तुलनेत खूपच घट झाल्याचे दिसत आहे. नंतरच्या पाच वर्षांमध्ये केवळ ४ बँकांनी एकूण ठेवींमध्ये १००% च्यावर शेकडा वाढ नोंदविली आहे, पहिल्या अर्धदशकामध्ये मात्र या वाढ गटामध्ये असणाऱ्या बँकांच्या तुलनेत ही संख्या अतिशय कमी आहे. ५०-१००% च्या दरम्यान वाढ नोंदविणाऱ्या बँकांच्या गटात १३ जिल्हा मध्यवर्ती सहकारी बँकांचा समावेश आहे तर १३ बँकांची एकूण ठेवींमधील शेकडा वाढ ५०% च्या आत आहे. पहिल्या अर्धदशकामध्ये ५० ते १००% च्या आत एकूण ठेवींमध्ये शेकडा वाढ दर्शविणाऱ्या १३ जिल्हा मध्यवर्ती सहकारी बँका होत्या तर केवळ ३ बँकांचीच एकूण ठेवींमधील शेकडा वाढ ५०% च्या आत आहे. पूर्वीच्या अर्धदशकाच्या तुलनेत महाराष्ट्रातील एकूण बँकांपैकी केवळ ५ बँकांनीच पूर्वीच्या अर्धदशकातील ठेवींच्या शेकडा वाढीच्या तुलनेत जास्त वाढ दर्शविली असून यापैकी जालना जिल्हा मध्यवर्ती सहकारी बँकेने एकूण ठेवीमध्ये मोठ्या प्रमाणात शेकडा वाढ नोंदविली आहे. दुसऱ्या पाच वर्षातील कालावधीमध्ये नागपूर जिल्हा मध्यवर्ती सहकारी बँकेने एकूण ठेवींमध्ये सर्वात जास्त ११६.४७% शेकडा वाढ नोंदविली आहे तर मुंबई जिल्हा मध्यवर्ती सहकारी बँकेची ११.५२% शेकडा वाढ ही सर्वात कमी आहे. अकोला जिल्हा मध्यवर्ती सहकारी बँकेची एकूण ठेवींमधील ७१.३५% शेकडा वाढ राज्यपातळीवरील ४७.३४% ह्या शेकडा वाढीपेक्षा चांगली आहे मात्र पूर्वीच्या अर्धदशकातील या बँकेच्या वाढीच्या तुलनेत कमी आहे. पण एकंदरीत सर्वच जिल्हा मध्यवर्ती सहकारी बँकांच्या ह्या अर्धदशकातील एकूण ठेवींच्या संदर्भातील वाटचाल पाहता अकोला जिल्हा मध्यवर्ती सहकारी बँकेची परिस्थिती समाधानकारक असल्याचे दिसते. राज्यपातळीचा विचार केल्यास पहिल्या अर्धदशकातील एकूण ठेवींची ११२.५२% वाढीच्या तुलनेत या अर्धदशकातील ४७.३४% शेकडा वाढ ही अत्यंत कमी असल्याचे जाणवते एकूण ठेवींच्या बाबतीत पहिल्या आणि दुसऱ्या अर्धदशकाची वरील तुलना पाहिल्यास महाराष्ट्रातील जिल्हा मध्यवर्ती सहकारी बँकांची स्थिती अत्यंत वाईट असल्याचे सार्वत्रिक चित्र आहे. बँकेच्या विकासाच्या दृष्टीने ठेवींमध्ये सतत वाढ होत राहणे अत्यावश्यक आहे.

राज्यातील जिल्हा मध्यवर्ती सहकारी बँकांच्या एकूण ठेवींच्या दशक शेकडा वाढीचा वेग पाहिल्यास ४००% च्या वर शेकडा वाढ नोंदविणाऱ्या ५ बँका असून नागपूर जिल्हा मध्यवर्ती सहकारी बँक ही ६२२.५४% वाढीसह आघाडीवर आहे. ३०० ते ४००% च्या दरम्यान एकूण ठेवीमध्ये शेकडा वाढ असणाऱ्या एकूण ८ बँका आहेत. या गटात ३९४.८४% वाढीसह रायगड जिल्हा मध्यवर्ती सहकारी बँक ही आघाडीवर आहे. २०० ते ३००% ह्या सामान्य शेकडा वाढ गटात १२ बँकांचा समावेश असून या गटात कोल्हापूर जिल्हा मध्यवर्ती सहकारी बँक २९०.७८% वाढीसह आघाडीवर आहे. १०० ते २००% ह्या त्यामाणाणे कमी शेकडा वाढ दर्शविणाऱ्या गटात पाच बँकांचा समावेश असून या गटात सर्वात जास्त १७६.८६ शेकडा वाढ परभणी जिल्हा मध्यवर्ती सहकारी बँकेने दर्शविली आहे. महाराष्ट्रातील सर्वच जिल्हा मध्यवर्ती सहकारी बँकांमध्ये दशक शेकडा वाढीबाबत जालना जिल्हा मध्यवर्ती सहकारी बँकेने १३७.३७% वाढीसह निच्चांक गाठला आहे. अकोला जिल्हा मध्यवर्ती सहकारी बँकेची एकूण ठेवींची दशक शेकडा वाढ ३३०.९१% असून ही वाढ राज्याच्या २७७.३३% ह्या सरासरी शेकडा वाढीपेक्षा जास्त असल्यामुळे ह्या बँकेची ठेवींच्या वाढीची गती जास्त आहे, ही बँकेच्यादृष्टीने सकारात्मक बाब आहे. राज्यपातळीवरील पहिल्या आणि दुसऱ्या सरासरी अर्धदशक शेकडा वाढीची तुलना केल्यास नंतरच्या अर्धदशकाच्या तुलनेत एकूण ठेवींच्याबाबत आधीच्या अर्धदशकातील शेकडा वाढ तीव्र होती. दुसऱ्या अर्धदशकातील एकूण ठेवीच्या शेकडा वाढीमध्ये आलेली सुस्ती जिल्हा मध्यवर्ती सहकारी बँकेच्या खेळत्या भांडवलामध्ये तूट निर्माण करून बँकांच्या विकासावर प्रतिकूल परिणाम करणारी आहे.

निष्कर्ष :-

राज्यातील जि.म.स. बँकांच्या सरासरी ठेवींची प्रथम अर्धदशक, द्वितीय अर्धदशक आणि दशक शेकडा वाढ अनुक्रमे ११२.५२%, ४७.३४% आणि २७७.३३% होती तर अकोला जिल्हा बँकेची शेकडा वाढ अनुक्रमे १०९.६३%, ७१.३५% आणि ३३०.९१% होती. राज्यपातळी आणि अकोला जि.म.स. बँकेची ठेवींची दुसऱ्या अर्धदशकतील शेकडा वाढ पहिल्या अर्धदशकातील वाढीपेक्षा बरीच कमी आहे, ही बाब जिल्हा मध्यवर्ती सहकारी बँकांच्या विकासाच्या दृष्टीने मारक आहे. अकोला जि.म.स. बँकेची राज्यपातळीच्या तुलनेत पहिल्या अर्धदशकातील शेकडा वाढ थोडी कमी असली तरी द्वितीय अर्धदशक आणि दशक शेकडा वाढ मात्र राज्यपातळीच्या तुलनेत बरीच जास्त असणे ही जमेची बाजू आहे पण पहिल्या अर्धदशकाच्या तुलनेत दुसऱ्या अर्धदशकातील शेकडा वाढ मात्र बरीच कमी आहे.

संदर्भ सूची :-

- Basic Data on performance of District Central Co-operative Banks (Reports: 1994-1995, 1998-1999, 1999-2000, 2003-2004)
- National Federation of State Co-operative Banks Ltd., Vashi, Navi Mumbai ₹ 400703

International Journal of Researches In Biosciences, Agriculture & Technology | May 2014 Issue-2, Volume-II | ISSN No. (Online) 2347-517X

INFLUENCE OF IONIC STRENGTH OF MEDIUM ON COMPLEX EQUILIBRIA OF LANTHANUM (III) AND NEODIMIUM (III) WITH SUBSTITUTED SCHIFF'S BASES

Sanjay Wagh
Shri Shivaji College, Akot, (MS), India.
Corresponding author Email : waghsanjay77@yahoo.in

Abstract:

The interactions of metal ions with Ligand (L5) and Ligand (L6) at various ionic strength in 70% DMF-water mixture is investigated by Calvin-Bjerrum pH-metric technique at 28 ± 10C. The ionic strength data were used to study the correct mechanism of complexation reaction. The thermodynamic properties of electrolyte solutions can be studied from long range interaction forces and short range interactions between ions and solvent molecules.

Keywords:

DMF - Dimethyl Formamide Ligand (L5) - 2 – Hydroxy -3-bromo-5-chloro-1-(α-para nitro phenyl imino) ethyl benzene Ligand (L6) - 2 – Hydroxy -3-bromo-5-chloro-1-(α-meta nitro phenyl imino) ethyl benzene

Introduction:

Debye and Huckel have given a theory of ion-ion interaction of dilute solution according to which the mean activity coefficient log (f±) of an electrolyte dissociating into cations of valency Z1 and anions of valency Z2 is given by –

$\log[f \pm = -] (A|Z\_1 Z\_2 | \sqrt{(\mu)})/(1+Ba \sqrt{(\mu)})$ .....(1)

Where the constants 'A' and 'B' involve the absolute temperature and the dielectric constant of the medium and 'a' is defined as the distance of closest approach of the ions. An equation due to Guntelberg1 for aqueous solution assumes to form –

$\log[f \pm = -] (A|Z\_1 Z\_2 | \sqrt{(\mu)})/(1+ \sqrt{(\mu)})$ .....(2)

The long range ions pairs not considered by Bjerrum have been discussed in a careful analysis of the whole theory by Fuoss and Krovs2. Equation (2) gives a pair representation of the behavior of a number of electrolytes up to $\mu = 0.1$ M3. At every low value of $\sqrt{\mu}$ i.e. in every dilute solutions, the term Ba $\sqrt{\mu}$ will

ultimately become negligible as compared to unity and equation (1) will be reduced to –

$\log[f \pm = - A|Z_1 Z_2 | \sqrt{(\mu)}]$ ..... (3)

This is Debye-Huckel limiting law according to which log f ± approaches linearly in the square root of concentration at high dilutions. Jaganathswami and Linaith4 have reported the information constants of bivalent metal chelates with some substituted chalcones. Narwade et al5 have studied the stability constants of Th(IV) complexes with some substituted pyrazolines. Ali-Asgar et al6 have investigated the metal-ligand stability constants of Cu(II) chelates with some substituted isoxazolines at different ionic strength. Sondewale et al have studied metal ligand stability constants of Cu(II)-complexes with O-Amino=Benzene-Sulphonic acid in different percentages of methanol-water mixture Mahajan have studied stability constants of Pr(III), UO2(II) complexes with some substituted sulphonic acids. Bandopadhy et al7 have studied proton-ligand stability constants of its complexes with lanthanides (III) in various mixed aqueous solvents. In view of analytical applications, it was an interest to know the physio-chemical properties and influence of ionic strengths on complex equilibria.

Material and Method:

In present investigation, the dependence stability constants on the ionic strength of the medium was examined by taking fixed concentrations of metal nitrates and perchloric acid using pH-metric titrations. The system has been studied at 0.02 M, 0.04 M, 0.06 M, 0.08 M, 0.1M ionic strengths by varying the concentrations of sodium perchlorate. In addition to sodium perchlorate, the titrating system contains ions from perchloric acid, metal nitrate and sodium hydroxide. The total ionic strength of the medium is calculated by following expression –

$\mu = \frac{1}{2}\Sigma C_i z_{i2}$ ..... (4)

Where C_i and Z_i are the concentration and valency of the ith ion respectively.

Result and Discussion:

The stability constants for the following systems were determined at 0.02 M, 0.04 M, 0.06 M, 0.08 M, 0.1 M ionic strength. 1. pK Values of (i) Ligand (L5) and (ii) Ligand (L6) 2. Log K Values of (i) La (III) – Ligand (L5) (ii) Nd (III) - Ligand (L5) (iii) La (III) – Ligand (L6) (iv) Nd (III) - Ligand (L6) This pK and log K values for various systems at various ionic strengths are presented in Table 1, 2 and 3. It may be inferred from the experimental data that an increase in the ionic strength of the system causes decrease in the pK and log K values. Gudadhe et al8 have obtained stability constants of Cu(II) – 1- (2-hydroxy-5methyl phenyl)-3-phenyl-1, 3-propandeione t various ionic strengths. Gupta9 have determined the stability constants of transition metal complexes with salicylamide at various ionic strengths in 75% methanol-water mixture. The values of stability constants have been found to increase with decreasing ionic strength. Fazlur Rahman et al10 have determined the stability constants of different metal complexes with substituted acetophenone oxime at various ionic strength in 75% dioxane-water mixture. The values of stability constants have been found to increase with increasing ionic strength. Recently Agrawal et al11 have obtained stability constants of metal complexes of substituted methyl-5-carboxylates at various ionic strengths.

Conclusion:

An increase in the ionic strength of the system causes decrease in the pK and log K values.

Acknowledgement:

Author is thankful to Principal and Laboratory staff of Shri Shivaji College, Akot for their kind co-operation.

Reference:

Guntelberg, H., (1926) : Z. Phys. Chem., 123, 199

Fuoss, R.M., Kravs, C.A. (1933) : J. Am. Chem. Soc., 55, 1919

Robinson, R. A., Stoke, R. H. (1959): "Electrolyte Solution", 2nd Ed. Butterworths, 230

Swami, J.J., Lingaith, P., (1978) : J. Ind, Shem. Soc., 16, 723.

Narwade, M.L., Gudadhe, S.K., Jamode, V.S. (1985):Acta Ciencia Indica, XIC (4), 234

Ali-Asgar., Jamode, V.S., Narwade, M.L. (1992) : Acta Ciencia Indica, XVIII C(3), 261.

Bandyopandhya, A.K., Chaudhary, A.K. (1987): Ind, J. Chem., 26A, 853

Gudadhe, S.K., Jamode, V.S., Narwade, M.L. (1985) : Acta Ciencia Indica, XIC (4), 234

Gupta, A., Pannu, B.S. (1994) : Asian J. Chem 6(1), 174

Fazlur Rahman., Rastogi, S.N., Jettey, U.K. (1990) : J. Ind Chem. Soc., 67, 342

Agrawal, P.B., Burghate A.S., Idrees, M., Narwade, M.L.,(2001): Oriental J. Chem., 17 (1) 123

Table – 1

Proton-Ligands Stability Constants at Various Ionic strengths.

Ionic Strength	$\sqrt{\mu}$	$\frac{\sqrt{\mu}}{1\sqrt{\mu}}$	$\frac{\sqrt{\mu}}{1\sqrt{\mu}} - 0.03\mu$	pK	
				Ligand (L_5)	Ligand (L_6)
0.02	0.1414	0.1238	0.0813	5.30	5.55
0.04	0.2000	0.1666	0.1066	4.96	5.15
0.06	0.249	0.1967	0.1232	4.65	4.80
0.08	0.2888	0.2204	0.1355	4.30	4.35
0.10	0.3162	0.2402	0.1453	4.12	4.24

Table – 2

Metal-Lignd Stability Constants at Various Ionic Strengths.

Ionic Strength μ	La(III) – Ligand (L_5)		Nd(III) – Ligand (L_5)	
	log K_1	Log K_2	log K_1	Log K_2
0.02	4.0515	3.9525	3.5518	3.3665
0.04	3.9505	3.8115	3.4703	3.3160
0.06	3.8100	3.6985	3.3365	3.2000
0.08	3.7520	3.5515	3.2005	3.1010
0.10	3.5752	3.4655	3.1055	3.0102

Table – 3

Metal-Lignd Stability Constants at Various Ionic Strengths.

Ionic Strength μ	La(III) – Ligand (L_6)		Nd(III) – Ligand (L_6)	
	log K_1	Log K_2	log K_1	Log K_2
0.02	4.2505	4.1206	3.9552	3.8105
0.04	4.0552	3.9550	3.8100	3.6999
0.06	3.9505	3.8550	3.7550	3.6550
0.08	3.8051	3.7513	3.6990	3.5800
0.10	3.7575	3.6422	3.6115	3.5202

International Journal of Researches In Biosciences, Agriculture & Technology | May 2014 Issue-2, Volume-II | ISSN No. (Online) 2347-517X

SYNTHESIS AND ANTIMICROBIAL ACTIVITIES OF – 5 – (SUBSTITUTED PHENYL) – 5 – (SUBSTITUTED BENZYL) – 2 – SUBSTITUTED THIOHYDANTOIN.

Sanjay Vitthalrao Kolhe
Shri Shivaji Art's, Commerce & Science College, Akot Dist. Akola (M.S.) India
Corresponding author Email : sanjaykolhe22@yahoo.in

Abstract:

2-hydroxy-3-substituted acetophenone were refluxed in DMSO medium in presence of mercuric acetate to get substituted coumaran-3-ones. The resulting substituted coumaran-3-ones is refluxed with thiourea in alkaline medium and alcohol gives 5-(substituted phenyl)-5-(substituted benzyl)-2-substituted thiohydantoin, which show strong antibacterial and antifungal activity. The identities of these compounds have been established on the basis of usual chemical transformation and IR, NMR spectral studies and all the compounds are screened for their antimicrobial activity.

Keywords:

Synthesis, Substituted coumaran-3-one, thiourea, mercuric acetate, substituted thiohydantoin, antimicrobial activity.

Introduction:

Thiohydantoin is an imadazole derivative. Many of the physiologically compounds used in medicinal chemistry are imadazole derivatives, and thiohydantoin are important core moiety in the design and synthesis of active molecules as well as natural products Benzil (ά- diketone) condensed with thiourea1 and substituted thiourea2, 3 in alkaline ethanolic medium yielded thiohydantoin. these derivatives have not only been used in medicinal chemistry as anti-HSV, HDL-cholesterol modulators Thiohydantoin and its derivatives have been also used as fungicides 4, herbicides in agrochemical research 5-10 antidiabetic11, show anti HIV activity12, anticonvulsant13, antinociceptive activity14. Substituted thiohydantoin analogs as a novel class of antitumor agents15, antimicrobial activity16 and anti arrhythmic activity17 Recently synthesized thiohydantoin were tested for their activity against HIV-

118and showed potential selectivity against leukemia cell lines19 The preliminary bioassay showed that these compounds exhibit certain selectively herbicidal activities20

Material and Method:

Materials and methods The melting points were taken in open capillary tube, IR spectra were recorded on Perkin-Elmer spectrum RXI FTIR spectrophotometer21, 1H NMR spectra were recorded in CDCl3 on Bruker DRX-300 spectrometer operating at 300MHz. The purity of synthesized compounds was check by TLC. The structural elucidation of compound was done on the basis of chemical and spectral data. Preparation of 5-(2-hydroxy-3-nitro-5-chloro phenyl) 5- (ά-hydroxy-4-methoxy benzyl)-2-thiohydantoin (II a):- 2-(4'methoxy benzylidene)-5- chloro-7-nitro coumaran-3-one (I a) (0.01 mole) and thiourea (0.01 mole) were dissolved in 40 ml of ethanol. To this mixture 10 ml of 10% KOH was added drop wise with constant stirring, allowed to stand for 2 to 3 hours. The reaction mixture was refluxed for 3 hrs. Cooled and then diluted with ice cold water washed several time with 1% NaHCO3 solution and then with distilled water. It was then crystallized from ethanol to get 5-(2-hydroxy-3-nitro-5-chloro phenyl) 5- (ά-hydroxy-4-methoxy benzyl)-2-thiohydantoin (II a).

Result and Discussion:

The structure of compound (II a) has been supported by chemical data, it is deep buff color crystalline solid m. p. 126OC. it shows positive ferric chloride indicating non-involvement of phenolic –OH group, and spectral data. • An IR spectrum was recorded on Perkin-Elmer spectrum RXI FTIR spectrophotometer. 3852 cm-1(-N-H, stretching), 3853 cm-1 (-N-H, stretching), 3815-3801 cm-1 (-OH group stretching), 1805 cm-1 (Lactum cyclic C=S group stretching), 1511 cm-1 (-NO2 group symmetrical aromatic stretching), 1340 cm-1 (-NO2 group unsymmetrical aromatic stretching), 1251 cm-1 (-NH bond

stretching), 1060(-CHOH group stretching), 767cm-1(C-Cl group stretching). • 1H NMR in CDCl3 on Bruker DRX-300 spectrometer. δ=1.25(s, 1H,-CH), 3.9(s, 3H, Ar-OCH3 group), 6.3-6.4(d, 1H -OH), 6.8(m, 6H, Ar-H), 6.9-7.8δ(s, 1H, Ar-OH). These chemical and spectral data shows that compound (II a) is get 5-(2-hydroxy-3-nitro-5-chloro phenyl) 5- (ά-hydroxy-4-methoxy benzyl)-2-thiohydantoin.

Antimicrobial activities:

All the compounds have been screened for both antibacterial and antifungal activity using cup plate agar diffusion method21 by measuring the inhibition zone in mm. The compounds were taken at a concentration of 1 mg/mL using dimethyl sulphoxide as solvent

Reference:

Vogel's Test book of organic practical chemistry (1989); 5th edition, Longman publication, 1153.

W. Garry Bowness, S. Balbir et.al. (1983); J. Chem. Soc. Perkin, Tran-I, (ii), 2649-53, (Eng.).

J. Brown Christopher and A. R. Bulter (1989); J. Chem. Soc., Perkin, Trans-II, 731-740, 3567-72, (Eng.).

Schroder, Ludwing et.al. (1982) Oct.; Eur. Pat. Appl. Ep., 91, DE. Appl. 3, 213140, 08, Apr., pp-47.

Li K., Shi D.Q. (2009); Synthesis and herbicidal activity of 3-aryl-1-[2- (aryloxy) propanoyl] imidazolidine- 2,4-diones. J. Heterocyclic Chemistry. 46, 544–547.

Thenmozhiyal J.C., Wong P.T.-H., Chui W.K. (2004); Anticonvulsant activity of phenylmethylene-hydantoins: A structure-activity relationship study. J. Med. Chem. 47:1527–1535. [PubMed]

Elokdah H., Abou-Gharbia M., Hennan J.K., Mcfarlane G., Mugford C.P., Krishnamurthy G., Crandall D.L. Tiplaxtinin,(2004); A novel orally efficacious inhibitor of plasminogen activator inhibitor-1: Design, synthesis, and preclinical characterization. J. Med. Chem. 47:3491–3494. [PubMed]

Brady S.F., Bauer J.D., Clarke-Pearson M.F., Daniels R. (2007); Natural products from isnA-containing biosynthetic gene clusters recovered from the genomes of cultured and uncultured bacteria. J. Am. Chem. Soc.; 129:12102–12103. [PubMed]

Nakajima M., Itoi K., Takamatsu Y., Kinoshita T., Okazaki T., Kawakubo K., Shindo M., Honma T., Tohjigamori M., Haneishi T. Hydantocidin(1991); A new compound with herbicidal activity from Streptomyes hygroscopicus. J. Antibiot. , 44:293–300. [PubMed]

Zhao B.G., Du H.F., Shi Y.A. (2008); A Cu (I)-catalyzed C-H α-Amination of esters. Direct synthesis of hydantion. J. Am. Chem. Soc., 130: 7220–7221. [PubMed]

Eisiac Co. Ltd. Jpn. Kokai Tokkyo Koho Jp., 58, 213, 717, (1983), Appl. 83/6085, 20th Jan. 1982, 18.

Comber, N. Robert, Revnolds, C. Robert, et.al. (1992); J. Med. Chem., 35 (19), 3567-72 (Eng.).

Rydzik, Elfrada, Kaminoka Anna, (1984); Acta. Pol. Pharm., 41(4), 459-64, (Pol.).

Zhou, Zinpei et .al. (1991): Zbongguo Yooke Dacue Auebao, 22(6), 330-333.

Al-Obaid, AM, El-Subbagh, HI;, Khodair,Al; Journals of Anti-Cancer Drugs, (1996), 105-110.

Ewa Szymanska, Katarzyna Kiec-Kononowicz, (2002): Farmaco, vol.-57, issue-1, Jan., 39-44.

Wei Zhang and Lu Yimin, (2010): Org. Lett., 219; 1015.

Khodair Al. el-Subbagh HI, el-Emam AA,(1997) Sep; Boll Chim Farm,136(8), 561-567.

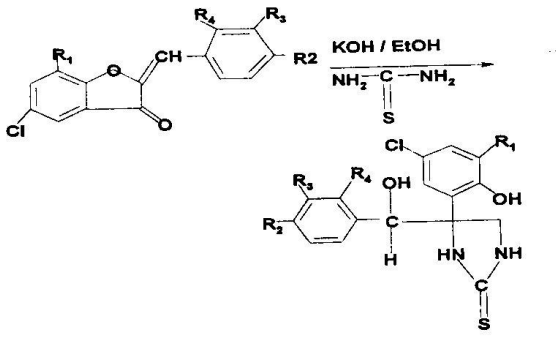
Al-Obaid, AM; El-Subbagh, HI; Khodair, Al; Elmazar, MMA, (1996); Anticancer drugs Journal, 280-284.

Jintao Han, Hongbo Dong, Zhihong Xu, Jinmin Wang, and Mingan Wang (2013) October; International J Mol Sci. 14(10): 19526–19539. 21.

N.B.Colthup, L.H.daly and S.E. Wiberley,(2003); Introduction to infrared and Raman Spectroscopy, Academic Press, New York , p. 279.

Table:-1 Synthesized compounds, M.P.'s and yields.

S. No.	Compounds	R_1	R_2	R_3	R_4	M.P.(°C)	Yield(%)
1	II a	NO_2	OCH_3	H	H	120	76
2	II b	NO_2	H	NO_2	H	126	78
3	II c	H	OCH_3	H	H	110	82
4	II d	Br	H	H	H	138	84
5	II e	Br	OCH_3	H	H	154	73
6	II f	Br	H	NO_2	H	132	76
7	II g	Cl	OCH_3	H	H	127	86
8	II h	Cl	H	NO_2	H	114	81



I (a) II (a)

2014-15

Aayushi International Interdisciplinary Research Journal (AIIRJ)
ISSN 2349-638x Impact Factor 4.574 Special Issue No. 25
UGC Approved Sr.No.64259 Website :- www.aiirjournal.com Email id:- aiirjpramod@gmail.com

EFFECT OF SOLVENTS ON THE ULTRASONIC VELOCITY AND ACOUSTIC PARAMETERS OF NALFURAFINEDRUGS AT 308K.

R. M. Jumle[a] & Usha Wasnik[b]

[a]Department of Chemistry,Shri Shivaji Arts, commerce&Science College, Akot,Dist: Akola (M.S.) India
[b]Department of Chemistry, Arts, Commerce &Science College, Chikhaldara, Dist: Amravati (M.S.) India
jumle.ravi@gmail.com

ABSTRACT

Ultrasonic studies provide information in understanding molecular behavior and intermolecular interactions of Nalfurafine drug solvent mixtures.The measurements of density, viscosity and speed of sound of Nalfurafinedrug have been determined by experimental procedures in different medium. From the experimental data various acoustical parameters such as apparent molar compressibility (ϕ_k), apparent molar volume (ϕ_v), adiabatic compressibility (β_s), specific acoustic impendence (Z), intermolecular free length (L_f) have been evaluated. The concentration range is 0.02 to 0.1 mol dm^{-3}. The measurements are conducted at 308K in different solvents. The variation ofthese acoustic parameters is explained in terms of solute -solvent molecular interaction occurring in a Drug solutions.

INTRODUCTION :

The measurement of ultrasonic velocity has been adequately employed in understanding the nature of molecular interactions in pure liquids and liquid mixtures. Ultrasonic propagation parameters yield valuable information regarding the behaviour of liquid systems, because intramolecular and intermolecular association, dipolar interactions, complex formation and related structural changes affect the compressibility of the system which in turnproduces corresponding variations in the ultrasonic velocity. The acoustical and thermo dynamical parameters obtained in ultrasonic study show that the ion solvation is accompanied by the destruction or enhancement of thesolvent structure[1-4]Excess thermodynamic properties of liquid mixtures are of great interest to conveniently design industrial processes and also to provide useful information on the molecular interactions required for optimizing thermodynamic models[3]. When two or more liquids are mixed there occur some changes in physical and thermodynamic properties because of free volume change, change in energy and change in molecular orientations.Derived thermodynamic and acousticalparameters like internal pressure, free volume and acoustic impedance are of considerable interest in understanding the intermolecular orientations in binary liquid mixtures[5-7]. Excess thermomic properties of mixtures are useful in the study of molecular orientations and arrangements[8-9].

Ultrasonic velocity $u = \lambda\upsilon$ -------- 1

Adiabatic compressibility $\beta_s = 1/u^2{}_s\rho_s$ --- 2

For the present study Nalfurafine[10] drug is selected. This drug is used for the treatments of uremic pruritus in individuals with chronic kidney disease undergoing. The acoustic properties of Nalfurafine have been studied in 20% Methanol-water, 20% Dioxane-water and 20% DMF-water solutions at 308 K.

EXPERIMENTAL

Solvents methanol, dioxane and dimethyl formamide used in the present work were of AR grade and were purified and dried by the usual procedure. Densities, viscosities and ultrasonic velocities were measured at 308 K over a wide range of composition. Densities were determined by using bicapillary pyknometer. The viscosities were measured by precalibrated Ostwald type viscometer. Ultrasonic velocity measurements were made by using an ultrasonic interferometer (Mittal Enterprises, New Delhi) at a frequency of 2MHz with a tolerance of ± 0.005%. All the measurements were carried out at 308 K.

THEORY

Acoustic parameters such as apparent molar compressibility (ϕ_k), apparent molar volume (ϕ_v), adiabatic compressibility (β_s), specific acoustic impendence (Z), intermolecular free length (L_f), Limiting apparent molar volume (ϕ^0_v), Limiting apparent molar compressibility (ϕ^0_k)were determined using following relations.

GIF
GLOBAL IMPACT FACTOR
0.641

2277-7601

Multilogic in Science

An International Refereed & Indexed Quarterly Journal In

Science, Engineering & Agriculture

Volume IV, Issue X, Oct. 2014

Extend the Knowledge

Associated & Indexed at

1. J-Gate
2. SJIF
3. Scientific Publication Index
4. Scientific Resources Database
5. Recent Science Index
6. Scholarly Journals Index
7. Directory of Academic Resources
8. Elite Scientific Journal Archive
9. Current Index to Scholaraly Journals
10. Digital Journals Database
11. Academic Papers Database
12. Contemporary Research Index
13. Sjoufnal Index
14. Open Academic Journal Index
15. AcademicKeys
16. Scholarsteer
17. ResearchBib
18. Journalseeker
19. Global Impact Factor
20. IIFS
21. UIF

Chief Editor

Dr.Kiran Abasaheb More

Dept. of Botany,

Yashwantrao Chavan Arts & Science College

Mangrulpir.Dist.Washim, (MH) India.

Volume IV, Issue X , Oct 2014 Multilogic in Science ISSN 2277-7601
An International Refereed & Indexed Quarterly Journal

NUTRITIONAL VALUES OF FRESH WATER FISHES OF AKOT DIST.AKOLA (M.S.)

R.S.Mankar
Dept of Zoology
Shri Shivaji Arta,Commerce & Science college Akot.

(Received : 18.08.2014; Revised : 14.09.2014; Accepted : 15.09.2014)

(RESEARCH PAPER IN ZOOLOGY)

Abstract-:

Malnutrition & starvation are the two serious problems being faced by million ofrural poor in most of the developing countries.The problem of malnutrition is in fact more serious & are of a bigger dimension than the starvation problem & is caused mainly due to the animal protein-deficient diets.Animal protein is essential for proper growth,repair & maintenance of the body organs & tissue.Fish contain about 16-20% protein compared to about 12% in eggs,3.5% in milk & 6.8% in rice & wheat.Moreover, it is wholesome,tasty,highly nutritive & an excellent source of essential minerals,vitamins &amino acids.At present about 31% of the total animal protein supply in the Asian region is in the from of fish protein.For the poorest segments of the population,fish is not only the most important animal protein source,but often the only one.It is concluded That the,higher amount of both protein & lipid content was found in fish,Acanthocobitis botia &.Where as lowest percentage was found from Notopterus notopterus.

Key words-: Amino acids,nutritious,protein,lipid Acantocobitis punctius.

Introduction-:

Fishes are the best article of food (Jayaram,2002;Yadav,2005).Today the limited quantity of food calories is agreat concern to many parts of the under developed world,but the quality,notably of proteins,is morecrucial(Singh,1990;Jadhav & Yadav,2007).Supplies of proteins are particularly scarce &costly in poorernations.for over one third of their population,the protein calories balance of the diet is inadequate & the protein problem is reaching a crucial stage (Yadav,2008).Fresh &processed fish are making important contributions to the fishery resources.Therefore,it is essential to obtain the knowledge of fishery science,especially about food values of fish i.e.Protein &lipid content in them.In present study,various fresh water fishe species captured from different river of Akot Dist.Akola were analyzed for estimation of total proteins,total lipids contents.

Material & Methods

The fish were procured from local fisherman in Akot Dist.Akola area & immediately brought to the laboratory & preserved in 80% methanol solution.

The food values like protein & lipids were estimated in the laboratory.The amount of total protein (g/100g)was estimated by Lowry`s methods(Lowry`s et al.,1951).And for total lipids the described in Bling & Dyer (1959) methods was applied

Results & Discussion

Fish are rich in proteins ,fats & vitamins.The fats provided energy & produces body fats,where as proteins provide energy &material for growth & repair & also for the formation of fats.In present nutritional values i.e.proteins,lipid were estimated immediately on same day of captured.The food valuesof thesefishes are presented in table-1

Table-1.Food valus of some fresh water fish from Akot.

S.No.	Name of the fish species	Protein(g)/100g tissue	Lipid(%)mg/100g
1	Acanthocobitis botia	20.70+-1.20	01.50+-00.30
2	Barilius bendelisis	15.20+-1.10	2.30+-00.60
3	Chanda nama	10.20+-1.00	2.00+-00.80
4	Channa marmarulius	8.60+-1.10	1.50+-00.30
5	Channa orientalis	19.30+-1.10	1.30+-00.40
6	Clupisoma garua1	15.50+-1.30	1.10+-00.40
7	Danio aequipinnatus	13.00+-1.12	2.30+-00.30
8	Garra mullya	13.85+-1.00	2.30+-00.45
9	Glossogobius giurus	5.90+-1.00	1.00+-00.32

10	Labeo boggut	10.20+-00.60	1.10+-00.30
11	Lepidocephalus guntea	13.40+-00.60	1.00+-00.10
12	Lepidocephalus thermalis	14.25+-1.10	2.00+-00.60
13	Mastacembelus pancalus	13.50+-1.00	2.15+-00.65
14	Notopterus notopterus	5.50+-00.30	00.50+00.10
15	Oreochromis mossambica	12.10+-1.20	1.00+-00.10
16	Rasbora doniconius	10.40+-00.80	1.20+-00.30

1-Total protein(g)-some of fishe species collected from different river in Akot show high amount of protein.Some species shows grate variations in the tissues.

2-Total lipids(%)-Like protein contents,there is wide variation in lipid content of captured fish.

Reference-

Beaven,R.(Captian)FRGS(1990).Handbook of fresh water fishes of India.Nerendra Publishing house,Delhi-110006.

Bling.E.G.&Dyer,W.J.(1959).A rapid methods of extraction & purification.Can J.Biochme.Physio,37:911-927

Jadhav,S.S.& Yadav,B.E.(2007).Occurrence of the fish,Etroplus maculates (Bloch,1885),inRatnagiri district,Mahashtra.Bionotes 9(1):26-27.

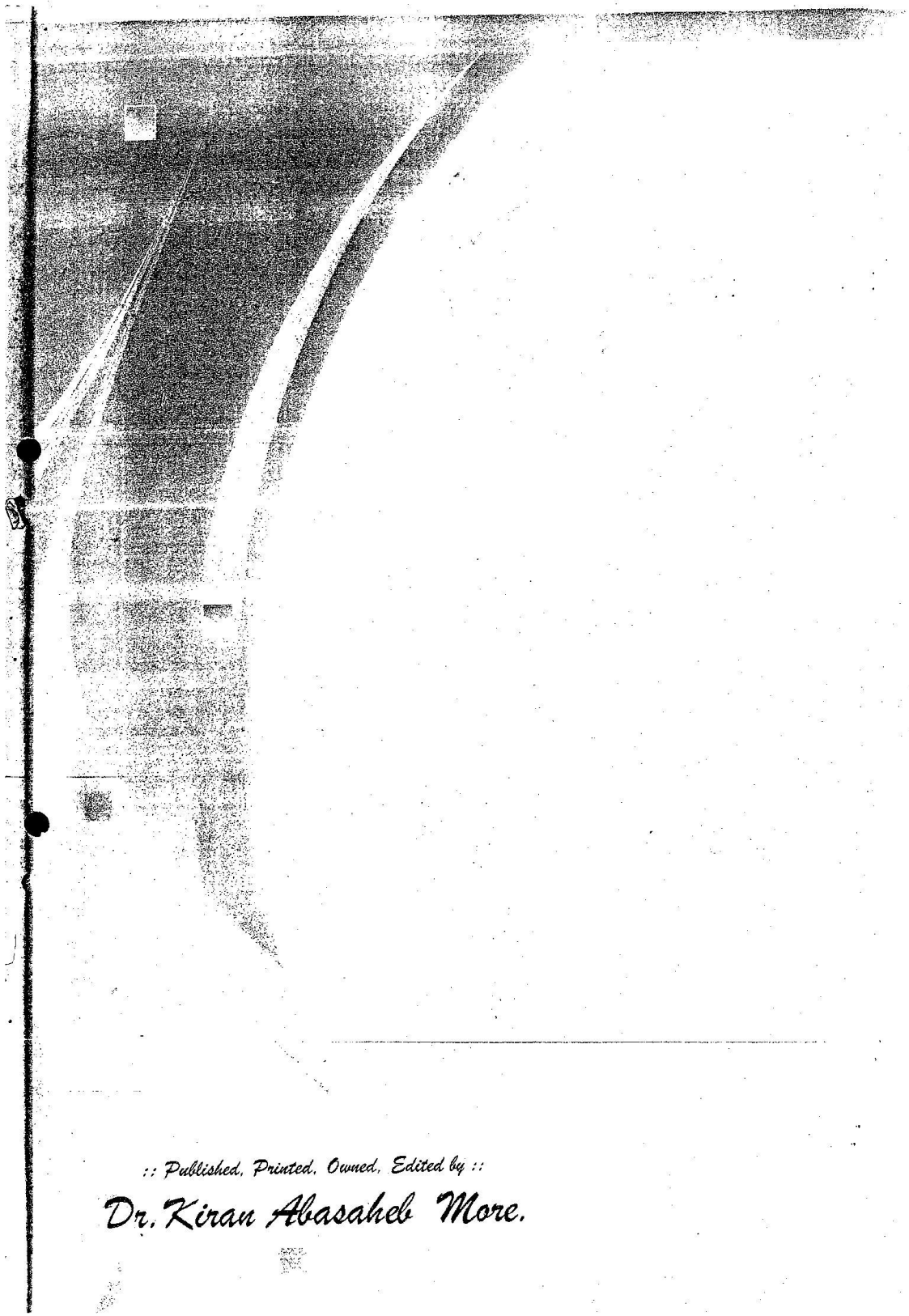
Jayaram,K.C.(2002).The fresh water fishes in Indian Region.Narendra Publshing house,Delhi-110006.

Lowry,O.H.,Rosenbrough,A.L.,Farr & Randell,R.J.(1951) Protein measurement with Folin phenol reagent.J.Biol.Chem 193:265.

Yadav,B.E.(2005).Pisces-Fauna of Melghat Tiger Reserve,conservation Area series,24Zool.Sur.India,231-296.

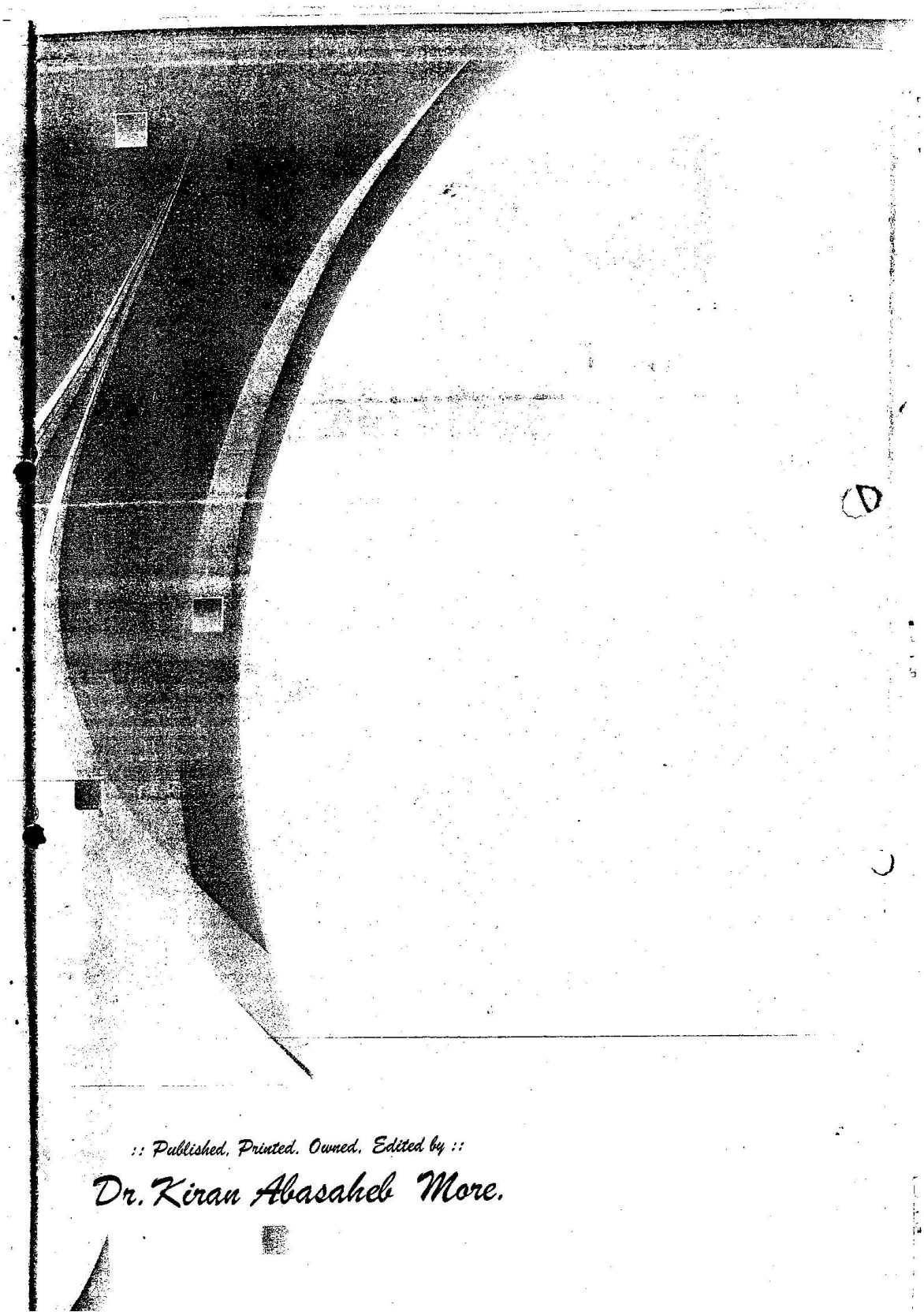
Yadav,B.E.(2008).Fresh water fishes.Fauna of Goa state,Fauna series,16,Zool.Surv.India,243-272.

Yadav,B.E.Jadhav,S.S.&Patil,S.G.(2007)Enhancing pisciculture in Northern part of w.Ghats.Bionotes,9(4):114-115.



:: Published, Printed, Owned, Edited by ::

Dr. Kiran Abasaheb More.



:: Published, Printed, Owned, Edited by ::

Dr. Kiran Abasaheb More.

International Journal of Researches In Biosciences, Agriculture & Technology | May 2014 Issue-2, Volume-II | ISSN No. (Online) 2347-517X

ZOOPLANKTON DIVERSITY AND THEIR POPULATIONIN DEVCHANDI DAM, WASHIM, MAHARASTRA, INDIA

Vijay B. Bhagat
Shri Shivaji Arts, Commerce and Science College, Akot
Corresponding author Email : ninad8199.vb@gmai.com

Abstract

Zooplankton diversity studies were carried out for a period of one year from December 2012 to November 2013 from the five stations of Devchandi Dam. In present study 51 species of Zooplankton were recorded from different sampling stations reveal that the dam water can be utilized for irrigation, fish culture, cattle drinking purpose. The communication provides an insight into the population of Zooplankton inhabiting the dam.

Keywords

Population of Zooplankton,Devchandi Dam.

Introduction

Animals of fresh water are extremely diverse and include representative of nearly all phyla. The Zooplankton includes animals suspended in water with limited power of locomotion. Fresh water Zooplankton was dominated by four major groups of animals: protozoa,rotifers and to subclasses of crustacea, the cladocerans and cupepods. Zooplanktons areabundant in shallow areas of most of the water bodies and distributed vertically and horizontally in an ecosystem. The Zooplanktons are important group as they occupy an intermediate position in the food web, many fishes feed upon different Zooplankton. Zooplankton, an important index of secondary production and a natural source of food for higher organism. Which play a key role in transferring energy from one tropic level to other in the aquatic habitats.They are also use as a biological indicators of trophic status of a water body. Inland fresh water bodies are the main sources of drinking water for the rural population. Deterioration in these water sources due to contamination with planktons, parasites and pollutants create health problem on fishes and drinking person and cattle. Evolution of safety water through assessment of biotic and abiotic characteristic of water has not been undertaken on a large scale. Several worker such as Ganapati, (1943);Nasar,(1975, 77); Sehgal,

(1980); V.Hague et.al, (1988);Biswas and Konar, (2000);NarsimhaRao and JayaRaju, (2001),Gupta, (2002).

Material and Method

Devchandi Dam is one of the important drinking water sourcefor the cattle and fish culture.Five stations were selected for the investigation of Zooplanktons during December 2012 to November 2013.For the analysis of Zooplanktons sampleswere collected monthlyfora period of one year from December 2012 to November 2013 from the five sampling stations. The samples were preserved using 4% formalin. The concentrate of the samples were examined under microscope and estimation of Zooplankton. The samples were examined with optic research microscope. The organism were identified and counted with magnification varying from 100X x 400X. Zooplanktons were calculated using Lackey's Keys Drop Count Method. Qualitative and quantitative analysis of Zooplankton were also carried out and expressed in org/Lit. Identification of Zooplanktons were carried out using key by APHA, (1989);Tonapi, (1980); and other literature.

Result and Discussion

Devchandi Dam one of the drinking water source and the most productive man made water body near Karanja(lad) Dist. Washim. The Zooplanktons in the investigation area during study period were analyzed. Station wise numerical abundance zooplankton and their percentage composition are shown in table 1. The co-relation study of Zooplankton of Devchandidam was found to be highly significant with alkalinity (r=0.945). A feeble to moderate positive co-relation was also found in between chloride (r=0.489) and with sulphate(r=0.465). Abiotic factors influence the growth of Zooplankton this is in agreement with Ade et.al, (2001).Zooplankton abundance was in the order of copepod >rotifers >cladocerans>ostracods>protozoan>worms and larvae(fig. 1). A strong positive co-relation was also observed in between Zooplankton and Phytoplankton (r=0.879). This is in conformation with the observation of Meshram, (1996).Among Rotifers, Karetellatropica, Lecane, Rotararia, Pompholyx,Asplanchna and Trichotria species were observed at all the sampling sites. This might be due to large particulate matter (Sarwar and Praveen,1995); Meshram, (1996);Ade, (2001). Similarly from the observation of five sampling stations I to Vare highly populated zones followed by station III

respectively (Table 1). The observation to confirm that the water is productive and capable of supporting intensive fish culture and useful tool for further ecological assessment and monitoring of this dam ecosystem.

Reference

APHA, (1989):Standard Methods for Analysis of Water and Waste Water. American Public Health Association17thEd.Washington D.C.P.P.2-1193.

Biswas, B.K. and S.K. Konar, (2000):Impact of Waste Disposal on Plankton Abundance and Diversity in the River Ganga at Hathidah (Bihar),Poll., Res., 19(4):633-640.

Ganapati, S.V, (1943): An Ecological Study of Garden Pond Containing Abundant Zooplankton. Proc.Ind.AcadSci 17: 48-58.

Meshram, C.B., (1996);LimnologicalStudies of WadaliLake, Amravati (M.S.): Ph. D. Thesis, Amravati University, Amravati.

Haque,A.A.,khan,M. Fatima and S.I.Burbhutan, (1988):lmpof some ecological parameters on rotifers population tropical perennial pond. Environment and Ecology. 6(4): 998-1001.

Narasimha Rao.P. and P. B. Jaya Raju, (2001):Limnologicalinvestigations and diversity of plankton sewage with culture pond of Nambur near Guntur (A.P.).J. Aqua Biol., (1 and 2): 11-14.

Sarwar, S.G. and A. Praveen, (1995): Community structure and population density of Zooplankton into interconnected lakes of Shrinagar (J&K) India. Poll. Res. 15: 35-38.

Tonapi, G.T. (1980): Cited from, Fresh water animal of India (an ecological approaches), Mumbai, Oxford, New Delhi,Calculta and I.B.H. Pub New Delhi. Ade,

P.P., Vankhede, G.N. and Dhande,R.R.(2001) : Physico-chemical characteristics and Zooplankton biodiversity of Amravati University Reservoir abstract of National Seminar, Khargone (M.P.).

Adoni, A.D. (1985):Work book on limnology, BlackWell ScientificPublication, Oxford. Nasar, S.A.K. (1977): Investigation on the seasonal periodicity of Zooplankton in freshwater pond in Bhagalpur, India. Acta.Hydrochim.Hydrobiol. 5 (6): 577-584.

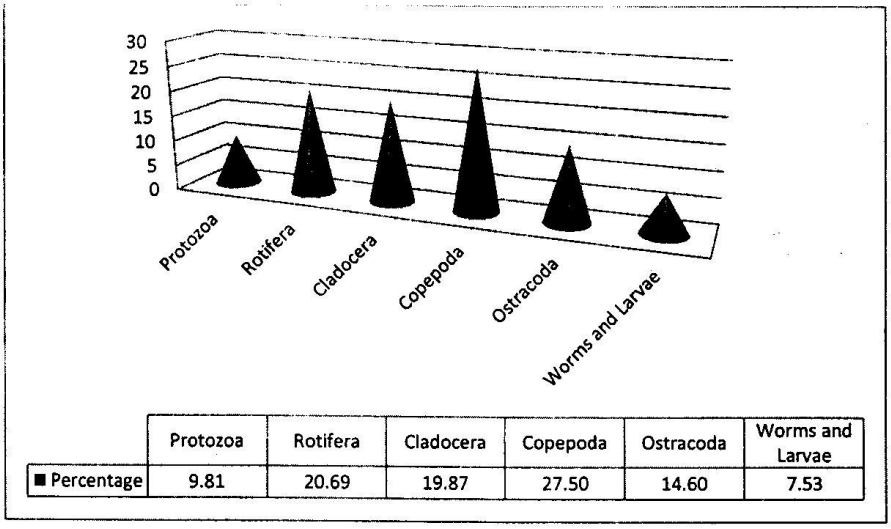
Naser, S.A.K. and Munshi, J.S.D. (1975):Studies of Primary Production of Fresh Water Pond. Jap. J. Ecol.25: 21-23.

Sehgal, H.S. (1980):Limnology of Lake Surinsar, Jammu, with reference to Zooplanktons and fishery prospects. Ph. D. Thesis submitted to Dept.of Bioscience, University of Jammu.

Gupta,(2002):Studies on the Diversity of cladocerans in the lake Mansar, Jammu.M. Phil. Dissertation, University of Jammu, Jammu.

Table No. 1 – Numerical abundance of Zooplankton (Org/Lit.) at different sampling stations during December 2012 to November 2013.

Sr. No.	Zooplankton	Station I	Station II	Station III	Station IV	Station V	Total	%
1	Protozoa	1931	1120	1366	1211	1042	6670	9.81
2	Rotifera	3092	2945	2656	2360	3010	14063	20.69
3	Cladocera	2810	3420	3101	1190	2987	13508	19.87
4	Copepoda	5014	3840	4551	2300	2990	18695	27.50
5	Ostracoda	2230	2840	2520	1355	980	9925	14.60
6	Worms and Larvae	480	1335	1810	680	815	5120	7.53
		15557	15500	16004	9096	11824	67981	100



	Protozoa	Rotifera	Cladocera	Copepoda	Ostracoda	Worms and Larvae
Percentage	9.81	20.69	19.87	27.50	14.60	7.53

Fig. No. 1 – Percentage composition of Zooplankton of Devchandi Dam

Volume-4, Issue-2, Feb-2015 • ISSN No 2277 - 8160

Research Paper English Literature

CODIFICATION OF ADULTS AND ADULTERY IN REVOLUTION 2020 OF CHETAN BHAGAT

R. B. WANKHADE Asst. Professor, Department of English Shri Shivaji Arts, Commerce & Science College Akot, Dist. Akola (M.S.) India

ABSTRACT

Revolution 2020: Love, Corruption and Ambition, is a story about three friends set in the backdrop of holy city of Varanasi. Gopal, Protagonist and Raghav are two good friends in school and Aarti is the girl with whom both the boys fall in love. As they grow, they observe corruption prevail everywhere. Gopal gives in to the system and Raghav fights it. Aarti is their only common world who is confused to choose the 'real one' for her. Gopal helps her choose 'in a filmy style. Gopal and Aarti initially developed friendship. Gopal wants to mould it into relationship but Aarti objects upon. While Gopal parted to Kota for pursuit his goal, Aarti get closer to his friend Madhav. They cultivated relationship beyond mere friends. They are on the verge of betrothal. Gopal unabated his love for Aarti. The girl loves yet to Gopal, too. But externally had accepted to be a life partner of Madhav. Gopal developed craze for the girl forever. The complicated yearning to each-other even legally fixed with someone is emotional adultery. The codification of soul to connect with adultery in adults is fragmented in the novel R2020 of Chetan Bhagat, the paper king of Indian English Novel.

KEYWORDS : Revolution 2020, Love, Ambition, Corruption, Adults, Adultery, Codification, etc.

Research paper

The rock star of Indian paper edition, Chetan Bhagat, is an unusual force in super post modern history of Indian English Novel. His fictional world caught the pulse of the boiling passions of the so called concrete pillars of future nation, 'the youth', similar to 19th century German writer Goethe, served as skilled physician by catching the pulse of the then people 'Thou ailest here', stated to Matthew Arnold in 'Memorial Verses'. The emotional range and thinking arena of the young, changes as constant to instant and permanent to temporary. The swift of inner passing to the rocketed height in the sky and the burst of sentiments melt into air, like calm dust after storms. The Theory of Humour shows that the behavioral differences results from a prevalence of one of the body's four humours i.e. blood, phlegm, black bile and yellow bile. All these correspond with the four elements of the universe air, water, fire and earth. The third element 'fire' has become the famous code indexed for the adults. The physiological and emotional power reaches to its quickness in action and thought in the young generation. Chetan Bhagat as a skilled craftsman reaches to the heart of the young readers, which is the largest asset of the world, majorly proportioned to India. He reads the cyber viruses' generation through his subtle study of mind. It is his mind merit that he is reining unchallengeable over the empire of young readers mind. Youth adore and respect him. The changes he can bring to India are matching to none.

Judging the literaurs merits as fertile imagination, rich fund of emotion, wide extensive study, precise observation of life, delightful treasury of humour and objective observation of occasion all these qualities are not perfectly and probably suited to the literary hands of Chatan Bhagat. So he could not be added to the queue of 'Indian Eco' in the firmament of world fiction. Salman Rushdie, Amitav Ghosh, Vikram Seth, Anita Desai Arvind Adiga, Jhumpa Lahiri to Amit Chaudhuri and so on, are the day-to-day firm figures of Indian literature famous for all time in the globe. A close study of all literature of Chetan Bhagat will indicate that he is far away in the world of imagination and fancy. Though as a trained writer he may be failed to exist on the surface of literary horizon, his realism and fine portraiture art along with pin- pointed observation excelled himself in compare with his predecessors in finding fairly fountain of firing fans to the arithmetic of weaving words. As an aesthetic of literature, Chetan Bhagat is par excellence in such a short span of life. His writing has got such a magnetic power, his readership increases from millions to billions over nightly. The short sighted views of the modern generation, he swallowed in such way so that today teen age to tight ages adults and youths are memorized to the acronym 'CheB'. The fans and followers are not only related with the paper copy of his books but the social networking sites are hugely filled up with the aspirations and and well wishes for his further literary output waiting aghastly.

Bhagat's another famous brainchild is 'Revolution 2020: Love, Corruption, and Ambition'. It is a story concerned with a triangle love, corruption and a journey of self-discovery. R2020 has exposed the issue of how private coaching institutions for courses like IIT, JEE, AIEEE exploit hopeful engineering students. How parents put their whole thing on stake for these coaching so that their children can pass engineering and other professional tests and change the fortune of their family. It also projects the 'win-win policy' in so called sacred field 'education' epitomized with the locale of Varanasi. Nevertheless, it unveils the socio-political commercialization with corruption existing in Education system of India.

This book follows the story of two friends alienated by their ambitions and passions yet connected by their love for the same girl. While Gopal, who has experienced the harsh realities of life due to poverty, aspires to become rich, his friend Raghav has only witnessed the same cruelties but desires to revolutionize India through it. As they grow older, they disconnect from each other and are busy with their individual lives. But Aarti somehow ties them together being their mutual friend. Both of them are in love with the same girl and this incorporates the romance facet of R2020.

Two boys Gopal, Raghav, and a girl, Aarti are the characters in Revolution 2020. Gopal is the narrator, the protagonist of the story, and is chiefly related with Gopal's love for Aarti. Gopal's mother died when he was very young, and he was raised by his father, who was poor due to a long running property problem with his brother. Gopal and Raghav are school friends. Aarti and Gopal are very close cordial friends, and are very friendly towards each other. While Gopal wants Aarti to become his, she repeatedly refuses him saying she doesn't want to enter a relationship.

The struggle of young boys to pursuit their goal is quite appreciative in the novel. So far as poverty and its hits affected the life of Gopal in search of job is also praiseworthy. A mutual friendship with classmate is not bad. But to transform it in a relationship is a real twist in the novel. The delineation of passion for physical love is abhorred. The hunger for lust is bad. The two beads of love are interwoven in the same threads with same time. Gopal and Aarti are exposed as good friends at the very first plot of the novel. While Gopal is away at Kota, Aarti and Raghav become close and then started going out, which causes much strain to Gopal and Aarti's friendship along with Gopal and Raghav's friendship. Gopal is distressed, and the novel explores the strains of unrequited love between intimate friends, which are a major part in the novel.

Raghav had scored very well in his exams and joins the prestigious IIT BHU to study engineering, though his real ambition is to become a journalist and affect social change. Partly due to the emotional difficulties brought on by his friends' relationship, Gopal again fails to fare good at the AIEEE. Gopal's father cannot bear his son's repeated failure and dies, leaving Gopal an orphan. Debt increased, through a friend he meets a powerful MLA, Shukla, who agrees to help start an

engineering college on his father's disputed land. Shukla agreed to provide financial backing and political support to construct the new college, named GangaTech, with Gopal who will be its director. In order to build the new colleage Gopal head to handle corrupt politicians, bureaucrats and regulators, all of whom had to be bribed during various stages of planning and construction of the college.

The character of Raghav can be described as the rarest of the rare ideal characters from the novels of Chetan Bhagat, as almost all his characters do not show the idealism of traditional kind. Though a resident of a holy city, Varanasi who follows the path of an ideal social activist Raghav does not mind to have a girl friend with whom he may have casual sexual relationship. Chetan Bhagat does not paints with noble attributes with character integral as if satisfaction of physical need has become the top most priority of young generation that doesn't care the loss of virginity. But the craze for physical pleasure to be fulfilled is a kind of adultery even if betrothed with someone. Gopal had a unique admiration for Aarti's physical beauty.

"I tugged at the loose end of her Ramada sari, bringing her close to me. We kissed. The rain grew insistent, noisy, thumping the window rhythmically. We kissed and, naturally, my hand went to her blouse." (Pg no- 250)

Aarti found Madhav fit for herself in relationship rather than only friend. She kept alive the hurt injury of Gopal by sharing her personals about Madhav with Gopal. All this types of vexed and mixed emotions for love interspersed in the novel. It is a code of sentiments for unconsummated love. 'Revolution 2020'remains one dimensional throughout. The story revolves around the narrator Gopal as he shares his experiences with the author. Gopal, Raghav and Aarti have their own ambition in life. Gopal wants to be a rich man, Raghav wants to change the world and Aarti wants to become an air hostess. Gopal and Raghav are school mates from the childhood and share the same bench in school and share the same girl as their girl friend, though for the most of the part Aarti loves Raghav.

The characters of Aarti is portrayed as an vague girl, though the daughter of a DM she appears to be quite insecure for she underwent the course of Air Hostess and later on joins a Five Star Hotel as care taker of hospitality part. Character wise Aarti is not unlike the female characters of the first three novels of Chetan Bhagat, who very easily compromise with the situation in order to indulge her in physical pleasure. But her indulge in love with Gopal even after having betrothed with Madhav is questionable. The earnestness to share everything hidden in her mind with Gopal is sentimental adultery. If the novels of Chetan Bhagat should be considered as the rational document of time and society it would be difficult to locate a person in present day with the qualities of truth and honour. Ultimately, it is not the best work from Chetan. Though, it started well, as it progressed, it appeared as if Chetan had written it keeping a film script more in mind with technically point of view rather than artistic.

REFERENCES

1. Bhagat, Chetan. Five Point Someone, India: Rupa publication, 2004. Print. | 2. Bhagat, Chetan. One Night @ the Call Center, India Rupa publication, 2005.Print. | 3. Bhagat, Chetan. Revolution 2020, India Rupa publication, 2011.Print. | 4. www. Google.com |

IJRBAT, Issue (3), Vol. II, May 2015: 314-315 ISSN 2347 – 517X

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

ANTIMICROBIAL PROPERTIES OF CALCIUM CHLORIDE LOADED POLYANILINE

Sanjay Wagh
Department of Chemistry, Shri Shivaji Art, Commerce and Science College, Akot, Dist. Akola Maharashtra

Abstract:
In situ polymerised polyaniline (PANI) with calcium chloride produced by chemical method and tested fortheir antibacterial activity with respect to Escherichia coli. PANI with various concentration of calcium chloride showed a significant antibacterial effect against bacteria strains whilethe efficacy of neat PANI base was only marginal. After the calcium chloride impreganation, the PANI base exhibited different levels of antibacterial effect depending on the type of the bacterial strain. The results show that calcium chloride impregenation on PANI can be a suitable method for the preparationof PANI base material with improved antibacterial properties.

Introduction:

Outbreaks of food borne illness associated with consuming raw vegetables occur more frequently in recent years. Fresh-cut vegetables are highly susceptible to microbial contamination because of microbial cross-contamination through the shredders and slicers and the exposure of inner tissues to microbial attachment and growth after cutting. The pathogenic bacteria of the most concern in fresh vegetables include Escherichia coli O157:H7, Listeria monocytogenes, and Salmonella Typhimurium. Chemical agents such as sodium hypochlorite, chlorine dioxide, sodium bisulfite, sulfur dioxide, organic acids, calcium chloride, trisodium phosphate, ozone, and cetyl pyridinium chloride have been studied as potential disinfectants.

Besides all its advantages, application of polymers in medicine brings also a problem related to the occurrence of nosocomial infections. Therefore, a considerable effort has been exerted to develop polymers or composites with efficient antibacterial properties. In addition to polymer materials which possess an intrinsic antibacterial activity, these properties can be also achieved through coating or adsorption of an antibacterial agent on to the polymer surface; immobilisation of an antibacterial agent in the polymer via ionic or covalent bonding or by direct incorporation of an antibacterial agent in to the polymer during its synthesis [1-5]. Recently published studies indicate that among the polymers inherently showing antibacterial properties are also conducting polymers such as polyaniline (PANI)[6-8], which has been the subject of considerable attention due to its potential in biomedical and other promising applications.Its efficacy against gram- positive and gram-negative bacteria and against fungi was first reported by Seshadri and Bhat[9].. Seshadri and Bhat (2005) prepared cotton fabrics coated with an insitu polymerised PANI salt. They observed significant reduction of the colony forming units(CFU) of gram-positive Staphylococcus aureus (S.aureus,95%), gram-negative Escherichia coli (E.coli,85%)and Candida albicans fungi(92%), which was explained by the activity of ions contained in PANI against the bacterial cell-wall. The following study reported total reduction of E.coli and S.aureus after 24h of incubation on composite PANI films. In this case, possible explanation of the observed antibacterial effect was based on the FTIR measurements revealing the possibility of the change in molecular structure of the PANI composite after its interaction with the bacterial species. These papers offered also two different explanations of the mechanism of the PANI antibacterial effect, namely possible reaction of acidic dopants on the polymer chains with the bacteria and electrostatic adherence between the PANI macromolecules and the bacteria. Antibacterial properties of functionalised and standard PANIs were subject of interest in the thorough work. Though all tested substances showed antibacterial activity, functionalised polymers were more efficient compared to the standard ones. Not only the PANI polymer alone but also its acetone extracted oligomers were reported to possess antibacterial properties . Also Humpo-liceketal. (2012) reported a notable cytotoxicity of the PANI emerlaldine salt on human cells. Though the last mentioned study was conducted using eukaryotic, not bacterial cells, it also confirms the negative influence of PANI on cellular viability.

In the present paper we prepared a material containing polyaniline and various conctration of calcium chloride and its microbial study against E. Coli were tested

Materials and Methods:

Aniline monomer was purified by distillation before use. Ammonium persulfate, and other chemicals were used as received.

Polymerization: 0.2M aniline and specific molar concentrations of calcium chloride were mixed with stirring at room temperature for 30 min. The stirring was then stopped, 50ml aqueous solution of 0.2M APS was added and the reaction was left for 12 hrs. The resulting PANI precipitate was washed with deionized water, methanol and ether several times. Finally the product was dried in vacuum at 80°C temperature for 24 hrs.

Antibacterial Study:

Prior to testing, the samples were disinfected by an exposure to an UV-radiation source (258nm) emitted from a low-pressure Hg lamp UV-C Long Life 30W/G30TB, Phillips, The Netherlands).Polyaniline is stable under such treatment. As model microorganisms, the gram-negative E.coli strains were used. The test was performed according to ISO22196 with a modification. Nutrient broth with 1%peptone (M244) and nutrient agar No. 2(M1269) were used in the test (HiMedia Laboratories, India).

Results and Discussion:

Although PANI is considered as a promising conducting polymer for the application

in biomedicine or more generally in biotechnology, only a few studies dealing with the antibacterial properties of this polymer have been published. Moreover, the majority of the studies is focused on the conducting PANI salt and only limited attention has been devoted to non-conducting PANI base. The published papers dealing with antibacterial activity of PANI and PANI based composites can be, for the purpose of the present study, divided into two groups: those concerning the activity of bare PANI and those concerning the properties of PANI containing calcium chloride. In the current study, calcium chloride are impregranated on the PANI surface by the immersion of naked PANI in a calcium chloride solution. The Electric conductivity behavior of calcium chloride impregranted PANI is shown in figure 1.

The results shows that, as the concentration was increases the electrical conductivity was increases up to the concentration of 0.4 mol. Further increase in the concnetraton no change of electrical conductivity observed.

The key problem in the evaluation of the studies dealing with the antibacterial effect of PANI combined with calcium chloride is their inconsistency in terms of different methods of PANI preparation, results evaluation or the lack of information about the concentration and form of Ag. A pioneering study published by Prabhakar et al[10] presented the reduction of biofilm formation (P. aeruginosa and B. subtilis) on polyurethane coated with a PANI–Ag nanoparticle composite. Tamboli et al[11] found that in situ polymerised powder of PANI–Ag possesses antibacterial activity against B. subtilis superior to that of Ag nanoparticles as such. Using the disc diffusion method, which cannot be directly correlated with our test procedure, the minimum bactericidal concentration of PANI–calcium chloride was determined to be 68 μg mL−1. An improvement of the antibacterial activity of PANI after the calcium chloride impregranation onto the polymer surface was observed also in the current work. The results were represented in table 1.

In conclusion the PANI –calcium chloride material prepared by chemical method has a potential materials towards E. Coli and will be a material for the various biomadeical applications.

PANI type	Antibacterial activity(CFU)
Pure PANI	20
Pure PANI+ 0.1 $CaCl_2$	10
Pure PANI+ 0.2 $CaCl_2$	6
Pure PANI+ 0.3 $CaCl_2$	0
Pure PANI+ 0.4 $CaCl_2$	0
Pure PANI+ 0.5 $CaCl_2$	0
Pure PANI+ 0.6 $CaCl_2$	0
Pure PANI+ 0.7 $CaCl_2$	0
Pure PANI+ 0.8 $CaCl_2$	0
Pure PANI+ 0.9 $CaCl_2$	0
Pure PANI+ 1.0 $CaCl_2$	0

Table.1- Antibacterial properties of PANI-calcium chloride material (CFU: Colony

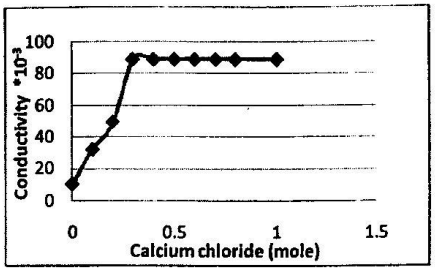


Figure 1: Effect of Calcium chloride concentration on electrical conductivity of PANI Forming Units)

References:

1. Bilek, F., Křížová, T., & Lehocký, M. (2011). Preparation of active antibacterial LDPE surface through multistep physicochemical approach: I. Allylamine grafting, attachment of antibacterial agent and antibacterial activity assessment. Colloids and Surfaces B: Biointerfaces, 88, 440–447.
2. Blinova, N. V., Sapurina, I., Klimovi´c, J., & Stejskal, J. (2005). The chemical and colloidal stability of polyaniline dispersions. Polymer Degradation and Stability, 88, 428–434.
3. Gizdavic-Nikolaidis, M. R., Bennett, J., Zujovic, Z., Swift, S. Bowmaker, G. A. (2012). Characterization and antimicrobial efficacy of acetone extracted aniline oligomers. Synthetic Metals, 162, 1114–1119.
4. Humpolicek, P., Kasparkova, V., Saha, P., & Stejskal, J. (2012).Biocompatibility of polyaniline. Synthetic Metals, 162, 722–727.
5. Jia, Q., Shan, S., Jiang, L., Wang, Y., & Li, D. (2012). Synergetic antimicrobial effects of polyaniline combined with silver nanoparticles. Journal of Applied Polymer Science, 125, 3560–3566.
6. Liang, X., Sun, M., Li, L., Qiao, R., Chen, K., Xiao, Q., & Xu, F. (2012). Preparation and antibacterial activities of polyaniline/Cu0.05Zn0.95O nanocomposites. Dalton Transactions, 41, 2804–2811.
7. Nabi, S. A., Shahadat, M., Bushra, R., Oves, M., & Ahmed, F. (2011). Synthesis and characterization of polyaniline Zr(IV) sulphosalicylate composite and its applications (1)electrical conductivity, and (2) antimicrobial activity studies. Chemical Engineering Journal, 173, 706–714.
8. Stejskal, J., & Gilbert, R. G. (2002). Polyaniline. Preparation of a conducting polymer (IUPAC Technical Report).Pure and Applied Chemistry, 74, 857–867.
9. Seshadri, D. T., & Bhat, N. V. (2005). Use of polyaniline as an antimicrobial agent in textiles. Indian Journal of Fibre &Textile Research, 30, 204–206.
10. Prabhakar, P. K., Raj, S., Anuradha, P. R., Sawant, S. N.,& Doble, M. (2011). Biocompatibility studies on polyaniline and polyaniline–silver nanoparticle coated polyurethane composite. Colloids and Surfaces B: Biointerfaces, 86, 146–153.
11. Tamboli, M. S., Kulkarni, M. V., Patil, R. H., Gade, W. N., Navale, S. C., & Kale, B. B. (2012). Nanowires of silver–polyaniline nanocomposite synthesized via in situ polymerization and its novel functionality as an antibacterial agent. Colloids and Surfaces B: Biointerfaces, 92, 35–41.

29

`वाचन` एक ज्ञान प्रक्रिया

प्रा. डॉ. शंकर राऊत
मराठी विभाग प्रमुख
श्री शिवाजी महाविद्यालय,आकोट जि- अकोला

भारत स्वातंत्र झाला आणि जवळजवळ संपूर्ण देश साक्षरही झाला. येथे मोफत सक्तीचे शिक्षण, रात्रीच्या शाळा, प्रौढ शिक्षण, मुक्त शिक्षण ह्या योजना कार्यरत आहेत. ज्याला `अक्षर` ओळख झाली तो साक्षर झाला आणि साक्षर हा वाचन प्रक्रियेतील मुलभूत घटक आहे. तोच या देशातला वाचक आहे. याचाच अर्थ असा की, वाचता येणारांची संख्या देशभर पसरली आहे. असे असले तरी ज्ञानासाठी वाचणाऱ्यांची संख्या रेषभरही [illegible] खेदाने म्हणावे लागेल.

[illegible] `वाचन हाच छंद` असा जो म्हणेल त्या अपवादात्मक [illegible] समजावा. वाचन हा वचनासारखा शब्द प्रयोग आहे. `वचन` पाळणे तसे ज्ञानाभिवृद्धीसाठी `वाचन` करणे अत्यंत महत्त्वाचे आहे. ज्ञान मिळविण्याचा मुलभूत मार्ग म्हणजे वाचन. वाचनाने क्षितीजे रुंदावतात, प्रश्नांची उत्तरे शोधता येतात. आकलन धारदार बनते. भाषेवर प्रभुत्व मिळवता येते. पर्यायाने व्यवहार क्षमता वाढते. याचाच अर्थ असा की वाचन व्यक्तिविकासाची गुरुकिल्ली होय. व्यक्तिविकासाबरोबरच समाजविकास घडवून आणणारी ही प्रक्रिया आहे. पूर्वी अध्यात्मिक केंद्रे होती. तीच संस्कार केंद्रे होती. हे संस्कार आश्रमामध्ये होत. आश्रम ऋषीमुनींचा असायचा. ते तपस्वी होते. म्हणूनच ते खऱ्या अर्थाने ज्ञानी होते. संपूर्ण निसर्गच त्यांचे वाचनक्षेत्र होते. म्हणूनच त्यांचे ग्रंथ म्हणजे अनुभवामृत होते. शिष्य ज्ञानी व्हावा ही त्यांची धारणा होती. आज गुरु-शिष्याचे नाते क्रमिक पुस्तकात गुरुटलेलं असते. चार भिंतीच्या [illegible] व अध्ययन करणारा गुंतलेला असतो. त्यांची [illegible] अपेक्षा असते. पण ते अवांतर वाचनापासून दूर असतात. [illegible] व्यतिरिक्त ते वाचत नाहीत. खरं म्हणजे हे विधानही तपासून घेण्यासारखेच आहे. कारण विद्यार्थी पाठ्यपुस्तके न वाचताही पास होणारे आहेत. त्यांना हा मार्ग व्यावहारिक दृष्टी ठेवलेल्या मार्गदर्शिका दाखवतात. प्रश्न आणि उत्तरे एवढंच त्यांना माहित असते. विद्यार्जन करणाऱ्यांची ही अवस्था तर इतरांचे ते काय ?

सामान्यांचे ग्रंथ देवघरात पूजेसाठी असतात. तर सुशिक्षितांचे ग्रंथ शोकेसमध्ये `शो` साठी असतात. आणि ग्रंथालये, वाचनालये बिचारी वाचकांची वाट पाहत थकतात. ही स्थिती निर्माण होण्याची कारणे जाणून घेतली पाहिजेत. आज देशभर नि जगभर सर्वकष विज्ञानाविष्कार झालेला आहे. आपल्याकडे रेडिओ, व्ही.डी.ओ., कॅसेट, टी.व्ही. ही दृकश्राव्य साधने सर्वदूर पोहचली आहेत. ती वैयक्तिक आहेत. आणि सार्वजनिक [illegible] आहेत. ऐकता यावी नि पाहता यावी अशी सुविधा [illegible] पर्यंत उपलब्ध आहे. शिक्षण क्षेत्रातही दृकश्राव्य साधने म्हणून ही यंत्रसामुग्री उपलब्ध आहे. याचा परिणाम समाज बहुश्रुत होण्याकडे झाला. एका अर्थाने त्याचे वहुवाचकपण येथे थांबले.

नुसता टी.व्ही. जरी घतला तरी त्यावरील विविध चॅनल मेट्रो, झी.टी.व्ही. झी.सिनेमा, स्टार प्लस, स्टार स्पोर्टस, डिस्कवरी, सी.व्ही.ओ., इन टी.व्ही. [illegible], बी.बी.सी. वगैरे वगैरे वर वारेमाप कार्यक्रम `सकाळ ते [illegible]` सुरू असतात परिणामतः आज सकाळ मधला `म` [illegible] वाचन क्षमता कमी करणारा `काळ` ठिल्लक राहीला [illegible] काळ वाचनासाठी चिंताजनक काळ आहे.

आपल्याकडे मराठी, हिंदी, इंग्रजी, उर्दू आणि इतरही भाषेतील वर्तमानपत्रे निघतात. वर्तमानपत्रे म्हणजे दैनंदिन घडमोडीचा ताजा इतिहास असतो. निवांतपणे ही तरी सर्वच वाचतात का? प्रवासात तरी वाचतात का? बस गाडीतील दोन-तीन प्रवासी वृत्तपत्र विकत घेतात. तिच दोन-तीन तासांच्या प्रवासात गाडीभर फिरतात. अन् थकून बिचारी एखाद्याच्या मांडीखाली आश्रयला जातात. तिच गत दुकानातल्या वृत्तपत्रांची. केव्हा फाडल्या जाईल अन् किराणा बांधला जाईल सांगता येत नाही. एक दैनिक अनेक लोक वाचतात. असा देखावा असला तरी ते फक्त चाळतात हा अनुभव नाकारता येत नाही. या तुलनेत साप्ताहिक, पाक्षिक, मासिक या सर्वांचा [illegible] बरा...! `वर्गणी पाठविली नाही तर पुढील [illegible] अंक होणार नाही` अशा घोषवाक्यातच [illegible] आवड अंग चोरुन बसली आहे. खप कमी [illegible] परिणाम कित्येक अंक बंद पडण्यात होत. म्हणून [illegible] आपल्या देशात

लोकांना अजून वाचनाची फारशी गोडी नाही व पैसे खर्च करुन वाचण्याची शिस्त लागलेली नाही.``. ग्रंथ न घेण्यामागील कारण भरमसाठ किंमत असे सांगितल्या जाते. सवलतीच्या दरातील पुस्तके तरी खरेदी केली जातात काय? वाचकाच्या उदासीन वृत्तीत याचे उत्तर शोधावे लागेल.

वाचनाची आवड आणि आवडीचे वाचन असे वाचनाचे दोन भाग जरी केले तरी कामापुरते वाचन असा तिसराच भाग निर्माण होतो. ज्या विद्यार्थ्यांना वाचनाची आवड आहे अशा अभ्यासू विद्यार्थ्यांना प्रश्नपत्रिका सोडवायला तीन तास पुरेसे वाटतात. ज्यांचे कामापुरते वाचन आहे. त्यांचेसाठी तीन तास कमी पडतात. त्यांची सर्व प्रश्नेही सोडविली जात नाहीत. गुणही कमी पडतात. एवढ्या छोट्या उदाहरणाने देखील वाचनाच्या नफ्या-तोट्याचे गणित लक्षात येऊ शकते.

ग्रामीण परिसर पारंपरिक पोथी-पुराणाच्या `वाचन-पठण-पारायण` यात रममान झालेला असतो. आणि तेही विशिष्ट तिथीला, विशिष्ट घटकेला. नवे-नवे अद्ययावत ग्रंथ तेथे उपलब्ध नसतात. कारण पुस्तक विक्रीची दुकाने नसतात. ग्रंथालय नसते. वाचनालय नसते याचाच अर्थ असा की, ग्रामीण परिसरात वाचनाची सवय फारच मर्यादीत स्वरुपात आढळते. अशा वेळी ज्याला अपवादात्मक वाचनाची आवड आहे त्याला संधी नसते. म्हणून `गाव तेथे ग्रंथालय` पोहचले पाहिजे.

वाचन प्रक्रियेत प्रकाशन संस्थांची कामगिरी अत्यंत महत्त्वाची असते. लेखकांना लेखन प्रवृत्त आणि वाचकांना वाचनप्रवृत्त करण्याचा तो महत्त्वाचा घटक असतो. वाचकाची अभिरुची जाणून लेखन प्राप्त करणे आणि पुरवणे हे काम म्हणावे तितके सोपे नाही. तसेच शिकत नसलेला पण साक्षर असलेला वाचन सन्मुख करणे हे ही काम म्हणावे तितके सोपे नाही. असे असले तरी या घटकांना वाचन प्रक्रियेत आणता आले पाहिजे. तरच ज्ञानात्मक विकासाची प्रक्रिया सुरु राहील व ज्ञानाचे लोकशाहीकरण होईल.

श्रवण आणि वाचन यांचा भाषेशी अबाधित संबंध असतो. भाषाभिवृद्धीसाठी त्याची नितांत गरज आहे. ग्रंथ गुरुस्थानी असतात. म्हणून ते श्रेष्ठ असतात. शाश्वत असतात. तेथे असुंदराला अमंगळाला स्थान नसते. चांगले ग्रंथ चांगला माणूस घडवतात. चांगले बोलता आले पाहिजे. आणि चांगले लिहिता आले पाहिजे म्हणजे चांगले वाचताही येईल. याचाच अर्थ असा की, वाचन हे सर्वांगीण विकासाचे मूळ आहे.

``स्वगृहे पूज्यते मूर्खः स्वग्रामे पूज्यते प्रभुः।
स्वदेशे पूज्यते राजा : विद्वान सर्वत्र पूज्यते ॥

मुर्ख मनुष्य आपल्या घरात, श्रीमंत मनुष्य आपल्या गावात, राजा आपल्या देशात, विद्वान मात्र सर्वत्र पूजिला जातो. वाचनाच्या आवडीने ही विद्वत्ता वाढीला लागते. आणि विद्वान हे पद प्राप्त होते. असे असताही `वाचनाने आमचे काहीच बिघडत नाही` अशाच मग्रुरीत आम्ही असतो. त्यामुळे विकासाचा एक मार्ग नहमीकरिता बंद होतो. असे म्हटल्या जाते. ``कुणाचा विकास दुसऱ्याकडून होत नसता त्यासाठी हवी असते विशिष्ट मानसिकता, मनात हवा असतो धगधगता ज्वालामुखी, संकटाच्या पहाडाला लावावा लागतो प्रयत्नांचा, जिद्दीचा सुरुंग यासाठी आवश्यक असते ती वाचनाची आवड.``

आज टी.व्ही. वरील चॅनलने शाळकरी मुलांचे लक्ष आकर्षून घेतले आहे. त्यातील नग्नता, शृंगार हिंसाचार, गुन्हेगारी जलदगतीने परिणामकारी ठरत आहे. त्यांचा कितीतरी वेळ टी.व्ही. समोर जातो. ग्रंथ वाचनातून होणाऱ्या दीर्घकालीन सुसंस्काराला ही पिढी मुकत चालली आहे. आज शालेय विद्यार्थ्यांच्या पाठीवर पुस्तकांचे ओझे असते. डोक्याचे काम [illegible] पाठ करु लागली. वाचन कमी होण्याचे हेही एक कारण. वास्तविक पाहता हेतुपूर्ण वाचनातून ज्ञान वाढते. स्पर्धात्मक परीक्षेतही [illegible] लागतो आणि त्या क्षणापुरता काळही थांबतो. आवडलेले पुन्हा पुन्हा वाचल्यान पुनःप्रत्ययाचा आनंद मिळतो. म्हणूनच आनंदासाठी वाचन, करमणुकीसाठी वाचन, अभ्यासासाठी वाचन, नवे शिकण्यासाठी वाचन, नवे शिकविण्यासाठी वाचन, छंद म्हणून वाचन केले पाहिजे. ललित वाचन आणि शास्त्रीय वाचन हेतूपूर्ण वाचन आणि निर्हेतुक वाचन यापैकी कोणत्याही वाचनाची सवय ज्ञानात भर टाकणारीच आहे. त्यासाठी बालपणापासूनच संस्काराची नितांत गरज आहे.

`आई` माझा गुरु। आई कल्पतरु` हेच संस्काराचे पहिले केंद्र आहे. `जिच्या हाती पाळण्याची दोरी, ती जगाते उद्धारी` हे उगीचच नव्हे. मुलांना शाळेत टाकून जबाबदारीतून मुक्त होणे सोयीचे नव्हे. शिक्षकांबरोबरच पालकांनीही ही जबाबदारी स्वीकारली पाहिजे.

पाठ्यपुस्तकाबरोबरच त्याला अवांतर वाचनाकडे प्रवृत्त केले पाहिजे मुलांची सिनेमाची गाणी पाठ असतात. पण पाठ्यपुस्तकातील काव्य पाठ नसते. असे खेदानेच म्हणावे लागते.

आज मुलांमध्ये वाचनासाठी अनुकूल स्थिती निर्माण करण्याची नितांत गरज आहे. त्याला प्रेरणा देणे, स्फूर्ती देणे, त्याच्या अंगी जिज्ञासा निर्माण करणे, आकर्षक चित्रांची पुस्तके, वाचक

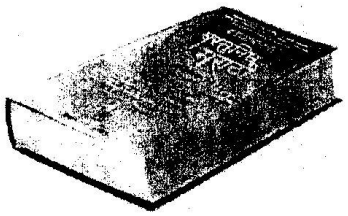
मेळावे आणि वाचन स्पर्धा आयोजित करण्याची आवश्यकता आहे. भूल्य शिक्षणाबरोबरच वाचनक्षमता वाढविण्यासाठी वाचन तासिका उपलब्ध व्हावी त्यासाठी वाचन उतारे असलेले पुस्तक अभ्यासक्रमात ठेवणे आणि अभ्यासक्रमातील काही विषयातील रटाळभाग कमी करणे, तसेच कमी किंमतीत पुस्तके मिळतील अशी व्यवस्था करणे गरजेचे आहे.

READING BOOKS IS A GOOD HABIT
BUT BUYING THEM IS A BETTER ONE !

पुस्तक वाचणे ही चांगली सवय आहे पण विकत घेऊन पुस्तक वाचने हे त्यापेक्षाही चांगले ! माझा फावला वेळ ग्रंथाच्या सहवासात जातो. असा म्हणणारा ज्या दिवशी सापडेल, तो सुदिन समजावा.

कोणी हस्तरेषा वाचून आयुष्याच कथन करतो. कोणी चेहरा वाचून स्वभाव सांगतो, कोणी राशी वाचून भविष्य सांगतो, कोणी शिल्प वाचून कलेचं गुणगाण करतो, कोणी निसर्ग वाचतो नि निर्मात्याचे आभार मानतो. येथे 'अक्षर' वा लिपी नाही. तरी वाचन हा शब्दप्रयोग आहे. याचाच अर्थ असा की, 'वाचन' हे आयुष्याचं गणित आहे. ते ज्यात मांडलं असतं ती ग्रंथ संपदा असते. म्हणूनच त्यांनी 'वाचाल तर वाचाल' ही फलश्रुती आहे.

❖ ❖ ❖



भारतीय शास्त्रीय संगीतातील 'बंदिश' एक चिंतन

प्रा. डॉ. शिरिश कडू
श्री. शिवाजी महाविद्यालय, अकोला

भारतीय शास्त्रीय संगीतात रागगायनामध्ये 'बंदीश' या संकल्पनेला अनन्यसाधारण महत्व आहे. बंदीश ही गायकीला चाकोरीबध्द व अजरामर करते. रागगायनात बंदीशीचाच मोठा उपयोग होतो. त्यामुळे राग प्रस्तुतीकरणात बंदिशीचे महत्वाचे स्थान आहे.

बंदिश : संज्ञा — स्वरूप :—

रागदर्शक स्वरसमुहाची कौशल्यपूर्ण रितीने तालात बांधणी करून त्यावर समर्पक शब्दांचा साज चढवून आकर्षक मुखडा समेवर योजून शास्त्रीय संगीत गायनासाठी जे स्थायी आणि अंतरा असे दोन भागात विभागलेले छोटेसे गीत तयार करतात त्याला 'बंदीश' असे म्हणतात.

ख्यालगायनांतर्गत बडाख्याल आणि छोटा ख्याल अशा दोन भागामध्ये गायन केले जाते. व्यवहारात मात्र विलंबित लयीत गायला जाणारा बडा ख्याल हाच मुख्य ख्याल समजला जातो व नंतरच्या छोट्या ख्यालाला द्रुत चीज असे म्हटले जाते. काहींच्या मते बंदिश व चीज हे दोन्ही समानार्थी शब्द आहेत. पण विलंबित ख्यालाच्या गीतरचनेला बंदीश व छोट्या ख्यालाच्या गीतरचनेला 'चीज' म्हणण्याचा प्रघात आहे. बडाख्याल (विलंबित ख्याल) प्रामुख्याने विलंबित एकताल, त्रिताल, झुमरा, आडाचारताल, झापताल इत्यादी तालप्रकारांमध्ये गायिले जातात, तर छोटाख्याल साधारपणे द्रुत एकताल, त्रिताल, रूपक आदी तालात स्थायी व अंतरा अशा भागात विभाजित करून गायिले जाते.

ख्यालगायनामध्ये गायकीच्या आधी सर्वप्रथम बंदीशन सादर करावी लागते व नंतर गायकी : एवढे

DEPENDENCE OF CDS GRAIN SIZE IN THIN FILMS ON THE SOURCE OF CADMIUM ION.

*Sanjay P. Wagh
Department of chemistry
Shri Shivaji Arts, Commerce and Science College,
Akot, Dist. Akola,Maharashtra , India.

(Received : 27.04.15; Revised : 27.05.2015; Accepted : 03.06.2015)
(RESEARCH PAPER OF CHEMISTRY)

Abstract:

We deposit CdS films on different substrates by chemical bath deposition (CBD) method using various sources of Cadmium ions. We record X- ray diffraction patterns and scanning electron micrographs (SEM) of developed samples. The sources utilized for (Cd^{++}) cadmium are cadmium chloride and cadmium sulphate. It is found that when cadmium chloride is utilized as a source, the average grain size of the CdS. in the thin film is 28 to 30 nanometers and when cadmium sulphate is utilized as the source of cadmium; the average grain size is about 15 to 20 nanometers. The physical conditions were kept identical while growing all the samples. It is also observed that energy band structure and band gaps get changed, because of the grain size of the sample in the films. We predict that, the difference in grain size of the CdS. in the thin films may be because of the binding energy of cadmium in the molecules of cadmium sulphate and cadmium chloride.

We are designing and planning an experiment to study the effect of source on the grain size. As the band structure and band gaps obtained are different in different samples, the properties exhibited by the samples would be entirely different. The synthesis method and technique may be tailored as per the requirement of the applications.

Keywords: CdS, CBD, thin film.

Introduction

Cadmium sulphide (CdS) had wide spread applications in the field of optoelectronic devices, due to its photo conducting nature and suitable band gap (2.5 eV). It has been used as a partner of several types of thin film solar cells. Specially, CdTe/CdS heterojunction solar cells with efficiency of about 16 % have been reported.

Spray pyrolysis, sputtering, electrodeposition, vacuum evaporation and chemical bath deposition (CBD) are widely used techniques for deposition of thin films. Particularly the CBD technique is easy, inexpensive and convenient method for large area preparation of thin films, at close to room temperature. Also it is a controllable chemical reaction. Another advantage of the CBD method with respect to the other methods is that films can be deposited on different kinds, shapes and sizes of substrates.

In this work, we were prepared the thin films for various cadmium ion sources such as cadmium chloride and cadmium sulphate by CBD technique on different substrates.

Experimental

The CdS films were fabricated by the controlled CBD technique using thiourea as the sulphide ion source and the stable cadmium chloride/ cadmium sulphate as the cadmium ion source, which slowly releases the Cd^{++} ions. Thiourea releases sulphur ions by means of an alkaline hydrolysis process.

The films were synthesized as follows:

0.15 M cadmium chloride/ cadmium sulphate solution was taken in a beaker and an equal volume of 0.15 M thiourea solution was added. Ammonia solution was added slowly to adjust the pH as per the requirement (here between 8 to 9). The solution was stirred and transferred to another beaker containing the substrate. The resulting solution was kept on hot plate and temperature controller at 70±2 °C for 40 minutes. The substrate used is glass slides and stainless steel. Cleaning of substrate is important in the deposition of thin films. They were used after washing by cleaning solution such as acetone, methanol and finally drying it.

The crystallographic structure of films was analyzed with a diffractometer (XPERT-PRO) by using Cu-Kα lines (λ= 1.54 Å). The average grain size in the

An International Refereed, Peer reviewed & Indexed Quarterly Journal

deposited films was obtained from a Debye-Scherrer's formula.Also, CdS films were characterized by SEM.

Reaction mechanism:

The reaction (steps) mechanism for the preparation of CdS thin film is, when **$CdCl_2$** is used as a cadmium source,Step: I) Cadmium ions are produced due to hydrolysis process [Cadmium source]

$$CdCl_2 + 2NH_3 \rightarrow Cd(NH_2)_2 + 2HCl$$

$$Cd(NH_2)_2 \xrightarrow{\text{ionisation}} Cd^{++} + 2NH_2^-$$

Step: II) Sulphide ions are obtained from aqueous solution of thiourea [Sulpher source].

$$CS(NH_2)_2 \rightarrow C(NH_2)_2 + S^{--}$$

Step: III) Cadmium ions formed in step I and sulphide ions formed in step II are combined to form cadmium sulphide.

$$Cd^{++} + S^{--} \rightarrow CdS.$$

The reaction (steps) mechanism for the preparation of CdS thin film is, when **$CdSO_4$** is used as a cadmium source,

Step: I) Cadmium ions are produced due to hydrolysis process [Cadmium source]

$$CdSO_4 + 2NH_3 \rightarrow Cd(NH_2)_2 + H_2SO_4$$

$$Cd(NH_2)_2 \xrightarrow{\text{ionisation}} Cd^{++} + 2NH_2^-$$

Step: II) Sulphide ions are obtained from aqueous solution of thiourea [Sulpher source].

$$CS(NH_2)_2 \rightarrow C(NH_2)_2 + S^{--}$$

Step: III) Cadmium ions formed in step I and sulphide ions formed in step II are combined to form cadmium sulphide.

$$Cd^{++} + S^{--} \rightarrow CdS$$

Cadmium Source	Film thickness in nm	Average grain size (g) nm
$CdCl_2$	271	143
	2021	30
	3690	28
$CdSO_4$	408	16
	516	20
pH	in between 8 to 9	

paration
cadmi
ed due

cadmium

cadmium

pH	in between 8 to 9

Fig. 2. SEM images of deposited samples

The grain size of sample was measured from the SEM photograph by keeping the photograph under traveling microscope having high accuracy. The average grain size measured was of the order of 70 nm. The grain size is less, when $CdSO_4$ is used as a Cd^{++} source as compaired to $CdCl_2$. rate of formation of Cd ions and S ions should be equal so that the formation of CdS would be maximum. The surface of the substrate must be plane so that the quality of the film would be better and deposition rate also will be high.

References:

J. Britt and C. Ferekides, Appl. Phys. Lett. 62, 2851 (1993).

A.V. Feitosa, et al., Brazilian Journal of Physics, vol. 34,2B (2004).

L.A. Patil, P.A. Wani, Cryst. Res. Technol.,36, 371-378 (2001).

C.D. Lokhande, Mater. Chem. Phys., 27,1 (1991).

P.K. Nair, M.T.S. Nair, et al, J. Phys, D 22, 829 (1989).

A.U. Ubale, V.S. Sangawar and D.K. Kulkarni, Bull. Matter Sci., Vol.30, No.2, 147-151 (2007).

g. 1 shows the XRD graphs of thin films for different ickness

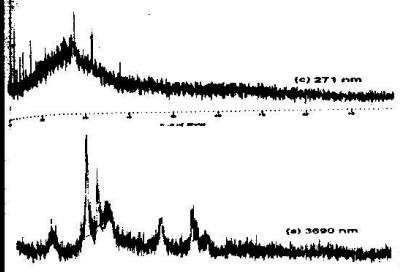


Fig. 1.

XRD of the samples of varying thickness(a) 271 nm
(b) 2021 nm
(c) 3690 nm.

3. Results and conclusion:

Measured data for the discussed samples are compiled in the table.

The average grain size (g) was calculated using the Debye-Scherrer's formula,

$g = 0.9\,\lambda / \beta \cos\theta$

Where,

λ= is the wavelength of x-ray source 1.54 Å)

β = the full width at half maximum of diffraction line.

θ = Diffraction angle. (Bragg's angleFig. 2 shows the SEM image of the thin film deposited, exhibits a polycrystalline nature. On the film surface large number of crystals are observed.

Sci., Vol.30, No.2, 147-151 (2007).

related problems. Musculo skeletal problem is very common which is followed by respiratory and skin problems. Poor socio-economic status, poor education, awareness and lack of hygienic consideration lead to various health problems to the beedi workers. It is found that through skin nicotine powder of tobacco entered in the body which produced many skin problems. Thus in the last we can say that the drastic condition of beedi workers are mainly due to large exposure of Tobacco for longer time and their agronomical condition also responsible for body pain and various types diseases.

References and Bibliography

1- Ahooja, R (2001). Research Methods , Rawat Publications, Jaipur

2- Bajpai, S.R (2000). Methods of Social Survey and Research, KitabGhar, Kanpur

3- Bernard, R.H (2008). Research Methods In Anthropology; Qualitative and Quantitative Approaches. Rawat Publication, Jaipur.

4- Bagwe, A.N. and Bhisey, R.A. 1991. Mutagenicity of processed bidi tobacco: Possible relevance to bidi workers. Mutat. Res. 261 (2):93-99

5- Chattopadhyay B.P, et.al. (2006). A Study to access the respiratory impairments among the male Beedi workers in unorganized sectors. Indian Journal of Occupational and Environment Medicine, volume 10, issue 2: pp. 69-73

6- Gupta, P.C & K.S, Reddy ed,(2004). Report on tobacco control in India. New Delhi: Ministry of Health and Family Welfare, Government of India.

7- Hasnain N.(1996). Tribal India, PalkaPrakshan, Delhi.

8- Joshi K.P, M. Robins, Parashramul, Venu and K.M.Mallikarjunaih 2013. An epidemiological study of occupational health hazards among bidi workers of Amarchinta, Andhra Pradesh. J.Acad. Indus. Res Vol. 1(9): 561-564.

9- Kumar A.(2009). The study on Assessment of Oral Health Status and Treatment Needs among beedi workers colonies in Karnataka.

10- Pandey,G (2006). Anthropological Research Method and Technique, Concept Publishing Company, New Delhi

10

"GREEN APPROACH TO THE SYNTHESIS OF SOME α, β UNSATURATED KETIMINES."

G.B.Andhale, Dr. S.P.Wagh, Dr. R.M.Jumle, Dr.S.V.Kolhe, A.R.Somwanshi

Department of Chemistry,
ShriShivaji Art's, Commerce & Science College,
Akot, Dist. Akola

****

ABSTRACT.

The use of hazardous and toxic solvents in chemical laboratories and the chemical industry is considered a very important problem for the health and safety of workers and environmental pollution. Green Chemistry aims to change the use of toxic solvents with greener alternatives, with replacement and synthetic techniques, separation and purification which do not need the use of solvents.Chalcone and their imine analogues are known to possess a broad spectrum of biological effects. Fast and very rapid procedure is reported for the synthesis of 5-bromo-2-hydroxy-n-(substituted-phenyl)-ketimines from substituted 2-hydroxychalcone and different substituted aromatic amines under 10% ethanol suspension. The remarkable advantages offered by this method are environmentally friendly, short reaction times, non-hazardous, simple work-up procedure and good to excellent yields of products.

Keywords: 2-hydroxychalcone; substituted aromatic amines; unsaturated ketimines; water suspension; green chemistry.

Introduction:

Recent advances in the technology for the development of eco-friendly synthetic method have great importance and are the need of the hour [1-7]. The multi-step conventional synthesis produces considerable large amount of environmentally unfavorable wastes mainly due to a series of complex isolation procedure involving expensive and toxic solvents after each step. Recently, environmentally benign approaches have been developed using solvent-free conditions [8-10]. An environmentally friendly chemical process is the vital part of the current chemical research and development [11]. However, organic reactions in aqueous media have attracted much attention in synthetic organic chemistry, not only because water is one of the most abundant, cheap, and environmentally friendly solvent, but also because water exhibits unique reactivity and selectivity, which is different from those in conventional organic solvents [12-16]. The synthesis and assaying of biological activity of imines have considerable interest in recent decades [17].

Therefore, we focus on developing the novel procedure for synthesis of á, â-unsaturated ketimines by condensation of substituted 2-hydroxychalcone and different aromatic amines under water suspension. á, â-Unsaturated ketimines are chalcone Schiff Ëh-Ë bases possess various pharmacological properties [18-20]. To best of our knowledge very less work has been carried out on synthesis of á,â-unsaturated ketimines. á, â-Unsaturated ketimines were synthesized by condensation of chalcones and aromatic amines in different solvents like ethanol containing few drops of conc. H2SO4 [21-22], CH2Cl2 in presence of TiCl4 catalyst [23-24] or by condensation of anions of enamine phosphine oxides with aldehydes or ketones in THF. However, although each of the above methods has its own merits, they are plagued by the limitations of low yield, use of toxic organic solvents, and the requirements of excess of reagents/catalysts, special apparatus, and harsh reaction conditions. Therefore, development of improved method for the synthesis of á, â-unsaturated ketimines has acquired relevance to current research.

Material and Methods:

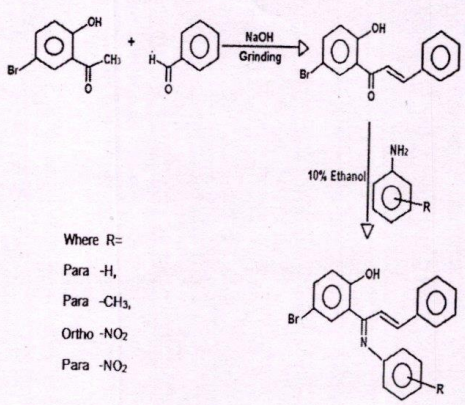
Melting points were determined in an open capillary tube and are uncorrected. The NaOH were used for condensation in order to achieve the best product yields. IR spectra were recorded in KBr on a Perkin-Elmer spectrometer. ^{1}H NMR spectra were recorded on a 300 MHz Bruker spectrometer using TMS as internal standard. The mass spectra were recorded on EI-SCHIMADJU-GC-MS Mass spectrometer. Reactions were monitored by thin-layer chromatography. TLC plates were coated with silica gel G (suspended in $CHCl_3$-MeOH) and iodine vapors were used as visualizing agent.

Synthesis of 5-bromo-2-hydroxy- Chalcone (CH-1).

Equimolar quantities of 2-hydroxy-5-bromo-acetophenone (0.01 mol) and benzaldehyde (0.01 mol) and solid pallets of NaOH (0.02 mol) were taken in mortar and grind for ten minute. The completion of reaction was monitored by TLC; the obtained solid mixture was mixed with cold water, neutralized by dil. HCl and recrystallized from glacial acetic acid. Yield: 80%; color: yellow solid; m.p: 152-154°C. MW: 303

Synthesis of 5-bromo-2-hydroxy-N-(Substituted phenyl)-ketimine (CHI-1-4).

A mixture of 2-hydroxy-5-bromo chalcone (0.01 mol) and substituted aromatic amine (0.01 mol) was vigorously stirred at room temperature in 10% ethanol (25 ml) for an appropriate time. The progress of reaction was monitored by TLC. After completion of reaction, the solid was separated, filtered and recrystallized from ethanol.



Spectral Characterization:

5-bromo-2-hydroxy- Chalcone (CH-1).

IR (KBr, cm^{-1}): 3531 (O-H), 1670 (C=O), 1570 and 1450 (C=C, aromatic), 1600 (C=C ,olefinic);

^{1}H-NMR (300 MHz, CDCl3, ä / ppm): 11.7 (s, 1H, -OH), 8.06 (d, 1H, Ar-CH), 7.5 (d, 1H, Ar-CH), 7.70 (dd, 2H, Ar-CH), 7.55-7.50 (dd, 1H, Ar-CH), 7.44-7..41 (d, 1H, Ar-CH), 6.04-6.00 (m, 8H, Ar-CH),

MASS (m/z):304.30 (M+1).

5-bromo-2-hydroxy-N-(phenyl)-ketimine (CHI-1). Yield: 75% M.P: 104 ^{0}C

IR (KBr, cm-1): 3340 (-OH), 1650 (-C=N), 1598 (C=C, olefinic), 1452 (C=C, aromatic).

1H-NMR (300 MHz, CDCl3, ä / ppm): 11.80 (s, 1H, -OH), 7.09 (d, 1H, -CHâ), 6.58 (d, 1H, -CHá), 8.22-7.30 (m, 13H, Ar-CH).

MASS (m/z): 378.30 (M+1).

5-bromo-2-hydroxy-N-(p-methylphenyl)-ketimine (CHI-2).

Yield: 70% M.P: 73 ^{0}C

IR (KBr, cm-1): 3300 (-OH), 1650 (-C=N), 1611 (C=C ,olefinic), 1590, 1458 (C=C, aromatic) ;

1H-NMR (300 MHz, CDCl3, ä / ppm): 12.10 (s, 1H, -OH), 7.28 (d, 1H, -CHâ), 6.68 (d, 1H, -CHá), 8.2-7.30 (m, 12H, Ar-CH), 2.33 (s, 3H,-CH3);

MS (m/z): 390.98 (M+1).

5-bromo-2-hydroxy-N-(p-nitrophenyl)-ketimine (CHI-3).

Yield: 60% M.P: 70 ^{0}C

IR (KBr, cm-1): 3310 (-OH), 1652 (-C=N), 1604 (C=C ,olefinic), 1580, 1446 (C=C, aromatic).

1H-NMR (300 MHz, CDCl3, ä / ppm): 12.11(s, 1H, -OH), 7.12 (d, 1H, -CHâ), 6.58 (d, 1H, -CHá), 8.00-7.19 (m, 12H, Ar-CH).

MASS (m/z): 423.4 (M+1).

5-bromo-2-hydroxy-N-(0-nitrophenyl)-ketimine (CHI-4).

Yield: 65% M.P: 42 ^{0}C

IR (KBr, cm-1): 3298 (-OH), 1648 (-C=N), 1604 (C=C ,olefinic), 1588, 1454 (C=C, aromatic).

1H-NMR (300 MHz, CDCl3, ä / ppm): 12.09 (s, 1H, -OH), 7.10 (d, 1H, -CHâ), 6.62 (d, 1H, -CHá), 7.98-7.21 (m, 12H, Ar-CH),

MASS (m/z): 423.98 (M+1).

Results and Discussion

The 2-hydroxy-5-bromo-n-(substituted-phenyl)-ketimine were synthesized by the usual conventional procedure for the comparison purpose. In continuation of earlier research work devoted towards development of green chemistry and development of new synthetic methodologies in organic chemistry herein, we report a simple, efficient and environmentally benign procedure for synthesis of some new 2-hydroxy-5-bromo-n-(substituted-phenyl)-

ketimine from condensation of 2-hydroxy-5-bromo chalcone with substituted aromatic amines in water suspension with high yields.

Physical properties of ketimine derivatives

Sr. No.	R	Product Code	Melting Point (°C)	Molecular Weight	Yield (%)
1	Phenyl	CHI-1	104	378	75
2	p-methyl phenyl	CHI-2	73	392	70
3	p-nitrophenyl	CHI-3	70	423	60
4	o-nitrophenyl	CHI-4	42	423	65

References:

[1] P.T. Anastas, J.C. Werner, Green Chemistry: Theory and Practice. Oxford Univ. Press, Oxford, 1998.

[2] J. Collins, Green Chemistry Encyclopedia of Chemistry, New York: Macmillian, 1997.

[3] P. Tundo, M. Silva, C.A. Marques, P.T. Anastas, T.C. Williamsons, Green Chemistry: Designing chemistry for the environment, ACS sym, 1996, 81, 626.

[4] S.L. Wilkinson, Chem. Eng. News., 1997, 75, 35.

[5] P.T. Anastas, Critical Rev. Anal. Chem., 1999, 29, 167.

[6] P.T. Anastas, C.T. Farris(eds.), Benign by Design: Alternative synthetic design for pollution prevention, ACS Symp., Washington DC., 1994,557.

[7] P. Tundo, P.T. Anatas; Green Chemistry: Challenging Prospectives.

Oxford University Press, Oxford, 2000.

[8] Dondoni, A.; Massi, A. Tetrahedron Lett. 2001, 42, 7975. (b) Burns, J. R.; Jachuck, R. Appl. Therm. Eng. 2001, 21, 495. (c) Boodhoo, K. V. K.; Dunk, W. A. E.; Jassim, M. S.; Jachuck, R. J. Appl. Polym. Sci. 2004, 91, 2079.

[9] Choudhary, V. R.; Tillu, V. H.; Narkhade, V. H.; Borate, H. B.; Wakharkar, R. D. Catal. Commun.2003, 4, 449.

[10] Ranu, B. C.; Hajra, A.; Dey, S. S. Org. Process Res. Dev. 2002, 6, 817.

[11] Anastas, P. T.; Warner, J. C. Green Chemistry: Theory and Practice, Oxford, 1998.

[12] Grieco, P. A. Organic Synthesis in Water. Blackie Academic and Professional: London, 1998.

[13] Li, C-J.; Chen, L. Chem. Soc. Rev. 2006, 35, 68.

[14] Demko, Z. P.; Sharpless, K. B. Org. Chem. 2001, 66, 7945.

[15] Narayan, S.; Muldoon, J.; Finn, M. G.; Fokin, V. V.; Kolb, H. C.; Sharpless, K. B. Angew. Chem. Int. Ed. 2005, 44, 3275.

[16] Wei, C.; Li, C.-J. J. Am. Chem. Soc. 2003, 125, 9584.

[17] Bloch, R. Chem. Rev. 1998, 98, 1407.

[18] Kedar, R. M. Oriental J. Chem. 2000, 16, 235.

[19] Raut, A. W.; Doshi, A. G.; Raghuwanshi, P. B. Oriental J. Chem. 1998, 14, 337.

[20] Deshmukh, A. Y.; Raghuwashi, P. B.; Doshi, A. G. Oriental J. Chem. 2002, 18, 101.

[21] Rathi, S. R.; Doshi, A. G. Oriental J. Chem. 2006, 22, 169.

[22] Ghanwate, N. A.; Raut, A. T.; Doshi, A. G. Oriental J. Chem. 2008, 24, 721.

[23] Sandrinelli, F.; Perrio, S.; Belsin, P. J. Org. Chem. 1997, 62, 8626.

[24] Jennings, W. B.; Lovely, C. J. Tetrahedron 1991, 47, 5561.

❖❖❖

09

STUDIES ON PHYSICOCHEMICAL PARAMETERS TO ASSESS THE WATER QUALITY OF KHADAKPURNA DAM IN BULDHANA DISTRICT

Dr. Sanjay P. Wagh
Chemistry department,
Shri Shivaji Arts, Commerce & Science College, Akot Dist. Akola (M.S.)

ABSTRACT

A systematic study has been carried out to assess the water quality index of Khadakpurna Dam in Buldhana District. 90 water samples from five sampling stations were collected and analysed for physico-chemical parameters (Temp, velocity, pH, dissolved oxygen, free CO_2, C.O.D., B.O.D., Carbonate, Bicarbonate, total alkalinity, hardness, turbidity, calcium, magnesium, sodium, potassium, nitrate, phosphate, chloride, sulphate, electrical conductivity, total dissolved solids and total suspended solids. The study area experiences a seasonal climate and broadly divided into three seasons as winter (November to February), Summer (March to June) and rainy (July to October). The samples were collected and analysed for two consecutive years 2013 and 2015. Each parameter was compared with the standard desirable limit of that parameter in river water as prescribed by different agencies. The analytical data of various physicochemical parameters indicates that some parameters like pH, electrical conductivity, total dissolved solids, total suspended solids, turbidity and sodium are found to be in excess than the prescribed limit in some water samples of the study areas.

Key words:,
Khadakpurna Dam water, Water analysis, Water quality index, Water pollution

INTRODUCTION

Pollution of a river first affects its chemical quality and then systematically destroys the community disrupting the delicate food web. Diverse uses of the rivers are seriously impaired due to pollution and even the polluters like industry suffer due to increased pollution of the rivers. River pollution has several dimensions and effective monitoring and control of river pollution requires the expertise from various disciplines. Pollution of river is a global problem. In India it is reported that about 70% of the available water is polluted. The chief source of pollution is identified as sewage constituting 84 to 92 percent of the waste water. Industrial waste water comprised 8 to 16 percent. The indiscriminate and large scale deforestation and over grazing in the watershed areas of river basins have caused soil erosion resulting in considerable silting of dams and shrinkage of river flows. This leads to the flooding of the rivers at the time of excessive rains. The disposal of waste leads to contamination of river and lakes chronically affecting the flora and fauna. According to surveys carried out on selected stretches of important rivers, it has been found that most of the rivers are grossly polluted. The domestic sewage discharged from a large number of populations gives rise to numerous water-borne diseases like typhoid, cholera, dysentery, poliomyelitis and cysticercosis, thereby affecting the human health and deterioration of the water quality.

For this study, the water samples were collected from the Dam. Accurate and timely information on the quality of water is necessary to shape a sound public policy and to implement the water quality improvement programmes efficiently. One of the most effective ways to communicate information on

water quality trends is with indices. Water quality index (WQI) is commonly used for the detection and evaluation of water pollution and may be defined as "a rating reflecting the composite influence of different quality parameters on the overall quality of water." The indices are broadly characterized in to two parts: the physico-chemical indices and the biological indices. The physico-chemical indices are based on the values of various physico-chemical parameters in a water sample, while biological indices are derived from the biological information and are calculated using the species composition of the sample, the diversity of species, their distribution pattern, the presence or absence of the indicator species or groups etc. Here attempt has been made to calculate the water quality index of the Khadakpurna Dam water.

METHODOLOGY

A total of 90 water samples were collected from five different spots during different seasons over a period of two years (November 2013 to October 2015). The samples were taken in BOD bottles and plastic jerry canes and brought to the laboratory with necessary precautions. All samples were labeled properly. Some parameters like temperature, velocity, pH and dissolved oxygen were measured on site. Grab sampling was generally applied during the sampling. Water samples were analysed by standard methods. The samples were analyzed for following physicochemical parameters:

Water Temperature (ºC), velocity(m/s), pH, hardness (mg/l), turbidity (JTU), total dissolved solids (mg/l), total suspended solids (mg/l), electrical conductivity (imho/cm), free CO (mg/l), dissolved oxygen (mg/l), B.O.D. (mg^2/l), C.O.D. (mg/l), alkalinity (mg/l), chloride (mg/l), calcium (mg/l), magnesium (mg/l), sodium (mg/l), potassium (mg/l),carbonate (mg/l), bicarbonate (mg/l) and sulphate (mg/l).

Eleven parameters were taken for calculation of water quality index : Ca, Mg, Na, K, NO_3, SO_4, Cl, hardness, TDSD, B.O.D. and total alkalinity. It is an established fact that the more harmful a given pollutant is, the smaller is its standard permissible value recommended for drinking water. Therefore, the "Weights" for various water quality characteristics are assumed to be inversely proportional to the recommended standards for the corresponding parameters (Tiwari and Ali). that is, W = K\S

Where W is the unit weight and Si is the recommended standard for the ith parameter P. The constant of proportionality K in equation can be determined from the condition ÓW =KÓ(1\ S)

The quality rating q for the ith parameter P is calculated from the following equation: q=100(V/ S)

Where V is the observed value. The subindex S for the the parameter P is given by (S)=(q w)

The overall WQI can be calculated by aggregating the quality rating (q) or subindices, linearly, and taking their weighted mean, i.e. WQI=[(Óq w/Ów)]

RESULTS AND DISCUSSION

The results obtained from analysis of water samples of Khadakurna Dam are shown in table 1 and table 2. The reported values refer to the mean value of water samples collected in different seasons at different areas along the stretch of Khadakurna Dam. The results indicate that the quality of water varies considerably from location to location. A summary of the findings is given below:

The water temperature of the Dam ranged between 10.18 ºC to 19.73 ºC. The water temperature showed an upward trend from winter season to summer season followed by a downward trend from rainy season onwards. The velocity was found to be directly proportional to the flood level and

also with gradient of the river stretch. The water level and its velocity started increasing from winter season onwards due to melting of snow at the place of origin of the river. The maximum velocity 2.18 m/s of the Khadakpurna was recorded in monsoon season and the minimum velocity 0.39m/s were observed in winter season. The conductivity of water is affected by the suspended impurities and also depends upon the amount of ions in the water. The highest conductivity 415.66ìmho/cm of the Khadakpurna water was observed in monsoon season. From monsoon season onwards the conductivity decreased and minimum conductivity 95.89ìmho/cm was observed in winter season.

The turbidity in the Dam was lowest during winter season. From summer season onwards the water became turbid due to melting of snow and rains. The maximum turbidity 608.15 JTU was observed in monsoon season and minimum 19.15 JTU was observed in winter season.

Total solids may affect water quality. Water with high total solids generally is of inferior potability. Total dissolved solids were observed maximum 540.68 mg/l in rainy season and minimum 42.58 mg/l in winter season. Total suspended solids were recorded maximum 3125.76mg/l in monsoon season and minimum 110.28 mg/l.

The pH of the Dam water was slightly alkaline. It ranged from 7.06 to 8.35. The Khadakpurna water contained highest dissolved oxygen during winter season, followed by a gradual decrease to its lowest values during monsoon season. The higher concentrations of dissolved oxygen during winter season was probably due to low water temperature, no turbidity and increased photosynthetic activity of the green algae found on the submerged stones and pebbles. The maximum 11.71 mg/l oxygen content of water was recorded in winter season and minimum 7.08 mg/l in rainy season. From monsoon season the water of Dam starts becoming turbid which reduces the photosynthetic activity of the algae and thus decreases oxygen concentration.

Free carbon dioxide in the Dam water was invariably present throughout the year. It fluctuated from 1.15mg/l in winter season to 5.39 mg/l in rainy season. The free carbon dioxide was found to be maximum in monsoon season and minimum in winter season.

The following map is showing the Khadakpurna Dam and sampling sites-

The C.O.D. ranged from 4.58mg/l to 13.72mg/l. The minimum C.O.D. was recorded in monsoon season and maximum in winter season. The B.O.D. was maximum 3.90 mg/l in monsoon season and minimum1.35 mg/l in winter season. Total alkalinity throughout the year ranges from 34.35 mg/l in winter season to 90.5 mg/l in summer season. The alkalinity due to carbonates was more or less. Maximum calcium 27.4 mg/l was found in rainy season. Minimum calcium 10.9 mg/l was found in winter season. Similarly, maximum magnesium 7.4 mg/l was found in rainy season and minimum magnesium 2.3 mg/l was found in winter season. Concentration of Calcium was always greater than that of magnesium. The hardness was higher in the monsoon season (120.62mg/l) and lower in the winter season (87.55mg/l). Calcium ions make major contribution to the hardness of river water. Maximum concentration of Sodium 28.320 mg/l was found in rainy season and minimum 6.720 mg/l in summer season. Similarly, maximum concentration of potassium 3.425 mg/lit was found in rainy season and minimum 1.216 mg/l in summer season. Sodium was found to have greater values than potassium throughout the study.

Maximum amount of nitrate (0.105mg/l) was found in rainy season and minimum

amount (0.0115mg/l) was found in summer season. Nitrate concentration depends upon the activity of nitrifying bacteria. The total phosphate was highest in monsoon season (0.23mg/l) and lowest in winter season. (0.037mg/l). Total sulphate was maximum in monsoon season (37.15mg/l) and minimum in winter season (16.45 mg/l).The chloride was observed maximum (13.48 mg/l) in rainy season and minimum (1.97 mg/l) in winter season. Water quality index represents the integrated effects of the relevant water quality variables. Table 3 shows drinking water quality standards and unit weights for all the parameters used in calculating WQI. For Khadakpurna Dam water, the rating of WQI of water samples was calculated and represented in table 1. It may be stated that the water quality requirements differ from one age to another and thus any polluted water may be considered suitable for some of the beneficial uses but may remain unsuitable for other purposes.

Table.1

WQI level	Water quality rating
0-25	Excellent
26-50	Good
51-75	Poor
76-100	Very poor
>100	Unfit for drinking purpose

S. N.	Parameters	Values	Mean
1	Water Temp	15.18-23.73	19.11
2	Velocity	0.39-2.18	1.30
3	pH	7.06-8.35	7.58
4	DO	7.08-11.71	9.34
5	Free CO_2	1.15-5.39	3.13
6	COD	4.58-13.72	8.09
7	BOD	1.35-3.90	2.72
8	CO_3^{2-}	0.02-3.50	0.63
9	HCO_3^-	34.0-89.25	53.50
10	Total Alkalinity	34.35-90.5	54.13
11	Hardness	87.55-120.62	107.75
12	Turbidity	19.15-608.15	213.63
13	Ca	10.9-27.4	17.17
14	Mg	2.3-7.4	4.87
15	Na	6.72-28.32	14.71
16	K	1.216-3.425	2.09
17	NO_3^-	0.0115-0.105	0.04
18	PO_4^{3-}	0.037-0.23	0.09
19	Cl^-	1.97-13.48	5.84
20	SO_4^{2-}	16.45-37.15	24.40
21	Ec	95.89-415.66	203.91
22	TDSD	42.58-540.68	365.41
23	TSSD	110.28-3125.76	1148.72

Table-2 :
Mean of different parameters in different sampling stations

Table-3 :
Drinking water quality standards (Maximum permissible limit)

Standards are taken according to WHO, ISI, CMR etc. Parameter	Standard Value (Si)	$W_i=1/S_i$
Ca	75	0.0133
Mg	50	0.02
Na	20	0.05
K	10	0.1
NO3-	20	0.05
SO4-2	200	0.005
Cl-	250	0.004
Hardness	300	0.0033
TDSD	500	0.002
BOD	5	0.2

REFRENCES:

1. P. Mishra and R.K. Patel, Some aspects of the quality of water in and around Rourkela, thesis (2005).
2. R.K. Trivedy and P.K Goel, *Environmental Publications India*, pp-215 (1984).
3. R.D. Harkins, J. *Water Poll Cont. Fed*, **46**, 589 (1974).
4. B.N. Lohani, Water pollution and management reviews (Ed C.K.Varshney) South Asian publications, New Delhi, pp. 53-69 (1981).
5. T.N. Tiwari, S.C. Das and P.K. Bose, *Poll. Res.*, 5, 1 (1986).
6. R.P. Mathur, Water and waste water testing, Nem Chand and Brothers, Publishers, Roorkee, 1-54 (1982).
7. N. Manivaskam, Physico-chemical examination, sewage and industrial, Pragati Prakashan Meerut (1986).
8. P.K. Trivedi and P.K. Goel, Chemical and biological methods for water pollution studies, Env. Publication, Karad (1986).
9. Manual on water and waste water analysis, NEERI Publications (1988).

❖ ❖ ❖

10

IRRETRIEVABLE BRAEAKDOWN OF MARRIAGE A GROUND FOR DIVORCE IN HINDU LAW

Jai Lal Verma
Research Scholar
Department of Law
O.P.J.S. University, Churu (Raj.)

Introduction :

"Marriage is the civil status of one man and one woman united in law for life, for the discharge to each other and the community of the duties legally incumbent on those whose association is founded on the distinction of sex." Marriage is a universal institution and it is that social relationship which is found everywhere in the world. However, it is not possible to trace the beginning of institution of marriage on the basis of any authentic recorded history. But we can not deny this fact that this very institution has pillared the human civilization. Marriage give approval to the sexual relationship of two persons of opposite sex and permit them to live together as husband and wife and allow them to arrange into neat family units and bring about coherency and security to all. This institution of marriage has sustained the continuity of human race along with the insurance for the survival of the group along with its culture. But in the last few decades, this essential and time tested institution of marriage has come under the threat. It is hard to believe, but the fact is that the institution of marriage has somewhere started to lose its importance, glory and sanctity. There are many reasons for this and some of them are degradation of morals and

I J R B A T, Issue (3), Vol. II, May 2015: 399-401 ISSN 2347 – 517X

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

DIVERSITY OF ROTIFERS IN SONALA DAM, SONALA DIST. WASHIM (M.S.) INDIA

U. P. Mankar[1] A. D. Bobdey[2] and V. B. Bhagat[3]
[1]Research Student, Department of Zoology, Sevadal Mahila Mahavidyalaya, Nagpur
[2]Head, Department of Zoology, Shri Shivaji Science College, Nagpur
[3]Department of Zoology, Shri Shivaji Science College, Akot, Dist. Akola. (M. S.)
landeujwala@gmail.com

Abstract:
Sonala dam is an earthen dam, constructed by irrigation department of Maharashtra Govt. The dam is presently used for irrigation and drinking for regional rural areas. Rotifers are microscopic soft-bodied fresh water invertebrates, which have been used to indicate the tropic status of a water body. They are one of the connecting link organisms between primary producers and consumers in aquatic food web. The present study reports the occurrence and diversity of rotifers in Sonala dam, Sonala, Dist. Washim. Quantitative assessment of rotifers was undertaken during February 2012 to January 2013. During the study period total 16 species of rotifers were collected from Sonala dam. They were abundant during the winter season and minimum was found in the monsoon season. Conservation of this water body is essential, as this habitat may reveal interesting rotifer fauna present there.
Keywords: Sonala dam, Diversity, Rotifers, Zooplanktons

Introduction

Studies on fresh water bodies, natural or manmade have recently gained much importance, mainly because of their multiple uses. Zooplanktons occupy a central position between the autotrophs and other heterotrophs. Plankton forms an important component of fish food in aquatic environment and on an important link in food of a fresh water ecosystem. Among the zooplankton, rotifers are apparently the most sensitive indicators of water properties. Rotifers are small pseudocoelomate animals that inhabit a wide variety of aquatic habitats (Pejler 1995; Wallace *et al.*, 2006). The habitats of rotifers include both, lentic and lotic environments (Sharma, 2009). They have been widely used in assessment of aquatic pollution due to their sensitivity to small changes in environment, short generation time, parthenogenic mode of reproduction. Rotifers play an integral role in the aquatic food chains due to their qualitative and quantitative occurrence (Vanjare 2013). The occurrence of rotifers is affected by the complex interaction of various physical, chemical, geographical, biological and ecological parameters. The rotifer fauna of freshwater bodies has a potential value as bio-indicators of changing the tropic condition. Some rotifers are highly specialized but most are opportunistic feeders since they consume and assimilate different types of food.

Materials and Methods

The present study is a part of limnological survey undertaken (during February, 2012 - January, 2013) in Sonala dam, Sonala, Dist. Washim. Sonala Dam reservoir was constructed in the year 1981. Agricultural fields surround the reservoir. The reservoir is mainly used for drinking water supply to nearby villages and for irrigation. The nearby villages also use the water for bathing and washing purposes. The dam is constructed by irrigation department of Maharashtra Govt. The Sonala dam is located at 77°, 12', 30" Longitude and latitude of 20°, 19', 00" in Sonala village of Washim district in Maharashtra (India). It is an earthen dam with 19.20 meter maximum height and 446.90 hector submergence with 132.50 square Km. of catchment area. The dam is presently used for irrigation and drinking for regional rural areas. The reservoir is constructed on the River Aran also known as River Adan a tributary of River Godavari. Adan River in its way runs through the Maraldoh village, before draining in the dam.

The selection of six sampling stations was made on the basis of human and other domestic activities. For biological analysis in water, 50 liter of water sample was filtered through standard plankton net of bolting silk cloth No.25 (56 mesh size). 125 ml was the final volume of the filtered sample which was transferred to another 125 ml plastic bottle and labeled mentioning the time, date and place of sampling. The samples were preserved by adding 2ml of 4% formalin. After 24 hours, the supernatant was carefully discarded and the final volume of concentrated sample was 50 ml. Preserved 50 ml water sample bottles were brought to the laboratory and examined under a Binocular microscope with different magnification. Quantitative analysis was done by Drop Count Method. Detailed taxonomic

identification was carried out with Pennak (1989), Koradkar (1992) and Dhanpati (2000).

Observations and Results

In the present investigation total 16 species of rotifers were recorded in dam water namely *Brachionous angularis, Brachionous calyciflorous, Brachionous species, Lecane reculata, Lecane ovalis, Anuraeopsis fissa, Ascomorpha species, Asplancha brrightwalli, Cephadella gibba, Ellosa species, Horaella brehmi, Keratella species, Lepadella ovalis, Lepadella patella, Monostyla species and Trichotria similisstrumosa.* Rotifers showed seasonal variations and showed dominance during the winter season. During the study period *Anuraeopsis fissa* 30.1 ± 2.5 ind/l *showed dominance at all stations* followed by *Cephadella gibba* 27.5 ± 1.2 ind/l, *Lepadella patella* 21.5 ± 1.0 ind/l *and Monostyla species* 19.7 ± *1.0* ind/l. Least appearance was shown by *Ellosa species* 4.4 ± 3.5 ind/l. Stationwise abundance of rotifers was in the order Station S_6 > Station S_2 > Station S_3 > Station S_1 > Station S_5 > Station S_4. Pollution indicator species from Rotifers such as *Cephalodella gibba, Lepadella patella* and *Monostyla* species were abundant at stations S_1, S_2, S_3 and S_6.

Table No. 1. Station wise Average values of Zooplanktons during year 2012-2013

Sr.No.	Plankton	S_1	S_2	S_3	S_4	S_5	S_6	Average
Rotifera								
1	*Anuraeopsis fissa*	30.8 ± 2.5	35.8 ± 2.3	31.7 ± 2.0	22.5 ± 1.5	21.7 ± 1.9	38.3 ± 2.8	30.1 ± 2.5
2	*Ascomorpha species*	29.2 ± 1.8	33.3 ± 2.0	30.0 ± 2.4	23.3 ± 1.7	21.7 ± 1.8	35.8 ± 2.5	28.9 ± 1.4
3	*Asplancha brrightwalli*	6.7 ± 4.5	9.2 ± 5.9	7.5 ± 5.1	9.2 ± 5.9	10.0 ± 6.5	8.3 ± 5.5	8.5 ± 5.6
4	*Brachionus angulariis*	5.8 ± 4.1	8.3 ± 5.2	5.8 ± 4.1	9.2 ± 5.9	8.3 ± 5.5	8.3 ± 5.7	7.6 ± 5.1
5	*Brachionus calyciflorous*	6.7 ± 4.7	9.2 ± 5.9	6.7 ± 4.7	10.8 ± 7.1	11.7 ± 7.6	9.2 ± 6.2	9.0 ± 6.0
6	*Brachionus species*	3.3 ± 2.9	7.5 ± 5.2	5.8 ± 4.3	5.8 ± 4.3	8.3 ± 6.0	5.0 ± 3.5	6.0 ± 4.4
7	*Cephallodell gibba**	29.2 ± 2.1	31.7 ± 2.2	30.0 ± 2.6	19.2 ± 1.2	18.3 ± 1.8	36.7 ± 23	27.5 ± 1.2
8	*Ellosa Species*	3.3 ± 2.9	3.3 ± 2.8	3.3 ± 3.3	5.8 ± 4.2	5.8 ± 4.2	5.0 ± 3.6	4.4 ± 3.5
9	*Horaella brehmi*	5.0 ± 4.0	3.3 ± 2.8	4.2 ± 3.7	3.3 ± 2.9	7.5 ± 5.2	6.7 ± 5.3	5.0 ± 4.0
10	*Keratella species*	14.2 ± 1.1	19.2 ± 1.5	15.8 ± 1.0	12.5 ± 1.9	12.5 ± 1.0	22.5 ± 1.9	16.1 ± 1.2
11	*Lecane raculta*	4.2 ± 3.3	4.2 ± 3.2	4.2 ± 3.7	5.0 ± 4.0	5.0 ± 4.0	5.0 ± 3.7	4.6 ± 3.7
12	*Lecane species*	7.5 ± 5.5	10.0 ± 7.5	9.2 ± 7.0	7.5 ± 5.1	10.0 ± 6.9	13.3 ± 1.8	9.6 ± 7.0
13	*Lepadella ovalis*	4.2 ± 3.2	5.0 ± 4.0	4.2 ± 3.2	7.5 ± 5.2	5.8 ± 4.4	6.7 ± 4.7	5.6 ± 4.1
14	*Lepadella patella**	20.0 ± 1.3	25.8 ± 1.7	20.0 ± 1.4	19.2 ± 1.4	20.0 ± 1.9	24.2 ± 1.5	21.5 ± 10
15	*Monostyla species**	20.8 ± 1.3	22.5 ± 1.5	20.0 ± 1.7	15.0 ± 1.6	15.0 ± 1.6	25.0 ± 1.4	19.7 ± 1.0
16	*Trichotria similisstrumosa*	7.5 ± 5.1	9.2 ± 6.1	7.5 ± 5.1	5.8 ± 4.4	5.8 ± 4.4	10.0 ± 6.7	7.6 ± 5.3

Discussion

Data harvested during the study period, Rotifers showed dominance during the winter season and minimum was found in the monsoon season. Maximum diversity of rotifers found in winter season which may be due to the abundance in the food. Less diversity during monsoon may be due to rainfall and heavy floods and less food available. (Sharma *et al.*, 2013). Present observations of Rotifers in Sonala Dam were similar with the observations of Edmondson (1965), Dhanpati (2000), Kumar (2001), Sitre S. R.(2012) and Sharma (2013). Edmondson (1965) observed high rotifer population in winter, which could be attributed to the favorable temperature and the availability of abundant food in the form bacteria, nanoplanktons and suspended particles. Present study, reports rich rotifer population represented by 16 species. Rotifers were found in maximum at stations, S_1, S_3, and S_6 during winter. In the present investigation, low nutrient level has been recorded but the

influence of water temperature was found negative. Rotifers are chiefly freshwater forms and presence of these organisms in abundance is related to suitable conditions for their survival (Dhanpati, 2000). The diversified rotifer fauna of lake can be linked to favorable conditions and availability of abundant food in the form of bacteria, nanoplankton and suspended detritus in the lake water (Sitre S. R. 2012).During monsoon season lower values of rotifer population density and diversity was observed which could be due to dilution of water resulting in less nutrients (Kumar, 2001).

Three pollution indicators species were observed during the study period among the observed rotifers, *Cephallodella gibba, Lepadellla patella* and *Monostyla* species and they were abundantly found at stations S_1, S_2, S_3 and S_6. The specific distribution of pollution indicators indicated different food habits and presence of pollutant in water at station S_1, S_3 and S_6 where the water depth was shallow in which the activities of domestic animals and human being with respect to washing and bathing were predominant. These factors were responsible for creation of unstable conditions and therefore, much pollutant tolerant species were observed from sampling stations S_1, S_3 and S_6. Sudzaki (1964) also observed more resistant species of rotifers at unstable polluted zone of various lakes in Japan. Rotifers are considered as ideal indicators of water quality assessment (Berzens 1989). More work is still required to study regional indicator species from different parts of India. It is presumed that rotifers utilize the nutrients as well as phytoplankton more rapidly to build up their population. This may be the reason for the worldwide distribution of Rotifers (Peenak 1978).

Conclusion

Sonala dam is nutrient rich and contain diversified rotifer fauna. Rotifers are microscopic soft-bodied fresh water invertebrates, which have often been used to indicate the tropic status of a water body. Rotifers utilize the nutrients as well as phytoplankton more rapidly to build up their population and due to their enormous reproductive potential; they play a significant role in aquatic ecosystem to maintain the ecological balance. They were most abundant during winter season and showed least abundance during monsoon season.

References

APHA, (1998): Standard methods for the examination of water and wastewater 20theds. American Public Health Association. American water works Association WaterEnvironment Federation. Washington, D.C.

Berzens, B. and Pejler, B. (1989): *Hydrobiologia,* 27: 171-180.

Edmondson, W. T. (1965): Reproductive rate of plank tonic rotifers as related to food and temperature. *Ecol Manoir.*, 35: 61-111.

Dhanpathi, M.V.S.S.S (2000): Taxonomic notes on the rotifers from India, IAAB, Hyderabad, 1-78.

Kodarkar, M. S. (1992): Methodology for water analysis, physico-chemical biological and micro-biological. Indian Association of Aquatic Biologists, Hydeabad, Publ. 2: pp.50.

Kumar, K. S. (2001): Studies on freshwater copepods and cladocera of Dharmapuri Dist. Tamil Nadu. *J.Aqua.Biol.* 16 (1 & 2): 5-10.

Pejler, B. (1995): Relation to habitat in rotifers. *Hydrobiologia* 313-314: 267-278.

Pennak, R. W. (1978): Freshwater invertebrates of the United States, 2nd Ed. New York: John Wiley-Interscience Pp.803.

Pennak, R. W. (1989): Fresh water invertebrates of the United States 2/e. 628: *John Wiley and Sons Inc., New York.*

Sharma, B. K. (1983): The Indian Species of the genus *Brachionus* (Eurotatoria, Monogonata, Brachionidae), *Hydrobiologia,* Vol.104: 31-39.

Sharma, B. K. (2009): Diversity of Rotifers (Rotifera: Eurotatoria) of Loktak lake, north-eastern India. *Tropical Ecology* 50 (2): 277-285.

Sharma, S., Solanki C. M., Sharma D., Zahoor Pir (2013): Distribution and diversity of zooplanktons in Madhya Pradesh, India. *International Journal of Advanced Research,* 1(1): 16-21.

Sitre, S. R. (2012): Assessment Of Biodiversity Of Rotifers In Ambazari Lake Of Nagpur City With Respect To Water Quality *International Interdisciplinary Research Journal, {Bi-Monthly}, Volume-II, Issue-II 104-110.*

Sudzaki, M. (1964): New systematical approach to the Japanese planktonic rotararia. *Hydrobiologia,* 23(1): 1-25.

Vanjare – Pai (2013): Ecology of freshwater rotifera in a seasonal pond of the University of Pune (Maharashtra, India) *Applied Ecology and Environmental Research* 11(4): 525-539.

Wallace, R. L., Snell, T. W., Ricci, C., and Nogrady, T. (2006): Rotifera: Biology, Ecology and Systematics. In: Guides to the identification of the microinvertebrates of the continental waters of the world (Eds. Segers, H., and D).

IJRBAT, Vol. II, Issue (7), Nov 2015: 479-483

ISSN 2347 – 517X

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

STUDIES ON AQUATIC PLANTS OF PERENNIAL LAKES OF NARNALA WILDLIFE SANCTUARY, AKOLA DISTRICT, MAHARASHTRA

Vijay B. Bhagat[1], Santosh N. Patole[1] and Atul D. Bobdey[2]

[1]Shri Shivaji Arts, Commerce and Science College, Akot Dist-Akola (M.S.)

[2]Shri Shivaji Science College, Nagpur (M.S.)

sanpatole@yahoo.co.in

Abstract

The present paper deals with the aquatic plants and its role in understanding the wetland ecosystem dynamics and species composition of aquatic plants, seasonal distribution in the lakes of Narnala Wildlife sanctuary. The sanctuary consists of a wide range of vegetation growing at different locations. These wetlands show a plant diversity of 28 genera and 31 species belonging to 20 families. These aquatic plant species includes free floating, rooted floating, submerged and emergent species.

Keywords: Aquatic plants, Narnala Wildlife Sanctuary, Perennial lakes, Akola district

Introduction:

Lakes are complex ecosystems composed of distinct habitats influenced by biological, physical and chemical processes. Aquatic plants are those plants which actively grow continuously or periodically depending upon the availability of required amount of water. They occur submerged below or floating on the surface or growing up through the water surface. These plants play an important role in the structure and function of the aquatic ecosystem. Threats to fresh waters such as pollution of different kinds, unfavorable climatic changes, eutrophication, acidification, and alien species invasion lead to reduction in native plant diversity which also threatens the faunal diversity of aquatic ecosystem (Chambers *et al.* 2008). The fresh water ecosystems in Asia are no exceptions and they are also exposed to these serious threats. Conservation of freshwater biodiversity faces serious challenges because of lack of public awareness about its magnitude and importance (Dudgeon 2000). Aquatic flora of India is studied by various workers. Earlier, Subrahmanyam (1962) has described 117 aquatic angiosperms. Lavania *et al.* (1990) has compiled the wetland flora of India; Cook (1996) has published the aquatic and wetland flora of India. From plant biodiversity point of view, many of the perennial and ephemeral lakes of Tamil Nadu still remain unexplored. In this paper, for the first time we present a checklist of aquatic angiosperms of lakes of Narnala Wildlife Sanctuary, Akola district, Maharshatra, India.

STUDY SITE

Narnala is an ancient fort in the hills in the north of AKOT taluka at a point where a narrow tongue of Akola District runs a few miles in to the Melghat. This area is Southern part of Melghat Tiger Reserve..The area is well known for its richness of flora and fauna. The Sanctuary area has special historical, biological, mythological, archaeological, scenic and recreational values and is a point of attraction for the tourists and the people of Maharashtra. The rich and varied miscellaneous forests of the area provide natural habitat to birds and wild animals. The Government of Maharashtra's Notification No WLP/1096/CR-279/F-1 dated 2nd May 1997 declared the ancient Narnala Fort and its surrounding patch of thick green forests as the Narnala Wildlife Sanctuary. The plants are studied from Narnala Fort and the vicinity of the Fort. This area is rich in plant diversity. The sanctuary consists of a wide range of vegetation growing at different locations.

Narnala Wildlife Sanctuary is unique in possessing perennial lakes in the area. The vegetations of lakes and ponds are rich in aquatic flora and constitute very important resources of food and medicine for the tribal population. But these natural resources, have hardly been given due attention for scientific studies, and thus their potentialities remain still untapped. The importance of the aquatic flora in agriculture, pisciculture, and as a source of food and medicine can hardly be emphasized. Water plants are taxonomically different as there is generally a lack of adequate herbarium material and a paucity of critical studies in the development of various organs due to the high degree of adaptability in form and structure in relation to aquatic environment. The peak flowering time of the aquatic flora is generally during the monsoon but some exhibit freak flowering out of the season while others are constantly in flower throughout the year.*ife sciences Leaflets 3:54– 68, 2010.* ISSN 0976 - 1098.

winged, glumes approximately, closely imbricate.

***7. Eichhornia crassipes* (M art.) Solms.-Laub.**
Vernacular name: Jalkumbhi
Family: Pontederiaceae:
Aquatic, free floating herb. Leaves emerged, radical, with petioles spongy, short, and very much swollen in young specimens. Flowers 10-20, expanding and withering almost simultaneously, very showy, posterior lobe with a bright yellow, blue bordered median blotch. Fruit a capsule, linear-oblong.*fe sciences Leaflets 3:54– 68, 2010.* ISSN 0976 - 1098.

***8.Hygrophila auriculata* (K.Schum.) Heine**
Vernacular name: Talmakhna
Family: Acanthaceae: A stout, erect, hispid herb with usually fascicled, undivided stems. Leaves lanceolate, sub sessile, acute at both ends, sparsely hispid with long white hairs, whorls large, dense with straight stout spines. Flowers in axillary whorls. Fruit a capsule, 4-8 seeded.

***9.Hydrilla verticillata* (L.f.) Royle**
Vernacular name: Kureli
Family: Hydrocharitaceae
A glabrous, submerged weed. Leaves sessile, linear, green, often with reddishbrown dots and dashes, sharply serrate-dentate, acute. Male flower solitary in a spathe and female spathe with apex shortly bidentate. Fruit subulate, smooth or softly echinate.

***10.Hydrocharis dubia* (Bl.) Backer, Handb.**
Family: Hydrocharitaceae
A stoloniferous herb. Leaves ovate-cordate to broadly ovate, apex obtusely rounded to broad acute, veins parallel, curved; stipules 1 or 2, transparent, scarious. Male spathes longer than the female ones. Petals pale yellow or white. Fruit filled with mucilage.
0976 - 1098.

***11.Ipomoea aquatica* Forsk:**
Family: Convolvulaceae
A glabrous trailer on mud or floating on water. Leaves ovate, ovate-oblong, deltoid, lanceolate or linear, base cordate, sagittate or hastate. Flowers 1-few in axillary cymes. Fruit a capsule, glabrous, ovoid to globose.

***12.Ipomoea fistulosa* M art.**
Vernacular name: Beshrum
Family: Convolvulaceae
A shrub, branches ascending, usually fistular containing milky juice. Leaves ovate to ovate-oblong base cordate to truncate, acuminate, mature leaves pubescent below on the veins more or less glabrous above. Flower is pink in colour. Fruit is capsule.

***13.Lemna perpusilla* Torrey**
Family: Lemnaceae
A free floating herb. Fronds rather thin, solitary or in groups of 2-5, ovate to obovate or obovate-oblong; base strongly asymmetric, obtuse or slightly acute at both the ends, green. Stamen solitary. Fruit asymmetric, ellipsoid, laterally slightly compressed.

***14. Ludwigia perenis* L.**
Family: Onagraceae
A floating herb rooting at the nodes and with conspicuous white, erect, spindle shaped, mucronate pheumatophores arising in clusters at the nodes of floating stems. Leaves broadly oblong- elliptic, obtuse or retuse, main veins prominent. Flower white in colour and fruit a capsule.

***15.Limnophila indica* (L.) Druce**
Vernacular name: Karpur
Family: Scrophulariaceae
A simple or branched plant, smelling of turpentine, with a few upper opposite, entire leaves and numerous whorled, capillaceo-multifid ones at its base. Flowers axillary, solitary, rarely subracemose. Calyx narrow, hemispheric in fruit, lobes ovate, acuminate.

***16.Lippia nodiflora* Rich**
Vernacular name: Bhui-okra
Family: Verbenaceae
An annual herb, creping minutely strigose, leaves cuneate-spathulate serrate, peduncles axillary rarely opposite, bracts obovate shortly acuminate as long as the corolla tube.
Life sciences Leaflets 3:54– 68, 2010. ISSN 0976 - 1098.

***17.Monochoria hastata* (L.) Solms.**
Vernacular name: Baranukha:
Family: Pontederiaceae
A perennial robust herb with often long rhizome covered with the remains of old leaf sheaths. Leaves many nerved, basal lobes divergent, petioles of radical leaves longer, broad and sheathing at the base, those of the floral leaves shorter, tumid above and embracing the short scape. Flowers in racemes or sub umbellate; perianth segments pale blue. Fruit a capsule, ellipsoid.

***18.Oxalis corniculata* Linn.**
Vernacular name: Khat buti
Family: Oxalidaceae*Life sciences Leaflets 3:54–68, 2010.* ISSN 0976 - 1098.
Herbs, with acid juice, leaves alternate, lernately digitate, often sub sensitive; stipules. Flowers regular, on axillary 1 or more flowered peduncles. Fruit a loculicidally dehiscent capsule with persistent valves.

Volume-4, Issue-11, Nov-2015 • ISSN No 2277 - 8160

Research Paper Zoology

Iron Deficiency Anemia: Peripheral blood smear investigation with special reference to RBC morphology.

Hingankar A.P Research Student, Dept. of Zoology, Shri Shivaji College, Akot.

Sapkal H.P Asst. Prof., Dept. of Zoology, Shri Shivaji College, Akola

V.B. Bhagat Associate Prof., Dept. of Zoology, Shri Shivaji College, Akot.

ABSTRACT

Iron deficiency anemia is one of the world's most widespread health problems, especially among children: approximately 40 percent of children are anemic across various African and Asian settings. Iron deficiency anemia leads to weakness, poor physical growth, and a compromised immune system decreasing the ability to fight infections and increasing morbidity and is also thought to impair cognitive performance and delay psychomotor development. Recent macroeconomic estimates suggest that the impact of iron deficiency anemia through both physical and cognitive channels could be as large as 4 percent of GDP on average in less developed countries. Through its impact on school participation and learning, anemia could also be central to understanding the intergenerational transmission of poverty. Peripheral blood smear investigation reveled the shape of different blood cells from affected persons.

Key words : Iron Deficiency Anemia, Peripheral blood smear.

Introduction:- Although much is known about iron metabolism, the health consequences of iron deficiency continue to be a subject of research and debate. This is partly because in many regions of the world iron supplements are the standard of care for individuals with anaemia. Most trials of iron supplementation have measured haemoglobin concentration as the primary outcome. There is a relatively small body of clinical trials of iron repletion to humans with functional iron deficiency (i.e.iron deficiency severe enough to affect erythropoiesis) with pregnancy outcomes or mortality as primary objectives. There is surprisingly little evidence to either support or refute a causal link between iron deficiency and these important adverse health outcomes. As processes like this comparative risk assessment (CRA) bring to light the overall weakness of evidence either supporting or refuting the relationship, new research priorities may emerge.

Material and Method:- Collection of blood

- Disposable latex gloves (Use non-latex, e.g. nitrile or vinyl, if the employee and/or client has a latex allergy).
- 70% isopropyl alcohol
- Cotton balls or gauze
- Blood lancets for finger puncture (capable of making a puncture to the depth of 1.5 mm)
- E. Blood lancet designed for heel sticks on infants and premature babies, to a depth of less than 2.0 mm (e.g. BD Quikheel™ Lancet).
- F. Puncture resistant sharp's containers
- G. Band Aids (optional)
- H. Appropriate microcuvettes or tubes for micro sampling
- I. Disinfectant (freshly prepared 10% household bleach) for bench tops.

Procedure:- 1) Small drop of blood (with or without anticoagulant) was place on new slide.
2) Push forward the spreader with a quick, smooth and single movement so as to make 2-3 cm long smears with convex edge.
3) Smear was dried quickly and stained the slides by using Leishman stain and methanol was used as a fixative.
4) Permanent slide was prepaired by covering with cover slip.

Observation and Result

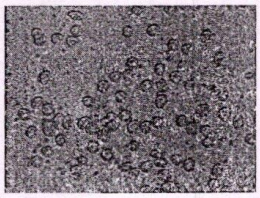
Peripheral Blood Smear Examination

The examination starts with a macroscopic view to evaluate the quality of the smear based on overall appearance. The microscopic analysis begins on lower power (10X), primarily to assess cellular distribution, staining quality, and to select an area where the RBCs are barely touching each other. This area is used to conduct a complete assessment of the cellular elements on higher magnification. All of the detailed analysis of the cellular elements on higher magnification. All of the detailed analysis of the cellular elements is performed using oil immersion. This final microscopic examination was perform at 50X and 100 X oil immersion and includes.

- A WBC differential
- The identification of abnormal and peculiar leukocytes.
- Assessment of RBC morphology
- The number and morphology of the platelets
- The identification of intra- and extra-cellular elements.
- Assessment of any organisms present.
- Following criteria was used to examine the peripheral blood smear of anemic patients.
- Size
- Shape
- Color
- Inclusions
- Peculiarities
- Relationships

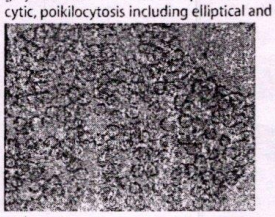
Sample 1

Peripheral blood smear shows that fragmented red blood cell. Fragmented cells are seen. Specific terms, depending on the shape, include schistocyte, acanthocyte, spur cells, and burr cells.



Sample2

This microphotograph depicts polychromasia. Referring to the blue-gray color of the red cell. Peripheral blood smear also showing microcytic, poikilocytosis including elliptical and elongated RBCs.



VOLUME V, ISSUE XV JAN 2016 MULTILOGIC IN SCIENCE ISSN 2277-7601
An International Refereed, Peer reviewed & Indexed Quarterly Journal

EFFECT OF TEMPERATURE IN THE ANIMAL

R.S. Mankar
Dept of Zoology, Shri Shivaji Arts,Commerce & Science College,
Akot Dist Akola Mahashtra

(Received : 22.10.15; Revised : 29.11.2015, Accepted : 30.11.2015)
(RESEARCH PAPER IN ZOOLOGY)

Abstract

The metabolic rate of the animal is dependent on the temperature of the environment in which it is submerged. When crab Uca pugnax was placed in a very cold environment ,the process of adaptation took place until the Uca pugnax reached the optimum temperature of 25°C, at which the heart rate conut in beats per minute was at its best (not too high or too low). This showed a doubling effect in the metbolic rate during that period of elapsed time. At a very low temperaiture, the conditions became very unfavourable for Uca pugnax due to the temperature and the availability of oxygen gradients, therefore the rate of metabolism slowed down . This paper shows the effect of temperature in the crab Uca pugnax.

Key words- pH,Temperature,Oxygen availability

Introduction

Temperature is an important environment factor limiting survival & distribution of various forms of life on the earth.The range of environmental temperature is much grater; however,an active life is normally restricted to a narrow range of it from-2 to 100 C,a range some times called as biokinetic zone.Because temperature acts as the rate limiting factor for vital biochemical reactions engaged in the maintenance of life,it has greatly influenced the distribution of biomass on the earth.The physiological processes of ectothermic organism are affected by temperature effects,one being the metabolic rate of such organisms.As temperature increase,physiological processes are generally accelerated.The increase in a process caused by an increase in temperature.This term is used for all rate processes that are affected by temperature.Aquatic invertebrates have the same temperature as their surroundings.In contrast,birds & mammals usually maintain their body temperature at a constant rate &are independent of the environment.Nonetheless,there are some animals,vertebrates & invertebrates that have the ability to maintain a substantial difference between their own temperature & that of their surroundings.Urca pugnax is aectothermic crab.this means that it depends on external heat sources,primarily solar radiation,in order to maintain its body temperature & metabolic rate.The rate of temperature give effect on physiological processes like oxygen consumption.

Materials & Method

A crab Uca pugnax is caught in the river & the crab was placed in the water baths of different temperature at a known temperature in a watch glass.A temperature probe is used to mesure the tempeture of the water so that the desired temperature was obtained prior to thr heart rate being measured in bets per minute.The heart rate was then counted over a period of about a minute.The heart rate count was repeated three times at each temperature from as close as 5 to 35,at5 intervals by using stereomicroscope.It was ensured that the temperature at which the heart rate was needed to be recorded in the table

Heart rate in beats per minute/temp Oc	5	10	15	20	25	30	35
	66	132	157	217	255	195	185
	51	147	163	234	260	191	153
	62	154	180	252	276	153	146
Average heart rate rate in beats/min	59.66	144.33	160	234.33	263.66	179.66	161.33

VOL. VI, ISSUE XVI, APRIL 2016 MULTILOGIC IN SCIENCE ISSN 2277-7601
An International Refereed, Peer Reviewed & Indexed Quarterly Journal in Science, Agriculture & Engineering

EFFECT OF COPPER(HEAVY METAL) ON RBCS & WBCS OF CHANNA PUNCTATUS L

R.S. Mankar
Dept of Zoology Shri Shivaji Arts,Commerce & Science Collage,Akot
Dist Akola Mahashtra (India) (*Received : 23.01.16; Revised : 27.02.2016; Accepted : 29.02.2016*)
(RESEARCH PAPER IN ZOOLOGY,)

Abstract

The present study deals with change in.RBCs &WBCs count that occurred due to the long-term exposure of sub-lethal concentraction of copper sulphate (0.40 mg\lit) in fish Channa punctutus to the heavy metal copper sulphate as compare to the normal fish.Exposure of fish showed a significant decrease in RBC number as compared to the control.Whereas the WBC increased with increase in exposure periods.

Key words:-Channa punctutus, Copper sulphate, Blood

Introduction

Fishes belonging to different taxonomic groups are adopted variously .depending on different prevailing ecological conditions.The blood composition of the fish could be used to indicate their well being.Fishes are the simple & reliable biomarker of copper pollution of aquatic bodies (Taylor et al,2000,Lodhi et al,2006).The metallic ion present in water enters the fish body & get accumulated in various organs.The blood parameters have been used as indicator of stress in fish exposed to copper.this copper ions are the major cause of the physiological abnormalities in fish.A fall in RBC count in Channa punctutus upon treatment with copper causes anaemia(Sing,1995).The metal entering into fish system are slowly eliminated(Newman & Mitz,1988,James &Sampath,1996,James et al,1996) due to this blood parameters get affected due to metal toxicity.

Materials & methods

The fishes were caught from local fresh water sources such as **ponds** & lakes.The fish was properly washed in tap water & treated with 0.2% KMNO4 &0.004% formalin solution to remove external infection of Fungi,algae etc.The normal uninfected healthy fish were selected for experiment.The fish were acclimatized to laboratory conditions for 15 days before taken for experimentation.The fish were divided into 4 equal groups consisting of 3 each & each group was transferred separately to glass aquaria of 50 Lit volume.The groupl fish were maintained as control without any treatment,thr groupie,III & IV fish were exposed to sublethal concentration(0.40mg)of copper sulphate for 15,30 &45 days.The Lc50 was estimated used Trimmed Speaman Karber methods (Hamilton et al,1977).The blood from the caudal vein of control & treated fish was collected for the counting of RBC &WBC.The RBC & WBC counting is done with the help of Wintrobe(1957) & Sood (1996) procedure.

Results & Discussion

Total Erythrocyte (RBC) count

The total RBC count observed in the present study in control & 15,30 & 45 days of treatment with copper sulphate were significant.The result indicate a significant decrease in RBC counts as compared to normal fishes.

Total Leucocyte (WBC) count

The total WBC count observed in the present study in control & 15,30 & 45 days of treatment with copper sulphate were significant.The result indicate a significant Increase in WBC counts as compared to normal fishes.

Discussion & conclusion

The fish blood has become an important tool of research for fishery biologists.It has been reported that the blood values remarkably vary in different fishes & this is considered to reflect adaptations to the varied environment condition (Ramaswamy & Reddy,1978:Moyle & Cech,1982).Changes in the RBC &WBC count are not only associated with the season & reproductive activities but also due to chemical stress (Joshi & Tandon,1977;Mahajan & Dhree

The variation in the blood parameters is due to the difference in season,sex,size,habit,habitat & the biology of the fish.The review of the literature on blood studies in fishes indicated that the data obtained from various fishes by various authors around the globe is not uniform

Reference

Al-Mohanna,M.M;Residues of some heavy metals in fishes collected from (Red sea coast) Jizan,Saudi Arabia.J.Environ.Biol,15,149-157 (1994).

Effler,S.W.,s.Litten,S.D.Field,T.Tong-Ngork,F.Hale,M.Meyer & M.Quirk:whole lake response to low level copper sulphate treatment.Water Res.,14,1489-1499 (1980).

Goel,K.A.,K.Gupta & M.L.Sharma: Haematological characteristic of Clarias batrachus under metallic stress of arsenic.Comp.Physio.Ecol.12,63-66 (1987).

Joshi,B.D.1989. Effect of dessication on some haematological values of a freshwater

catfish,H.fossilis.,Comp.Physio.Ecol.,11(2).
Moyle,P.B.& Ceeh,J.J.1982.An introduction Ichthyology.First Edition,Prentis Hall,IncEagle wood cliffs,New Jeresy,pp 396-409.
Mishra.S.& A.K. Srivstava:The acute toxic effects of copper on the blood ofteleost.Ecotoxicol.Environ.Safety4,191-194 (1980).
Wintobe,M.M.:Clinical Haema tology ,lea & Febiger USA (1957).

White family and their calm in their city home. It also depict how July, the servant shares ver and modern facilities. All that happens in this novel is because of shifting of power from te to black. July's brave venture by risking his own life gives him ability. The Smales family forced to leave their home. Thus the novel displays the subversion of power of the whites ause of the black revolution. The Smales family faces the new life and they have to adapt the v environment. The family feels a sense of interference.

is paper was an attempt to discuss the some major novels of the writer. Gordimer is nsidered as prominent voice of South African situation. Thus the novels of Nadine Gordimer filled with the themes and issues that depict the sufferings and problems of South African iety.

cited

Gordimer, Nadine. July's People. New York: Penguin Books, 1981..
My Son's Story. London: Bloomsbury, 1990.
Burger's Daughter. Harmondsworth: Penguin Books, 1979.
Abrahams, Cecil. The Tragic Life: Bessie Head and Literature in Southern Africa. New Jersey: African World Press, 1990.
Abrahams, Peter. A night of their own. New York: Knopf, 1965.
Tell freedom: memories of Africa. New York: Collier Books, 1970.
Ross, Robert. A Concise History of South Africa. Cambridge: Cambridge University Press, 1999.
Nadine Gordimer, The Pickup (London: Bloomsbury, 2001)

SANYASI : FREEDOM IN THE MIDST OF THINGS, FORMS AND PURPOSE

Assist. Prof. **Shyam M. Gedam**
Shri Shivaji Arts, Commerce and Science College, Akot

NTRODUCTION:

he play *Sanyasi*that was published in the year 1889 is the first major play of Tagore, bearing ne glimpses of his mystical attitude. Tagore regards it as an "introduction to all his future vorks" because its essence represents his-fundamental conviction of the "the joy of attaining the nfinite within the finite". Regarding its theme, Tagore asserts; "..... the great is to be found in he small, the infinite within the bounds of form, and the eternal freedom of soul in love.[2] The otal impression gathered from the play is that Tagore wants to establish his concept of umanitarian mysticism. It consists in the faith that humanity leads to divinity and salvation

oment ***Vasanti***draws his attention to a creeper trailing on the grass, seeking some tree to twine tself round. The ***Sanyasi***feels that she is twining herself round him like a creeper and wonders. 'Is it Nature herself weaving her dreams round me, clouding my senses?" Suddenly he tears the creeper but at once his heart melts with pity to see tears in the girl's eyes: "Weep not child, come o me: You seem to me like a cry of the lost world, like the song of the wandering star. You ring to my mind something, which is infinitely more than this Nature' — more than the sun and tars." He is afraid he is irresistibly drawn towards the world which he had abandoned, and runs way.

One day, while sitting upon a boulder in a mountain path, the gold of the evening reminds him f the little girl and he cries in agony: "But where is my little girl, with her dark sad eyes, big ith tears? Is she there, sitting outside her hut, watching that same star through the immense ess of the evening?" At this moment he meets a ragged girl who further reminds him of *asanti.* He holds the girl's hand in his palm, and its soft touch brings the memory of *asanti's*caressing hand. The dark and desolate night fills his heart with a pang of separation om *Vasanti.* And he gives up his vows ***of Sanyasi,*** breaks his staff and his alms-bowl and cides to achieve Infinite in time and space through endless forms: "I am free among things, d forms and purpose. The finite is the true Infinite, and love knows its truth. My girl, you are e spirit of all that is — I can never leave you." Soon a woman tells him that ***Vasanti***is dead. t the ***Sanyasi***says that 'she can never be dead'.

*nyasi*is Rabindranath's first drama in which he has painted a full-length portrait, that of the ***nyasi.*** There are a large number of dramatis personae— the ***Sanyusi,,Vasanti, wayfarers, lag..., womenfolk, students,*** but except the *Sanyasi,* all are shadows without any viduality. They are like **Shakespeare's *First Citizen, Second Citizen,*** but in **Shakespeare** y are all sharply lined whereas in Rabindranath they are an indistinguishable mass. **akespeare's** superiority in this respect is undeniable. **Dr. Sen Gupta** rightly says, "The portance of the ***Prince*** *of Denmark in the play of Hamlet is* proverbial, but all the minor aracters are sharply lined and even ***Rosencrantz*** can be distinguished from ***Guildenstern."***[3]

e ***Sanyasi***encounters a number of conflicts and through these conflicts that there is a gradual elopment of his character. First, there is a conflict in his mind between his determination to off all connections with the trivialities of the world and their allurements. At last he gains tory over the allurements and retires into a mountain-cave to realize the Infinite. Now he is he in a dark cave and merged in himself. From the roadside he notices the processions of men

chieved through the negation of, he Finite. ***Sanyasi's***joy of loneliness has been comparedto the satisfaction of mythical***Lord Shiva,*** who after eons of dream "wakes up to find Himself alone in the heart of the infinite annihilation".[5]

CONCLUSION :

Sanyasiis a simple drama, but its theme is profound— realizing the infinite in the finite and as the poet says in Reminiscences, it may be looked upon as an introduction to the whole of his future literary work, because the key thought of his whole literary output is the attainment of freedom in the midst of bondage. The play tells the storyof a hermit who lives in a dark cave all alone, merged in himself, cut off from all bonds of the world, intent on achieving the Infinite is brought back to the world by his love for a little girl, at last realizing the joy of achieving the Infinite in the finite, and not eliminating the finite. And as the ***Sanyasi***comes to the world of days and nights, time and space, both the Infinite and the finite acquire a new significance: "When love bridged the gulf between the two and the hermit and the householder met, the seeming triviality of the finite and the seeming emptiness of the Infinite alike disappeared."[5]

REFERENCES :

- Guha, P. 1930, *Thakura : The Bangali Drama,* London, Keganpaul, P. 208
- *Tagore, R, 1917,Reminis,'cences,* London, P. 237
- *The Great Sentinel', P.* 146
- lyengar, Srinivasa, K, *R.,1973Jlabifidranath Tagore : My Reminiscences,* P. 124.
- Sanyasi, P. 4
- *Ibid,* P. 238

TRAVAILS OF IDENTITY CRISIS IN THE NOVELS OF NAYANTARA SAHGAL

Mr. Waman G. Jawanjal
Asst. Professor (English)
Bar. R.D.I.K.& N.K.D. Badnera,Amravati 444 701.

According to *The Oxford English Dictionary*, identity in an individual context refers to

> The sameness of a person or thing at all times or all circumstances; the condition or fact that a person or thing is itself and not something else.[1]

Personal identity has three basic components:

> A sense of personal distinctiveness, a sense of personal continuity, and a sense of personal autonomy.[2]

Aayushi International Interdisciplinary Research Journal (AIIRJ)
Vol - III Issue-III MARCH 2016 ISSN 2349-638x Impact Factor 2.147

An Echo of Eco-Buddhism in Gary Snyder's Poetry

- D. B. Wankhade
Assistant professor of English
Shri Shivaji Arts, Commerce & Science College Akot,
Dist. Akola (M.S.) India.

Abstract-

Gary Snyder is an American poet, a philosopher, naturalist, essayists, an Environmental activist and the worshipper of cosmopolitan creatures. As a poet Snyder's poetic power is influenced by Buddhism and its Natural love. As a first scientist in the world, Lord Buddha, has propounded to balance the ecological atmosphere of Natural world. The doctrine of Buddhism has neglected the existence of Godly appearance in the entire universe. The human being is an epitome of Nature. It is composed with five essential elements as Panchatatva i. e. air, water, fire, earth and space. To restore Nature in its ancient value, Snyder peeps into Buddhism which provides peace and content of life on the level of medium path of Lord Buddha. The sense of meditation, casting off the yoke of corrupt human senses, the concept of 'All in Nothingness and Nothing in All', are the trends of Buddhism rested in dark and deep woods, in high mountains and meadows, appealed to Snyder. Far from physical and pleasure life, Gary Snyder finds a dose of tonic to the anxiety in Nature. The central philosophy of Buddhism rounds around the preservation of Primitive Nature. The same is important for existence of human life on the earth.

Keywords- Eco-Buddhism, Sanfranscsco Movement, Beat Generation etc.

Gary Sherman Snyder is an American man of letters, best known as a poet, essayist, prose writer, translator and traveler, associated with the Beat Generation and the San Francisco Renaissance movement in literature. The term San Francisco Renaissance is a global designation for a range of poetic activity centered on San Francisco which brought it to prominence as a hub of the American poetic avant-garde. However, it was a broader phenomenon encompassing visual and performing arts, philosophy, cross-cultural interests, particularly in Asian cultures, and new social sensibilities. He uses mainly common speech-patterns as the basis for his lines, though his style has been noted for its 'flexibility' and the variety of different forms his poems have taken. He does not typically use conventional meters or intentional rhyme. Love and respect for the primitive tribe, honor accorded the Earth, the escape from city and industry, the possible, contemplation, the communal, such, is the awareness and commitment behind the specific poems. Snyder's poetry addresses the life-planet identification with unusual simplicity of style and complexity of effect.

Gary Snyder is an American poet, a philosopher, naturalist, an active Environmental activist and the worshipper of cosmopolitan creatures. As an ardent lover of Wild Nature and a genius in the world of words his is a credit of winning a host of prizes and awards for expansion the poetic canvas. As a member of Beat Generation in American literature, Snyder's contribution to the entire English and Buddhist literature is unsurpassable. He has no excel in depicting the lively human lives. Beat generation is a group of litterateurs whose works explore the cultural complexities and twist in tenets in the American lives in the

Aayushi International Interdisciplinary Research Journal (AIIRJ)
Vol - III Issue-III MARCH 2016 ISSN 2349-638x Impact Factor 2.147

post Second World War period. A number of significant figures are included in Beat Generation among which the mention may be made of Herbert Huncke, Allen Ginsberg, William S. Burroughs, Lucien Carr, and Jack Kerouac, Gary Snyder and Neal Cassidy . The New York City being the literary hub and Sanfransisco Reanissanince is the movement of this core group of literary giants in the 1950's. All these literary artists were indulged in depicting the co-relationship between the American natives and the perennial power of Natural world. Gary Snyder is on the forefront of rest of all for he is not only oral speaker on the nativatism and American Wild world but has got the first hand experience as a wild man in the American coastal and wild jungles. As an artist his poetry is not giving only a docile message of antic peace but he understood Nature as his first abode, as malady to all panic on earthy life.

As a poet Snyder's poetic power is influenced by Buddhism and its Natural love. The central philosophy of Buddhism rounds around the preservation of Primitive Nature. All the teaching of Lord Buddha is rested in support of Natural Neutrality. As a first scientist in the world Lord Buddha has propounded to balance the ecological atmosphere of Natural world. The doctrine of Buddhism has neglected the existence of Godly appearance in the entire universe. The human being is an epitome of nature. It is composed with five essential elements as Panchatatva i. e. air, water, fire, earth and space. The same is important for existence of human life on the earth. Snyder accepts Nature not only as his family but as abode. The preservation of Nature in its genuine stage is the need of hour. To restore Nature in its ancient value, Snyder peeps into Buddhism which provides peace and content of life on the level of medium path of Lord Buddha. The sense of meditation, casting off the yoke of corrupt human senses, the concept of 'All in Nothingness and Nothing in All', are the trends of Buddhism rested in dark and deep woods, in high mountains and meadows, appealed to Snyder. Far from physical and pleasure life, Gary Snyder finds a dose of tonic to the human anxiety in Nature. Snyder is a firm believer of Buddhist philosophy, urged the world to keep the eternal bond of Natural love in practical life. The medium path of Buddhism and an echo Ecology in Snyder's poetry teaches to love Nature and its all creatures. As a medicine to the malady of human whimsical nature, 'Natural Neutrality' is an elixir to Snyder, to balance the Natural World.

The preaching of Lord Buddha is called as the doctrine of Buddhism. Originated in India the Buddhism has rapidly transcended the regional and geographical boundaries and spread throughout the world. As the time proceeds the original philosophy of Buddhism has melted in to the cultural variations according to the ethos and ethics of the locale. This variation leads Buddhism to split into vivid sects as Mahayana, Haryana and Zen worldwide. Though the waves of thinking and practicing of it are differed with the cultural traditions, the native hue of Buddhist philosophy of love to Nature and its Wildness, cosmopolitan compassion, peace, non-violence and altruism is not of an age but for all time to come. One of the facets of human developments, literature as an art form has not remained an untouched area from the philosophy of Buddhism. The source of literary composition was rested in 'Jatak tales' and 'Folk literature' about Buddhism. Various architecture and sculpture are also erected throughout the then Buddhism acquainted spheres which tells the various facets of facts and

Aayushi International Interdisciplinary Research Journal (AIIRJ)
Vol - III Issue-III MARCH 2016 ISSN 2349-638x Impact Factor 2.147

fiction about Buddhism. A host of literary upheaval has been taken place about Buddhism in Indian context. The renaissance of Buddhism intermingled in Sanfransisco Renaissance movement emerged in 1950's with New York City as a center to restore the Buddhist philosophy in a neo guise into literature. A new type of writer's generation with humanitarian ground appeared on the literary horizon. It is famous for Beat Generation in American literature. The beat generation tried to examine the gap between the spiritual, mental, social and ecological with the cultural counteraction. Gary Snyder is an expert in examination of human and humane on the basis of his rich fund of profound experience.

As an all time devote of Buddhism Snyder spare no moments of life aloof from Buddhism. The various aspects of his personality are absorbed in the atoms of Buddhism. He rendered the whole life in using literature as powerful tool of sprouting and spreading of Buddhism all over the globe. He travelled wildly and widely. He worked as a logger. The coastal life of American region was once a medium of his bread and butter. He is the first man of literary background of the first devoted generation absorbed in Buddhism from top to bottom. As a creative artist his mind is wounding when Snyder sees the fire on the mountain, a shelter of masses living in with the home of once own. He spent the span of more than a decade in living an acetic life suited to the Buddhist practice of salvation through simplicity. In the Buddhist monastery in Japan he abandoned his relationship with the world which is full with 'weariness, fever and fret' to quote the famous romantic poet, John Keats. The fine combination and concrete balance of Nature and its Wildness and Buddhist vision is not an overnight transition responsible to the philosophical and artistic bent of mind of Gary Snyder. It's a steady and slow strength of an inner insight and acute observation of outer glimpse of Snyder. His work, in his various roles, reflects an immersion in both Buddhist spirituality and Nature. The love for Nature, cordiality for wildness, sympathy for the billows of the killing animals, disappearance of million species and pathos in deforestation and compassion in deserted birds is highly projected in the poetry of Gary Snyder.

Snyder's work blends physical reality and precise observations of nature with inner insight received primarily through the practice of Buddhism. While Snyder has gained attention as a spokesman for the preservation of the natural world and its earth-conscious cultures, he is not simply a 'back-to-nature' poet with a facile message. Snyder has looked to the Orient and to the beliefs of American Indians for positive responses to the world, and he has tempered his studies with stints of hard physical labor as a logger and trail builder. Snyder's view of nature is neither romantic nor one-dimensional. Having spent a great deal of time hiking trails, and working as a fire for the complexity of the natural world: "life in the world is not just eating berries in the sunlight. I like to imagine a depth ecology that would go to the dark side of nature, the ball of crunched bones in a seat, the feathers in the snow, and the tales of insatiable appetite." Hence, for Snyder, in addition to being beautiful, fecund, and alive, wild nature is 'also nocturnal, anaerobic, cannibalistic, microscopic, digestive, fermentative, cooking away in the warm dark.

From the primitive to the present day, the Natural creativity is showering its blessings upon human beings. The greed for Mammon worship, lust for physical pleasure and

Aayushi International Interdisciplinary Research Journal (AIIRJ)
Vol - III Issue-III MARCH 2016 ISSN 2349-638x Impact Factor 2.147

power and craze for blind development of modern man is limitless. For the attainment of all these blind values in this 'fast food generation' world, under the guise of glow and glamour, the moral and ethics are on its devastation. Consequently, the Natural ecosystem is losing its aboriginal stage. The world is facing the numerous problems on National and International level. The environment along with its all aspects is showing its dangerous mood due to human hurt. The global warming, melting glaciers, deluge, water, air and sound pollution, deforestation, destruction of rocky mountains, drought, famine, aridity of soil and countless diseases in human body are the burning problems before the universe, today. The only panacea to all these problems lies in the real follower and execution of moral and spiritual ethics rested in Buddhism. The restoration of organic unity is only possible through Eco-Buddhism.

Gary Snyder is an American poet, a philosopher, naturalist, essayists, an Environmental activist and the worshipper of cosmopolitan creatures. As a poet Snyder's poetic power is influenced by Buddhism and its Natural love. As a first scientist in the world, Lord Buddha, has propounded to balance the ecological atmosphere of Natural world. The doctrine of Buddhism has neglected the existence of Godly appearance in the entire universe. The human being is an epitome of Nature. It is composed with five essential elements as Panchatatva i. e. air, water, fire, earth and space. To restore Nature in its ancient value, Snyder peeps into Buddhism which provides peace and content of life on the level of medium path of Lord Buddha. The sense of meditation, casting off the yoke of corrupt human senses, the concept of 'All in Nothingness and Nothing in All', are the trends of Buddhism rested in dark and deep woods, in high mountains and meadows, appealed to Snyder. Far from physical and pleasure life, Gary Snyder finds a dose of tonic to the anxiety in Nature. The central philosophy of Buddhism rounds around the preservation of Primitive Nature. The same is important for existence of human life on the earth.

Works Cited-

Primary sources-

1. Snyder, Gary. *The Gary Snyder Reader*. Washington, D.C.: Counterpoint, 1999. Print.
2. Snyder, Gary. *Axe Handles* .San Francisco: North Point, 1983. Print.
3. Snyder, Gary. *Left Out in the Rain*. San Francisco: North Point, 1988. Print.
4. Snyder, Gary. *Mountains and Rivers without End* Washington, D.C.: Counterpoint, 1996. Print.

Secondary sources-

1. Allen, Donald M., editor, *The New American Poetry, Grove*. New York, NY. 1960.
2. Almon, Bert, Gary Snyder, Boise State University Press, Boise, ID. 1979.
3. Cook, Bruce. *The Beat Generation, Scribner* (New York, NY), 1971.
4. Earth House Hold: Technical Notes & Queries for Fellow Dharma Revolutionaries.
5. Environment, December, 1996, Kenneth A. Ollif, review of A Place in Space: Ethics, Aesthetics, and Watersheds, p. 25.
6. Epoch: A Magazine of Contemporary Literature, fall, 1965.

Aayushi International Interdisciplinary Research Journal (AIIRJ)
Vol - III Issue-III MARCH 2016 ISSN 2349-638X Impact Factor 2.147

Networking & consortia in Digital Learning Environment

Madhuri Deshmukh
Librarian
Shri Shivaji College Akot

What is a Network?

A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

Two very common types of networks include:

- Local Area Network (LAN)
- Wide Area Network (WAN)

You may also see references to a Metropolitan Area Networks (MAN), a Wireless LAN (WLAN), or a Wireless WAN (WWAN).

Local Area Network

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building.

Wide Area Network

Wide Area Networks (WANs) connect networks in larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of global network.

Advantages of Computer Networking

1. Easy Communication and Speed

It is very easy to communicate through a network. People can communicate efficiently using a network with a group of people. They can enjoy the benefit of emails, instant messaging, telephony, video conferencing, chat rooms, etc.

2. Ability to Share Files, Data and Information

This is one of the major advantages of networking computers. People can find and share information and data because of networking. This is beneficial for large organizations to maintain their data in an organized manner and facilitate access for desired people

12

Rural Development through Micro Finance Institution & Government Policies

Prof. Avinash Ramkrishna Pawar
Assistant Professor,
Shri Shivaji Arts, Commerce & Science College,
Akot., Dist: Akola (M.S.)

Abstract

Rural development which is concerned with economic growth and social justice, Improvement in the living of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. The present strategy of rural development mainly focuses on poverty alleviation through micro finance and government policies and programmes they have laid emphasis on poverty alleviation generation of employment and income opportunities and provision of infrastructure and basic facilities to meet the needs of rural people.

Micro finance means providing loans on small amount to poor persons. Urban and non urban area to improve their standard of living and make availability of employment. Today there thousands of Micro finance Institutions providing financial services to an estimated 100-200 million of the world poor.

Keyword: Microfinance, Rural development, MFI's, employment,Government Policies & Programmes.

Introduction: -

Today, there is need of reeducation in poverty by various alleviation policies and programmer for better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self employed. The above goals will be achieved by various programme support being implemented created partnership, with communities, non – governmental organizations, community based organization and micro finance institution.

Micro fiancé is branch of economic development over the few decades and has become a popular development tool among policy maker, the literature on micro finance offer a diversity of findings relating to the type and level of impact of the programme. By providing opportunities for self employment and in crease woman is security autonomy, self confidence and status within the household. Various banks and institutions helps rural people to improve their economic condition and make them self dependent as well as to provide them financial aid for their business, government Bank, Co – op. bank, Regional rural bank, NABARD, SBI provide the microfinance to rural people and their businesses.

According to Huge Allen

"Finance begins with saving not loans"

Most microfinance focuses on disbursing loans. Their saving services and designed as a means of collateralizing loans and providing low cost capita. They are not designed to meet the poor's need for serving mechanism such loans are usually refers to microfinance David Hulne.

(Ref. What is wrong with microfinance – p. n. 19)

In brief historically the bankers were selective in lending to poorer sections of the society. As such one of the objectives of the nationalization of the commercial banks was to improve the access of the population, particularly the rural poor, to the institutional credit and reduce their dependence on costlier informal sources of credit.

Objectives:-

1) To provide financial help to rural people
2) To prove micro finance is useful in rural sector development.
3) Govt. alleviation policies & progaramme working properly in Indian economy.
4) To prove that the impact of micro finance is essential for emerging India.
5) To study rural people's grown up in BPL.

TONI MORRISON'S LITERARY CONTRIBUTION AS A BLACK WOMAN FICTION WRITER

Mr. Shyam M. Gedam
(Assistant Professor)
Shri Shivaji Arts, Commerce and Science College, Akot.

Introduction:

The complexity and richness of Morrison's novels, their novelistic fancy as well as their historical journey, are embedded in the context of the Black experience, more specifically the context of the Black woman's experience in America. This is not to say that Morrison can be read only as a "Black writer." Her perspective is rooted in her experience and in her culture. Morrison belongs to a feminist tradition, a Black tradition, and a humanist tradition. Toni Morrison has secured her place among the Black women writers who now comprise an American genre in themselves, such writers as Zora Hurston, Gwendolyn Brooks, Ntozake Shange, and Gloria Naylor. Morrison's literary roots also go far back into ancient African mythology. Morrison's work pulls from many cultures and genres, Black and Africans as well as European and American. Many reminiscences and flashes of memory have been triggered by her books-not only through their language and character and vibrancy, but also through Morrison's own life conditions and her urgency of storytelling.

Education and Career:

After graduating from Howard University with bachelor's degree in 1953, Morison earned a master's degree in English from Cornell University in 1955. She began working as an editor for a textbook subsidiary of Random House in Syracuse, New York, in 1966 and a few years later obtained an editorial position at Random House in New York City. She was instrumental in publishing the autobiographies of well known African-American authors. Morrison left Random House in 1987 to focus on teaching and writing. She has taught at such institutions as Yale University, Bard College, and Princeton University.

Women of Visionary Force and Talent:

Considered one of the foremost figures in contemporary American fiction, Morrison has won international acclaim for works in which she examines the role of race in American society. Using unconventional narrative structures, poetic language, myth and folklore, Morrison addresses such issues as black victimization, the emotional and social effects of racial and sexual oppression, and the difficulties African-Americans face in trying to achieve a sense of identity in a society dominated by white culture values. In awarding Morrison the Nobel Prize for Literature, the Swedish Academy praised her giving "life to an essential aspect of American reality" in novels "characterized by visionary force and poetic import."

Toni Morrison and Her Fiction:

The Bluest Eye focuses on Pecola Breedlove, an eleven year-old black girl who believes she is ugly and longs for blue eyes. Her fixation turns to insanity, however, after she is raped by her father and subsequently gives birth to a premature baby who later dies. Pecola eventually withdraws into a world of fantasy, believing that no one has eyes as blue as hers. In this work Morrison addresses the conflicts between black identity and white cultural values, the social repercussions of marginalizing impoverished members of American society, and the psychological and emotional effects of victimization.

Song of Solomon, which won the National Book Critics Circle Award in 1977, chronicles Milkman Dead's search for self-identity. In addition to praising Morrison's portrayal of Milkman's spiritual transformation, critics lauded her blending of fantasy and reality and her adept use of myths and folktales. *Song of Solomon* was the first Morrison's works to become a best seller and is generally considered to be the work which established her as a major American writer.

Set on the isolated West Indian island of Isle de Chevaliers, *Tar Baby* focuses on the relationship between Jadine and Son. *Tar Baby* as some of the critics found is an examination of the conflicts that can arise when one attempts to deny one's past.

Set in a small town in the years following the American Civil War, *Beloved* explores the hardships endured by a former slave woman, Sethe, during the Reconstruction Era. Mistakenly believing that she will be taken back to slavery, Sethe murders her infant daughter, Beloved, to spare the girl a life in bondage. While some critics have contended that Morrison's depictions of violence and humiliation in *Beloved* are melodramatic, most regard her rendition of slavery and its psychological manifestations as among the most affecting in contemporary American literature.

Morrison's sixth novel *Jazz* published in 1992 chronicles the tempestuous relationship between Joe and Violet Trace, a black couple from Virginia who move to Harlem in 1906. Michael Dorris has stated that *Jazz* is "a novel about change and continuity, about immigration: the belongingness you leave behind and the tied-together suitcase you carry under your arm. It's about coping with arrival in a destination that doesn't let you stay the same person."

Paradise deals with the story of all-black town of Ruby and the neighboring community of women who occupy the convent located just outside the Oklahoma. The more acute sense of black oppression in white America can be traced in this novel. *Paradise* becomes a saga of suffering of Blacks' physical and psychic wounds. In *love* Toni Morrison explores the themes of love and betrayal and the struggle these conflicting forces create within the individual. *A Mercy* is mainly about theme of slavery. Major characters including Florence, Lina are slaves. *Home*, Toni Morrison's tenth novel is about the painful experiences of the people, who are affected because of war between Korea and the United States, medical

28

शास्त्रीय संगीत आणि लोकसंगीत

प्रा. संतोष ना. वावगे
श्री. शिवाजी महाविद्यालय, आकोट

लोकसंगीत म्हणजे लोकांनी गायलेले, लोकांनीच निर्मिलेले, लोकांसाठीचे संगीत. हे संगीत सामान्यांना समजते, गाता येते व एखादी घटना (लग्न, जावळ, डोहाळजेवण, वाढदिवस ते अगदी मृत्यू) त्यामुळे साजरी करता येते. यात उच्च कोटीचे गायन अथवा काव्य अभिप्रेत नसते. रंजन हे लोकसंगीताचे केंद्रीय लक्षण नसते. लोकगीतांचे विषय हे दैनंदिन जीवनातील लहान–मोठया घटनांवर आधारित असतात. या काव्यात कल्पनाविलास नसतो. काव्याचे विषय वास्तवाशी प्रामाणिक असतात. यात कवी व संगीतकार एकच असतो. हृदयात दाटून आलेले भाव, दडपलेल्या वेदना, सलणारी दु:खे जेंव्हा स्वाभाविक प्रतिभावेगाने शब्दरुप लेवून व स्वरांचे साधेसुधे नैसर्गिक कोंदण लेवून बाहेर पडते, तेंव्हा ते लोकगीत बनते. श्रोते आहेत किंवा नाहीत याची फिकीर लोकगीत गाणाऱ्याला नसते. स्वत:चे ताणतणाव हलके करण्यासाठी तो जमेल तसे गात असतो. याचे जिवंत उदाहरण म्हणजे जात्यावरील ओव्या. आता पुढील ओव्या बघा.

बया बया म्हणू किती,
बया साखरेचं पोतं
येता जाताना लुटलं,
नाही होईना गं रितं

या ओवीत बयेच्या (आईच्या) प्रेमाला साखरेच्या पोत्याची उपमा दिली आहे. साखरेचे पोते केव्हा ना केव्हा रिकामे होईल पण आईचे प्रेम कितीही लुटा, संपतच नाही.

पिता माझा वड,
बया माझी करवंद
काशीला ग जाते,
वाट दोन्ही झाडांच्या मधून

वरील ओवीत वडिलांना विशाल वटवृक्षाची तर आईला करवंदाच्या झाडाची सार्थ उपमा दिली आहे. 'ओवीला जोडाक्षरे माहित नाहीत. ह्रस्व–दीर्घाची कसरत नाही. विरामचिन्हे नाहीत. ती सर्वांहून मुक्त. म्हणून निर्भर, लवचिक असा गोडवा तिच्यामध्ये असतो.' असे 'मालन–गाथा' या पुस्तकात प्रख्यात कवयित्री इंदिरा संत म्हणतात.

लोकसंगीत लिखित स्वरुपात नाही व ते तसे (लिखित स्वरुपात) एका पिढीकडून दुसऱ्या पिढीकडे सोपविले जात नाही. ते मौखिक परंपरेने प्रवाहित होत असते.

लोकसंगीताची लक्षणे विशद करतांना श्री श्रीरंग संगोराम लिहितात, 'अनामिक कर्ता, मौखिक परंपरा व शिष्ट समाजाच्या संपर्कापासून दूर असणारी ग्रामीण समाजातील निर्मिती ही लोकगीत व लोकसंगीताची लक्षणे बहुमताने मान्य करण्यात आली आहेत. (नादब्रम्ह, जुलै ०२)

लोकगीत यात 'लोक' शब्दाला फार महत्व आहे. लोकगीते ही जास्त प्रमाणात समुहगीतेच असतात. आदिवासी भागात नाचाबरोबर गायली जाणारी गीते ही समुहगीतेच असतात.

लोकगीताचा आणखी एक पैलू उलगडवून दाखवितांना डॉ. सविता जाजोदिया म्हणतात, 'लोकगीत कधीही जुने नसते की नवे नसते. ते रानातील वृक्षासारखे असते. भूतकाळाच्या जमिनीत त्याची पाळेमुळे खोलवर रुजलेली असतात, पण त्याला सतत नवी पालवी व फुले येत असतात.' ('छंद माझा आगळा'– संपादिका : डॉ. सरोजिनी बाबर)

लोकगीतांना विशिष्ठ संप्रदाय नसतो. याची विशिष्ठ आविष्कार पध्दती विकसित केली जात नाही. गीत बनविणारा तसेच म्हणणारा प्रसिध्दी पराडमुख व बेफिकीर असतो. यात चढाओढीचा अभाव असतो. भारतीय संस्कृती व लोकसंगीताची

IJRBAT, Vol. IV, Issue (3), Sept - 2016 ISSN 2347 – 517X

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

ULTRASONIC STUDIES OF MOLECULAR INTERACTIONS OF SOME PHENOTHIAZINES IN AQUEOUS MEDIUM AT 308K

Usha Wasnik[1] Ravi Jumle[2] and P.R. Rajput[3]

[1]Department of Chemistry, Arts Science and Commerce College, Chikhaldara, (M.S.) 444807 India.
[2]Department of Chemistry , Shivaji Science College, Akot, (M.S.) India
[3]Department of Chemistry, VBMV, Amravati, (M.S.) India
us.wasnik@gmail.com

Abstract:
Ultrasonic velocity, density and viscosity have been measured experimentally in aqueous medium of Prochlorperazine maleate, Chlorpromazine hydrochloride and Tri fluoperazine dihydrochloride at 308 K over the entire composition range. The useful acoustic parameters namely apparent molar compressibility (ϕ_K), apparent molar volume (ϕ_v), adiabatic compressibility (β_s), specific acoustic impendence (Z), intermolecular free length (L_f) have been evaluated. From these parameters intermolecular interactions occurring in these solutions among the aqueous solutions have been discussed.

Keywords: Phenothiazines, ultrasonic, compressibility, behavior.

Introduction:

Ultrasonic waves, in recent years, have acquired the status of and important probe for the structure and properties of matter in basic science. Ultrasonic techniques are best suited for physicochemical studies of systems. Some of the phenomenon analyzed in recent past, are the acoustic attenuation due to phenon-phenon interaction, the nuclear spin and electron spin interaction, with the acoustic waves and phenon – electron magnetic field interaction. In the field technology, the waves are being used for electron of flaws, testing of materials, mechanical cleaning of surface etc, In medicinal science too, the waves are being used to detect bone fractures, cancer tumors, fetal conditions and in physiotherapy, bloodless surgery, cardiology, gynecology etc. Present day applications of ultrasonic are emerging in the field of forensic sciences, space research and in wars. Solute-solvent interaction is of current interest in all branches of chemistry. In various theories of liquid state, intermolecular interaction is expressed as a potential. Ultrasonic waves provide valuable information about the molecular interaction in pure liquids[1], aqueous solutions[2], liquid mixtures[3] and also provide valuable information about the structure of solids [4].

The study of molecular interaction in liquids provides valuable information regarding internal structure, molecular association, complex formation, internal pressure etc. The various techniques available to study them are nuclear magnetic resonance, microwave, ultraviolet and infrared spectroscopy, neutron and X-ray scattering and ultrasonic investigation. Ultrasonic technique reveals very weak intermolecular interactions due to its useful wave length range. Moreover, ultrasonic parameters are directly related to a large number of thermodynamic parameters. Since various molecular theories of liquid state are based on thermodynamic consideration, ultrasonic absorption study and ultrasonic velocity determination provide means to study them.

Phenothiazines belongs to a class of heterocyclic compounds characterized by tricyclic aromatic ring with sulphur and nitrogen atoms and substituent in 2-and 10 - or -3- and 7- positions. Phenothiazine derivatives substituted in 2-and 10-positions[5] are commonly used as psychotropic, anticholinergic and antihistaminic drugs.

Phenothiazines are employed in pre-anesthetic medication and are a useful muscle relaxant in the treatment of tetanus. Phenothiazines are also used in veterinary therapeutics as antiparasitic slow release tablets for the treatment of animal farcioliasis, respiratory and digestive strongylosis and Cestodiasis[6].

Experimental:

Solvents methanol, dioxane and dimethyl formamide used in the present work were of AR grade and were purified and dried by the usual procedure. Densities, viscosities and ultrasonic velocities were measured at 303 K over a wide range of composition. Densities were determined by using bicapillarypyknometer. The viscosities were measured by precalibrated Ostwald type viscometer with an accuracy of about ± 0.1K. Ultrasonic velocity measurements were made by using an ultrasonic interferometer (Mittal Enterprises, New Delhi) at a frequency of 2MHz with a tolerance of ± 0.005%. All the measurements were carried out at 303 K.

Theory:

Acoustic parameters such as apparent molar compressibility (ϕ_k), apparent molar volume (ϕ_v), adiabatic compressibility (β_s), specific acoustic impendence (Z), intermolecular free length (L_f), Limiting apparent molar volume (ϕ^0_v), Limiting apparent molar compressibility (ϕ^0_k)were determined using following relations.

Ultrasonic velocity	$u = \lambda \upsilon$ ----------	1
Adiabatic compressibility	$\beta_s = 1/ u^2_s \rho_s$ ----------	2
Apparent molar volume	$\phi_v = 10^3(\rho_0-\rho_s)/m-\rho_0 \rho_s + M/\rho_0$ --------	3
Apparent molar compressibility	$\phi_k = 10^3(\rho_0\beta_s-\rho_s\beta_0)/m-\rho_s \rho_0 + \beta_s M/\rho_s$ ----	4
Intermolecular free length	$L_f = K (\beta_s)^{1/2}$ ----------	5
Specific acoustic impendence	$Z = \rho.u$ ----------	6
Limiting apparent molar volume	$\phi_v = \phi^0_v + S_v C^{1/2}$ ----------	7
Limiting apparent molar compressibility	$\phi_k = \phi^0_k + S_k^{1/2}$ ----------	8

Table-1. Density, Ultrasonic Velocity and related Parameters of some phenothiazines in aqueous medium at 308K.

System	Conc. mol. dm^{-3}	Density ρs Kgm^{-3}	Ultrasonic Velocity(u) m/s	β_s x10^{-10} Pa^{-1}	Φv x10^{-5} m^3mol^{-1}	Φk x10^{-14} m^3mol^{-1} Pa^{-1}	L_f x10^{-11} (m)	Z x10^5 Kg m^{-2} sec^{-1}	Relative association R_A X10^{-3}
PCP	0.02	992.53	1447.5	4.8086	68.6781	252.3160	4.5973	14.3668	1014.1777
	0.04	992.86	1449.1	4.7964	64.0197	137.2820	4.5914	14.3875	1014.1414
	0.06	993.09	1452.0	4.7762	62.6288	97.5682	4.5817	14.4196	1013.7005
	0.08	993.32	1453.8	4.7632	61.9265	78.6137	4.5755	14.4408	1013.5166
	0.1	993.54	1456.2	4.7465	61.5103	66.8052	4.5675	14.4679	1013.1839
CPZ	0.02	999.13	1517.0	4.3491	9.89	-7.5032	4.1917	15.1568	1005.08
	0.04	999.36	1517.1	4.3476	22.1	3.3286	4.3713	15.1612	1005.29
	0.06	999.56	1517.4	4.3450	26.3	6.7828	4.3700	15.1673	1005.43
	0.08	999.84	1518.2	4.3392	28.2	8.0472	4.3671	15.1795	1005.53
	0.1	1000.11	1518.9	4.3340	29.4	8.8654	4.3645	15.1906	1005.65
TFP	0.02	997.98	1531.3	4.2732	28.2304	-37.9341	4.1543	15.2820	1000.79
	0.04	998.02	1533.0	4.2636	38.0825	-11.1873	4.1496	15.2996	1000.46
	0.06	998.64	1538.7	4.2294	40.3674	-6.9366	4.1329	15.3660	999.848
	0.08	998.89	1540.0	4.2212	41.9771	-1.3182	4.1289	15.3829	999.817
	0.1	999.12	1541.6	4.2115	42.9592	1.8835	4.1242	15.4024	999.701

Result and discussion:

Table 1 shows that density (ρ), ultrasonic velocity (u) and viscosity (η) increases with increase in concentration for all three systems. The increase in ultrasonic velocity is due to decrease in intermolecular free length (L_f) as shown in table. This suggests that there is a strong interaction between chlorpromazine and solvent molecule. Adiabatic compressibility (β_s) is a measure of intermolecular association or repulsion calculated from the measured ultrasonic velocity (u) and density (ρ). Adiabatic compressibility is found to decrease with increase in concentration[7]. Since adiabatic compressibility is inversely related to the product of density and ultrasonic velocity based on this the compressibility is expected to decrease which has observed in the present case. When the sound waves travels through the solution, certain part of it travels through the medium and rest gets reflected by the ion[8] i.e. restriction for flow of sound velocity by the ions. The character that determines the restriction movement of sound waves is known as acoustic impendence (Z). It has been found that acoustic impendence increases with increase in concentration. The apparent molar compressibility (ϕ_k) explains the solute-solvent and solute- solute interactions in solution and was calculated by using the equation no.4. The apparent molar volume (ϕ_v) is defined as the change in volume of solution for the added one mole of a particular component at constant temperature and pressure. It is thermodynamic property which helps in elucidating solvation behavior of electrolyte in solution. Apparent molar volume was evaluated from the density of solution and solvent.

References:

1. **RP Verma and S Kumar,** Ind J Pure and apply Phy 2000;312:59.
2. **S Kamila, S jena and B Bihari.** J ChemThermodyn 2005;37:820.
3. **R Abraham, M Abdulkhadar and CV Asokan.** J ChemThermodyn 2001;32:1.
4. **S Mukharjee, C Basu and US Ghosh.** J Non-Cryst Solids.1992;144:159.

5. **H. Puzanowska - Tarasiewicz,** "Analytical applications of phenothiazines" in Bioactive Molecules. Vol. IV, "Phenothiazines and 1, 4-Benzothiazines". R.R. Gupta, (ed); Chapter XVI, Elsevier, Amsterdam, 862 (1988).

6. **Vincent and A.E Louis, Fr. Demande, 1979,** P. 19, Chem. Abstr, 94, 175827 (1981).

7. **Owen B.B and Kronick P K, J Phys Chem,1961;** 65:81.

8. **Sumathi T & Uma Maheshwari,** Indian J Pure and Applied phys., 2009; 47:782.Osmania University 2012.

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

ANTIMICROBIAL POTENTIAL OF SOME MEDICINAL PLANTS AGAINST SELECTED HUMAN PATHOGENS

Ravindrakumar Dhande
Department of Botany, Shri Shivaji Arts, Commerce and Science College, Akot. Dist. Akola (M.S.) India
ravi_dhande2005@yahoo.co.in

Abstract
The present study aimed at evaluating the *Invitro* antimicrobial potential of methanolic extracts of some ethno-medicinal plants viz., *Boerhaavia diffusa, Eclipta alba, Achyranthes aspera, Lawsonia inermis, Andrographis paniculata, Abutilon indicum and Withania somnifera* against selected human bacterial pathogens such as *E. coli, Salmonella typhi, Staphylococcus aureus, Enterococcus sp., Bacillus subtilis* and *Helicobacter pylori.*
The maximum inhibitory activity against *B. subtilis* and *Enterococcus Sp.* was shown by *Boerhaavia diffusa* whereas, *Withania somnifera* showed maximum inhibitory activity against *E. coli* and *S. typhi. Lawsonia inermis* showed maximum inhibitory activity against *S. aureus.* The maximum inhibitory activity against *H. pylori* of 7 mm zone of inhibition was shown by *Achyranthes aspera.* The plants such as *Eclipta alba, Andrographis paniculata* and *Withania somnifera* did not show inhibitory potential against *H. pylori.*
Key words: Antimicrobial potential, medicinal plants, human pathogen

Introduction:

There are the vast majority of microbes responsible for causing severe problems and diseases in the human. Some of these microorganisms are as *E. coli, Salmonella typhi, Staphylococcus aureus, Enterococcus sp., Bacillus subtilis* and *Helicobacter pylori. E. coli* is a gram-negative, facultative anaerobic, rod-shaped, coliform bacterium commonly found in the lower intestine of warm blooded organisms including Human being (Singleton P., 1999). Most *E. coli* strains are harmless, but some serotypes can cause serious food poisoning in their hosts (Vogt RL, Dippold L., 2005). Although, *Bacillus subtilis* is considered to be non-pathogenic but occasionally cause fatal disease like septicemia (Rabon Cox, 1959). *Enterococci* are part of the normal intestinal flora of humans and animals. *Enterococcus* species are gram positive and facultative anaerobic organisms (de Perio MA. et.al. 2006). They have been long recognized as important pathogens and only a few cause clinical infections in humans. *Enterococcus faecalis* and *Enterococcus faecium* are the most prevalent species cultured from humans, accounting for more than 90% of clinical isolates (Courvalin P., 2006). *S. aureus* is a gram-positive, round-shaped bacterium frequently found in the nose, respiratory tract, and on the skin. It is positive for catalase and nitrate reduction and is a facultative anaerobe (Masalha M; et al. 2001). It is a common cause of skin infections such as a skin abscess, respiratory infections such as sinusitis, and food poisoning. Pathogenic strains often promote infections by producing virulence factors such as potent protein toxins, and the expression of cell-surface proteins that bind and inactivate antibodies. The emergence of antibiotic-resistant strains of *S. aureus* is a worldwide problem in clinical medicine and there is no approved vaccine for it. The bacterial strain, *Salmonella typhi*, is rod-shape, flagellated, aerobic and gram-negative bacterium responsible for causing typhoid disease in human (Murray PR. et.al. 2009). The bacterium *Helicobacter pylori* is a gram-negative, microaerophilic bacterium found usually in the stomach. It is associated with chronic gastritis and gastric ulcers. It is also linked to the development of duodenal ulcers and stomach cancer. However, over 80% of individuals infected with the bacterium are asymptomatic, and it may play an important role in the natural stomach ecology (Blaser MJ, 2006).

To cure the problems caused by infection of such microbes, the current therapy is based on use of synthetic drugs and antibiotics. Although the synthetic drugs have been used in emergency, they possess many side effects. Therefore, it is necessary to introduce an alternative remedial regimen.

In the traditional system of India, various indigenous plants are used in the diagnosis, prevention and cure of physical and mental problems of the people (Manjunath 1990). The drugs of herbal origin are used as a medicine in Unani and Ayurveda since ancient times. Medicinal plants are the source of important therapeutic aid for alleviating human and animal ailments. The whole plants or its parts like leaves, stem, bark, root, flower, fruits and seed are used as a source of medicine by the folk healers and local community. Large quantity of this raw drug traded in the market as a raw material for herbal drugs industries. Now a day, again the people have started using of plants and plant based drugs in order to

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

STUDIES ON FUNGI ASSOCIATED WITH SPOILAGE OF FRUITS, GRAINS AND VEGETABLES OF SELECTED PLANTS

R.S.Dhande[1], S.N.Patole[2] and V.B.Bhagat[3]
1&2. Department of Botany, Shri Shivaji Arts, Commerce and Science College, Akot (M.S.)
3. Department of Zoology, Shri Shivaji Arts, Commerce and Science College, Akot (M.S.)
ravi_dhande2005@yahoo.co.in

Abstract:
A study was carried out to find out fungi associated with the spoilage of different fruits, grains and vegetables during their post harvest period. A total of twelve strains of fungi were isolated and identified as *Botrytis cinerea, Uncinula Spp., Colletotricum Spp., Fusarium Spp., Aspergillus niger, Aspergillus flavus, Rhizopus Spp., Diplodia Spp., Tilletia Spp., Phytophthora infestans, Alternaria alternata* and *S. cerevisiae.* These fungi are responsible for causing rottening of the fruits and gross loss of productivity.
Key words: Fungi, Spoilage, Fruits, Grains, Vegetables

Introduction

Fruits, grains and vegetables are of great economic importance. These are the dietary sources of carbohydrates, proteins, vitamins and minerals. Some of the fruits also have medicinal importance. Wide range of microorganisms affects the growth and quality of the agricultural products. Spoilage can also be referred to as rot or decay that leads to deterioration in quality. Spoilt fruits are characterized by excess softening, mycelial growth, unpleasant odour and shrinkage (Franzier and Westhoff, 1991). The occurrence of spoilage in fruits by microorganisms depends on the types of organisms present and whether the fruit under its existing condition of storage can support the growth of any or all of them. Only certain species out of all the organisms present in a fruit will be able to thrive well and spoil it. Spoilage by microorganisms may be influenced by some qualities such as water content, pH value, temperature, texture and nutrient composition of the fruit (Lloyd, 1993). In comparison to other microbes, Fungi singly cause more plant diseases than any other group of plant pest with over 8,000 species shown to cause disease. In this paper, the different fruits of various plants, grains and vegetables infected by pathogenic fungi are studied and the causal organisms are identified

Materials and Method

The infected ripe fruits, grains and vegetables such as Strawberry, Pomegranate, Grapes, Banana, Apple, Watermelon, Papaya, Custard apple, Beet root, Wheat grains, Potato tubers, Sorghum grains, Tomato fruit and Onion bulb were collected from different fruit stores, grain stores and vegetable stores of Akot, India. The fruits were collected into a sterile polythene bag and brought to the laboratory for the study.

Potato Dextrose Agar (PDA) (Downes F. P. and Ito K., (Eds.), 2001) used in this study was prepared for plating. Bacterial contamination was inhibited by aseptically adding 2 ml of streptomycin antibiotic to 1000 ml of the sterile medium prior to pouring into sterile petriplates. Surface sterilization of the infected portion of the fruits was done using 70% alcohol, the fruits were then rinsed with sterile distilled water. The infected grains were also surface sterilized. Small portions of the infected parts of the fruits and grains were aseptically inoculated on sterilized PDA and incubated at 26±1^{0}C for 72 to 96 hours. The colonies on the plates were observed and subcultured until pure cultures of isolates were obtained. The pure cultures were maintained on agar slants which were kept as stock cultures under refrigeration (4^{0}C) for subsequent use. The isolates were characterized based on their colonial and cellular morphology. The colonial morphology of the isolates was observed and characteristics such as color of mycelia and spores, shape and surface texture were noted. The isolates were then observed under light microscope for their cellular morphology (hyphal nature and disposition of mature fruiting structures) by using wet mounting method. The fungal isolates were compared with those of fungi in a compendium of pathogenic fungus by Barnnet and Hunter (1972).

Results and Discussion

A total of twelve strains of fungi were isolated and identified during the study as *Botrytis cinerea, Uncinula necator, Colletotricum musae, Fusarium oxysporum, Aspergillus niger, Aspergillus flavus, Rhizopus stolonifer, Diplodia natalensis, Tilletia indica, Phytophthora infestans, Alternaria alternata* and *S. cerevisiae.* These fungi are responsible for causing

IF. 4.427

INTERNATIONAL JOURNAL OF SCIENTIFIC PROGRESS AND RESEARCH (IJSPR) ISSN: 2349-4689
Issue 96, Volume 34, Number 02, 2017

Isolation of Alkalophilic Bacteria from Lonar Crater and its Insecticidal Protein Producing Ability

Yogini S. Dhote[1], Dr. Moharil M. P.[2], Dr. Dhande R. S.[3]

[1]M.Sc. scholar, from Biotechnology Centre ,Department of Botany Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola,

[2]Assistant Professor, Biotechnology Centre, Department of Agricultural Botany, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

[3]Assistant Professor, Department of Botany, Shri Shivaji Arts ,Commerce & Science College Akot. Dist Akola

Abstract - Alkalophilic bacteria were isolated from water and sediment samples collected in rainy season,June 2010 from alkaline Lonar lake.India having pH -10.5 .The total viable count (TVC) were found to be in the range of (10^3 to 10^4 cfu ml^{-1}) and (10^3 to 10^5 cfu g^{-1}) in water and sediment sample respectively. Five different bacterial strain were isolated using different enrichment media. These five isolated bacterial strain was furture studied for Morphological characterization on the basis of the different characters such as colony colour, colony shape, colony surface, colony elevation and colony edge.These five isolates were furthur subjected to biochemical characterization and 16SRNA sequencing. Biochemical characterization of these isolates showed that out of five isolates four isolates were gram positive and one was gram negative when observed under light microscopy. The taxonomic identification of the all bacterial isolates by 16S rRNA sequencing showed that four isolates were from Bacillus species and one isolate from Halomonas species. The BLAST results of these isolates are Bacillus thurengeinsis serovar finitimus, Bacillus licheniformis, Bacillus cereus, Halomonas campisalis, Bacillus pseudofirmus .These five alkalophilic bacteria were furthur studied for isolation and characterization of enzyme/protein having insecticidal potential.

Keywords - TVC, alkalophilic bacteria.

I. INTRODUCTION

Alkalophiles, bacteria living in alkaline environment, have been have been flourishing everywhere on our planet. However, only a few scientists, have shown interests in this microbial domain and its application in various agricultural fields. They can thrive in neutral as well as alkaline environments because they can change their surrounding from neutral to alkaline pH value by producing basic compounds or by symbiosis. However, alkalophiles were thought to require only higher pH values for their growth. The term "Alkalophiles" is applied only to microorganism that grow optimally or very well at pH values above 9.0 ,but cannot grow or grow slowly at neutral pH values of 6.5 -7.0 (Horikoshi,1992).

Alkalophilic microorganism are widely distributed throughout the world. There are three largest lake in the world where alkalophiles are found. Among them, Lonar crater in Maharashtra is the third largest and meteriotic crater having alkaline pH. (Siddiqui2008).

Takami et al (1997) isolated thousands of microbes from mud samples collected from the Mariana Trench. The microbial flora found at a depth of 10,897m was composed of actinomycetes,fungi, non exteromophilic bacteria and various exteromophilic bacteria such as alkaliphiles thermophiles and psychrophilies.

Lonar lake ecosystem has reported to contain rich bacterial diversity. The microorganism, alkalophilic bacteria, in this environment would therefore be unique.

Lonar crater is a classic beautiful bowl shaped depression in the basaltic flows of the Deccan traps in Southern India believed to be formed as a result of high volecity impact of huge meteror of extra terrestrial origin. Rightly rated as the third largest and oldest meterotic crater is about 52000 year old crater size 1800-2000m in diameter, height is 20-30m,depth 150m and placid water spread areas 77.69 ha. The water of this lake are characterised by very high alkaline pH of 8 to 10.5.(Gopalkrishna, 2000)

Lonar Lake is rich in microbial diversity. Microbial ecology of Lonar Lake have been earlier studied by various scientific groups. Lonar Lake represent most stable naturally occurring alkaline environment on earth. This environments typically contain high concentration of sodium carbonate or complexes of salt. (Jhingram and Rao,1912).

Joshi et al (2006) have found that, microorganisms like Arthorospira, Algae, Spirulina, Clostridium, Chlorella and various type of bacteria are abundant in water of this lake. Spirulina sp. growing in high alkaline area has been studied for various microbiological interaction and categories as alkalophiles. Despite the temperature optima for these bacteria is in mesophilic range but some isolate show thermotolent character. Nitrogen fixing microorganism have also found in this lake which are all halophilic in nature and grow at pH 11.

Impact factor 4.935

IJR BAT, Special Issue (2), Vol-V, July 2017 ISSN No. 2347-517X (Online)
INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

Isolation and Characterisation of Protease Inhibitors From Alkalophilic Bacteria Isolated From Lonar Crater and Its Insecticidal Protein Producing Ability

Yogini S. Dhote[1] and R.S Dhande[2]

[1]Biotechnology Centre Department of Botany Dr Panjabrao Deshmukh Krsihi Vidyapeeth Akola-
[2]Department of Botany Shri Shivaji Arts Commerce and Science college .Akot .Dist Akola
e-mail: yoginidhote@gmail.com

ABSTRACT

Proteinase inhibitors (PIs) are anti-metabolic proteins which interfere with digestive process of insects. It is one of the important defence strategies existing in plants against predators. Five different isolates of alkalophilic bacteria were obtained from water and sludge sample of Lonar lake, in Buldhana district of Maharashtra. These isolates were identified as Cholesterol oxidase, Protease inhibitor, Amylase inhibitor. Alkaline Protease, Chitinase by 16S rDNA sequencing. In this paper the characters of protease inhibitor produced by the five most potent isolates were studied for its insecticidal potential. Among the five isolates, four isolates (i.e A, B, D and E) showed the activity of protease inhibitor. Out of that, isolate E i.e *Bacillus pseudofirmus* showed highest (12.2 U mg protein^{-1}) protease inhibitory activity. All the enzyme exhibited maximum activity in the neutral to alkaline range of pH from (8 to 10) with wide stability range from pH 9 to 10.the temperature optima for all the enzymes were slightly highest between 30 to 50°C with a stability range from 30 to 40°C. The enzyme PI retained above 95% thermal stability after incubation for 90 min.

Keywords ;- Protease inhibitor PI , alkalophilic bacteria , Lonar crater

I. INTRODUCTION

Protease inhibitors are anti-metabolic proteins which interfere with the defensive strategies existing in plants against predators. The use of plants derived PI genes for developing insect resistant transgenic plants expressing PIs have been created and these plants have shown enhanced resistance against insect pests. Protease inhibitor (PI) was obtained from variety of sources (virus, bacteria, fungi, plants and insect) have toxicity towards insects. Some of these insecticidal protease inhibitor evolved as herbivore resistance factors and play roles in antibiosis mechanism of plant against insect development or digestion. The sites of protease toxic inhibitor activity range from insect midgut to the homocoel (body cavity) to the cuticle **(Harrison and Bonning 2010).** The defensive capacities of plants protease inhibitors rely on inhibition of protease present in insect guts or secreted by microorganism causing reduction in the availability of amino acids necessary for their growth and development. **(De Leo et al 2002).**

Exogeneous chemical means to counteract Lepidopteran attack have become less feasible, mainly due to the development of pesticides resistance in insect and inherited possible environmental hazard. Chemical insecticides are widely used in agricultural pest control, but they impose serious negative effect on environment and human health. As a consequences alternative method such as biological control using entomopathogenic bacteria and their enzymes/ proteins having insecticidal potential needs to be explore further as ecofriendly pest control measure. Protein with insecticidal action need to be ingested by the insect to be active, since the insect's cuticle is impermeable to hydrophlic macrolecules such as proteins. As a natural consequence of this, the mechanism of action of most insecticidal proteins involves a step in which the protein interacts with components of the digestive tract of the insect.

Importance protease as inhibitor in insect control is well known and probably this is the most studied insecticidal gene apart from insecticidal *Bt* genes. Schuler et al., 1998 showed that, PI as potent toxic protein against predators and pathogens. PIs are protein that occurs naturally in wide range of plants as a part their defense system and provides immunity to plant against insect and pathogen

Lonar lake ecosystem has reported to contain rich bacterial diversity. The microorganism, alkalophilic bacteria, in this environment would therefore be unique. Lonar crater is a classic beautiful bowl shaped depression in the basaltic flows of the Deccan traps in Southern India believed to be formed as a result of high velocity impact of huge meteror of extra terrestrial origin. It is situated in Buldhana district of Maharashtra. Rightly rated as the third largest and oldest meterotic crater is about 52000 year old crater size 1800-2000m in diameter, height is 20-30m,depth 150m and placid water spread areas 77.69 ha.. The water of this lake are characterised by very high alkaline pH of 8 to 10.5. **(Gopalkrishna, 2000)**

I.IRBAT, Special Issue (2), Vol-V, July 2017 ISSN No. 2347-517X (Online)

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE & TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

Study of Metal-Ligand and Proton Ligand Stability Constants of Ba(Ii), Sr(Ii) Ni(Ii) & Cu(Ii) With A, B Unsaturated Ketimines by Ph Metrically

Prof. S. P. Wagh and G. B. Andhale
Department of Chemistry, Shri Shivaji Art's, Commerce & Science College, Akot, Dist. Akola
E-mail: ganeshandhale005@gmail.com

Abstract:
Complex formation between Ba(II), Sr(II), Ni(II) and Cu(II) metal ions with α, β Unsaturated Ketimines have been investigated by employing Bjerrum-Calvin pH metric techniques at 35 °C in 70 % dioxane-water medium. The data obtained can be used for the determination of proton-ligand forma- tion numbers (η_A). From the formation curve, proton-ligand stability constant pK values have been evaluated using half integral method. The metal-ligand formation numbers (η) are estimated by using Irving- Rossotti's expression. Metal-ligand stability constants for 1:1 and 1:2 complexes have been calculated which are designated by letters log K1 and log K2, respectively.
KEYWORDS: Stability constant, ketimines etc.

INTRODUCTION:

Stability constant is well known tool for solution chemist, biochemist, and chemist. In general to help for determination the properties of metal-ligand reactions in water and biological system [1]. Biological properties of some rare earth complexes have been reported by Sharma [2, 3]. The pharmaceutical use of metal complexes has been reported by many workers [4,5].The α, β Unsaturated Ketimines having imine group could be easily found in most of the plants naturally and is an intermediate precursor of flavonoids and isoflavonoids. The presence of a reactive α-β unsaturated keto function in Chalcones and their imine analogues is found to be responsible for their antimicrobial activity. The synthesis and assaying of biological activity of imines have considerable interest in recent decades [6]. α, β-Unsaturated ketimines are chalcone Schiff's bases posses various pharmacological properties [7-9]. The class of α, β Unsaturated Ketimines is one of the most versatile chelating agents having many analytical applications. Chalcone of substituted imine have wide range of applications in the field of biology and biochemistry. The chalcone of substituted imines have been reported to possess various biological activities such as antimicrobial, anti-inflammatory, anti- malarial, antileishmanial, antioxidant, anti tubercular [10]. In the present work we report 2-Hydroxy chalcone imines prepared by reported methods[10]. In view of the analytical application of α, β Unsaturated Ketimines and confirmation of dissociable hydroxy group (-OH), it is necessary to know the physico-chemical properties such as proton-ligand and metal-ligand stability constant by pH-metrically.

EXPERIMENTAL

- Distilled water: Carbon dioxide free, doubly distilled water was used. Distilled water so obtained was again distilled over alkaline permanganate in a glass quick-fit set up and was always used fresh one. Nitrogen gas was bubbled through it, before using it. The pH of this water was found to be 6.98
- 1,4 Dioxane: 1,4 dioxane is a widely used solvent for many recently developed synthetic procedures because of its powerful solvating properties and its chemical stability in the absence of acidic or basic catalysts.
- Sodium Hydroxide: The solution of sodium hydroxide (A.R grade) was prepared free from carbonate by allowing the solution to stand for a long period till any carbonate if present precipitated. The solution was filtered through a sintered Pyrex glass crucible and kept in a Pyrex vessel free from carbon dioxide and was used as the titrant for the pH titration. The solution was standardized by titrating it with standard oxalic acid (AR grade) before use.
- Nitric Acid: Nitric acid is used for preparation of stock solution. Stock solution of 0.1M was prepared by diluting a suitable quantity of original commercial acid. Its exact molarity was calculated by titrating against sodium hydroxide solution.
- Potassium Nitrate: The potassium nitrate was used of AR grade. The stock solution was prepared by dissolving the requisite amount in distilled water.
- Metal Salts: All the metal ions Ba(II), Sr(II), Ni(II)and Cu(II)) used were in the form of their nitrates in order to avoid the possibility of complex formation of the metal ion with anions. Stock solution of 0.01M of each metal salt was prepared by dissolving the requisite quantities in distilled water. The concentrations of metal in solutions are estimated by titrating against standard EDTA solution.
- Ligands: The substituted ketimine will be synthesized by standard method[10]. The ligand

ISSN NO. 2347-517X (Online)

used in the present investigation is 2-Hydroxy-5-bromo-4-chloro-N-(p-methyl phenyl)-ketimine (L_A)

pH meter (accuracy ± 0.01 unit) along with saturated calomel electrode and glass electrode calibrated with buffer solution of pH 4, 7 and 9.2 at 35 °C was used for the pH measurements. The titration were carried out in 100 mL pyrex glass beaker kept in water bath maintained at constant temperature (35 ± 0.1 °C). The pH meter readings were taken for each addition of 0.2 mL.

The experimental procedure involved the following titrations:

Free acid titration: A solution containing nitric acid (1.0×10^{-2} M) in 70 % dioxane-water mixture was titrated with standard NaOH solution (0.1 M).

Free acid-ligand titration: A solution containing nitric acid and ligand (20×10^{-4} M) in 70 % dioxane-water mixture was titrated against standard 0.1 M NaOH solution.

Free acid-metal-ligand titration: A solution containing nitric acid, ligand and metal ion (4×10^{-4} M) in 70 % dioxane-water mixture was titrated against 0.1 M NaOH solution. Data obtained from the titrations was used to plot a graph between volume of NaOH and pH values.

- **Calculation of n_A, n and pK**

The values of proton-ligand formation number from ligand molecule and metal-ligand formation number are calculated by using experimental data obtained form titration curve. The titration curve is made by plotting pH Vs volume (ml.) of alkali added. From the curve, the values of V1, V2 andV3 is determined. By using value of V1, V2 andV3, the values of nA, n is determined at different pH.

$$\bar{n}_A = \gamma - \frac{(V_2-V_1)(E^0+N)}{(V_0+V_1)T^0L}$$

V0 = Initial volume of solution

V1 =Volume of alkali required during free acid titration.

V2 = Volume of alkali required during free acid +ligand titration.

N = Normality of sodium hydroxide.

E^0= Concentration of mineral acid ($HClO_4$)

γ= Number of replaceable hydrogen ion.

The value of metal-ligand formation number is calculated by using Irving and Rossotti expression.

$$\bar{n} = \frac{(V_3-V_2)(N + E^0)}{(V_0+ V_2)(T^0M \times n_A)}$$

V_3 = Volume of alkali required during free acid +ligand + metal ion titration.

T^0M = Total concentration of metal ion in solution.

n_A= Proton-ligand formation number.

pK values for different ligands are determined by using following expression.

$$pK = \log \frac{\bar{n}_A}{1-\bar{n}_A} + pH$$

Results and Discussion

- Proton -Ligand Stability Constant (Pk) Values

It could be seen from Table 1 that there is good agreement of proton ligand stability constants between half integral method and pointwise calculation method.

- Metal -Ligand Stability Constant (Log_K)

Determinations of metal-ligand stability constants require the accurate values of proton-ligand stability constants. Higher values of logK1 and logK2 showed that ligands are stronger chelating agents and vice versa. Metal–ligand stability constants of complexes have played an important role in thermochemistry for determining thermodynamic parameters (ΔH, ΔG, ΔS).

Metal-ligand stability constant of Ba(II), Sr(II), Ni(II), Cu(II) complex with some substituted ketimines were determined by employing Bjerrum Calvin pH metric titration method as adopted by Irving and Rossotti. The significant separation starting from pH = 3.95 for Ba(II), Sr(II), Ni(II), Cu(II) with ligand -L_A.

Deviation between (Acid + Ligand + Metal) titration curves from (Acid + Ligand) titration curve started from pH =3.95 which shows the commencement of complex formation.

The values of logK1/logK2 are presented in table-3. The values of log K1and log K2 determines from metal-ligand formation curve at formation number 0.5 and 1.5. The values of logK1and logK2are determined from point wise calculation

.The result shows the ratio of Logk1 / Logk2 is positive and greater than one in all cases .This implies that there is little or no steric hindrance to the addition of secondary ligand molecule. It has been observed that the difference between $LogK_1$and $LogK_2$ is different for different metal ligand complex, and difference between $LogK_1$and $LogK_2$ has less than 2.5 this indicating the simultaneous formation of 1:1 and 1:2 complexes when the difference is more than 2.5 then in such a case there is a stepwise complex formation takes place.

Table-1 Proton-Ligand stability constants (pK)

Ligand	pK	
	Half Integral method	Pointwise Calculation
L_A	7.23	7.27

Table-2 Metal-ligand stability constants (log K)

Ligand	Metal	$logK_1$	$logK_2$
L_A	Ba(II)	5.14	3.65
	Sr (II)	4.94	4.05
	Ni(II)	5.14	2.55
	Cu(II)	4.84	2.95

Table-3 Metal-ligand stability constants (log K)

Ligand	Metal	Metal Ligand Stability Constants	
		$logK_1/logK_2$	$logk_1-logk_2$
L_A	Ba(II)	1.40	1.49
	Sr(II)	1.21	0.89
	Ni(II)	2.01	2.59
	Cu(II)	1.64	1.89

REFERENCES:

Furia T E, *Handbook of food additives*, IInd edition Chap.6 **(1972),** 1050.

Sharma R C, Khanna S, Tripathi S P, Sharma R S, *Curr Science*, 50, **(1981)**, 748.

Sharma R C, Khanna S, Tripathi S P, *Curr Science*, 52, **(1983),** 410.

Ma T S, Tein J M, *Antibio and Chemmother*, 3, **(1953),** 491.

Zsolanat, Tober, *Biochem Pharmacol*, 11, **(1962)**, 995.

Zsolanat, Tober, *Biochem Pharmacol*, 11, **(1962)**, 995.

Bloch, R. Chem. Rev. 1998, 98, 1407.

Kedar, R. M. Oriental J. Chem. 2000, 16, 235.

Raut, A. W.; Doshi, A. G.; Raghuwanshi, P. B. Oriental J. Chem. 1998, 14, 337.

Shubhangi Patil, Prashant Uthale, S. Gholse., Asian J. Biochemocal and Pharmaceutical Research 2013 (vol. 3)., 114-122.

❖❖❖❖❖

Aayushi International Interdisciplinary Research Journal (AIIRJ)
ISSN 2349-638x Impact Factor 4.574 Special Issue No. 25
UGC Approved Sr.No.64259 Website :- www.aiirjournal.com Email id:- aiirjpramod@gmail.com

SYNTHESIS OF SOME HETEROCYCLIC COMPOUNDS DERIVED FROM CHALCONES

S. V. Kolhe & A. R. Somwanshi
P.G. Department of chemistry
Shri Shivaji Arts' Commerce & Science, College, Akot Dist. Akola

ABSTRACT

Chalcone derivatives were synthesized by reaction of some substituted benzaldehyde derivatives with acetophenone, and then the products obtained were allowed to react with urea, thiourea and hydroxylamine, to give the heterocyclic derivatives of oxazine, thiazine and isoxazole, respectively. The final products have been characterized by elemental analysis, IR and proton NMR spectra. These compounds were also screened for their antibacterial activities.

***Key words**: Synthesis, Heterocyclic compounds, Chalcone, Antibacterial.*

INTRODUCTION

Chalcones were prepared by condensation of acetophenone with aromatic aldehydes in presence of suitable condensing agent [1,2]. They undergo a variety of chemical reactions that leads to many heterocyclic compounds [3-6]. Chalcones have been used as intermediates for the preparation of compounds having therapeutic value [7,8]. Many reviews reveal that chalcone derivatives exhibit diverse pharmacological activities, such as potential cytotoxic agents, antimicrobial agents, antiviral, anti-inflammatory, anesthetic, etc. [9,10]. In the view of the varied biological and pharmacological applications, we have planned to synthesize some heterocyclic derivatives of chalcone and test their antibacterial activity.

EXPERIMENTAL

Melting points were determined open capillary tube and were uncorrected. IR spectra were recorded on FT IR Perkin-Elmer spectrophotometer using KBr disc method. H1 NMR spectra were recorded on Bruker AMX-300 MHz spectrometer in DMSO. Chemical shifts relative to TMS used as internal standard were obtained in δ unit. The heterocyclic derivatives of chalcone were subjected to antimicrobial screening using nutrient agar medium by well diffusion method [8]. The antibacterial activity was tested against various types of bacteria and compared with standard drugs (Ampicillin and Vibromycin). The chalcones then the heterocyclic derivatives were prepared as shown in the following scheme:

REACTION SCHEME

Synthesis of chalcones (Ia-c)

Benzaldehyde derivative (0.01 mol) and acetophenone (0.01 mol) were dissolved in ethanol (25 mL).Sodium hydroxide solution, 10% (25 ml) was added slowly and the mixture stirred for 4 hrs then it was poured into 400 ml of water with constant stirring and left overnight in Refrigerator. The precipitate obtained was filtered, washed and recrystallized from ethanol.

Preparation of Thiazine/Oxazine derivatives (II a-c; III a-c)

A mixture of chalcone (0.02 mol), thiourea/urea (0.02 mol) were dissolved in ethanolic sodium hydroxide solution (10 ml) was stirred for 3 hrs, then it was poured into 400 ml of cold water with continuous stirring for 1 hr then left overnight. The precipitate formed was filtered, washed and recrystallized from ethanol.

Preparation of Isoxazole derivatives (IV a-c)

A mixture of chalcone (0.02 mol), hydroxylamine hydrochloride (0.02 mol) and sodium acetate in ethanol (25 ml) was refluxed for 6 hrs, and then the reaction mixture was poured into ice water (50 ml). The precipitate obtained was filtered, washed and recrystallized from ethanol.

Table 1: Physical and elemental analysis of synthesized compounds

No.	Mol. Formula	Mol. Wt.	M. P. (o C)	Yield (%)
I a	$C_{15}H_{12}O_2$	224	150	80.35
I b	$C_{17}H_{17}NO$	251	95-98	81.27
I c	$C_{16}H_{14}O_2$	238	40	80.67
II a	$C_{10}H_{14}N_2OS$	282	148-149	68.08
II b	$C_{18}H_{19}N_3S$	309	73-75	69.90
II c	$C_{17}H_{16}N_2OS$	296	40	68.91
III a	$C_{16}H_{14}N_2O_2$	266	144-145	72.18
III b	$C_{18}H_{19}N_3O$	293	65-66	73.72
III c	$C_{17}H_{16}N_2O_2$	280	45	72.85
Iv a	$C_{15}H_{11}NO_2$	237	140-142	75.94

IV b	$C_{17}H_{16}N_2O$	264	76-78	77.27
IV c	$C_{16}H_{13}NO_2$	251	--------	76.49

Table 2: Spectral data of the synthesized compounds

Compd. IR (KBr) ν cm-1 1H NMR (d6-DMSO) δ ppm

Ia 3350 (Ar-OH); 1675 (CH = CH-CO); 1640 (C = C); 1480 (Ar-C = C) 4.4 (d, 2H, 2CH); 5.0 (s,1H,Ar-OH); 7.0-7.8 (m,9H, Ar-H)

Ib 3400 (Ar-I); 1680(CH = CH-CO); 1635 (C = C); 1520 (Ar-C = C) 2.47 (s,6H,I(CH3)2); 4.6 (d,2H,2CH); 7.1-7.8 (m,9H,Ar-H)

Ic 1670 (CH = CH-CO); 1645 (C = C); 1528 (Ar-C = C); 1100 (Ar-OC) 3.4 (s,3H,OCH3); 4.5 (d,2H,2CH); 6.9-7.8 (m,9H,Ar-H)

IIa 3370 (Ar-OH); 2370 (C-S-C); 1655 (C = C); 1624 (C = N); 1610 (NH2) 2.1 (s,2H,NH2); 3.5 (s,1H); 5.2 (s,1H,Ar-OH); 5.7 (s,1H); 6.8-7.9 (m,9H,Ar-H)

IIb 3430 (Ar-N); 2356 (C-S-C); 1650 (C = C); 1620 (C = N); 1590 (NH2) 2.0 (s,2H,NH2); 2.4 (s,6H,N(CH3)2); 3.4 (s,1H); 5.6 (s,1H); 6.9-8.0 (m,9H,Ar-H)

BIOLOGICAL ASSAY OF THE SYNTHESIZED PRODUCTS

Antibacterial activity of the heterocyclic derivatives of chalcone have been carried out against several types of bacteria such as, *E. coli*; *S. aureus*; and *P. aregenosa* using nutrient agar medium by well diffusion method[1]. All compounds were suspended in aqueous solutions in different concentrations ranged from 10-100 mg/mL, the results are expressed on MIC (minimal inhibitory concentration), solvent blanks were run against each test organism in all assays and the experimental biological data is given in Table 3.

Table 3: Antibacterial activity data of the heterocyclic derivatives of chalcone

Compound	*E. coli*	*S. aureus*	*P. aregenosa*
IIa	18	19	17
IIb	21	18	20
IIc	22	20	18
IIIa	18	20	22
IIIb	22	21	19
IIIc	23	21	20
IVa	17	19	18
IVb	20	20	19
IVc	22	21	18
Ampicillin	23	20	21
Vibromycin	24	22	20

RESULTS AND DISCUSSION

All synthesized compounds as well as the reactions that carried out were characterized and monitored by TLC, melting points, elemental analysis, IR and 1H NMR, and they all gave satisfactory results.

The compounds were evaluated for their antibacterial activities against various types of bacteria, and they showed comparable activity with that of standard drugs.

REFERENCES

1. Hasan, L. Rasheed and Abdul Malik, Asian J. Chem., **19(2)**, 937 (2007).
2. R. Kalirajan, S. U. Sivakumar, S. Jubie and B. Gowramma, B. Suresh, Int. J. Chem. Tech. Res., **1(1)**, 27 (2009).
3. R. Kalirajan, M. Palanivelu, V. Rajamanickam and G. Vinothapooshan, K. Anandarajagopal, Int. J. Chem. Sci., **5(1)**, 73 (2007).
4. R. H. Udupi, R. Bhat and K. Krishna, Indian J. Het. Chem., **8**, 143 (1998).
5. G. Urmila, S. Vineeta, K. Vineeta and C. Sanjana, Indian J. Het. Chem., **14**, 265 (2005). *Sci. Revs. Chem. Commun.: 2(2), 2012* 107.
6. V. K. Pandey, V. D. Gupta and D. N. Tiwari, Indian J. Het. Chem., **13**, 399 (2004).
7. B. A. Bhat, K. L. Dhar, A. K. Saxena and M. Shanmugavel, Bioorg. Med. Chem., **15(3)**, 177 (2005).
8. I. F. Michael, M. S. David and S. S. Parsad, J. Med. Chem., **33**, 1948 (1990).
9. Pharmacopoeia of India II, A-100, A-108 (1996).
10. S. Chatterjee and S. N. Dan, Ind. J. Pharmacology, **28**, 116 (1996).
11. A. Barry, Antibiotic in Laboratory Medicine Corian (Ed.), Williams & Wilkins, Baltimore, 1991, Alves A. J. et al., Rev. Farm., **34**, 77 (1999).

Aayushi International Interdisciplinary Research Journal (AIIRJ)
ISSN 2349-638x Impact Factor 4.574 Special Issue No. 25
UGC Approved Sr.No.64259 **Website :-** www.aiirjournal.com **Email id:-** aiirjpramod@gmail.com

THERMODYNAMIC STUDY OF SOME SUBSTITUTED SCHIFF'S BASES AT DIFFERENT CONCENTRATION IN 70% (DIOXANE+WATER) SOLVENT BY VISCOMETRICALLY.

G.B. Andhale, S.P. Wagh
Shri Shivaji Art's, Commerce & Science College, Akot

ABSTRACT

Solute-solvent interactions play an important role in a variety of phenomenon.The important information regarding solute-solute and solute-solvent interaction in an aqueous and in non-aqueous solution is obtained by viscometric study.

The present study deals with the study of substituted Schiff Bases at different temperature by preparing the solutions of different concentrations.The themodynamic properties such as free energy change(ΔG), enthalpy change(ΔH) and entropy change (ΔS) of different substituted Schiff Bases have been studied in 70% (Dioxane+water) solvent by the measurement of densities and viscosities at different temperature such as 304K, 306K and 308K. The experimental data obtained used to compute the molecular interaction of different ligands.

Key words *: specific viscosity, Density, thermodynamic parameters,*

INTRODUCTION

The property of liquid by virtue of which it opposes relative motion between its different layers is known as viscosity or internal friction of the liquid. Those liquids flow slowly (glycerin, honey, castor oil etc.) are said to have high viscosity, while those which flow readily are said to have low viscosity. As may be looked upon as the force of friction between two layer layers of liquid moving past one another with different velocities. Viscometricstudy gives valuable information about the solute–solvent interactions in the solution phase. These interactions have been studied in aqueous and non-aqueous solutions by many researchers [1-3]. The molecular interactions of electrolyte in binary mixture of two liquids in terms of viscosity B-coefficients have been studied by Kapadi [4], Mehrotra[5], Das [6], and Nikam [7]. The molecular interactions are also studied by Kalra [8], Yadav[9], Pandey[10], and Raut[11]. The viscosities and densities of an aqueous binary electrolyte having different molar concentrations have been studied by Pandey and Yasmin [12]. The dependence of concentration of viscosity in concentrated electrolyte solution was reported by Breslau Miler [13] and Vand [14]. Rajagopal et al [15] also reported density and viscosity measurements for 4-aminobutyric acid in various composition in aqueous metformin hydrochloride at different temperature.Effects ofconcentration and temperature on viscosity in (l-alanine/l-threonine/glycylglycine + aqueous d-glucose/aqueous sucrose) systems has been reported by Riyazuddeen et al [16]. In the present research work we have performed the viscometric study of following ligands.

1. 2-Hydroxy-5chloro-1-(α phenyl imino) ethyl benzene (L1).
2. 2-Hydroxy-5chloro-1-(α para methyl phenyl imino) ethyl benzene (L2).
3. 2-Hydroxy-3-bromo-5-chloro-1-(α phenyl imino) ethyl benzene (L3).
4. 2-Hydroxy-3-bromo -5-chloro-1-(α para nitro phenyl imino) ethyl benzene (L4).

MATERIAL AND METHOD

The ligands used in the present research work were synthesized by using reported methods. The solvent dioxane of AR grade and freshly prepared doubly distilled water was used. All the weighings were made on ZaktadyPrecyzyjnej Gdansk Balance, made in Poland. The densities of pure solvent and solutions of various concentrations were measured at different temperature using a calibrated pycnometer. Viscosities of the solutions were determined with the help of calibrated Ostwald viscometer thoroughly cleaned and dried. The flow time of solutions were measured by using digital clock of racer company having error (±0.01Sec).for each measurments , sufficient time was allowed to attain thermal equilibrium between viscometer and water bath.

Calculation

To determine the relative and specific viscosity, in the different concentration of the substituted oxoimidazolidone solution were prepared and there viscosities are measured with help of the following mathematical relation

$(\eta r)=(ds \times ts/dw \times tw)\times \eta w$.....(1)

Where

ηr = Relative viscosity
ηw = Viscosityof water
ds = Density of solution
dw = Density of water
ts = Flow time for solution
tw = Flow time for water

From the calculated values of relative viscosities (ηr) and the temperature (T),the graph between log (ηr) vs 1/T can be plotted.

The relative viscosities of solutions at different concentration are presented in table 1. The viscosity data have been analyzed by Jones –Dole equation[ ]

$(\eta r -1) /\sqrt{C}= \eta sp/\sqrt{C} = A + B \sqrt{C}$ ---------- (3)

Where

A = Falkenhagen coefficient
B= Jones-Dole coefficient
C = concentration of solutions

The Falkenhagen coefficient (A) measures the solute-solute interation while Jones-Dole coefficient (B) measures the solute-solvent interaction.

The thermodynamic parameters i.e. free energy change(ΔG), enthalpy change(ΔH) and entropy change (ΔS) can be determine by using following relation,

$\Delta G = -2.303\times R\times slope$..... (4)

$\log \eta r1 - \log \eta r2 = (\Delta H/2.303)\times(1/T1 -1/T2)$ .... (5)

$\Delta S = (\Delta G - \Delta H)/T$..... (6)

Table 1

System-Ligand L1

Temp: 31°C±0.1°C Medium: 70% Dioxane-Water

Conc(C) Mole/lit	√C Mole-1/2 lit-1/2	Density gm/cc	Time Flow (Sec)	Relative Viscosity ηr = η/η0	Specific Viscosity ηsp= ηr-1	ηsp/√C
0.010	0.1000	0.9652	57.7	2.1978	1.1978	11.9785
0.008	0.0894	0.9645	56.2	2.1392	1.1392	12.7423
0.006	0.0774	0.9633	55.8	2.1213	1.1213	14.4869
0.004	0.0632	0.9622	53.7	2.0391	1.0391	16.4419
0.002	0.0447	0.9613	48.5	1.8399	0.8399	18.7897

Table 2

System-Ligand L2

Temp: 31°C±0.1°C Medium: 70% Dioxane-Water

Conc(C) Mole/lit	√C Mole-1/2 lit-1/2	Density gm/cc	Time Flow (Sec)	Relative Viscosity ηr = η/η0	Specific Viscosity ηsp= ηr-1	ηsp/√C
0.010	0.1000	0.9657	57.4	2.1875	1.1875	11.8755
0.008	0.0894	0.9648	55.5	2.1132	1.1132	12.4616
0.006	0.0774	0.9635	53.1	2.0191	1.0191	13.1662
0.004	0.0632	0.9622	49.3	1.8720	0.8720	13.7982
0.002	0.0447	0.9614	44.4	1.6846	0.6846	15.3149

Table 3

System-Ligand L3

Temp: 31°C±0.1°C

Medium: 70% Dioxane-Water

Conc(C) Mole/lit	√C Mole-1/2 lit-1/2	Density gm/cc	Time Flow (Sec)	Relative Viscosity ŋr = ŋ/ŋ0	Specific Viscosity ŋsp= ŋr-1	ŋsp/√C
0.010	0.1000	0.9660	65.2	2.1425	1.1425	11.4248
0.008	0.0894	0.9652	55.5	2.1140	1.1140	12.4614
0.006	0.0774	0.9645	54.8	2.0859	1.0859	14.0293
0.004	0.0632	0.9636	52.5	1.9965	0.9965	15.7668
0.002	0.0447	0.9628	47.9	1.8200	0.8200	18.3449

Table 4

System-Ligand L4

Temp: 31°C±0.1°C

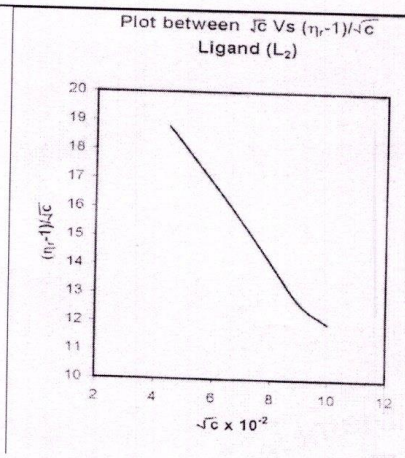
Medium: 70% Dioxane-Water

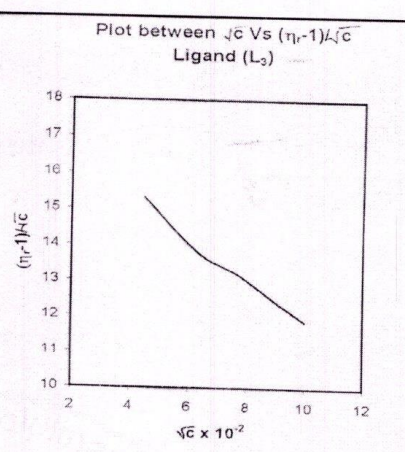
Conc(C) Mole/lit	√C Mole-1/2 lit-1/2	Density gm/cc	Time Flow (Sec)	Relative Viscosity ŋr = ŋ/ŋ0	Specific Viscosity ŋsp= ŋr-1	ŋsp/√C
0.010	0.1000	0.9665	55.9	2.1322	1.1322	11.3215
0.008	0.0894	0.9653	54.2	2.0647	1.0647	11.9099
0.006	0.0774	0.9644	52.4	1.9943	0.9943	12.8464
0.004	0.0632	0.9632	49.1	1.8664	0.8664	13.7087
0.002	0.0447	0.9619	44.1	1.6741	0.6741	15.0798

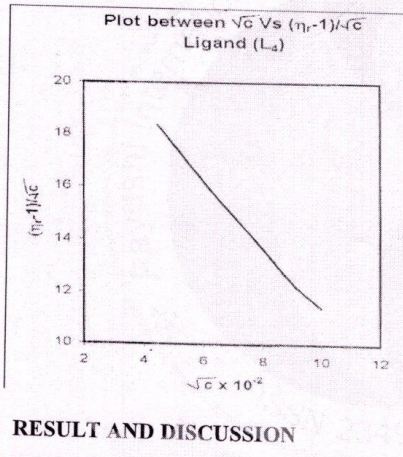
Table 5

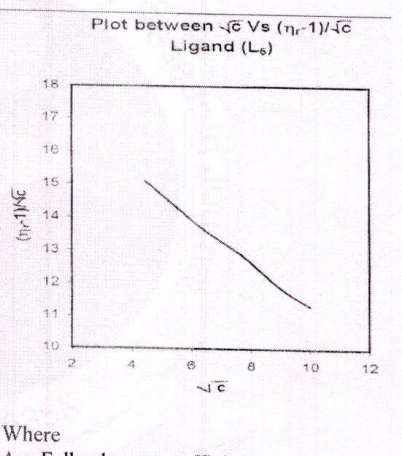
A = Falkenhagen coefficient, B= Jones-Dole coefficient values

Ligand + 70%Dioxane-Water	**A**	**B (Lit/mol)**
L1	20.60	+125.00
L2	18.10	+62.50
L3	20.20	+123.53
L4	18.30	+72.7273









RESULT AND DISCUSSION

In the present investigation the relative and specific viscosity, of substituted Schiff Bases are measured with help of the following mathematical relation

(ŋr)=(ds ×ts/dw ×tw)× ŋw……(1)

Where

ŋr = Relative viscosity
ŋw = Viscosity of water
ds = Density of solution
dw = Density of water
ts = Flow time for solution
tw = Flow time for water

The relative viscosities of solutions at different concentration are presented in table 1-5. The viscosity datahave been analyzed by Jones –Dole equation .(ŋr -1) /√C= ŋsp/√C = A + B √C --------- -------- (3)

Where

A = Falkenhagen coefficient
B= Jones-Dole coefficient
C = concentration of solutions

The Falkenhagen coefficient (A) measures the solute-solute interation while Jones-Dole coefficient (B) measures the solute-solvent interaction.

In the present investigation, the relative viscosity of solution of synthesized ligands increases with increase in concentration of solutions. The increase in viscosity with increase in concentration is may be ascribed to the increase in the interactions of solute-solvent. The large and small deviations in the values of 'A' give us an idea about the stronger and weaker solute-solvent interaction respectively as shown in table. The increase in relative viscosity of solutions with concentration measures the increase in interaction

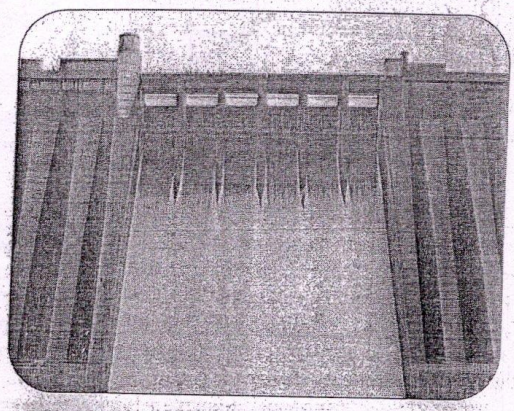
of solute and solvent. The relation between viscosity (ηsp/√ C) and concentration of solution (√C) represented by plotting the graph (fig. 1-4). These plotted graphs prove the validity of Jones-Dole equation for all systems by giving linear straight line . The values of Jones-Dole coefficients especially B- coefficients are the slope of graph (ηsp/√C) Vs (√C) while the values of Falkenhagen coefficient i.e. A-Coefficient are the intercept of graph of (ηsp/√C) Vs (√C). The order or disorder introduced by solute in solvent is measured by the values of B coefficient which shows either positive or negative values. B coefficient is in turn measures the effective hydrodynamic volume of solute, which accounts for the ion-solvent interaction.

REFERENCES

1. Patil, K.J., Manwatkar, S.M. and Donges, S.S. Ind. J. Chem., 33,4(1994).
2. Karia, F., Baluja, S. Asian J. Chem., 12(2), 593 (2000).
3. Wadi, R.K., Vinita, Kakkar, Ind. J. Chem., 39,(6), 598 (2000).
4. U Kapadi, P Hankare, S Chavan, J.Ind.Chem.Soc., 72, 269.1994
5. K Mehrotra, K Tandon K, M Rawat, J.Ind.Chem.Soc., , 69 ,193-197, 1992.
6. S Das, D Hazra, Ind.J.Chem., 1988, 27, 898-906.
7. Nikam, P.S., and MedhiHasan, J.Ind.Chem.Soc., 69, 300, (1992).
8. Yadava, S.S., Ind. J. Chem., 34,131(1995).
9. Kalra, B.K., Singh, K.C. and Bharadwaj, Umesh; Ind. J. Chem., 33,314(1994).
10. J. D. Pandye, G.P. Dubye and B.P. Shukla, Ind. J. Chem. Soc., 69:750 (1992).
11. Raut, B.R. and Chakravorty; Ind. J. Chem., 33,4, 303(1994).
12. Pandey JD; Yasmin A and Sharma AK. Indian J. Chem., 37A, 1998, 1094.
13. B Breslan, J Miller, J.Phys.Chem., 1970, 74, 1956-1962.
14. V Vand, J.Phys.Colloid.Chem., 1948, 52, 277-282
15. K Rajagopal, S Jayabalakrishnan, J.Serb.Chem.Soc. 2011, 76(1),129–142.
16. Riyazuddeen, Moh. A Usmani, ThermochimicaActa, 2014, 575, 331– 335

REVIEW OF RESEARCH
ISSN: 2249-894X
IMPACT FACTOR : 5.2331(UIF)
VOLUME - 7 | ISSUE - 2 | NOVEMBER - 2017

STUDY ON PHYSICO-CHEMICAL PARAMETERS OF POPATKHED RESERVOIR ON AKOT TAHSIL, DISTRICT AKOLA.



Mankar R. S.
Assistant Professor, Dept. of Zoology, Shri Shivaji Arts, Commerce and Sciences Akot, Dist Akola (M.S.)

ABSTRACT:-

Popatkhed Reservoir is situated in Akot Tahsil, Dist Akola Maharashtra. Water sample was collected from three different sampling sites during January to December 2016. Water sample was analysed by using standard methods for Physical as well as Chemical parameters. For knowing about the water quality of analysed Physical parameters like Colour, Temperature, pH, Conductivity, Total Dissolved Solid and Chemical parameters like Dissolved Oxygen, Free Carbon dioxide, Carbonate (HCO_3), Bicarbonate (HCO_3), Total hardness, Calcium hardness, Magnesium hardness, Chloride, Phosphate. From that it was concluded that all above mentioned Physico-Chemical parameters were within the permissible limit hence the reservoir water is used for Drinking, Irrigation, Domestic use, fish cultivation.

KEYWORDS: *Physico-Chemical, Popatkhed.*

INTRODUCTION :

The physico-chemical parameters are very important in study of any environment, especially aquatic environment. The pH and dissolved nutrients are important for the phytoplankton production. Temperature, pH and dissolved oxygen are important factors, which control the exchange of nutrients between the sediment and water **Dabhade and Tandale (2016).** The relationship between the physico-chemical parameters and plankton production of pond water and their relation with monthly fluctuation of zooplankton are of great importance and basically very much essential in care of fish culture. Fishes are more dependent on water temperature, pH, dissolved oxygen, free CO_2, alkalinity and some other salts for growth and development. The maintenance of a healthy aquatic ecosystem is dependent on the physical-chemical properties of water and the biological diversity. A large number of streams and rivers in India have been impounded to store the water for multipurpose beneficial uses like irrigation, fisheries, power generation and drinking water supply.

The Water quality is also affected by its pollutant, which act an element existing in water such as dissolved oxygen or ammonia, nitrates. It is not possible to understand biological phenomena fully without the knowledge of water chemistry as the ecosystem. The Physico- chemical means are useful in detecting effects of pollution on the water quality but changes in trophic conditions of water are reflected in the biotic community-structure including species pattern, distribution and diversity.

MATERIAL AND METHODS:

Physico- chemical parameters analyzed as per the standard methods recommended by **Clesceri *et al.*, (1998)** and with the help of Systronics digital portable water analysis kit, DO meter, pH meter, Conductivity meter and CST meter.

Popatkhed Reservoir Photo Showing Sampling site S1,S2,and S3 (21°20'74.76"N77°08'25.47"E)

RESULT AND DISCUSSION:

I: Physical Parameters

1. Colour:

Popatkhed Reservoirs Water Colour shows variation throughout the study period.

During month January to May it was Green Dark and in June to September it looks Olive green it might be due to monsoon during which some organic materials, sand particles are drained with flow of water. From September to December it was observed pale green might be due to plankton population increases in that season. Due to more number of phytoplankton and zooplankton water of reservoirs appears green in colour. **Sing *et al.*, (2012)** observed colour of water was yellow brown in monsoon season, green in winter and dark green in summer season.

2. Temperature:

Temperature is major parameters for aquatic organism; during study period mean highest temperature was recorded in the month of Jun which was 28 ± 0.4 ºC and lowest was observed in December was 20.03±0.06 ºC. There was not very significant difference in water temperature in a year. The water temperature is important factor for indicating the quality of water. It affects the aquatic organism, chemical solutes and dissolved oxygen and carbon dioxide in water.

The water temperature shows seasonal variation in change in atmospheric temperature, but in the present investigation water temperature found higher in the month of June and lower in December. The rise in water temperature in monsoon seasons due to intake of rain water. These variation of temperature in different season like decreases temperature in winter and increases in summer was reported by **Tandale *et al.*, (2014), Kumbhar *et al* .,(2009), Bade *et al.*,(2009) and Patel (2011).** Water Temperature shows positive correlation with pH, turbidity, T.D.S. Conductivity, Carbonate, Total hardness and magnesium hardness but it shows negative correlation with dissolved oxygen, CO_2, bicarbonate, calcium hardness in 2016.

3. pH:

pH in aquatic ecosystem indicates the alkalinity and acidity of water. During the study period mean highest pH value was observed in month of July was 7.73±0.06, lowest was in November 7.2±0. It was indicate that water pH was slightly alkaline. Most of the biological and biochemical are depends upon the fluctuations of pH, therefore pH is consider as an indicator of overall productivity that causes habitat diversity **Tandale *et al.*, (2014).**

pH value increases in Mansoon and pre monsoon and decreases in winter, there were found somewhat fluctuation in all results, that in some reservoir the pH found to be maximum in summer ad minimum in winter reported by **Tandale *et al.*, (2014), Dabhade and Tandale (2016), Shinde *et al.*, (2011).**

4. Conductivity:

Conductivity is an important parameter to know the quality of water. The highest mean values of conductivity were recorded in the month of February 558.3±2 µmhos and lowest was in October 236.66±14.3 µmhos. Conductivity was lower in winter season was reported by **Sing *et al.*, (2012), Dabhade and Tandale (2016), (2017)** and Tandale and Dabhade (2014). Reservoir is partially covered with the field area therefore organic matter influence the water conductivity, in rainy season organic soil, sand particles are artificially drained, it increases the cation concentration of reservoir water studied by **Tandale *et al.*, (2016).**

5. Total Dissolved Solids:

Total dissolved solids is used to measure amount of particles that dissolved in water, that is nitrates, calcium, magnesium, sodium, potassium, iron, carbonates and bicarbonate **Dabhade and Tandale (2016).**

During the Mean highest TDS value was recorded in month of July 291±3.5 mg/l and Lowest was in November 219.9±10.7 mg/l. Due to agricultural land near the reservoir, runoff is rich and it increases the fertilizers, organic matter and salts in aquatic water, therefore the 295.6 mg/L TDS is found in July, similar result obtained by **Makode (2012)** of Charghad dam Amravati, Maharashtra. Some controversial results obtained by **Tandale *et al.*, (2014), Verma *et al.*, (2011),** they found increased TDS in summer season and decreased in monsoon due to dilution of rain water.

II: Chemical Parameters

6. Dissolved Oxygen:

During the study periods mean Dissolved Oxygen from all three sampling sites highest was observed in month of January 18.3±24mg/l and lowest was in May 2.3±0.2mg/l. At the time of sampling rain is on which cause the aeration hence maximum value was recorded in this particular month. Dissolved oxygen was found maximum in the month of December and January and minimum in September, October. Similar results were recorded by **Khan *et al.*,(2012), Dabhade and Tandale (2016).** Dissolved oxygen is play vital role in aquatic fauna, it is an important parameter for aquatic life mainly fish culture, it found lower in summer by **Rani *et al.*,(2004) and Medudhula *et al.*, (2012).**

7. Carbon dioxide:

During study period free CO_2 was found nil it means that was converted in to CO_3, or HCO_3 depends upon the pH and biological condition **Tandale *et al.*, (2014), Dabhade and Tandale (2016), (2017).** Presence of free CO_2 is also depends upon the time of sampling and seasonal fluctuations in water body. The total CO_2 concentration in water depend upon pH Which is governed by the buffering effect of carbonic acid, carbonate and bicarbonate Dabhade (2015).

CO_2 is essential for respiratory metabolism of phytoplankton and aquatic vegetation, increased carbon dioxide level might be due to uptake from autotroph, assimilation by algae and aerobic bacteria of decay add CO_2 **Tandale *et al.*, (2014).**

8. CO_3 (Carbonate Phenolphthalein alkalinity):

During the study period highest mean Carbonate was found in month of April 81.4±4.6mg/L and lowest was in December 31.1±1mg/L. When the value of carbonate was high on sampling sites S1 then value of Bicarbonate was low and when the Carbonate value low the Bicarbonate value high at sampling sites S2 their values are 1695±887.5mg/l and 1537.17±833.2mg/l. Bicarbonates was 1284.17±554.3mg/l and 1207±505.5mg/l **Dabhade and Tandale (2016).**

9. HCO3 (Bicarbonate or Methyl Orange alkality):

During study period highest mean bicarbonate was in January 132.4±11.1 mg/land lowest was in December 64.4±18.6mg/l. The total value of carbonate and bicarbonate increases in summer and decreases in

the month of monsoon it may due to dilution water in rainy season and in summer less water increases the percentage of alkality in water body **Tandale et al., (2017), (2016).**

10. Hardness:

Hardness of water is on the basis of both Calcium and Magnesium and we also calculated Total hardness from the summation of both calcium and magnesium hardness. Mean Total hardness highest was in March 251.7±10.1mg.l and lowest was in September 149V6.1mg/l. Total hardness of water increases mainly due to the presence of (Ca^{2+}) and magnesium (Mg^{2+}) ions in every water body which may increases due the human washing clothes, bathing activities in Morna reservoir **Solanke *et al.*, (2016).** Mean highest Magnesium was observed in February 47.1±0.1mg/l and lowest was in September 22.7±2.9mg/l. The permissible limit of magnesium of drinking water is 50mg/l according to (W.H.O).

11. Chloride:

From the chloride we are also calculated the value of salinity because for fresh water we take the chloride and for the alkaline water bodies salinity is used. During the study period chloride value of reservoir was highest 82.7±1.2mg/l observed in the month of May while lowest was in August 61.7±2.3mg/l. Similar result obtained by **Shinde *et al.*, (2011),** according to them Higher level of chlorides in natural water is indication of pollution and domestic sewage.

12. Phosphate :

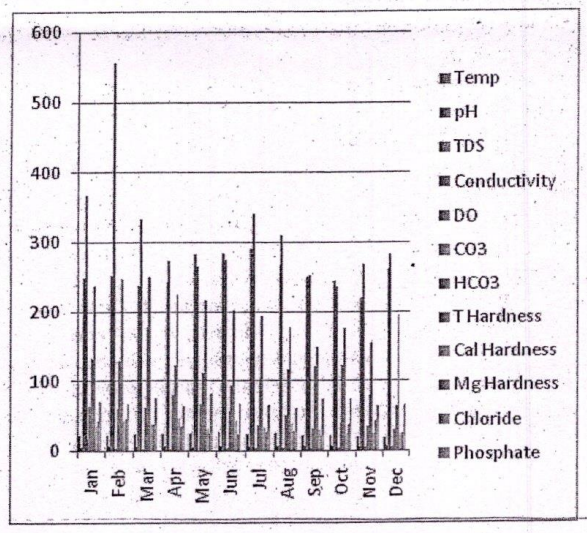
As the Popat Khed Reservoir is totally surrounded from all sides by field area and totally water in reservoir is used for irrigation purpose, therefore it also necessary to study the phosphate level in water. Highest was observed in September 0.72 ±0.14mg/l and lowest in February 0.12 ±0.004mg/l. The phosphate level was higher in Monsoon season and lower in summer and winter season **Tandale *et al.*, (2014).** Due to surface water runoff, agriculture run off, washer man activities increases inorganic phosphate in water in rainy season therefore phosphate level increases in monsoon season **Dabhade and Tandale (2014, 2016, 2017), Tandale and Dabhade (2014.)**

Table No. 1. Showing mean and standard deviation of Physico-Chemical Parameters of Popatkhed reservoir

Month	TEMP	pH	TDS	Conductivity	DO	CO3
Jan	23.5±0.5	7.2±0	250±2	367.5±12.6	18.3±24	64.3±0.6
Feb	23.23±0.7	7.7±0.1	253.7±7.8	558.3±167.3	4.7±0.2	61.1±1.9
Mar	23.73±0.5	7.23±0.06	237.7±2.9	333.7±12.8	3.4±0	62.6±0.8
Apr	25.03±0.1	7.3±0.1	243.3±2.3	274.2±16.8	2.8±0	81.4±4.6
May	26.4±0.67	7.22±0.03	283.2±3.5	266.2±12.6	2.3=±0.2	67.6±3.9
Jun	28±0.4	7.5±0.05	285±4.3	275.1±27.6	4.7±0.25	58.2±8.6
Jul	24.5±0.5	7.73±0.06	292±3.5	342.8±20.6	5.4±0.3	38±6
Aug	25.3±0.23	7.51±0.17	267.3±10.	310.6±37.6	5.5±0.5	52.7±5.03
Sept	23.03±0.1	7.4±0.06	252±11.6	252.5±6.5	4.2=±0.0	31.7±6.3
Oct	22.8±0.35	7.6±0.2	245.1±4.7	236.66±14.3	4.8±0.5	41.5±2.7
Nov	21.23±0.2	7.2±0	219.9±11	269.6±2.5	6.3±0.21	35.7±1.5
Dec	20.03±0.1	7.32±0.01	263±23.6	283.9±61.3	6.1±1.6	31.1±1

Table No. 2. Showing mean and standard deviation of Physico-Chemical Parameters of Popatkhed reservoir

Month	HCO3	T. Hard	Ca Hard	Mg Hard	Chloride	Phosphate
Jan	132.4±11. 1	238.7±1.2	36.3±3.6	43.9±4.8	70.7±2.3	0.15±0.03
Feb	129.2±8.47	248.3±10.7	44.2±3.7	47.1±0.1	68±0	0.12±0.004
Mar	179.37±11.7	251.7±10.1	39.3±2.3	39.3±2.3	76.7±8.0	0.21±0.01
Apr	123.3±2.9	225.3±6.4	47.3±0.6	36±0	65.7±0.6	0.3±0.03
May	112.7±11.01	217±11	32.7±1.2	25.7±1.2	82.7±1.2	0.28±0.02
Jun	94.8±11.5	202±13	43±1.7	24.3±0.6	68.7±9	0.29±0.02
Jul	103.2±4.4	195.3±5.03	33.7±6.7	27.3±9.02	66.7±10.8	0.62±0.4
Aug	116.0±3.7	178.7±6.1	38.7±3.1	29±6.1	61.7±2.3	0.33±0.12
Sept	121.4±3.2	149±6.1	30.7±2.3	22.7±2.9	75.3±3.1	0.72±0.14
Oct	122.5±3.9	177.3±12.7	24.3±0.6	38.7±2.5	74.7±14.2	0.38±0.1
Nov	80.5±13.3	156.3±13.2	23.7±6.4	43±1.7	64.3±10	0.6±0.1
Dec	64.4±18.6	196±10.8	24.7±0.6	26±2	66±7.2	0.53±0.2



Graphical Presentation of Physico-Chemical Parameters during Study Period

CONCLUSION:

Popatkhed reservoir shows seasonal fluctuations in Physico-Chemical parameters which affect the aquatic organism that may zooplankton or phytoplankton and or micro-invertebrates. Therefore it is necessary to analysed such parameters for better utilization of water because it was used for Drinking, irrigation, purpose hence guideline should be provided to local people for maintaining the water quality of reservoir.

ACKNOWLEDGEMENT:

Author thankful to Dr. V. B. Bhagat Head Dept. of Zoology Shri Shivaji Arts, Commerce and Sciences College Akot to provide laboratory facility.

BIBLIOGRAPHY:

Bade B.B., Kulkarni D. A. and A. C. Kumbhar (2009): Studies on physic-chemical parameters in Sai reservoir, Latur dist, Maharashtra. Shodh, Samoksha aur Mulankan International Research Journal, Vol. 2 (7).

Clesceri L. S., A. E. Greenb and A. D. Eaton (1998): Standard Methods for the Examination of water and wastewater, 20th Edition.

Dabhade D. S. (2013): Eutrophication, A threat to saline lake in A Crater at Lonar, Maharashtra., Asian Journal of Contemporary Science, Vol. 2(1), 1-6.

Dabhade D. S. (2015): Lonar Saline Lake, India a Case Study; International Journal of Researches in Biosciences, Agriculture and Technology, IJBRT, Vol. 2 (3), 249-251.

Dabhade D. S. and M. R. Tandale (2016): Some more planktons of Lonar crater Lake, International interdisciplinary Research Journal Proceedings Recent Trends in conservation of Biodiversity, 189-193.

Dabhade D. S., M. R. Tandale (2016): Study on effects of physical parameters on planktonic population of lonar crater India. International Journal of Applied Research, Vol. Special Issue, 305-308.

Dabhade D. S., M. R. Tandale (2016): Lonar Lake and Comprehensive Conservative Measures. International Journal on IDEAL, Vol. Special Issue 3, 17-21.

Dabhade D. S., M. R. Tandale (2016): Quantitative analysis of Zooplankton Communities of Meteorite impact Crater Lonar, India. Journal of Research Journey International Multidicipilinary E- Research Journal, Vol. Special Issue (4), 98-104.

Dabhade D.S. (2006): Limnological studies on Lonar Lake, Maharashtra. Ph.D. thesis submitted to SGB Amravati University,Amravati.

Dabhade, D. S. (2006): Limnological studies on Lonar Crater Lake, Maharashtra. Ph.D. Thesis submitted to S.G.B. Amravati University, Amravati.

Khan R. M., Jadhav M. J. and I. R. Ustad (2012): Physicochemical analysis of Triveni Lake water of Amravati district in (MS) India., J. Bioscience discovery, Vol. 3(1), 64-66.

Kumbhar A.C., Kulkarni D.A. and B.B. Bade (2009): Seasonal Variation in Physico-chemical parameters of VJANI Reservoir of Madha Tahashil, Dist- Solapur. Vol. 2(9).

Makode P.M. (2012): Physico-Chemical parameters Charghad Dam district Amravati, Maharashtra.

Malu, R. A., D. S. Dabhade and M. S. Kodarkar, (2007): Conservation and management of Lonar Lake, An Ecological Wonder, Maharashtra, India. World Lake Vision-Action report, International Lake Environment Committee Foundation (ILEC), Japan, 208-216.

Medudhula T., Samatha Ch. and Ch. Sammaiah (2012): Analysis of water quality using physic-chemical parameters in lower manair reservoir of Karimnagar district, Andra Pradesh.

Patel A. N. and E. T. Puttiah (2011): Analysis of water quality using physico-chemical parameters Hosahalli tank in Shimoga district, Karnataka, India. Global J. of Science frontier research, Vol 11 (3).

Rani R., Gupta B. K. and K. B. L. Srivastav (2004): Studies on water quality assessment in Satna city (M.P.): Seasonal parametric variation, Nature environment and pollution technology, Vol. 3(4), 563-565.

Shinde S.E., Pathan T.S., Raut K.S. and D. L. Sonawane (2011): Studies on the physic-chemical parameters and correlation coefficient of Harsool-savangi dam, district Aurangabad, India. Middle-East Journal of Scientific Research. Vol. 8(3), 544-554.

Singh S. M., Panday S. C., Pani S. and A. Malhosia (2012): Limnology : A case study of highly polluted Laharpur reservoir, Bhopal, (M.P.) India. J. of Chemical, Biological and Physical Sciences. Vol.2(3),1560-1566.

Solanke M. R. And D. S. Dabhade (2016): Physico-Chemical analysis of Upper Morna Reservoir, Medshi District-Washim, Maharashtra, Indian Streams Research Journal, Vol. 5 (12), 1-11.

Tandale M. R., D. S. Dabhade (2014): Study on some physico-chemical parameter of Lonar Crater, India. Journal of Global Biosciences; Vol. 3, 941-950.

Tandale M. R., D. S. Dabhade (2014): The physico-chemical parameter status of Lonar crater lake, India. Bioscience Biotech Research Communicaton (Ecological Communication: BBRC) Vol. 7(1), 50-56.

Tandale M. R., D. S. Dabhade (2016): Study on Chemical Parameter of Meteorite Impact Crater Lake Lonar, India Multidisciplinary Research Journal: Indian Stream Research Journal, Vol. 5(12), 105-111.

Verma P.U., Chandawat D.K. and H. A. Solanki (2011): Seasonal variation in physic-chemical and Phytoplankton analysis of Kankaria Lake, Gujrat University, Ahmedabad Gujrat, Life science Leaflets, Vol.19, 842.

W.H.O. (1993) : Guidelines for drinking water quality (vol.2.): Recommendations, World Health Organization, Geneva.

Wanjari H. V., D. S. Dabhade (2015): Lonar crater Lake of India: An abundant source of highly economic important Spirulina, IJBRT, Vol. 2 (3), 274-279.

Mankar R. S.
Assistant Professor, Dept. of Zoology, Shri Shivaji Arts, Commerce and Sciences Akot, Dist Akola (M.S.)

IJRBAT, Special Issue (2), Vol-V, July 2017 ISSN No. 2347-517X (Online)

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE & TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

Studies on Physicochemical Properties of Drinking Water of Akola City

Santosh.N. Patole; Sanjay P. Wagh; Manik M. Dhore & Umar Bhati
Shri Shivaji Arts, Commerce & Science College, Akot
Dist Akola (M.S.) India Email: sanpatole@yahoo.co.in

Abstract
The physico-chemical status of water samples from ten major part of locality in Akot city was assessed. The sampling points were selected on the basis of their importance. The physicochemical parameter like, temperature, pH, electrical conductivity (EC), total dissolved solids (TDS), turbidity, dissolved oxygen (DO), total alkalinity (TA), total hardness (TH), calcium (Ca++) magnesium (Mg++), sodium (Na+), potassium (K+), chloride (Cl-), fluoride (F-), nitrate (NO- 3) sulphate (SO2- 4) and phosphate (PO3- 4) of Open Well and Bore well was determined. The results were compared with standards prescribed by WHO (1973) and ISI (10500-91). It was found that the ground water was contaminated at few sampling sites namely Mothi Umri, While the sampling sites Hanuman Nagar, Jatharpeth, Shudhir Colony and Rautwadi showed physicochemical parameters within the water quality standards and the quality of water is good and it is fit for drinking purpose.
Keywords: Groundwater, physicochemical parameter, open well and borewell, Akola city.

INTRODUCTION

Water is a valuable commodity for the survival of all life forms in the ecosystem. It is essential for growing crops, plants, household uses such as drinking, cooking, sanitation and in industries for various physical, chemical and biological processes. Quality drinking water is of basic importance to human physiology and man's continued existence depends very much on its availability. Provision of quality water to rural and urban population is necessary in order to prevent health hazards. The combination of unsafe drinking water and inadequate sanitation facilities constitute one of the major causes of death and disability as a result of water borne diseases, which is often on epidemic scale among the poor in developing countries. Water has to comply with certain physical, chemical and microbiological standards, which are designed to ensure that the water is potable and safe for drinking before it can be described as being of good quality. Quality water is defined as water that is free from disease - producing microorganisms and chemical substances deleterious to health. Despite the abundance of water, large percentage of the world population does not have enough to drink and meet their essential needs, as the provision of quality water remains a major problem. Water from most sources is therefore unfit for immediate consumption without some sort of treatment. The original source of most drinking water is rich in aquatic microbes, some of which could be pathogenic if they enter the human body. Conformation with microbiological standard is therefore of special interest because of the capacity of water to spread diseases within a large population. This study was carried out to evaluate the microbiological and physicochemical properties of drinking water from different sources in Akola City, Maharashtra.

Natural resources are the important wealth of our country, water is one of them. Water is a wander of the nature. *" No life without water "* is a common saying depending upon the fact that water is the one of the naturally occurring essential requirement of all life supporting activities1 Since it is a dynamic system, containing living as well as nonliving, organic, inorganic ,soluble as well as insoluble substances. So its quality is likely to change day by day and from source to source. Any change in the natural quality may disturb the equilibrium system and would become unfit for designated uses. The availability of water through surface and groundwater resources has become critical day to day. Only 1% part is available on land for drinking, agriculture, and domestic power generation, industrial consumption, transportation and waste disposal. In India, most of the population is dependent on groundwater as the only source of drinking water supply. The groundwater is believed to be comparatively much clean and free from pollution than surface water. But prolonged discharge of industrial effluents, domestic sewage and solid waste dump causes the groundwater to become polluted and created health problems. The rapid growth of urban areas has further affected groundwater quality due to overexploitation of resources and improper waste disposal practices. Hence, there is always a need for and concern over the protection and management of groundwater quality. Heavy metals are priority toxic pollutants that severely limit the beneficial use of water for domestic and industrial application.

The lakes have complex and fragile ecosystem, as they do not have self cleaning ability and therefore readily accumulate pollutants. The physicochemical parameters and trace metal contents of water samples from Delhi were assessed. The most of water bodies in India needs to be treated before using it in domestic applications by various means. Ground water contains high amount of various ions, salts etc. so if we were using such type of water as potable water then it leads to various water-borne diseases. The consequence of urbanization and industrialization leads to spoil the water. For agricultural purposes ground water is explored in rural areas especially in those areas where other sources of water like dam and river or the canal is not available. During last decade, this is observed that the ground water get polluted drastically because of increased human activities. Hence it is very essential to maintain the quality of ground water for human consumption, for the aquatic life and for other subsequent uses. Considering the above aspects of groundwater contamination, the present study was undertaken to Investigate the impact of the groundwater quality of some open wells and bore well project work an attempt has been made to assess the physical and chemical parameters of groundwater like, Temperature (T), pH, electrical conductivity (EC), total dissolved solids (TDS), turbidity, dissolved oxygen (DO), total alkalinity (TA), total hardness (TH), calcium (Ca++) magnesium (Mg++), sodium (Na+), potassium (K+), chloride (Cl-), fluoride (F-), nitrate (NO- 3) sulphate (SO--4) and phosphate (PO3- 4) of Open Well and Bore well was determined. The analyzed data were compared with standard values recommended by WHO.

MATERIAL AND METHODS

Akola city which is situated in the heart of the nation in Maharashtra (Vidarbha region) has become an important city because of the natural resources available around it. There are various existing industries and industrial estates. These industries use huge quantity of water for processing and release most of the water in the form of wastewater. The wastewater being generated is discharged into the nearby water resources. Similarly the geochemical and morphological structural changes due to weathering may also leached out some chemicals/minerals from the geostrata into surface and groundwater and may change the original characteristics of water which could be rather harmful to human health after consumption. The people are using open well water, tube well water as well as municipal water for their daily need. The literature survey reveals that no water quality management studies are made in this region so far. Hence the present study was planned and undertaken. Hanuman Nagar (Bore well), Sudhir colony (bore well), Jatharpeth (bore well), Rautwadi (borewell), Civil line (bore well), Mothi Umri (Bore well), Ramdaspeth (bore well), Birla gate (Borewell) and Durga Chauk (bore well), sites selected were from different localities in Akola Town for samples collection.

Preparation of Water Samples:

The sample were collected from all the stations at 11.00 am to 12.00 noon in both the seasons for physico-chemical examinations, different methods of collection and handling were adopted based the standard procedures. The samples were collected in plastic canes of five liters capacity without any air bubbles. The instruments were used of accuracy. The temperatures of the samples were measured in the field itself at the time of sample collection. The samples were kept in refrigerator maintained at 4°C. Water samples from ten sampling sites were collected during a post monsoon period of five months (November-2016 to March -2016). The sampling locations in Akot city for assessment of physico-chemical parameter status of ground water are given in Table- 1.

Physico-Chemical Analysis:

Analysis was carried out for various water quality parameters such as Temperature, pH, electrical conductivity (EC), total dissolved solids (TDS), turbidity, dissolved oxygen (DO), total alkalinity (TA), total hardness (TH), calcium (Ca++) magnesium (Mg++), sodium (Na+), potassium (K+), chloride (Cl-), fluoride(F-) nitrate (NO- 3), sulphate (SO--4) and phosphate (PO3- 4) using standard method. All The reagents used for the analysis were AR grade and double distilled water was used for preparation of solutions.

RESULT AND DISCUSSSION:

The physico-chemical parameters of the above mention sites in Akot city can be calculated and it is describe as bellow.

Temperature (T) in °C:

Temperature is an important biologically significant factor, which plays an important role in the metabolic activities of the organism. The

temperature was ranging from 23.0°C to 27.00°C during the study period. Lowest water temperature was observed in the Ramtek Pura was 23.0 °C. A study increase in water temperature in the course of Shivaji College was noticed ie 27°C. An increase in temperature was observed from Somwar Wesh (24.0 °C) to Mahalaxmi Nagar (26.0 °C). This might be due to presence of the effluents. Our property of water is that with change in temperature, its density varies and it becomes less with warming up and more with cooling.

pH:

pH is a term used universally to express the intensity of the acid or alkaline condition of a solution. Most of the water samples are slightly alkaline due to presence of carbonates and bicarbonates. The pH values of water samples varied between 8.0 to 7.1 and were found within the limit prescribed by WHO. The higher range of Ph indicates higher productivity of water.

Electrical Conductivity (EC) in Micro-ohm/cm:

Electrical conductivity (EC) is a measure of water capacity to convey electric current. It signifies the amount of total dissolved salts20. EC values were in the range of 1563 micro-ohms/cm to 390 microohms/ cm. High EC values were observed for five sampling points namely S1, S2, S3, S4, and S5 indicating the presence of high amount of dissolved inorganic substances in ionized form.

Total Dissolved Solids (TDS) in mg/l:

Total dissolved solids indicate the salinity behavior of groundwater. Water containing more than 500 mg/L of TDS is not considered desirable for drinking water supplies, but in unavoidable cases 1500 mg/L is also allowed21. TDS values varied from 108 mg/L to 1650 mg/L. The sampling points S1, S2 and S3 showed higher TDS values than the prescribed limit given by ISI.

Turbidity in NTU:

In most waters, turbidity is due to colloidal and extremely fine dispersions. The turbidity values varied between 0.00 to 0.2 NTU and found within the limits prescribed by ISI (10500-91).

Dissolved Oxygen (DO) in mg/l:

Dissolved oxygen is important parameter in water quality assessment and reflects the physical and biological processes prevailing in the water. The DO values indicate the degree of pollution in water bodies. DO values varied from 7.4 to 2.9. The sampling points S6 and S7 showed high DO values.

Total Alkalinity (TA) in mg/l:

Alkalinity of water is its capacity to neutralize a strong acid and it is normally due to the presence of bicarbonate, carbonate and hydroxide compound of calcium, sodium and potassium. Total alkalinity values for all the investigated samples were found to be greater in samples S1, S2, S3 and S4 than the value prescribed by WHO.

Total Hardness (TH) in mg/l:

Hardness is the property of water which prevents the lather formation with soap and increases the boiling points of water22 Hardness of water mainly depends upon the amount of calcium or magnesium salts or both. The hardness values shown range from 784 mg/L to 312 mg/L. The values for sample from point S2 and S3 were higher than the prescribed limit.

Calcium (Ca2+) in mg/l:

Calcium are directly related to hardness. Calcium concentration ranged between 80.00 mg/L to 34.00 mg/L and found below permissible limit of ISI, except samples from sampling point S1, S2 and S3.

Magnesium (Mg2+) in mg/l:

Magnesium are directly related to hardness. Magnesium content in the investigated water samples was ranging from 147.00 mg/L to 37.1 mg/L which were found within WHO limit.

Sodium (Na +) in mg/l:

Sodium concentrations were found in between 375.00 mg/L to 199.00 mg/L. Sampling sites S9, S10 showed lower sodium concentration than the prescribed limit by WHO and ISI.

Potassium (K +) in mg/l:

The major source of potassium in natural fresh water is weathering of rocks but the quantities increase in the polluted water due to disposal of waste water22. Potassium content in the water samples varied from 0.3 mg/L to 0.8 mg/L. It is found that the contents of potassium in site S1 is higher ie 0.80 mg/l, whereas for sites S4 to S10 is zero.

Chloride (Cl -) in mg/l:

The chloride concentration serves as an indicator of pollution by sewage. People accustomed to higher chloride in water are subjected to laxative effects20. In the present analysis, chloride concentration was found in the range of 257.00 mg/L to 38.2 mg/L. The

values are within the limit except water sample collected from sites S2 and S3. Higher chloride concentration in samples from sites S1 may be due to big discharge of sewage near the sampling sites.

Fluoride (F -) in mg/l:

Probable source of high fluoride in Indian waters seems to be that during weathering and circulation of water in rocks and soils, fluorine is leached out and dissolved in ground water. Excess intake of fluoride through drinking water causes fluorosis on human being. In the present analysis, fluoride concentration was found in all samples sites in Akot city. It is found zero for all sites ie from S1 to S10.

Nitrate (NO3 -) in mg/l:

Groundwater contains nitrate due to leaching of nitrate with the percolating water. Groundwater can also be contaminated by sewage and other wastes rich in nitrates. The nitrate content in the study area varied in the range 1.28 mg/L to 0.12 mg/L and found within the prescribed limit.

Sulphate (SO4 2-) in mg/l:

Sulphate occurs naturally in water as a result of leaching from gypsum and other common minerals18. Discharge of industrial wastes and domestic sewage tends to increase its concentration. The sulphate concentration varied between 80.9 mg/L and 19.1 mg/L. and found within the prescribed limit.

Phosphate (PO4 3-) in mg/l:

Phosphate may occur in groundwater as a result of domestic sewage, detergents, and agricultural effluents with fertilizers. The phosphate content in the study area was found in S1 site only it is 0.1 mg/L. All the data can be summarized in *Table-2.*

CONCLUSION

Deviations were observed by some groundwater samples in Akola City. The water samples from sites S1 and S2 showed poor water quality as compared to other water samples, probably due to River close to site S1 The water samples from sites S1 and S2 are polluted and unfit for drinking purpose. The sampling point S1 showed high TDS, total alkalinity and sodium content indicating the need of some treatment for minimization of the parameters. The sampling sites S9 and S10 showed physicochemical parameters within the water quality standards and the quality of water is good and it is fit for drinking purpose. The parameters namely F- and PO4 3- is found as zero for all sites.

REFERENCES

Mishra K.R., Pradip, Tripathi; S.P,(2002) Groundwater Quality of Open Wells and Tube Wells, *Acta Ciencia Indica*, XXXIIIC, 2, 179.

Gupta V., Agarwal J., Sharma S.; (2008)Adsorption Analysis of Mn(VII) from Aqueous Medium by Natural Polymer Chitin and Chitosan, *Asian J. of Chem.*, 20(8), 6195-98.

Tahir M.A., Rasheed H. and Malana A.;(2008)Method development for arsenic analysis by modification in spectrphotometric technique, *Drik. Water Eng.Sci. Discuss.* 1, 135-154.

Raja R E, Lydia Sharmila, Princy Merlin, Chritopher G,(2002) Physico-Chemical Analysis of Some Groundwater Samples of Kotputli Town Jaipur, Rajasthan, *Indian J Environ Prot.*, 22(2), 137.

Patil P.R, Badgujar S.R. and Warke A.M. (2001)Evaluation Of Ground Water Quality In Ganesh Colony Area Of Jalgaon City, *Oriental J Chem.*, 17 (2), 283.

Petrus R and Warchol J.K., (2005) Heavy metal removal by clinoptilolite. An equilibrium study in multi-component systems, *Water Res.*, 39, 819-830.

Lokeshwari H and Chandrappa G.T, (2006) Impact of heavy metal contamination of Bellandur Lake on soil and cultivated vegetation, *Curr Sci.*, 91(5), 584.

Massod Alam, Sumbul Rais and Mohd AslamS; (2009)Hydro-chemical Survey of Groundwater of Delhi, India, *E-Jour. of Chem.* 6(2), 429-436.

Arvnabh Mishra, Vasishta D. Bhatt, Nirav Sevak, Pinal Shah, Kirit Patel and Chaitanya Patel; (2010)Comparative Study of Physico-Chemical and Microbial Parameters on Lotic And Ground-Waters In Selected Outlying Areas Of Central Gujarat, *J. Chem. Pharm. Res.*, 2(4), 174-177.

Elizabeth K.M. and Premnath Naik L,(2005) Effect of polluted water On human health *Poll.* res., 24(2) 337-340.

Vijender Singh;(2006) Physico-chemical Examination of water, Sewage and Industrial effluents, *Res. J. chem and ENV*, 10(3), 62- 66.

Arunabh Mishra and Vasishta Bhatt;(2008) Physico- Chemical and Microbiological Analysis of Under Ground Water in V.V Nagar and Nearby Places of Anand District,Gujarat, India, *E-.J. Chem.*, 5(3), 487-492.

World Health Organization,(1993) Guidelines for drinking water quality-I, Recommendations. *2nd Ed. Geneva WHO.*

Standard Methods for the Examination of Water and Waste Water,(1998) *20th Ed., APHA, AWWA, WEF. Washington DC.*

Standard Methods for the examination of water and waste water, *American Public Health Association, 17th Ed., Washington, DC,* (1989)

Trivedy R.K and Goel P.K; (1986)*Chemical and Biological methods for water pollution studies Environmental Publication, Karad.*

Manivaskam N. (2005)Physicochemical examination of water sewage and industrial effluent, *5th Ed. Pragati Prakashan Meerut.*)

Khan, I.A. and Khan A.A.,(1985) Physical and chemical condition in Seika Jheelat, *Aligarh, Ecol.*, **3,** 269-274.

Sudhir Dahiya and Amarjeet Kaur,(1999) physic chemical characteristics of underground water in rural areas of Tosham subdivisions, Bhiwani district, Haryana, *J. Environ Poll.,* 6 (4), 281.

Shrinivasa Rao B and Venkateswaralu P,(2000)Physicochemical Analysis of Selected Groundwater Samples, *Indian J Environ Prot.,* 20 (3), 161.

Trivedy R. K. and Goel P. K.;(1986) Chemical and Biological methods for water pollution Studies, *Environmental Publication*, Karad.

Table No. 1. Water Sampling Sites of Akola Town

S.N.	Sample Location	Source	Symbol used
1	Hanuman nagar	Borewell	S1
2	Jatharpeth	Borewell	S2
3	Sudhir colony	Borewell	S3
4	Mothi Umri	Borewell	S4
5	Civil line	Borewell	S5
6	Jawahar nagar	Borewell	S6
7	Rautwadi	Borewell	S7
8	Durga Chauk	Borewell	S8
9	Birla Gate	Borewell	S9
10	Ramdaspeth	Borewell	S10

Table No. 2 : Average results of the Physicochemical properties of different location in the Akola town.

S.N.	Parameter	WHO	ISI	Sampling sites of the Akot Town									
				S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
1	Temperature	--	--	27	26	26	26	25	24	24	23.3	23.1	23
2	pH	7-8.5	6.5-8.5	8.0	8.0	7.9	7.8	7.8	7.5	7.5	7.4	7.2	7.1
3	EC	1400	--	1500	1563	1477	1476	1476	1250	1249	780	390	390
4	TDS	1000	500	1650	1482	520	456	456	439	411	287	110	108
5	Turbidity	5.0	10	0.2	0.2	0.2	0.2	0.2	0.15	0.15	0.12	0.00	0.00
6	DO	--	5.0	5.1	5.1	5.0	5.0	5.0	7.4	7.3	3.4	2.9	2.9
7	TA	120	200	187	178	176	121	121	120	120	119	116	116
8	TH	500	300	513	784	389	336	336	334	334	331	312	312
9	Ca^{2+}	100	75	80	77	85	72	72	34	92	76	74	74
10	MG^{2+}	150	30	147	147	147	139	139	137	132	53.7	37.1	37.1
11	Na^{+}	200	200	255	234	375	214	214	210	207	204	199	199
12	Cl^{-}	250	250	257	211	186	123	123	78.2	71.6	78.7	38.2	38.2
13	F^{-}	1.5	--	00	00	00	00	00	00	00	00	00	00
14	NO_3^{-}	5	45	1.28	0.79	0.46	0.24	0.24	0.20	0.19	0.12	0.12	0.12
15	So_4^{2-}	250	200	22.3	22.1	80.1	62.3	62.3	56.8	55.7	47.4	19.1	19.1
16	PO_4^{3-}	--	--	01	00	00	000	00	00	00	00	00	00

❖❖❖❖❖

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

REMEMBERING REALISM IN ALICE MUNRO'S *OPEN SECRETS*, A COLLECTION OF SHORT STORY

D. B. WANKHADE
Assistant Professor, Dept. of English
Shri Shivaji Arts, Commerce & Science
College Akot, Dist. Akola
(MS) INDIA

ABSTRACT

Alice Munro is a Canadian short story writer and Nobel Prize winner. Munro's work has been described as having revolutionized the architecture of short stories, especially in its tendency to move forward and backward in time. Munro's fiction is most often set in her native Huron County in southwestern Ontario. Her stories explore human complexities in an uncomplicated prose style. Her writing has established her as "one of our greatest contemporary writers of fiction, Munro's prose reveals the ambiguities of life: ironic and serious at the same time. Her style places the fantastic facts next to the ordinary, with each undercutting the other in ways that simply and effortlessly evoke life.

Munro's highly acclaimed first collection of stories, Dance of the Happy Shades in 1968, won the Governor General's Award, then Canada's highest literary prize. That success was followed by Lives of Girls and Women (1971), a collection of interlinked stories. In 1978, Munro's published a collection of interlinked stories Who Do You Think You Are? This book earned Munro a second Governor General's Literary Award. Her most famous Open Secrets in 1994 is a pioneer work in literary art, it includes numerous pieces of prose as Carried Away', A Real Life, The Albanian Virgin, The Jack Randa Hotel, A Wilderness Station, Spaceships Have Landed and so on.

Keywords *- Realism, Nostalgia, Identification, Humanism etc.*

INTRODUCTION

Alice Munro is a Canadian author, master of the contemporary short story who won the Nobel Prize in Literature in 2013. She is one of the most read and talked author for the years.

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

Munro has a long and creative career, ranging from the 1960s to this decade, and she is considered as one of the best writers alive. Her short stories have been commended by various literary scholars. Her Open Secrets with its various resemblances binding with fine facts and fancy, are worthy to attention.

Alice Munro's Open Secrets a short story collection was published in 1994. The praise at the back is very inexplicable and slightly non-committal, but having read the book, it actually manages to capture the one thing that connects these stories together i. e. unconventional women and freedom. The stories in this collection tell of women of various ages and places, of various conditions in life and various approaches to the significant and insignificant issues. One of the stories features an accidental letter exchange between a librarian and a soldier and the expectations that arise when he is due to return from the war. Another follows a woman that trails down her ex-husband to the other side of the world, and another a woman captured by a native tribe and being assimilated to their lifestyle.

Alice Munro's style and craft with which she creates stories is noble. The switching between different characters and time periods and the subtle indications of mood and emotion are catch worthy. Occasionally the scarcity of the words brought to aphoristic line of Bacon who also had the talent to set the tone and mood of the idea in just a few lines. There are many short stories in Open Secrets are Carried Away, Spaceships Have Landed and A Wilderness Station the intricate structure and flow of narration in those was incredible. However, there were also some things that put a damper on my mood. In some stories share some common elements. Upon reading the collection, the stories didn't appear to have any connecting features only the occasional mentions of the town Carstairs.

Alice Munro is an acknowledged master of the short story, and her newest collection has garnered the very highest praise. Most of the eight stories in Open Secrets take place in Munro's native Canada and particularly in the small Ontario town of Carstairs. Munro's exploration of her characters' varied lives reveals entire worlds of passion, joy, despair even exoticism and adventure beneath exteriors that are often deceptively mundane.

The central characters in the stories are all women: an emotionally adventurous librarian; a young woman kidnapped by Albanian tribesmen in the 1920s; a farmer's wife who yearns for gentility; a young born-again Christian whose unresolved feelings of love and anger cause her to vandalize a house; a spurned middle-aged woman who follows the man who rejected her to Australia and spies on him; a young frontier wife in the wilderness with her abusive husband. Munro explores female themes with great depth and power, but the range of her vision is not exclusively female: through the eyes of her fictional women she examines the

UGC Approved Journal No 48520 (Arts & Humanities)
VOL 4, ISSUE 1 www.puneresearch.com/english
(IMPACT FACTOR 3.02) INDEXED, PEER-REVIEWED / REFEREED

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

culture and values of her world while weaving complex, luminous, and poetic apprehensions of the milieu she has made so intensely her own.

Throughout Alice Munro's "Open Secrets" the narrator places considerable emphasis on Maureen's uncanny ability to interpret various forms of language-anything from spoken word to unspoken words, and even body language. This emphasis by the narrator on Maureen's capabilities to interpret language ultimately establishes Maureen as the detective tasked with solving the mystery of the disappearance of Heather Bell. Though Maureen is portrayed as a master in almost all aspects of language, however, the narrator emphasizes one facet of language which Maureen struggles with: profane language. Ultimately, it is the lack of mastery in this area-the only chink in her armor with respect to language-which results in Maureen coming up short in solving the mystery of Heather Bell's disappearance and unable to fully comprehend the "Open Secret" right before her eyes.

A particularly important scene in the story is the love scene between Maureen and Lawyer Stephens, because it juxtaposes Maureen's mastery of language against her only inadequacy with respect to language. The beginning of this scene emphasizes Maureen's language abilities by demonstrating her knack for interpreting the unspoken language of body language. After Marian and her husband leave Maureen's house following their meeting with Lawyer Stephens, Maureen's husband approaches her for sex. Before Lawyer Stephens has the chance to verbally proposition Maureen, however, the narrator provides Maureen's perspective on the situation through her interpretation of her husband's body language. This focus by the narrator on Maureen's ability to interpret the unspoken language of her husband is one of the strongest depictions of Maureen's interpretative language skills.

Alice Munro's stories are lucid and compelling. They are also extremely mysterious. They demand close attention a word skipped or a line skimmed can be the difference between bafflement and illumination but the prose is always supple, never knotty. It is one of this author's many subtleties that she avoids writing in a self-consciously subtle manner. Open Secrets is Munro's eighth work of fiction, and it develops the preoccupations - and the paradoxes of her earlier books. All her stories tell more than one story. All deliver more than they promise: they are colloquial but highly wrought, domestic but dramatic, sceptical but intense, vividly based in the life of small Canadian towns but able to reach across continents

The title-story shows Munro's gifts at full stretch: it is the most limpidly expressed piece and the most puzzling. 'Open Secrets' touches quickly on the drama of several different lives. A provocative young girl goes missing on a mountain hike; a middle-aged woman is troubled by her staid husband's sudden sexual voracity; and an uncomfortable married couple report to a judge with what seems to be an accusation but may be a confession. The interweaving of

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

these lives is delicate and transitory. What has happened whether and how the girl was murdered is never spelt out, although a solution is obliquely glimpsed through hints and memories.

Despite these black complexities, Munro's stories are full of buoyant moments: it is a measure of her richness as a writer that she can throw off as asides passages that other authors would use as centrepieces. In 'Open Secrets' she gives a rapid sketch of a woman, Mary Johnstone, whom you were hardly supposed to mention in Carstair without attaching the word 'wonderful': 'Whenever Maureen met Mary Johnstone on the street or in a store, her heart sank. First came that searching smile, the eyes raking yours, the declared delight in any weather - wind or hail or sun or rain, each had something to recommend it - then the laughing question. So what have you been up to, Mrs Stephens? Mary Johnstone always made a point of saying 'Mrs Stephens', but she said it as if it was a play title and she was thinking all the time, it's only Maureen Coulter.'

This scepticism and melancholy and humour give a taste of the small-town life, bristling with gossip and a sense of the past, in which Open Secrets is steeped. All but one of the seven stories have their roots in the same two nearby towns, and Munro evokes with wonderful economy the terrain from which these are carved the creeks and river flats and wildwoods and rock pools - as well as her urban landmarks: a drinking-fountain, a food store, a high-windowed library in which lovers shelter, and a piano factory that marks the boundary of one settlement 'like a medieval town wall'. The gaps and the continuities of this history are one of Munro's most important subjects. These stories, which talk eloquently of the unexpected echoes in the lives of different people, also speak of the dissonance in our own: our pasts, Alice Munro says, make us strangers to our selves.

In this new collection of stories the finest yet from one of the most brilliant writers of fiction at work today whole lives, whole worlds, unfold with an ease, a richness, an absolute "rightness" that are breathtaking. These are stories in which women are central. They are about lovers found and lovers lost but lodged still in the subconscious, about secrets that change lives, about people whose histories are opening out or coming to an end. Their power accumulates layer by layer as time and reality shift, identities become uncertain, truths surface. A heart patient on a trip to her doctor on a hot summer's day has a revelation about the lasting power of an old love. A long-hidden secret sticks in the consciousness of a young woman, who, in an outrageous but entirely satisfying act, finally rids herself of its thrall. A romantic tale of capture and escape in the wilds of central Europe may or may not be true, but it comforts the hearer, who, on an adventure of her own, is fleeing her husband. Two childhood friends resolve their lives in a madcap and unexpected way on a memorable

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

midsummer's eve. A wonderful gathering of stories in which once again, as she does with each new book, Alice Munro surpasses herself.

Munro, an exemplary short-story writer, with exquisite sad tales, lonely eccentrics leading lives of quiet self-deception. Her heroines are often troubled souls with the unforgiving task of fitting into the rigorously confining community that spawned them, occasioning minor acts of rebellion and sometimes even acts of violence. Insurmountable obstacles seem to inhibit even the simplest communication words fail to form, letters never arrive, and strokes paralyze speech. Society seems to stand on the most tenuous of foundations, one based on "gossip, rumor, and the coldhearted thrill of catastrophe." With the poise and self-confidence of a true master of her craft, Munro presents stories laden with mysteries that are gradually revealed and some that remain obscured by ambiguity and time. A teenage girl vanishes into thin air; a jilted woman stalks her ex-lover to the far reaches of Australia; a good Christian vandalizes the home of an old neighbor. Munro expertly captures the vagaries of history and geography in this satisfying and immensely pleasurable collection.

The story, aptly entitled "Carried Away," is the first in Alice Munro's new collection, "Open Secrets," her eighth work of fiction. And in fact, all the stories in "Open Secrets" are lessons. Ms. Munro's work has always been ambitious and risky precisely because it dares to teach, and by the hardest, best method: without giving answers. Sometimes even the characters themselves have only a fuzzy notion of what their own stories mean. "Carried Away" isn't really about women making fools of themselves. And none of these eight stories are easy to predict. Just when meaning seems almost revealed, the story changes, veers, steps off a cliff.

The librarian, for instance, tells of the soldier who wooed her by mail during World War I, then came home and married another girl. After she confesses the details to the salesman and asks, "Do you think it was all a joke on me? Do you think a man could be so diabolical?" the salesman says, "No, no. Don't you think such a thing. Far more likely he was sincere. He got a little carried away. It's all just the way it looks on the surface." Then the salesman seduces her.

Few writers would dare such a move, and fewer still could make it work. But Ms. Munro does. The narrative fabric into which this horrible event is woven is tight with a sense of time and place, a solid realism that allows even the bizarre to appear normal. And, as it turns out, decapitation isn't the final twist in the story, or even the most bizarre. Two more follow, a marriage and a vision, and the story concludes with a flashback that proves what we may by now have suspected: Ms. Munro's fiction is out to seize to apprehend the mystery of existence within time, "the unforeseen intervention," the unique quality of a person's fate.

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

Human hesitation of mystery has to start with language, our technique for rehashing and examining experience for any traces of meaning. So in "Open Secrets" people are continually telling and hearing stories sometimes more than one at a time in confessions, letters, rumors, ballads, conversations, newspapers. But some parts of life aren't quickly comprehensive through language. Puzzles of love, time, death, spirit these are the open secrets, near-at-hand mysteries that can't readily be talked or written into clarity, but that nevertheless can be relentlessly turned and poked and studied until, with some luck, they yield something a lesson that's partial and ambiguous but likely also to be momentous. Every story in the collection contains some sort of startling leap, whether it's a huge jump forward in time, a geographical change or a sudden switch in viewpoint that changes the whole nature of the story. Mishaps and accidents twist through like killer tornadoes, throwing everybody off course. By thus expanding you might even say exploding the fictional context, Ms. Munro reaches toward difficult truths.

Perhaps the most exploded story in the collection is "The Albanian Virgin," which begins with the exotic narrative of a Canadian woman held captive in a remote Albanian village during the 1920's. But after five pages there is an interruption: "I heard this story in the old St. Joseph's Hospital in Victoria from Charlotte, who was the sort of friend I had in my early days there." The narrator is a young woman of the 1960's who has fled both a marriage and a love affair on the other side of the continent. And her narrative is interrupted from time to time by a return to the Albanian adventure. The result is a bold assault on the assumptions and expectations of traditional fiction, with remarkable success.

It's no coincidence that almost every story in "Open Secrets" has as its time frame the span of an entire life, for these stories draw upon the complexity of a mature, long-vigilant sensibility. And lifelong learning isn't easy. In "Vandals," a woman perseveres in a troubled marriage: "She learned, she changed. Age was a help to her. Drink also." The only real guard against despair, against the "devouring muddle" and a life of "arbitrary days," is to make a narrative of the self, constantly reinterpreting the accumulated life. People whose lives have not panned out, like Millicent in "A Real Life," who talk her friend Dorrie into marrying a stranger, can thus achieve a compensatory wisdom, limited but powerful, and vaguely mystical.

In the title story, Maureen Stephens's supposedly lucky marriage has taken a sexually horrifying turn. And when a local girl disappears from a hiking trip, the lost girl reminds Maureen of how girlhood itself vanishes. She remembers her own secret recklessness. "To be careless, dauntless, to create havoc that was the lost hope of girls." She experiences odd hallucinatory moments when she sees things that "seem to be part of another life that she is leading," as if she were "looking into an open secret, something not startling until you think

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

of trying to tell it." "Open Secrets" is a book that dazzles with its faith in language and in life. Sex and self-defense

Still, even an apprentice magician knows that the best effects come when sheer talent is strengthened by careful study of the craft. And Ms. Munro whose work has been critically acclaimed since her first book, "Dance of the Happy Shades," won Canada's Governor General's Award in 1968 is a master at hers. Speaking by telephone from her home in Clinton, Ontario, Ms. Munro, 62, moved easily through the stories in her latest collection, "Open Secrets," in much the same cross-cutting style that she uses in the stories themselves. Consider, for example, "The Albanian Virgin," which takes place, in part, in a landscape quite different from her usual settings in rural Ontario, the Scottish countryside of its inhabitants' ancestors and the farther reaches, in Canada or Australia, to which their descendants sometimes flee.

There is, of course, a hidden local connection. "I got interested in Albania," Ms. Munro explained, "because I heard a story, which I've never been able to verify, that a librarian from Clinton, traveling in Europe in the 1920's, was captured by bandits in Albania." Ms. Munro's research led her to a book called "High Albania," in which she came upon a chapter called "The Albanian Virgin" that set forth the restrictions imposed on women in some of the remote villages of that time. It also described an escape route: by forswearing sex and marriage, a woman could become a kind of honorary man, living as she pleased. "She could smoke and booze and spend her life polishing her weapons," Ms. Munro remarked with a laugh. Then she added, more seriously, "I hadn't seen another society where such a clear distinction is made, with the sexual role of the woman defining her inferiority."

Although Ms. Munro was quick to point out that "I never write about an idea," she acknowledged that she has always been interested in "the way women circumvented the rules," even as they took it upon themselves, in many cases, to enforce them. And she remains interested in the distinctions between sexual and emotional intimacy that prevailed in earlier generations, particularly that of her mother. "That rejection of sex as something necessary but unpleasant, something you would avoid if you could when I was younger I thought it was simply a bad part of a Puritan heritage, but it was pure self-defense. Sex changed your life well, it could now too, I guess -- but then it changed your life in a way you didn't recover from." Yet marriage was a woman's goal. "Sex was unpleasant, but marriage was another thing altogether."

Despite her willingness to explore the bleaker aspects of her characters' relationships, Ms. Munro is also intrigued by the notion of "high romance." In "The Albanian Virgin," the story of the kidnapped Canadian woman is told by Charlotte, an elderly bohemian, to Claire, who

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

has fled her husband and is unsure about whether her lover will follow her. "The two stories combined there are a romantic fairy tale and a sort of romance worked out in real life," Ms. Munro said.

With a few strokes of her pen, Munro has the unerring ability to familiarize us with a foreign country or the entire life of another person. Even if you've already read these latest stories in the New Yorker, you'll want to luxuriate in their gorgeous prose again and again. Munro's women must take repeated flight from the harshness of their realities bad spinsterhood, worse marriages into their imaginations, where wrongs are alternately redressed or allowed to fester into self doubt and guilt. Louisa, the protagonist of "Carried Away," is a small Canadian town's lonely librarian who receives an unexpected letter from the equally desolate Jack, a WW I soldier whom she has never met but who remembers her from the library and woos her through the mail. After the war, he never introduces himself in person, and she reads in the newspaper of his betrayal and marriage to another woman. Jack continues to be the obsession of her thoughts and actions when his head is severed from his body in a horrific accident at the piano factory where he works and Louisa plunges into a "normal" life and marries the factory's owner. Years later, when an elderly Louisa thinks she is having a conversation with an elderly Jack in town, we realize that Jack's death or even Jack himself may be a figment of her imagination. Similarly, we aren't quite sure if an old bag lady in Victoria, B.C., was kidnapped in her youth by Albanian tribesmen ("An Albanian Virgin"), if a woman in the 1850s Canadian wilderness actually murdered her husband, who may or may not have been abusing her ("A Wilderness Station"), or if a teenager who disappeared from a hike was murdered, kidnapped, or simply ran off with a guy she had the hots for ("Open Secrets"). In Munro's hands, fact is a stepsister to fiction and reality may have nothing in common with life's truths. Munro's stories of miscellaneous experience in the female world of fictions and facts are of applicable with native hue of humanism.

WORK CITED

1. Carscallen, James. *The Other Country: patterns in the writing of Alice Munro.* (Toronto: ECW Press, 1993)
2. Cox, Alisa. *Alice Munro.* (Tavistock: Northcote House, 2004)
3. Dahlie, Hallvard. *Alice Munro and Her Works.* (Toronto: ECW Press, 1984)
4. Howells, Coral Ann. *Alice Munro.* (New York: Manchester University Press, 1998)
5. Lecercle, Jean-Jacques. 'Alice Munro's Two Secrets.' In Ventura and Conde. 25–37.
6. Lynch, Gerald. "No Honey, I'm Home." *Canadian Literature* 160 (Spring 1999).
7. MacKendrick, Louis King. *Some Other Reality: Alice Munro's Something I've Been Meaning to Tell You.* (Toronto: ECW Press, 1993)

PUNE RESEARCH ISSN 2454-3454
AN INTERNATIONAL JOURNAL IN ENGLISH VOL 4, ISSUE 1
UGC Approved Journal No 48520 (Arts & Humanities) ENGLISH

8. Martin, W.R. *Alice Munro: paradox and parallel.* (Edmonton: University of Alberta Press, 1987)
9. Ross, Catherine Sheldrick. *Alice Munro: a double life.* (Toronto: ECW Press, 1992.)
10. Thacker, Robert. *Alice Munro: writing her lives: a biography.* (Toronto: McClelland & Stewart, 2005)
11. Thacker, Robert. Ed. The Rest of the Story: critical essays on Alice Munro. (Toronto: ECW Press, 1999)
12. www.google.com

MAH MUL/03051/2012 ISSN: 2319 9318 | UGC Approved Sr.No.62759 | Vidyawarta® | February 2018 Special Issue Vol.02 | 052

14

MULK RAJ ANAND: A LITERARY LIBERATOR OF HUMANISM WITH REFERENCE TO TWO LEAVES AND A BUD

D. B. Wankhade
Assistant Professor, Dept. of English
Shri Shivaji Arts, Commerce & Science College
Akot, Dist. Akola (M.S.) India.

Abstract-

Gangu is a middle aged peasant residing in Hoshiarpur together with his wife Sajani and his daughter Leila, due to his extremely good money owed he ends up losing his lands and as such, comfortably is of the same opinion to journey to Assam to tackle a plantation task that would pay well and permit Gangu to personal his very own land. Upon his arrival Gangu reveals that this became all a trick and that the job is basically slave labor. Gangu and his own family are compelled to live their lives in squalor and to bear all kinds of abuse and degradation. The general terrible treatment and residing conditions initiate problem in the plantation's physician, John Dela. Harve, especially as the risk of cholera looms over the plantation. Gangu attempts to prevent him however is as a substitute shot and killed by using Hunt. The officer is charged with Gangu's homicide, but an ordeal comprised predominantly of Englishmen unearths him not guilty. Anand depicts the humanitarian concern over the Indian issues of subjugation both by the mindsets of natives and the foreigners.

Keywords - Humanism, Exploitation, Awakening, Indian Fiction.

Mulk Raj Anand is a reputed Indian English novelist of first generation along with R. K. Narayan and Raja Rao. This trinity paved the way for Indian ethos concerning the pre independent issues of awaking India. Two Leaves and the Bud is one of the finest pieces of literature among the sequel of fictionist fashion of Anand's genius. The Indian English novelist become aware of the fact that he must not merely imitate the condition of the colonized over the colonizer, however in searching for the electricity and fertility of his very own cultural sensibility and socio-cultural enjoy. Anand's outstanding novels are Untouchable, Coolie, Two Leaves and a Bud, The Village, and The Sword and the Sickle. The practical portrayal of the bleak existence of the plantation coolies provides to the pathos of the novel. The tea estate, in Two Leaves and a Bud is a global within an international that projects ethnic intolerance, suspicion, cruelty, and exploitation of the terrible labors with the aid of the colonizers who result in a form of 'inner colonialism'. The very starting chapter foretells the future of the negative Gangu, who is suffered by various strokes of bad humiliations and humanism.

Gangu may be a middle aged peasant living in Hoshiarpur along with his married woman Sajani and his female offspring Leila. Due to his outstanding debts he finally ends up losing his lands and intrinsically, promptly agrees to travel Assam to require on a plantation job that will pay well and permit Gangu to possess his own land. But upon his arrival Gangu finds that this was all a trick which the work is basically slave labor. Their pay isn't even enough to shop for food and lots of the merchants supply loans with interest rates therefore high that compensation is not possible. Gangu and his family are forced to measure their lives in sordidness and to endure all varieties of abuse and degradation. On high of this Sajani and Leila are subjected to rape and alternative sexual degradation.

MAH MUL/03051/2012 UGC Approved Sr.No.62759 Vidyawarta® February 2018 Special Issue Vol.02 052
ISSN: 2319 9318

14

MULK RAJ ANAND: A LITERARY LIBERATOR OF HUMANISM WITH REFERENCE TO TWO LEAVES AND A BUD

D. B. Wankhade
Assistant Professor, Dept. of English
Shri Shivaji Arts, Commerce & Science College
Akot, Dist. Akola (M.S.) India.

Abstract-

Gangu is a middle aged peasant residing in Hoshiarpur together with his wife Sajani and his daughter Leila, due to his extremely good money owed he ends up losing his lands and as such, comfortably is of the same opinion to journey to Assam to tackle a plantation task that would pay well and permit Gangu to personal his very own land. Upon his arrival Gangu reveals that this became all a trick and that the job is basically slave labor. Gangu and his own family are compelled to live their lives in squalor and to bear all kinds of abuse and degradation. The general terrible treatment and residing conditions initiate problem in the plantation's physician, John Dela. Harve, especially as the risk of cholera looms over the plantation. Gangu attempts to prevent him however is as a substitute shot and killed by using Hunt. The officer is charged with Gangu's homicide, but an ordeal comprised predominantly of Englishmen unearths him not guilty. Anand depicts the humanitarian concern over the Indian issues of subjugation both by the mindsets of natives and the foreigners.

Keywords - Humanism, Exploitation, Awakening, Indian Fiction.

Mulk Raj Anand is a reputed Indian English novelist of first generation along with R. K. Narayan and Raja Rao. This trinity paved the way for Indian ethos concerning the pre independent issues of awaking India. Two Leaves and the Bud is one of the finest pieces of literature among the sequel of fictionist fashion of Anand's genius. The Indian English novelist become aware of the fact that he must not merely imitate the condition of the colonized over the colonizer, however in searching for the electricity and fertility of his very own cultural sensibility and socio-cultural enjoy. Anand's outstanding novels are Untouchable, Coolie, Two Leaves and a Bud, The Village, and The Sword and the Sickle. The practical portrayal of the bleak existence of the plantation coolies provides to the pathos of the novel. The tea estate, in Two Leaves and a Bud is a global within an international that projects ethnic intolerance, suspicion, cruelty, and exploitation of the terrible labors with the aid of the colonizers who result in a form of 'inner colonialism'. The very starting chapter foretells the future of the negative Gangu, who is suffered by various strokes of bad humiliations and humanism.

Gangu may be a middle aged peasant living in Hoshiarpur along with his married woman Sajani and his female offspring Leila. Due to his outstanding debts he finally ends up losing his lands and intrinsically, promptly agrees to travel Assam to require on a plantation job that will pay well and permit Gangu to possess his own land. But upon his arrival Gangu finds that this was all a trick which the work is basically slave labor. Their pay isn't even enough to shop for food and lots of the merchants supply loans with interest rates therefore high that compensation is not possible. Gangu and his family are forced to measure their lives in sordidness and to endure all varieties of abuse and degradation. On high of this Sajani and Leila are subjected to rape and alternative sexual degradation.

and melancholy. Anand describes his characters as part of his autobiography, of the torments, ecstasies and deliriums of the final two generations. The narrow novel untouchable suggests the necessary Anand. Anand offers in the life of Bakha an inauspicious day punctuated by happy and sad reports.

Anand describes within the subsequent strains the violent stirrings within the soul of Bakha: the electricity, the strength of his giant frame glistened with the preference for revenge in his eyes, even as horror, rage, indignation swept over his frame E. M. Forster in his preface to the unconventional recognizes the broader gamut of emotions assimilated into the radical. The following remark suggests his admiration for Anand's combined temperament: he has simply the proper aggregate of perception and detachment and the fact that he has come to fiction through philosophy has given him intensity. Anand romanticizes Bakha's mind-set to work and glorifies the triumph it introduced to Bakha. Anand writes: the toil of the frame bad built up for him a completely exceptional body. The way Anand describes his splendor is almost Lawrentian. Anand facts the emotions of her modest lover with equal sympathy and sensitivity: he too had observed her earlier than and felt a stirring in his blood, the nice and cozy impulse of love, the unusually affecting desire of the soul to reach out something past. Anand describes his depression and anger: he felt he could kill them all. Anand graphically describes Bakha's feelings for that lady who gracefully grows right into a younger woman. Anand offers copious details to make the state of affairs particularly symbolic. Anand writes in a manner that offers the human movement cosmic proportions. The philosopher in Anand does coloration his perception on this novel but it is a deplorable distortion if we are saying that Anand gloats on nullity and futility inside the novel. Anand facts his feelings for a lady: there's something of water approximately a girl. Anand sufficiently suggests that his leader objective as a novelist is the innovative interpretation of Indian scenes and situations. Indian way of life has its very own picture and Anand initiatives its high-quality value. Indian psyche is a vital part of the cultural sample authentically delineated in the first three novels of Anand.

Anand's fiction does display the complicated crystalline shape that characterizes Indian civilization. The common-or-garden sufferer is beaten with the aid of the relentless immobility of rigid magnificence systems and imperial feudalism in the novels of Anand. Anand's main men aren't oxen and girls are not true sports activities. Mulk Raj Anand also recognizes that Gandhi set free a stream of consciousness which released our humans into a new form of harmony. Anand determined in Gandhi a brand new ferment, a new kind of ethos that gave content to Indian persona. Anand does now not cope with the subject of alienation even in his early novels but it isn't always his reductivist technique. Arun Joshi, V.S. Naipaul and Salman Rushdie constitute a sort of reality that is alien to Mulk Raj Anand. Anand does no longer write a literature of pissed off desires and he does no longer subvert the belief of goal reality. The imaginative and prescient of existence as a procedure transforms the stressed global in the novels of both Ghosh and Anand. We do sense that Anand's social perception includes instead of excludes even in his early novels. Anand allows his hero to question and take a look at the scales of cost and ethical codes.

Consequently the recurrent issues of Anand have attracted the eye of the readers for critical evaluation and remark and find a distinguished location in every essential have a look at of his novels. Mulk Raj Anand a laureate via humanity affords a photographic picture of the society displaying as it is and as a social reformer shows the seeds of humanism for the betterment of the society. As a true artist Mulk

MAH MUL/03051/2012 ISSN: 2319 9318 UGC Approved Sr.No.62759 Vidyawarta® February 2018 Special Issue Vol.02 056

of caste, class, faith race and so forth in all his novels. Anand portrays the condition of terrible peasants, coolie and labourers within the novel via his humanistic brush with the colorations of phrases, which had been in advance exploited by using money lenders in their village and later with the aid of the Britishers inside the tea estate. His quite a whole lot of novels highlight the circumstance of these people who are omitted by means of the society and its inflexible ethnicity. The unconventional now not simplest well-known shows the pathetic condition of labourers inside the tea estate but also highlights the deplorable condition of underclass ladies who work in doomed and detrimental surroundings due to the ill monetary circumstance of the circle of relatives. The novelist has portrayed each scene of the unconventional with the humanitarian issue and supplied the actual pathetic condition of labourers and coolies. Anand writes approximately the radical.

Works cited -

1. Ravi Kumar, N. P. "Two Leaves and a Bud: A Proletariate Novel."The Novels of Mulk Raj Anand: A New Critical Spectrum. ed. T. M. J. Indra Mohan. New Delhi, Atlantic Publishers, 2005.

2. Pratap, Kiran. "Human Fervour in the Novels of Mulk Raj Anand: WSR to Two Leaves and a Bud." Mulk Raj Anand. ed.,B.R. Agrawal. New Delhi, Atlantic Publishers, 2006.

3. Anand, Mulk Raj. Two Leaves and a Bud. Bombay, Kutub Popular, 1946. All subsequent references have been taken from this edition of the text.

4. Iyengar, K. R. S. Indian Writings in English. Bombay, Hind Kitab, 1978.

5. Harrex, S. C. The Fire and the Offering. Calcutta, Writers Workshop, 1977.

6. Cowasjee, Saros. So Many Freedoms: A Study of the Major Fiction of Mulk Raj Anand. New Delhi, Oxford University Press, 1977.

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

22.

Transitional Twist from Earning Education to Performative Protagonist as Outcome of Colonial Trends in Weep Not, Child of Ngugi Wa Thiong'o

D. B. Wankhade
Assistant Professor, Deptt. of English
Shri Shivaji Arts, Commerce & Science College Akot,
Dist. Akola (M.S.) India.

Abstract -

Ngugi wa Thiong'o is an author of global reputation. His pen has enlivened the reflection of African ethos and it's dynamic of transitional inclination to be fitted in existing time. Being belonged to Kenyan descent, his artistic imagination rests in his ethnic ethos and cultural shafts preserved in his soul as precious pride. He has been acclaimed as one of the foremost living African novelists, a post-colonial theorist, and as professor of English, experiencing at universities around the world. His addiction and admiration towards local native customs and traditional culture have been sufficiently flaunts by adopting his current name Bantu and discarding the westernize name James Ngugi to emphasize his aboriginal pride. The editions of his early books including Weep Not, Child and The River Between are published under the name James Ngugi.

The inheritance of colonial concerns has remained Ngugi's consistent interest throughout his life besmeared with different artistic styles. Ngugi's work is often extremely political, which has caused much controversy for him in Kenya. The present paper will try to seek out the atoms of heroic quality flourishing in a pre and post colonial context as a phase of transition from darkness to lightness in the life of Njoroge. Njoroge is the central character of the novel whose core aspiration throughout the story Weep Not, Child is to get as educated as possible.

Keywords *- Being hero, colonial, education, consciousness, etc.*

Introduction -

Ngugi wa Thiong'o composed Weep Not, Child in England in 1962, at Leeds college days. It speaks about Njoroge, a young boy, who passes thorough an exhausting and tragic journey to attain training at some point of the 1952-1960 emergencies in Kenya. It becomes a chaotic period which sowed the seed of emergence of Kenyan revolutionary agencies towards the British colonists.

Ngugi at the same time as gaining knowledge of at Leeds wrote his great regarded novel Weep Not, Child, which delivered him an international reputation. As a prolific writer, genius and as an enlighten novelist his style has modified over time but the tone and technique is actual. He wrote mainly sensible works, but in modern-day years he has tour around an extra experimental, magical realist aesthetic. Some of his other widely known novels are Petals of Blood (1977), A Grain of Wheat (1967), and Wizard of the Crow (2006). His memoir In the House of the Interpreter became published, in 2012. His politically proativeness delivered him various trials and tribulations in his existence. In his theatre, Ngugi attempts to involve the target audience without delay, which makes his political messages greater threatening to authorities.

At present Ngugi has been excellently serving as an outstanding professor in comparative literature and English at the college of California, Irvine. In the novel Weep Not, Child, the author's goal is to inform a few stories than to look a whole tradition in change and on the verge of violence, with numerous perspectives. It includes numerous sub-plots, such as the ones of Ngotho, Njoroge's father, who struggles in opposition to the loss of his own family's

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

land; and Mwihaki, a rich village woman who explores a romance with Njoroge. Maximumly, it also tries to recognize the mindset of one of the white colonists, Mr. Howlannds.

The unconventional is portrayed into many parts and chapters. The primary part deals with the schooling of Njoroge, whereas second part deals with the growing rebellion, anti-colonist tumult in Kenya. Njoroge, a younger boy, is entreated to attend school by his mother. He is the primary considered one of his circle of relatives capable of go to school. His circle of relatives' lives at the land of Jacobo, an African made rich through his dealings with white settlers, specifically Mr. Howlands, the maximum effective land proprietor in the region. Njoroge's brother Kamau works as an apprentice to a Chippie, at the same time as Boro, the eldest dwelling son, is disturbed by using his stories even as in forced service all through international conflict, which includes witnessing the loss of life of his elder brother. Ngotho, Njoroge's father changed into a reputable man inside the close by place, serves Mr. Howlands' vegetation, however is annoyed by using his passion to shield his inherited land, rather than for any repayment or assist.

Ngotho is careworn about taking part within the strike of black employees call for a strike to attain better wages because he fears he will lose his activity. On the agitation, there are calls for better wages. All of sudden, the white police inspector expects Jacobo to pacify the collection of the native human beings. Jacobo attempts to stop to the strike. Ngotho attacks Jacobo, and the end result is a riot in which two people are killed. Jacobo survives and swears revenge. Ngotho loses his activity and Njoroge's circle of relatives is pressured to transport. Njoroge's brothers guide his training and seem to lose appreciate for their father. Mwihaki, Jacobo's daughter and Njoroge's excellent friend, enters a ladies' handiest boarding school, leaving Njoroge particularly on his own. He displays upon her leaving, and realizes that he was abashed by way of his father's movements in the direction of Jacobo. Njoroge isn't dissatisfied by her go out and their separation.

Many blacks assume that he goes to bring about Kenya's independence. But Jomo loses the trial and is imprisoned. These consequences in further protests and greater suppression of the black population. Jacobo and a white landowner, Mr. Howlands, fight against the rising sports of the Mau Mau, a corporation striving for Kenyan monetary, political, and cultural independence. Jacobo accuses Ngotho of being the chief of the Mau Mau and attempts to imprison the whole circle of relatives. In the meantime, the situation within the USA is deteriorating. Six black guys are taken out of their houses and executed within the woods. Someday Njoroge meets Mwihaki once more, who has lower back from boarding school. Despite the fact that Njoroge had deliberate to avoid her due to the conflict among their fathers, their friendship is unaffected. Njoroge passes an essential exam that allows him to increase to high school. His village is happy with him, and collects cash to pay Njoroge's excessive school lessons.

Jacobo is murdered in his office by a member of the Mau Mau. Mr. Howlands has Njoroge removed from school for questioning. Each father and son is brutally overwhelmed before launch and Ngotho is left slightly alive. even though there would not seem to be a connection between Njoroge's circle of relatives and the murder, it's far sooner or later discovered that Njoroge's brothers are in the back of the assassination. and that Boro, is the real leader of the Mau Mau. Ngotho quickly dies from his injuries and Njoroge reveals out that his father became protecting his brothers. Kamau has been imprisoned for life. Handiest Njoroge

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

and his mother stay unfastened, and Njoroge is left as the sole provider of his two moms. Njoroge fears that he cannot make ends meet; he offers up desire of persevering with in school and loses faith in god.

Njoroge asks for Mwihaki's assist; however she is indignant because of her father's death. While he in the end pledges his like to her, she refuses to go away with him, understanding her responsibility to Kenya and her mother. Njoroge makes a decision to depart city and makes an attempt at suicide; but, he fails while his mothers discover him before he's capable of grasp himself. The radical closes with Njoroge feeling hopeless, and ashamed of cowardice. Ngugi desires to percentage the idea of amnesia propagated by the colonists a few of the native inhabitants making them paralyzed via intellectual and physical both leading to depression and negativity about the lifestyles.

In a few ways, grief is the primary riding force at the back of the action of Weep Not, Child. Boro is driven to enroll in the Mau Mau to appease his grief over his brother Mwangi's demise in world struggle. Ngotho's resentment is fueled by way of grief over dropping his own family's land to the British. Further, grief drives Njoroge's non secular evolution. Nothing can undermine his faith in god until Ngotho dies, at which factor Njoroge stops praying. Further, Jacobo's loss of life prevents Njoroge from being with Mwihaki, due to the fact she ought to take care of her mom. Because the characters cope with the deaths in their loved ones, their overwhelming grief slowly dissolves right into a sense of responsibility that permits them to go beyond their misery. Even though Njoroge is almost pushed to suicide by using Mwihaki's rejection and his father's death, its miles the necessity of worrying for his mothers that in the end saves him.

As Ngugi notes on numerous events, race is not the handiest obstacle that stops the characters from pursuing their dreams in lifestyles. They're arguably even extra hampered by means of their social elegance. This is applicable to poor characters like Kamau, who need to stick to the carpentry apprenticeship he dislikes so that it will help his circle of relatives. But, even upper-elegance characters find that their upbringing prevents them from being certainly unfastened. As an example, Mwihaki's affection for Njoroge is hampered through her family's wealth, and the expectations that come from that. Similarly, Stephen Howlands ought to attend boarding college in England despite the fact that he feels more at domestic in Kenya, and does not need to go away. Njoroge has a wonderful wish that training will assist bridge the gap of social magnificence, but situations concede his schooling earlier than he can test that idea.

Ngotho and Mr. Howlands share a fierce willpower to the land. At the center in their courting is the crucial trouble of the colonial presence in Kenya, and therefore to the radical's main conflicts. Everyone has his own deep connection to the land. Land is an essential part of Gikuyu lifestyle, an indicator of an own family. Mr. Howlands seems to have embodied a number of this sentiment, regardless of his racism. But, 'land' does no longer refer best to the physical area used for dwelling and farming. With the aid of the stop of the unconventional, it has received a multi-dimensional meaning. Further to Mr. Howlands's Shamba, the concept of land has come to consist of the individuals who live on it. Land, with all its profundity, is what the Africans misplaced to the British, and what they're preventing to regain. One of the major

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

questions that Weep Not, Child increases is whether love is a robust enough force to go beyond suffering.

Weep Not, Child is complete of evidence that infighting among Africans changed into a major problem during the Mau Mau uprising. Ngugi indicates that some of it is able to be justified; for instance, Jacobo is in reality villainous man or woman, and we're intended to sympathize with Ngotho whilst he assaults him. However, Ngugi is very express approximately the reality that such infighting ultimately performed into the hands of the British, using blocks between Africans and making the conflict greater violent than was important. The distinction between the reputations of Jomo and Dedan Kimathi screen how significant the ideological variations among Africans had become. Whilst Njoroge and Stephen Howlands talk the causes of prejudice, their insights offer a way for Africans to move past their differences and combat for the not unusual exact. The tragedy is that man or woman desires are often useless before larger social forces that during many methods hurt each person.

Njoroge turns to many extraordinary resources of comfort as conditions go to pot in his village: college, faith, and his love for Mwihaki are some examples. But the handiest force that stands among him and suicide at the give up of the book is his experience of obligation to his moms, who could be on my own and destitute if he dies. Mwihaki rejects him due to the fact she, too, must take care of her mother. For Ngugi, family loyalty is the last bond. One of the number one challenges his characters face is figuring out how to great live loyal to their circle of relatives in a time of war and contradictions. Boro is an especially complicated example of this query. Ngotho orders him to prevent combating with the Mau Mau, but Boro feels he have to maintain in an effort to avenge his father's demise, and to combat for a better future for his younger siblings. Whether or not to guard one's circle of relatives by using right away providing or via preventing for his or her progeny is a question posed, however no longer answered, via the unconventional.

Weep Not, Child was the second novel Ngugi wrote and his first novel to be posted. Set in Kenya inside the turbulent 1950's, the novel tells the tale of a circle of relatives and the way it's miles laid low with the open antagonisms between natives and colonists. While the unconventional opens, the family is terrible but glad and harmonious; the route of the unconventional traces the disintegration of the family. The protagonist, Njoroge, is a young boy who wants extra than something to obtain schooling and is pleased to wait a missionary college. His father, Ngotho, is a tenant farmer on land owned with the aid of Jacobo, a wealthy African farmer. Ngotho works for the British Mr. Howlands on a tea plantation this is Ngotho's ancestral land. He waits patiently for the time while the gods will satisfy the prophecy and supply his humans from their oppression. His older son, Boro, has lower back from army provider in world conflict, bitter, upset, and having found out of the white guy's violence. Weep Not, Child is the story of a boy, Njoroge, growing up over the years of the Kenyan emergency. In this time, the Mau Mau warring parties dedicate many acts of violence against the White settlers and Africans that they view as traitors and the white authorities return this violence in kind. This novel explores the approaches that this warfare influences all of those concerned. The tale begins with Njoroge being advised that he's going to attend faculty; the first in his family to do so. This is Njoroge's finest wish, and schooling is a passion he pursues fervently at some point of the novel. His brother, Kamau, has been apprenticed as a carpenter and will not go to high school. Boro and Mwangi, their older brothers, had long past to combat in world struggle. Mwangi became killed

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

and Boro had again home a modified man. Their different brother, Kori, works in the nearby metropolis of Kipanga, and regularly brings home stories and pals within the evenings.

Njoroge hears his father's words about the prophecy too, and thinks that with his training perhaps he is destined to make a difference. As Njoroge's education progresses, so does the unrest among the African human beings of the area. A national strike is organized and Boro is one of the audio systems at a meeting on the first day. Despite being threatened with dismissal, Ngotho takes component inside the strike and attends the meeting, wherein he leads the group to assault Jacobo, a wealthy black farmer who has been delivered in to try to pacify the workers. No longer only does Ngotho lose his task, but he is also evicted from his domestic, which is on Jacobo's assets.

As the USA becomes more dangerous, and those Njoroge knows are arrested or killed, he buries himself deeper in his studies and his faith, viewing himself as like a prophet who, if he may want to simply get an education, could store the USA. He is a hit in gaining front to secondary college, wherein he finds a community of college students and instructors from all walks of lifestyles, operating and analyzing collectively efficaciously. His school is sort of a haven from the loss of life and destruction taking area within the relaxation of the USA.

Together with his family in portions, his dreams of schooling long gone, and his religion in god shattered, Njoroge attempts to turn to his childhood friend, Mwihaki the daughter of Jacobo with whom he has fallen in love. Despite the fact that she loves him too, she can't turn away from her duty to her own family and her use, as Njoroge asks. Having now lost the whole thing, Njoroge is going out and sits underneath a tree, waiting for darkish whilst he intends to hold himself. Before that can show up although, Njoroge's mom comes looking for him, and brings him home. Njoroge is the main protagonist of the unconventional, which follows his improvement using college. He is his father's, Ngotho, youngest son, and has 4 older brothers. Even though it is in short mentioned that he has sisters, they are not in any other case covered inside the novel.

On the start of the book, Njoroge is a small baby, given through his mother a threat to start faculty. He is a great and dedicated pupil, enjoys gaining knowledge of English, and is the best boy within the region to be prevalent into secondary school. For this, the complete community supports him to go to the missionary college, Siriana. Whilst his circle of relatives is implicated in Jacobo's murder, however, he is expelled from school and all his dreams are destroyed.

The references to mild and darkish at some stage in the novel talk to optimism and despair, to put in writing and incorrect, to hopelessness and salvation. Njoroge's cognizance on the mild enables to sustain him thru Kenya's dark instances, however whilst the light goes out for him, he waits for literal darkness so as to attempt to take his own lifestyles.

Works cited-

1. Balogun, F. Odun. *Ngugi and African Postcolonial Narrative: The Novel as Oral Narrative in Multigenre Performance*. St-Hyacinthe, Que.: World Heritage Press, 1997.
2. Draper, James P., ed. *Black Literature Criticism*. Vol. 3. Detroit: Gale Research, 1992.
3. Gikandi, Simon. *Ngugi wa Thiong'o*. Cambridge, England: Cambridge University Press, 2000.
4. Harrow, Kenneth W. *Thresholds of Change in African Literature: The Emergence of a Tradition*. London: Heinemann, 1994.

New Man International Journal of Multidisciplinary Studies
(UGC Approved Journal No. 45886)
ISSN: 2348-1390
Impact Factor: 4.321 (IIJIF)

5. Killam, G. D., ed. *Critical Perspectives on Ngugi wa Thiong'o*. Washington, D.C.: Three Continents Press, 1984.
6. Larson, Charles R. *The Emergence of African Fiction*. Bloomington: Indiana University Press, 1971.
7. Lindfors, Bernth, and Bala Kothandaraman, eds. *The Writer as Activist: South Asian Perspectives on Ngugi wa Thiong'o*. Trenton, N.J.: Africa World Press, 2001.
8. Nazareth, Peter, ed. *Critical Essays on Ngugi wa Thiong'o*. New York: Twayne, 2000.
9. Palmer, Eustace. *An Introduction to the African Novel*. New York: Africana, 1972.
10. Popkin, Michael. *Modern Black Writers*. New York: Frederick Ungar, 1978.

❑❑❑

39

डॉ. बाबासाहेब आंबेडकरांचे शैक्षणिक व सामाजिक विचार

प्रा.डॉ. विलास विश्वनाथ तायडे
मराठी विभाग प्रमुख
श्री शिवाजी कला वाणिज्य व विज्ञान महाविद्यालय
आकोट जि.अकोला,

****

भारतरत्न डॉ. बाबासाहेब आंबेडकर हे भारतमातेचे महान सुपुत्र आहेत. अस्पृश्यतेचे चटके आणि अवहेना यांना सामोरे जात, पराकाष्टेची जिद्द आणि कठोर परिश्रम यांच्या जोरावर सर्व प्रतिकुल परिस्थितीवर मात करीत त्यांनी अखंड ज्ञान साधना केली. एम.ए.,पी.एचडी.,डी.एस्सी.,एल.एल.डी.,डी. लिट आणि बॉरएटर्लो या पदव्यांनी सन्मानीत झालेले ते अतुलनीय असे बुद्धीवंत होते. डॉ. बाबासाहेब आंबेडकर हे प्रख्यात घटनातज्ञ, राजकारणी, विधीज्ञ आणि खऱ्या अर्थाने लोकशाहीचे पुरस्कर्ते होते. भारतातील धर्माधिष्ठित समाज व्यवस्था बदलून ती मानवी मूल्याधिष्ठीत व्हावी त्यांची कल्पना होती. लोकशाही बलशाही झाल्याशिवाय भारतीय समाज व राष्ट्र बलशाली होणार नाही, ही त्यांची ठाम धारणा होती. डॉ.बाबासाहेबांची लोकशाही संकल्पना ही त्यांनी भारताला दिलेलेी वैशिष्टयपूर्ण देगणी आहे.

डॉ. बाबासाहेब आंबेडकर थोर देशभक्त होते. देशाबद्दल बोलतांना ते म्हणत 'रक्ताचा शेवटचा थेंब माझ्या शरिरात असेपर्यंत माझ्या देशाचे मी रक्षण प्राणपणाने करेण. सर्वसामान्य माणुस लक्षात घेऊन त्यांनी विचारांची जडणघडण केली. शिका, संघटीत व्हावा आणि संघर्ष करा. असा त्यांनी नारा दिला.

डॉ. बाबासाहेबांनी तिन उपास्य दैवत मांनले होते. पहिले दैवत विद्या, दुसरे दैवत स्वाभिमान, तिसरे दैवत शील. शिक्षणाबद्दल बाबासाहेब म्हणतात 'शिक्षण हे वाघिनीचे दुध आहे. जो ते प्राशन करील तो गुरगुरल्याशिवाय राहणार नाही' विद्यार्थ्यांना अनेक सवलती आहेत शिष्यवृत्या आहेत त्याचा लाभ त्यांनी घ्यावा. स्वऊन्नती व समाजऊन्नती करावी. विद्यार्थ्यांनी विविधक्षेत्रात गेले पाहिजे व्यवसाय केला पाहिजे. उच्चशिक्षण घेऊन शासनकर्ती जमात बनले पाहिजे.

प्रत्येकाने आपल्या कर्तव्याची जाणीव ठेवून अभ्यास केला पाहिजे. डॉ. बाबासाहेब म्हणत मी प्रथम बॅरिस्टर होऊन आल्यानंतर महारडा बॅरिस्टर म्हणून मला हिणवीले जात असे. परंतु मी आपल्या कर्तबगारीने त्या लोकांची तोंडे बंद केली आहेत. आपल्याला चांगले दिव्य केल्याशिवाय महत्व येत नाही. इतर समाजात असे नाही. ज्यावेळी आपण सोन्याच्या मोलाचे कार्य करू तेव्हा इतर लोक त्याला कथलाच्या मोलाचे कार्य समजतील. विद्यार्थ्यांना सांगतांना डॉ. बाबासाहेब आंबेडकर म्हणतात, मुंबईच्या डेव्हलपमेटच्या चाळीत दहा फुट लांब व दहा फूट रूंद खोलीत आईबाप, भावंडे यांच्यासह राहून एका पैशाच्या घासलेट तेलावर अभ्यास केला आहे. इतकेच नव्हे तर अनेक अडचणींना व संकटांना त्याकाळी तोंड देऊन मी जर एवढे करू शकलो तर तुम्हास आजच्या साधन–सामुग्रीने सज्ज असलेल्या काळात अशक्य काय आहे

आत्मविश्वासासारखी दुसरी दैवी शक्ती नाही. आम्ही आमच्यातील आत्मविश्वास गमावता कामा नये.कोणताही मनुष्य सतत दीर्घोगानेच पराक्रमी व बुद्धीमान होऊ शकतो. कोणीही उपजत बुद्धीमान अगर पराक्रमी निपजु शकत नाही. मी विद्यार्थीदशेत इंग्लंमध्ये असतांना ज्या अभ्यासक्रमास ८ वर्ष लागतात तो अभ्यासक्रम मी २ वर्ष ३ महिण्यात यशस्वी तऱ्हेने पुरा केला आहे. हे करण्यासाठी मला २४ तासापैकी २१ तास अभ्यास करावा लागला आहे. डॉ. बाबासाहेब म्हणतात त्यासाठी मी २४ तासापैकी सारखा १८ तास खुर्चीवर बसून काम करीत होतो. अलिकडच्या तरूणाला तर अर्धातास तो सारखा बसला की त्याला सिगरेट्स ओढीत हातपाय ताणून काही पेंगल्याशिवाय उत्साह येत नाही. डॉ. बाबासाहेबांना या पैकी कशाचीही गरज भासत नाही.

(18)

ISSN 2320-4494
RNI No.MAHAUL03008/13/2012-TC

POWER OF KNOWLEDGE

An International Multilingual Quarterly Refereed Research Journal
UGC Approved
Special Issue - September 2017
म.शि.प्र.मंडळाचे

सुंदरराव सोळंके महाविद्यालय, माजलगाव आयोजित

आंतरविद्याशाखीय राष्ट्रीय परिषदेचा विशेषांक

हुंडा-एक समस्या : आव्हाने व उपाय

दि.११/०९/२०१७

बोडके बी.आर.
(संपादक)

डॉ.व्ही.पी.पवार
(प्राचार्य)

...Knowledge UGC Approved Journal Volume : 1 Special Issue, Sept.2017 ISSN 2320-4494

हुंडा एक सामाजिक समस्या

प्रा. सचिन प्र. कोठेकर
सहाय्यक अध्यापक, इतिहास विभाग
श्री शिवाजी कला, वाणिज्य व विज्ञान महाविद्यालय, अकोट

भारतीय संस्कृतीमध्ये चार आश्रम सांगण्यात आले आहे. त्यामध्ये ब्रह्मचर्याश्रम, गृहस्थाश्रम, वानप्रस्थाश्रम, संन्यासाश्रम आहे. यामध्ये गृहस्थाश्रम हा सर्वात महत्त्वाचा आश्रम समजण्यात येतो. आणि गृहस्थाश्रमात प्रवेश घेण्याकरिता विवाह हा संस्कार करावा लागतो. म्हणून विवाह या संस्काराकडे एक पवित्र संस्कार म्हणून पाहिला जातो. विवाहाचे आठ प्रकार सांगण्यात आले आहे. त्यामध्ये देव विवाह, आर्षविवाह, प्रजापत्य विवाह, ब्रह्म विवाह, असुर विवाह, राक्षस विवाह, पैशाच विवाह, गांधर्व विवाह हे होते. यापैकी पहिले चार विवाह समाजास मान्य होते. तर नंतरचे चार विवाह समाजास मान्य नव्हते कारण त्या विवाहामध्ये वरपिता, वधु यांची फसवणूक, हुंडा या सारख्या कुप्रथा होत्या त्यामुळे अनेक मुलींचे आयुष्य नष्ट झाल्याचे दिसते. आजही समाजात हुंडा सारखी कुप्रथा अस्तित्वात आहे. हुंड्यासारखी सामाजिक समस्या स्वातंत्र्यानंतर आजही ज्वलंत आहे. आजही आपण हुंड्यापायी नववधुंचा छळ, हुंडाबळीच्या घटना ऐकतो. या पध्दतीचे निर्मूलन करणे म्हणजे प्रचलित रुढी, परंपरा विरुध्द जनजागृतीची एक प्रकारची लढाईच आहे.

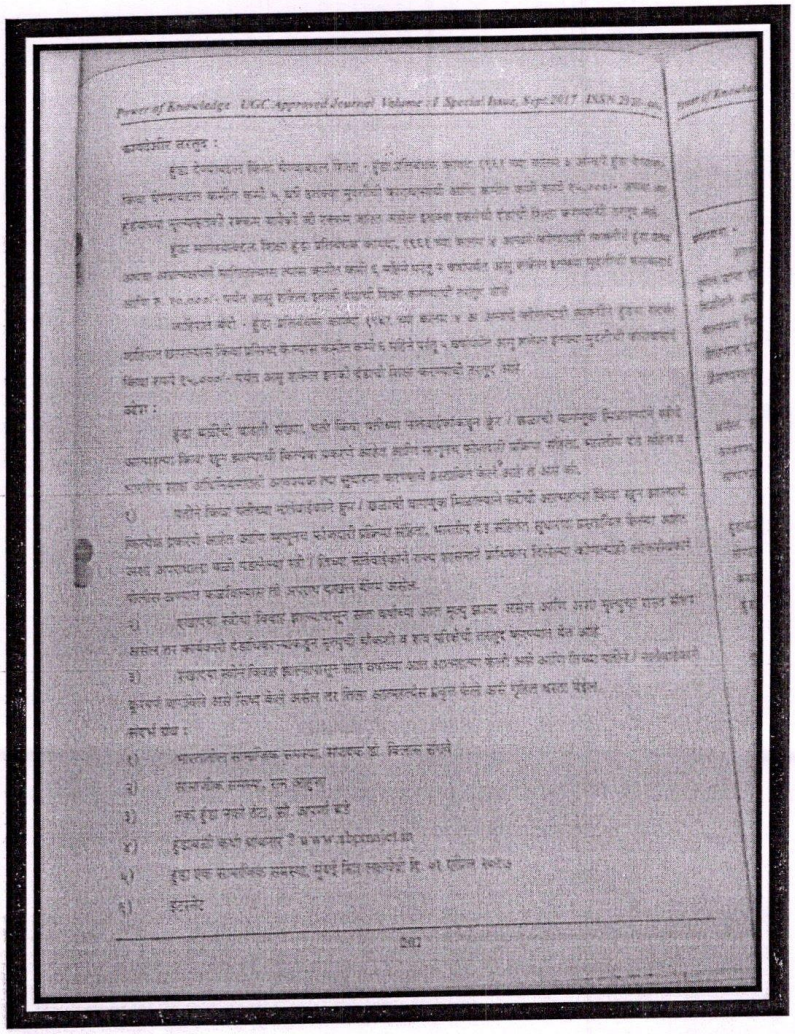
हुंडा पध्दती ही आपण पुरुष महिला समानतेचा जो नारा देत आहोत त्यांच्याशी विसंगतच आहे. त्यातूनच स्त्रीचे समाजातील स्थान, स्त्रीला समाजात असणारी किंमत या विषयी समाजाची मानसिकता काय आहे हे कळून येते. हुंडा पध्दतीचे निर्मूलन म्हणजे ही मानसिकता बदलण्याचे मोठे आव्हान सर्व समाजापुढे आहे.

हुंडा पध्दतीविषयी जी मानसिकता समाजात आहे ती बदलणे तरुणांच्या व युवा शक्तीच्या हाती आहे. त्यासाठी समाजामध्ये हुंडा विरोधीचे चर्चासत्र, चित्रस्पर्धा, व्यंग चित्रस्पर्धा, प्रदर्शने, आत्मकथन, लघुपट, स्लाईड शो, प्रश्नमंजुषा इत्यादी कार्यक्रमाद्वारे जनजागृती घडवून आणता येणे शक्य आहे.

हुंडा देणे व घेणे ही परंपरेने अस्तित्वात असलेली अनिष्ठ प्रथा आहे. हुंड्यापायी छळ होवून अनेक युवतींना वैवाहिक जीवनातून बाहेर पडावे लागत आहे व समाजातअनेक अडचणींना तोंड देत जीवन जगावे लागत आहे. या वैवाहिक जीवनातून बाहेर पडलेल्या युवतींच्या पालकांमुळे कुटूंबाची दुर्दशा होणे, मुले मातेच्या प्रेमापासून पारखी होणे व [illegible] प्रश्नही निर्माण होतो. या सर्व समस्यांवर वचक बसावा म्हणून सरकारने हुंडा बंदी कायदा तयार केला आहे.

हुंड्याची व्याख्या :

हुंडा प्रतिबंधक कायदा १९६१ या अधिनियमातील कलम २ अन्वये हुंडा या शब्दाची व्याख्या विवाहातील एका पक्षाने विवाहातील अन्य पक्षास किंवा विवाहातील कोणत्याही पक्षाच्या आई-वडिलांना अथवा अन्य कोणत्याही व्यक्तीने विवाहाच्या वेळी किंवा तत्पूर्वी किंवा त्यानंतर कोणत्याही वेळी प्रत्यक्षपणे किंवा अप्रत्यक्षपणे दिलेली किंवा द्यावयाचे कबूल केलेली कोणतीही मालमत्ता अथवा मूल्यवान रोख असा आहे. परंतु त्यामध्ये ज्या व्यक्तींना मुस्लिम व्यक्तिगत कायदा (शरीअत) लागू आहे त्या व्यक्तींच्या बाबतीत दहेज किंवा मेहर यांचा समावेश होत नाही.



Power of Knowledge UGC Approved Journal Volume -II Special Issue, Sept.2017 ISSN 2320-...

कार्यक्षेत्र वगळून :

हुडा टेनन्सीवाल किंवा वेनन्सीवाल नियम - हुडा अधिनियम कायदा (१९६१ चा कायदा ३ अन्वये हुडा वेनन्सीवाल किंवा वेनन्सीवाल कलीन खाली ५ इतरे इतरका मुदतीची जागाधारणाची आणि कलीन खाली खाली ३५,०००/- रुपयांचा अ... हस्तांतरण मुल्यापेक्षाची रक्कम खरेदीची जी रक्कम आहात असात इतरका इतरांची परवानगी विना करण्यासाठी असतू नाही.

हुडा आजवाजवरन विक्रय हुडा अधिनियम कायदा, १९६१ चा कायदा ३ अन्वये कोणत्याही जागेची हुडा तसेच अशाच आजवाजवरी वाणिज्यिकरण व्यवस कलीन खाली ६ महिने मात्रु २ वर्षापर्यंत असू शकेल इतका मुदतीची कारावास आणि रु. १०,०००/- पर्यंत असू शकेल इतकी शास्ती किंवा कारावासची असतू होते

अपील करणे - हुडा अधिनियम कायदा १९६१ चा कायदा ३ अ अन्वये कोणत्याही आजवरी हुडा तसेच वाणिज्यिक वापरासाठी विक्रय प्रतिबंध या आदेशाचे पालन करणे ६ महिने पर्यंत २ वर्षापर्यंत असू शकेल इतका मुदतीची कारावास किंवा रुपये ३५,०००/- पर्यंत असू शकेल इतकी दंडाची शिक्षा करण्यासाठी असतू होते

उद्देश :

हुडा अधिनियम कायदा, चांगले किंवा पर्याप्त पालनाकरिताकडून हुडा / झडाची यांनाकृत नियंत्रणाने खरेदी व्यापारासाठी किंवा वृद्ध व्यापारी विपणन उद्देशाने असलेल्या आणि नागरीकरण योजनाची अंतिम सीमेत, भारतीय दंड संहिता व भारतीय साक्ष्य अधिनियमाची अत्यावश्यक त्या सुधारणा करण्याचे प्रस्तावित केले आहे व आहे की.

१) महानगर किंवा पर्याप्त नागरीकरणे हुडा / झडाची यांनाकृत नियंत्रणाने खरेदी व्यापारासाठी किंवा वृद्ध व्यापारी विपणन प्रकारचे अशांत आणि नागरीकरण योजनाची अंतिम सीमेत, भारतीय दंड संहिता, सुधारणा प्रस्तावित केल्या आहेत. जसत व्यापारासाठी पाळी पडलेल्या आहे / हिच्या खरेदीकारी राज्य शासनाने प्रतिबंधक दिलेल्या कोणत्याही सार्वजनिकरणे पोलीस अगाता कर्तव्यिलाचा ती अपराध दाखल केला असेल.

२) व्यवसाय स्थापना किंवा व्यापारासाठी जागा खरेदीच्या असत मृत्यु झाला, संसर्ग आणि असतो मृत्युमुख राहत केला असेल तर कार्यवाही रद्दबातकारण्यात हुडा मृत्युची शेकडो व शब्द पोलिसांची तयारू करण्यात येत आहे.

३) व्यवसाय स्थापने किंवा व्यापारासाठी जागा व्यवसाय असत व्यापाऱ्याचा खरेदी असते आणि किंवा पर्याप्त / व्यवसायाची कुटुंबाने व्यापाऱ्याने असते किंवा केलेले असेल तर किंवा व्यापाऱ्यांदेस प्रस्तुत केलेले असते पूर्तिस भरता येईल.

संदर्भ ग्रंथ :

१) भारतातील नगरविकास समस्या, संपादक डॉ. विजय खांबे

२) समाजीक संशोधन, रमा आहुजा

३) एक हुडा नगरी होती, डॉ. अरुणा बर्वे

४) हुडाबद्दल काही माहिती ? www.cidcpune.net

५) हुडा एक सामाजिक समस्या, मुलभूत विद्या लक्ष्मीरोड पु. ४१ एप्रिल २०१७

६) इंटरनेट

41

अस्पृश्यांचे कैवारी:— भारतरत्न डॉ. भीमराव आंबेडकर

स्वंयरोजगार आणि स्त्रीसक्षमीकरण

प्रा.स्वाती एस. वैद्य
गृहअर्थशास्त्र विभाग प्रमुख,
श्री शिवाजी कला, वाणिज्य व विज्ञान महाविधालय
आकोट, जि. : अकोला.
drprashantkothe@gmail.com

प्रस्तावना:

स्वंयरोजगाार ही आज काळाची गरज आहे. देशात असलेल्या समस्यांपैकी बेरोजगारी ही एक ज्वलंत समस्या आहे. शिक्षणाच्या माध्यमातून विविध स्वंयरोजगार उत्पन्न व्हावेत हे अपेक्षित असते. २१ व्या शतकात महिलांनी सुध्दा शिक्षणाच्या माध्यमातून विकासाच्या अनेक संधी पुरुषांच्या बरोबरीने मिळविलेल्या दिसतात. गृहअर्थशास्त्राच्या शिक्षणातून अनेक स्वंयरोजगाराची निर्मिती करता येते. स्वंयरोजगारामुळे आर्थिक प्राप्ती बरोबरच आर्थिक स्वातंत्र व त्याचा उपयोग करण्याची संधी प्राप्त होवून मानसिक समाधान व आनंद मिळण्यास मदत होते. सक्षमीकरणाच्या दृष्टीने ही बाब महत्वाची ठरते. तसेच देशाच्या प्रगतीसाठी महिला उद्योजक तयार होणे महत्वाचे आहे.

उद्दिष्टे :

१.स्त्रीसक्षमीकरणाचा अर्थ जाणून घेणे.
२.स्वंयरोजगाराचा अर्थ व गृहअर्थशास्त्रातील विविध स्वंयरोजगार यांची माहिती देणे.
३.महिला स्वंयरोजगाराची कारणे जाणून घेणे.

स्त्रीसक्षमीकरण हा महत्वाचा व स्वंतत्र विषय मानला जातो. समानता व सर्वांगिण विकासाकरिता स्त्री सक्षम होणे गरजेचे आहे.

स्त्रीसक्षमीकरण व्याख्या :

१. ''स्त्रियांना सामाजिक, आर्थिक, सांस्कृतिक, वैचारिक पातळयांवर समानसंधी मिळणे होय''
२. ''स्त्री'' ही स्वतंत्र घटक मानुन तीला विकासाच्या प्रक्रियेत बरोबरीचा दर्जा देवून सहभागी करणे म्हणजे स्त्रीसक्षमीकरण.

स्वयंरोजगाराचा अर्थ:

"स्वंयरोजगार म्हणजे एखादी व्यक्ती आपले ज्ञान, कौशल्य, वेळ, शक्ती. तसेच आर्थिक मानसिक भावनिक गुंतवणुक विशिष्ट उद्दिष्ट गाठण्यासाठी करते ज्याचा उद्देश खर्ची घातलेल्या संसाधनाचा मोबदला पैशाच्या स्वरुपात प्राप्त करणे होय."

महिला स्वंयरोजगाराची कारणे :

आजच्या काळात कौटुंबिक गरजा एकटयाच्या कमाईवर पुर्ण होवू शकत नाही. त्यामुळे स्त्रीयांनीही त्याला हातभार लावणे आवश्यक झालेले आहे. नोकरीच्या संधी सर्वांनाच मिळेल याची शाश्वती नाही. त्यामुळे आपल्या शिक्षणाचा कौशल्याचा सुप्त गुणांचा विकास करण्याची संधी मिळवून स्वंयरोजगार करणे गरजेचे झालेले आहे.

१.वाढती महगाई –

आज वाढत्या महागाईमुळे प्रत्येक वस्तु महागलेली दिसते. त्यामुळे कौटुंबिक अंदापजत्रक कोलमडतांना दिसते. अशावेळी स्त्रीला स्वंयरोजगाराची आवश्यकता वाटते.

२.मर्यादित उत्पन्न –

काही कुटुंबाचे उत्पन्न मर्यादित (कमी) असल्यामुळे कौटुंबिक गरजा पूर्ण करण्याच्या दृष्टीने उत्पन्न वाढविण्याकरिता स्त्रीयांसुध्दा विविध स्वंयरोजगाराकडे वळलेल्या दिसतात.

३.जीवनमानात सुधारणा –

आजच्या आधुनिक काळात राहणीमानात बराच फरक पडलेला दिसतो. त्यादृष्टीने विविध सोईसुविधा, मिळविण्या या करिता पैशाची आवश्यकता असते. पैसा मिळविण्यासाठी विविध स्वंयरोजगार करुन राहणीमानात सुधारणा करता येते.

४.रोजगाराच्या मर्यादित संधी –

नोकरीच्या मर्यादित संधी (जागा) मुळे त्यात स्पर्धा, चढाओढ दिसते. त्यातून सर्वानांच नोकरी मिळेलच अशी खात्री देता येत नाही. त्यामुळे आपल्या ज्ञानाचा, कौशल्याचा उपयोग स्वंयरोजगार करुन अर्थाजनासाठी केला जातो.

५.शिक्षण –

नोकरीकरिता शैक्षणिक पात्रता सर्वच स्त्रीयांकडे असेलच असे नाही त्यामुळे अर्थाजनासाठी नोकरीला पर्याय म्हणून स्वंयरोजगार निवडला जातो.

08

"Recent Trends in Skills Development of India through Commerce Education"

Prof. Avinash Ramkrishna Pawar
Assistant Professor, Dept. of Commerce,
Shri Shivaji Art's, Commerce & Science College
AkotTq. Akot Dist. Akola

Introduction:-

Skills and knowledge are the driving force of economic growth and social development for any country. Indian demographic is with the unique facet of being fraught with a majority of young populace. Education sector in India is well developed and mature. The nation's educational infrastructure offers a concrete system comprising of Primary education, Secondary education and Higher education. The constitution of India has made education a fundamental right provisioning free and compulsory education for children between 5 to 14.

Education and skill development becomes quite an imperative sector to appropriate this massive human resource. The supply of public education is inefficient and leaves a significant shortfall which is being filled by private education institutions. The working age group between 15 to 59 years is its largest bulk constituting of more than 65% of total population. In such a backdrop, 29%of children are enrolled in private schools. In higher education sector, private institutions, colleges and universities are playing a pivotal role in the education landscape.

Potentially the target group for skill development comprises of all those in the labour force, including those entering the labour market for the first time. The current capacity of the skill development programs is 3.1 million. Indian has target of skilling 500 people by 2022. According to a survey 2 percent of the country's workforce is skilled which is much lower when compared to the developing nations; there is a ducal challenge of developing skills and utilizing them in a proper way.

Education and Skill development sector constitutes of Industrial Training, Professional courses and vocational education apart from School and higher education. Skill development is associated more to the context of industry oriented training that fetch immediate employment and earning. In India, education and skill development sector is structured under two independent ministries.

The Ministry of Human Resource and Development is associated with conventional education system. Primary Education, Secondary Education, Higher Secondary and Higher education sector is regulated by this ministry. Industry oriented training and education is supervised by the Ministry of Labor and Employment. Industrial Training Institute and other vocational education programs are maintained under the ambit of this ministry. Additionally, a number of commissions and agencies such as AICTE, UGC are dedicated for higher education in the country.

Present Situation of Skill Development in India:-

The IMF chief, Christine Lagarde, recently noted India's growth potential and said that India must seize the opportunity. India's growth story reveals that since independence till recently, the focus has been mainly on education rather than the vocational skill acquisition of the workforce. However, the potential for skill development caught the imagination of policy makers during the Eleventh Five Year Plan (2007-12). The target group for skill development comprised all those in the labour force, including those entering the labour market for the first time (12.8 million annually)

SPECIAL ISSUE G. S. Science, Arts & Commerce College, Khamgaon
SCHOLARS IMPACT Online : ISSN-2394-7632
Multidisciplinary Multilingual Refereed Journal Print : ISSN-2394-7640

(12)

GROWING MALL CULTURE IN INDIA CHANGING LIFESTYLE

PROF. AVINASH RAMKRISHNA PAWAR
Shri Shivaji Arts, Commerce and Science College, Akot
Email – avipawar75@yahoo.in

ABSTRACT

One of the reason for existence of mall culture globalization malls can built an open air format. These malls have brought a new revolution in the world of shopping. A shopping mall is a building or a group of building that contains stores. Shopping malls is that it enclosed variety of shops or products, products and brands from various places, cultures and communities are under one roof.

The primary objectives of this study was to understand evolution of mall in recent early years & to analyze consumer behavior, also studied about customer satisfaction level towards the services provided by mall and strategies to be used by different mall for effective customer relations.

Introduction

The Era of rural retail industry could be categorized into two formats :

i) Weekly market ii) Village fairs

Primarily weekly market provided daily necessity of villagers. Village fairs were larger in size with a wide variety of goods sold from food, clothing, cosmetics & small consumer durables. The modern era has a host of small & large formats with exclusive outlets complete.

"The few words that come to our mind when we hear the word 'mall' are shopping, food, movies, entertainment & of course hanging out of an a holidays, all under the same roofs. People find that mall as the best place to visit & shops & get free entry to the all one.

Shopping malls have taken the surprise place in Indian scenario. It has grown at an incredible place the Indian youth minds. Indians youth are increasing attracted to the malls.

What is mall?

I like to quote Wikipedia here:

SCHOLARS IMPACT Online : ISSN-2394-7632
Multidisciplinary Multilingual Refereed Journal Print : ISSN-2394-7640

"A shopping mall shopping center or shopping acrade is a building or set of building that contain stores & has in connecting walkways enabling visitors to easily walk from store to store. The walkways may or may not be enclosed."

Advantages & Disadvantages

Pros:

i) A lot of variety of products in one place for the consumer.
ii) Products & prices are tailor made for middle class & upper class in society.

Con:

i) They do not promote the indigenous products.
ii) Due to the large scale air conditioning, lot of green emission
iii) Very convenient target of anti-social groups due to the large gathering of people.
iv) It is creating disparity between rich & poor.

Features

1) Natural phenomenon:

We can clearly observe that malls are very much qualifying for the tag of flag holders of industrial society. This is phenomenon we observe in our group trip to rave.

2) Mass society:

Mass society is a society in which concern of majority plays a prominent role. Malls owners always take a deep interest in consumers need & then promote product for everyone which is well thought of same in core but different in packaging.

3) Cultural industry & entertainment:

Every city provides a "Chill out zone" to its youth that insists on value addition to simply sipping cola or a cup of tea. The air conditioning, music, movies, scrabble& discs full of wise cracks.

4) Use of technology:

Most of the small shopkeepers already feeling heat but in malls use many good technology like lifts, air-conditioners, electronic security systems.

5) **Knowledge become source of power:**
Mall is a place which promotes the centralized advertising. In mall itself guaranty reach up to a large number of customer. But due to malls reading habits are going to drain.

Scope of the study

The scope of this study envisages the following points

a) Describe the growth of malls in the Indian context.
b) Deep understanding of the influence of mall culture on Indian youth.
c) Become aware of the positive & negative sides of mall culture.
d) To find out relevant lade of mall culture in goers.
e) Personal interest in the topic.
f) To suggest a new way of being a young mall goer.

Literature Review

Our analysis included assessment of publication on the growth of Indian mall culture. Arif Sheikh mall culture, Himalaya Publishing House. These publications were mainly used in the research paper. Publication included popular internet sites, mall culture publication & reports by major malls. The other major source of data collection is mall culture magazines.

Describe that we are on the vital of change where in huge, multicultural. India is transforming from a socialist economy to a consumption led, creative economy. The scope & depth of change that is taking place due to the revolutionary mall culture so, mall culture can play a significant role in creating the Indians changing lifestyle.

Background of the study

There has been massive development of new retail formats such as malls, hypermarkets, supermarket & life style stores. The organized see for represent a more 2% of this market. The growing power of mall is fast & this development has gained importance not only in the metropolitan but also towns &village also with this transition taking place, the shopping behavior of consumer is likely to change as these formats were not in existence in the country unit recently.

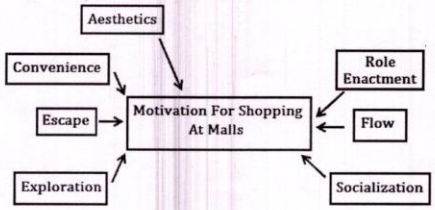
The should would concentrate on the behavior of consumer change by using mall culture. So consumer exhibits while visiting or making purchase in newly opened malls. A final objective is to establish a baseline for examining changing behavior in future as development continues.

Methodology

The study is based on secondary data. The required data has been collected from various i.e. research papers, various magazines of mall culture, McGraw Hill book & various internet sites.

Data Interpretation

Graphical representation of Influence of shopping dimensions on motivation for shopping at malls



Reasons for growth of malls in India

- Fast growing middle class with higher discretionary income.
- Emergence of youth as in independent shopper with a lot of disposal income.
- Rogerness of Indian choppers for a new shopping experience.
- Ability of mall developers to make shopping an enjoyable experience.
- Presence of factors like cost effectiveness, convenience wide variety of products with the fun element entertainment and good time pass plus shopping on weekends.
- Marketing communication resulting in changing aspirations, lifestyle orientation & change in consumer perceptions about shopping.

Emergence of shopping mall in India

Introduction of mall has not been to replace traditional market which still popular among the pocket conscious people, but has definitely added a new growing adventure to the shopping experience.

Without any doubt, the mall culture has gripped Indians & they seem love every bit of it. The main reason of growing mall in India is mall perception has completely changed towards shopping. Congenial atmosphere, world class entertainment, international brands also malls aspires to provide guides & services under one roof.

शेणाने बंधन बहुसंख्यांकावर राहु शकत नाही त्यामुळे अल्पसंख्यांकावर अन्याय होऊ शकतो हा अडथळा डॉ. आंबेडकरांना संसदिय लोकशाही बद्दल वाटत होता परंतु उपाय म्हणुन डॉ. आंबेडकरांनी अल्पसंख्यांकांना आपल्या स्वातंत्र्य व अधिकाराची खात्री पटली तरोच त्यांना सुरक्षित वाटावे याकरीता अल्पसंख्यांकाचे प्रतिनिधी संसदेत निवडले जातील तरोच ते विश्वासपात्र प्रतिनिधी असेल याची काळजी अल्पसंख्यांकानी त्यांना निवडून देतांना घेतली पाहिजे असे डॉ. आंबेडकरांचे मत होते.

५) जातीय स्वरुपाचे राजकारण :-

एकीकडे संसदिय शासन पध्दतीमुळे भारतातील जातीय व्यवस्थेचे निर्मूलन होईल असे आंबेडकरांना वाटत होते. दुसरीकडे जातीय स्वरुपाचे राजकारण हा अडथळाही वाटत होता. कारण भारतात ज्या जातींची संख्या बहुसंख्या आहे त्यांच्या हाती सत्ता केंद्रीत होईल तसेच विरोधी विचारांना व अल्पसंख्यांक जातीना दडपून टाकले जाईल. तसेच संसदिय शासन पध्दती ही भारतीयांकरीता नवीन आहे त्यामुळे हा सुध्दा एक अडथळा आहे. परतु असे असले तरीही भारतीयांनी ह्या सर्व अडथळ्यावर मात करुनच ही संसदिय लोकशाही शिकून घ्यायला पाहिजे तसेच तीला यशस्वी करण्याकरीता प्रयत्नशील राहायला. पाहिजे कारण डॉ. आंबेडकरांच्या मते भारतात हिच पध्दत उपयुक्त आहे.

सारांश :-

संपूर्ण भारतीय नागरीकांचा सर्वांगिण विकास व्हावा तसेच सर्व सामान्य नागरीकांचा राजकीय प्रक्रियेत सहभाग वाढावा म्हणून डॉ.बाबासाहेब आंबेडकरांनी संसदिय लोकशाहीचे समर्थन केले. परंतु केवळ आदर्श, शासनप्रणाली म्हणून नाही तर तीच्या व्यवहारीक बाजूंचेही विश्लेषण केले. संसदिय लोकशाहीमध्ये कोण-कोणते दोष आहे याचेही विश्लेषण त्यांनी मांडले. अगदी वास्तवतेच्या आणि विवेकाच्या आधारावर प्रत्येक गोष्टीचा सखोल अभ्यास करुन डॉ.आंबेडकरांनी आपल्या विचारांची मांडणी केली आहे. म्हणूनच गेल्या सहा दशकापासून भारतामध्ये संसदिय लोकशाही अविरत कार्यरत आहे.

□□□

48

स्त्री मुक्तीत डॉ. बाबासाहेब आंबेडकरांचे योगदान

माधुरी म. देशमुख
ग्रंथपाल, श्री शिवाजी कला, वाणिज्य व विज्ञान महाविद्यालय, अकोट

डॉ. बाबासाहेब आंबेडकर म्हटले की, केवळ दलितांचे नेते किंवा भारतीय घटनेचे शिल्पकार याबाबतच त्यांचा विचार होतो. परंतु स्त्रियांना शिक्षित करणे, त्यांना जागृत करणे व माणुसकीचे जीवन प्रदान करणे हे डॉ. बाबासाहेब आंबेडकर यांचे ध्येय होते. ज्या हक्कापासून स्त्री वंचित होती ते सर्व अधिकार स्त्रियांना मिळावे ह्या ध्येयाने त्यांनी अथक प्रयत्न केले. स्त्रियांना मूलभूत हक्क प्रदान करुन त्यांच्या उन्नतीचे सर्व मार्ग त्यांनी मोकळे केले. डॉ. आंबेडकरांनी केवळ अस्पृश्य स्त्रियांमध्ये बदल घडवून आणण्याचा प्रयत्न केला असे नाही तर भारतातील समस्त स्त्रियांमध्ये परिवर्तन घडवून आणण्यासाठी प्रयत्न केला. डॉ. आंबेडकरांनी शेकडो वर्षांपासून होणारी स्त्रींची विटंबना थांबवून त्यांच्यात स्वाभीमान, स्वविश्वास जागृत केला. समाजात ताट मानेने जगण्याचे सामर्थ्य बहाल केले. माणुसकीला पारख्या झालेल्या स्त्री वर्गांना माणूस म्हणून जगण्याची संधी मिळवून दिली. प्राचीन काळापासून ज्या स्त्री वर्गाच्या उत्थानाचा साधा विचारही कुणाला शिवला नाही ते कार्य डॉ. बाबासाहेब आंबेडकरांनी केले.

स्त्रियांच्या आरोग्यविषयक प्रश्नांना वाचा फोडणारे डॉ. आंबेडकर हे पहिले सुधारक होते. १९३८ साली स्वतंत्र मजूरपक्षातर्फे डॉ.बाबासाहेब आंबेडकरांच्या वतीने पी.जे. रोहम यांनी मुंबई प्रांतविधिमंडळात संतती नियमनाबाबतचे जे अशासकीय विधेयक मांडले, त्या विधेयकातून आर्थिक विकासाला अवरुध्द करणारी लोकसंख्या वाढी ही कशी आटोक्यात आणता येईल ह्यावर विचार करुन त्यांनी संतती नियमनाबाबतचा महत्वाचा मुद्दा मांडला. संतती नियमनाबाबतच्या विधेयकात दुहेरी सुत्र होते. एक राष्ट्राच्या आर्थिक विकासातील अडथळ दुर करणे. तसेच स्त्रियांच्या आरोग्याची काळजी घेणे. कुटुंब नियोजन स्त्रियांच्या दृष्टीने किती महत्वाचे आहे हे त्यांनी या विधेयकाच्या अनुषंगाने पटवून दिले. अनेक मुलांना जन्म दिल्यामुळे स्त्रिया मृत्युमुखी पडतात, मूल नको असल्यास

14

शास्त्रीय संगीत प्रचार व प्रसाराकरीता दृकश्राव्य माध्यमांचा उपयोग

प्रा.प्रतिभा चं.पवित्रकार
संगीत विभाग प्रमुख,
श्री. शिवाजी कला वाणिज्य व विज्ञान महा., आकोट

प्रस्तावना :-

१९ व्या शतकाच्या शेवटपर्यंत भारतीय संगीत हे घराणा परंपरेत समाविष्ट होते. परंतू कालातंराने भारतीय शास्त्रीय संगीत मोठ मोठे राजवाडे, राजदरबारातून, मैफिली व मंदिरांमधून बाहेर येवून संस्थांमध्ये प्रवेश करु लागले. ज्यामुळे संगीताचा प्रचार व प्रसाराला सुरुवात झाली. त्यानंतर २० व्या शताब्दीच्या पूर्वार्धापासून संगीत क्षेत्रामध्ये अनेक क्रांतीकारी बदल सुरु आहेत. म्हणजेच ज्याप्रमाणे पुस्तकांच्या माध्यमातून शास्त्राचा विकास होत होता. त्याचप्रमाणे इलेक्ट्रॉनिक माध्यमांच्या वापराने कलेचा (प्रात्यक्षिक) देखील खूप झपाटयाने प्रचार व प्रसार होवू लागला. आणि त्यामुळे घराणेशाही किंवा परंपरेचा ऱ्हास होवू लागला. घराणे पध्दतीमध्ये आपल्या घराण्या व्यतिरिक्त दूसऱ्या घराण्यातील गायकी शिकण्यास मज्जाव होता. आधुनिक काळात संस्थागत शिक्षण प्रणाली सोबतच संगीत शिक्षणात वैज्ञानिक उपकरणांचा उपयोग होवून दिग्गज कलावंतांच्या गायन वादनाचा आनंद आपण घरबसल्या घेवू शकतो. इतकेच नव्हे तर संपूर्ण जगातील कुठलेही संगीत आपण शिकू शकतो. तेव्हा या इलेक्ट्रॉनिक उपकरणांच्या माध्यमाने शास्त्रीय संगीत हे सुरक्षित राहू शकते. त्याचबरोबर सामान्य लोकांमध्ये संगीत शिकण्याची उत्सुकता निर्माण होवून शास्त्रीय संगीताच्या प्रचार व प्रसाराकरिता दृकश्राव्य माध्यम महत्त्वाचे ठरत आहे.

विजेवर चालणाऱ्या उपकरणांना इलेक्ट्रॉनिक माध्यम म्हटल्या जातं आणि हे उपकरणं या माध्यमाव्दारे संचालित होतात. यामध्ये २ प्रकार येतात. एक म्हणजे आपण फक्त कानाने ऐकू शकतो. उदा :- रेडिओ, टेपरेकॉर्डर, ग्रामोफोन रेकॉर्डस आणि सि.डि. इ. दुसरं म्हणजे कानाने ऐकण्यासोबतच आपल्या डोळयाने बघू शकतो. असे माध्यम उदा :- टेलिव्हिजन, व्हिडीओ, सी.डी. कॅम्प्यूटर, सिनेमा इ. आधुनिक काळात शास्त्रीय संगीताच्या प्रचार, प्रसार व शिक्षणाकरीता या इलेक्ट्रॉनिक माध्यमांचा उपयोग दिसून येतो.

रेडिओ :-

रेडिओ हे श्राव्य माध्यम आहे. आकाशवाणी म्हणजेच ऑल इंडिया रेडिओ, भारतिय शास्त्रीय संगीताच्या संरक्षण तसेच प्रचार व प्रसाराकरीता रेडिओची विशेष भूमीका राहिलेली आहे. भारतामध्ये रेडिओचे नियमित प्रसारण २३ जुलै १९२७ पासून सुरु झाले. आणि आकाशवाणी प्रसारण कार्यक्रमामध्ये संगीताला स्थान देण्याची श्रेय डॉ. बी.जी. केसकर यांना दिल्या जाते. १९५२ मध्ये प्रसारण मंत्री असतांना त्यांनी संगीत प्रसारणासंबंधी नियम बनवून त्या आधारे आकाशवाणीच्या संगीत कार्यक्रमाचा स्तर व संख्येमध्ये वृध्दी केली. याच वेळी कलाकारांची निवड ही स्वर परिक्षणाने करुन शास्त्रीय संगीताच्या कार्यक्रमाचा कालावधी सुध्दा वाढविला.

भारतीय शास्त्रीय संगीताचा स्तर उंचावून प्रभावशाली होण्यामागे १९५२-६१ मध्ये डॉ. केसकर सूचना आणि प्रसारण मंत्री असतांनाचा हा काळ अतिशय महत्वपूर्ण ठरला. यांच्याच काळात रेडिओवर शास्त्रीय संगीताचे कार्यक्रम आखल्या गेलेत. आणि त्याचाच परिणाम म्हणून आजही हे कार्यक्रम रेडिओवर आपल्याला ऐकायला मिळतात. त्यामध्ये शास्त्रीय संगीत का राष्ट्रीय कार्यक्रम, संगीत पत्रिका, महफिल, आकाशवाणी संगीत सम्मेलन, संगीत पाठ, संगीत का अखिल भारतीय कार्यक्रम, अनुरंजनी इ. कार्यक्रमांचा उल्लेख आढळून येतो. सध्या सादर होत असलेला संगीत सरिता या कार्यक्रमामुळे शास्त्रीय संगीतातील वेगवेगळया कलावंताची ओळख तर होतेच शिवाय मार्गदर्शनही लाभते. संगीत शिकणाज्या प्रक्रियेत शिकणे व रियाज करणे जसे महत्वाचे असते. तसे श्रवण करणे हे सुध्दा महत्वाचे असते. रागाचे स्वरुप, स्वर लावण्याची पध्दत, लयकारी, एखादया कलावंताच्या सादरीकरणाची पध्दत इ.बाबी संगीत शिकणाज्या विद्यार्थ्यांना आत्मसात करता येतात. आधुनिक युगात एफ.एम. हा प्रकार रेडिओ संगीतात प्रचलित आहेत. तसेच आधुनिक तंत्रज्ञानाचा उपयोग करुन इन्सॅटव्दारे रेडिओ संगीत ऐकण्याची सुविधा उपलब्ध झाली आहे. ज्याप्रमाणे केबलच्या माध्यमातून विविध वाहिन्यांचे कार्यक्रम आपण दूरदर्शनवर पाहू शकतो. तसेच विविध कार्यक्रम आपण इन्सॅटच्या माध्यमातून ऐकू शकतो. ज्या उपकरणामध्ये भजन, गझल, लोकसंगीतासोबत , शास्त्रीय संगीतही आपल्याला ऐकायला मिळते. खरोखरच मार्कोनी या शास्त्रज्ञाचे संगीत शिकणाज्या विद्यार्थ्यांवर अनंत ऋण आहेत.

दुरदर्शन :-

आकाशवाणी किंवा रेडिओ नंतर शास्त्रीय संगीताला

से परीचीत करते है। तथा विवीध कार्यक्रमो की प्रशंसा प्राप्त होती है। उससे उसे मानसीक संतृष्ट व कलात्मक प्रेरणा प्राप्त होती है।

संदर्भ ग्रंथ सुची -

१) रेडीओ और संगीत - डॉ.अशोक कुमार

२) भारतीय संगीत मे वैज्ञानिक उपकरनो का प्रयोग - अनिता गौतम

३) आकाशवानी एवं हिंदुस्थानी शास्त्रीय संगीत - डॉ.शुची स्मिता

४) संगीत विषारद - वसंत.

❑❑❑

लोकसंगीत के प्रचार में दृक - श्राव्य माध्यमों का योगदान

प्रा. संतोष एन. वावगे
श्री.शिवाजी कला वाणिज्य व विज्ञान महाविद्यालय, अकोट

लोकसंगीत किसी भी सभ्यता और संस्कृती का महत्वपूर्ण अंग है | यह मानव हृदय में स्थित गहनतम अनुभुतियों की सरलतम और सहज अभिव्यक्ती का साधन है | यह शास्त्रीय संगीत की आधार शिला है| भारत के प्रत्येक प्रान्त का अपना एक विशेष लोक संगीत है,जो वहाँ के आंचलिक क्षेत्र से प्रभावित होता है| लोकगीतों में बहूत से शास्त्रीय रागो का आभास मिलता है | दरअसल शास्त्रीय संगीत के कुछ राग लोक धुनों से ही विकसीत हुऐ है | लोकसंगीत वस्तुत: शास्त्रीय संगीत का उद्गम स्त्रोत है|

आधुनिक समय मे भौतिक विज्ञान व्दारा सांगीतीक क्षेत्र में नई वैज्ञानिक ध्वनी प्रसारण विधी का प्रयोग किया जाता है | संगीत प्रदर्शन के लिए कक्ष, भवन, प्रेक्षागृह इत्यादी की दीवारों, छतों, स्टेज का निर्माण व ध्वनि नियंत्रण एवं अवांछित ध्वनीयों को दूर करने के लिए जिस विधी व सामग्री का प्रयोग किया जाता है, विज्ञान की ऐसी शाखा जिसके व्दारा ध्वनी की विशेषताओं का ज्ञान होता है, उसे एकॉस्टिक पध्दती कहते है | इस पध्दती व्दारा ही आधुनिक सांगीतिक प्रदर्शन प्रभावशाली होता है|

सांगीतिक रिकॉर्डिग के समय सर्वप्रथम आवश्यक है - ध्वनी की निश्चित आवृति रेंज | साधारण मानव की आवृती रेंज २० से २०,००० चक्र प्रति सेंकिण्ड माना जाती है | विभिन्न सांगीतिक यंत्रो की आकृती रेंज अलग होती है |

रिकॉर्डिग से अभिप्राय है, ध्वजी को मृद्रित करके संरक्षित रखना एवं उसे आवश्यकतानुसार सुनना व प्रयोग करना | आधुनिक समय में रेकॉर्डिग की नई वैज्ञानिक सुविधाएं उपलब्ध है जिनके व्दारा उत्तम तकनीक से साऊंड रिकॉर्डींग होती है |

फिल्म स्ट्रिप से अभिप्राय है- स्थिर चित्रों का निश्चित क्रम में होना अर्थात इसमें चित्रों की संख्या एक निश्चित क्रम में लगी होती है | इसके अतर्गत विभीन्न नृत्य मुद्राओं, वाद्यो एवं कलाकारों की

जानकारी प्राप्त होती है |

प्रोजेक्टर एक ऐसा यंत्र है जिससे किसी चित्र का प्रक्षेपण किया जाता है| इस प्रक्षेपी यंत्र भी कहा जाता है | इसके व्दारा विभिन्न कलाकारों की छाया को स्लाईड व्दारा बहुत बडे रुप में पर्दे पर देखा जा सकता है|

आधुनिक दृक-श्रव्य साधनों के अंतर्गत टेलीविजन एक महत्वपूर्ण व लोकप्रिय साधन है | यह एक ऐसा साधन हे जिसमें चित्र व ध्वनी दोंनों एक साथ प्राप्त होते है| आजकल घर-घर में टेलीविजन उपलब्ध है | इसके व्दारा अनेक सांगितीक कार्यक्रम समय-समय पर प्रसारित होते है व संगीत पर आधारित अनेक चैलन दिखाए जाते है जिनमें पुर्णतः संगीत का प्रसारण होता है |

संदर्भ ग्रंथ

१) संगीत के मुलतत्व - डॉ.नरेंद्र कौर शास्त्रीय संगीत का प्रचार और उन्नती में दृकश्राव्य माध्यमों का योगदान प्रा.विनोद डिगांबर वानखडे सहदेवराव भोपळे महाविद्यालय, हिवरखेड

भारतीय शास्त्रीय संगीत भारतीय संगीत का अभिन्न अंग है | लगभग तीन हजार वर्ष पुर्व रचे गए वेदों को संगीत का मूल स्त्रोंत माना जाता है | यह माना जाता है कि ब्रम्हा नें नारद मुनिको संगीत वरदान में दिया था | चारों वेदी में, सामवेद के मंत्रो का उच्चारण उस समय के वैदिक सप्तक या समगान के अनुसार सातो स्वरों के प्रयोग के साथ किया जाता था| वेंदो का ज्ञान मौखिक ही प्राप्त होता था | उनमें किसी प्रकार के परिवर्तन की संभावना से मनाही थी| इस तरह प्राचिन समय में वेंदो व संगीत के इतिहास का प्रथम लिखीत प्रमाण माना जाता है| इसकी रचना के समय कें बारे में कई मतभेद है | आज के भारतीय शास्त्रीय संगीत के कई पहलुओं का उल्लेख इस प्राचीन ग्रंथ में मिलना है | भरतमुनि व्दारा रचित च्नाटयशास्त्रछ भारतीय संगीत के इतिहास का प्रथम लिखीत प्रमाण माना जाता है | भरतमुनी के च्नाटयशास्त्रछ के बाद शारंगदेव व्दारा रचित घ्संगीत रत्नाकरङ ऐतिहासिक दृष्टी से सबसे महत्वपुर्ण ग्रंथ माना जाता है | १२ वीं सदी के पुर्वाध्द में लिखे गये सात अध्यायों वाले इस ग्रंथ में संगीत व नृत्य का विस्तार से वर्णन किया गया है|

दृक साधन विज्ञान की ऐसी देन है जिनका सांगीतिक क्षेत्र में विशेष महत्व है | साधारण अर्थ में दृक का अर्थ है- देखना | ऐसे साधन जिन्हे देखा जा सके, दृक साधन कहलाते है |

दृक के अर्थ के विषय में यह कहा जा सकता है, वह तांत्रिकीय बिन्दू जो प्रकाश के प्रति संवेदनशिल रहा, आँख बन गया | यह अंग जीवधारी को स्पर्श से बहुत दूर पदार्थ की, रोचकता का अनुमान लगाने की सामर्थ्य देता है |

दृक साधन महत्वपूर्ण इसलिए माने जाते है| क्योंकी पहले केवल श्रव्य साधनों की सहायता से केवल श्रव्य रुप में सुनकर ही संगीत का ज्ञान प्राप्त किया जा सकता था परन्तु दृक साधनों से देखकर भी ज्ञान प्राप्त किया जा सकता है | नृत्य में इन साधनों का विशेष स्थान है | जब भी कोई कलाकार नृत्य सिखता है तो नृत्य की भिन्न-भिन्न मुद्रांओ तथा हावों-भावों का ज्ञान केवल नेत्रो व्दारा ही हो सकता है |

वैज्ञानिक आविष्कारों व्दारा सर्वप्रथम श्रव्य-साधन उपलब्ध हुए | तत्पश्चात् वैज्ञानिक विकास क्रम से दृश्य साधन प्राप्त हुए एवं धीरे दृश्य-श्रव्य साधन उपलब्ध हुए जिनसे एक ही उपकरण व्दारा देखने व सुनने की सुविधा प्राप्त हुई | दृश्य श्रव्य साधनों में नेत्रों एवं कानो दोनों ज्ञानेंद्रियों का प्रयोग होता है| आँखे और कानों को ज्ञान अर्जन का प्रमुख साधन माना जाता है | दृक-श्रव्य साधन ऐसी उपलब्धी है जो देखने -सुनने की मूल शक्ति के विशेष उपयोग में सहाय्यक सिध्द हुए है |

इन नवीन साधनों ने संगीत कें प्रस्तुतिकरण को नया रुप प्रदान किया है | दृक -श्रव्य साधनों के समन्वित प्रयोग व उपयोग से कला, विज्ञान दोंनो क्षेत्रों में प्रगति एवं विकास हुआ है |

संदर्भ ग्रंथ

१) भारतीय शास्त्रीय संगीत - भारतकोश
२) संगीत के मूलतत्व- डॉ.नरेंद्र कौर .

❑❑❑

संगणकांनी सर्वप्रथम रोवली. संगणाकांचा उपयोग फक्त संगीत गायन अध्ययन करणाऱ्या विद्यार्थ्यांपर्यंतच मर्यादित नसुन वाद्य शिकणाऱ्या, रेकॉर्डींग करणाऱ्या तंत्रज्ञानांच्या दृष्टीनेही अत्यंत महत्वाचा आहे. पूर्वीच्या काळी युगल गीतांच्या ध्वनीमुद्रणाकरीता स्त्री व पुरुष गायक एकाच वेळी उपस्थित लागत. पण आज संगणकामुळे दोन्ही गायक आपआपल्या सोईनुसार ध्वनीमुद्रण करुन जावू शकतात.

इंटरनेट :—

इंटरनेटच्या माध्यमातून अनेक संगीत प्रकार अध्यापन अध्ययन सुलभ करतात. आजतागायत इंटरनेटवर अनेक संदर्भ उपलब्ध आहेत ज्याच्या मदतीने आपण ध्वनीमुद्रित व दृकश्राव्य कार्यक्रम सहजरित्या पाहू शकतो. यु—ट्युब, डेली मोशन, रागाडॉटकॉम सारख्या संकेत स्थळावरुन विविध गायन प्रकारांचे अध्ययन केले जावु शकते. त्याचप्रमाणे संगीत क्षेत्रातील घराण्यांविषयी, कलाकारांविषयी अध्ययन करायचे असल्यास त्याचा प्रचंड माहिती उपलब्ध आहे. फेसबुक सारख्या समाज माध्यमांद्वारे समविचारी लोकांच्या समुहामार्फत संगीत विषयक ज्ञानाचे व माहितीचे आदान प्रदान करणे अगदी सोपे झाले आहे. त्याला प्रचंड माहिती उपलब्ध आहे. फेसबुक सारख्या समाज माध्यमांद्वारे समविचारी लोकांच्या समुहामार्फत संगीत विषयक ज्ञानाचे व माहितीचे आदानप्रदान करणे अगदी सोपे झाले आहे.

इलेक्ट्रॉनिक्स गॅझेटस् :—

तंत्रज्ञानामध्ये होत असलेल्या सततच्या बदलामुळे संगणकाचा आकार आणखी लहान व इंटनरेटची उपलब्धता सुलभ झाली आहे. दिवसेंदिवस येत असणाऱ्या वेगवेगळया ॲपसमुळे संगीताचे ज्ञान आदान प्रदान करणे आणखीनच सोपे झाले आहे. मोबाईमध्ये रेकॉर्डींग करणे, गाणे ब्लुटुथने आदानप्रदान करणे अषा अनेक गोष्टी सहज शक्य होतात.

इलेक्ट्रॉनिक्स तानपुरा व तबला :—

संगीताच्या अध्ययन अध्यापन प्रक्रियेत महत्वाची भुमिका असते ती वाद्यांची. यांच वाद्यांमधे तंत्रज्ञानामुळे आमुलाग्र बदल घवून आला. जसे इलेक्ट्रॉनिक तानपूरा / तबला. तबला वादक किंवा तानपूरा वादक उपलब्ध नसतील तरीही अध्ययन प्रक्रिया थांबत नाही. तसेच ही वाद्ये हाताळायला, ने आण करायला जास्त सोईस्कर आहेत. आगदी प्रवासातही विद्यार्थी व अध्यापक सहजपणे हाताळू शकतात. मानवी वादक एकवेळ वादन करुन थकेल पण हे यंत्र मात्र अविश्रांत संगीताची साथ करु शकतात.

ऑन लाईन गुरु शिष्य परंपरा :—

प्राचीन काळी गुरुगृही वास्तव्य करुन शिष्याला संगीताचे ज्ञान मिळवावे लागे. पण आजच्या काळात हे शक्य नाही. त्या परंपरेला तंत्रज्ञानाने दिलेला सशक्त पर्याय म्हणजे इंटरनेट सॉफ्टवेअरद्वारे ऑनलाईन पध्दतीने गुरुंनी शिष्याला संगीताचे अध्यापन करणे. यापध्दतीने केवळ भारतातीलच नव्हे तर विदेशातील अनेक विद्यार्थी प्रतिभासंपन्न कलाकारांकडून ज्ञान मिळवू शकतात. स्कायपी सारख्या सॉफ्टवेअरमुळे यात विशेष मदत होते.

सारांश :—

मानवी जीवनात संगीताचे महत्व ध्यानात घेतल्यास मानवाच्या जन्मापासुन ते अंतापर्यंत संगीताची प्रमुख भुमिका आहे हे लक्षात येते, त्या अनुशंगाने शिक्षणासारख्या जीवनाच्या अविभाज्य घटकात अध्ययन अध्यापन प्रक्रियेत बदलत्या काळाप्रमाणे तंत्रज्ञानाचे उपयोजन आणि महत्व याचा उहापोह प्रस्तुत शोधनिबंधात केला आहे.

❑❑❑

यजुर्वेद में विणा, तुणव, दुदंभी, भांख, आदि वाद्योंका उल्लेख मिलता है | अश्वमेघ यज्ञ के समय मनोरंजन के लिए गाथागान विणावादन रेसे संगीत के आयोजन होते थे | नृत्य और नाटक आदि कलाओंका सादरीकरण भी होता था | गीत संगत की जाती थी | स्त्रियोंमे भी संगीत.का प्रचार था |

सामवेदीय संगीत :-

चारो वेदों मे सामवेद को संगीत का एक महत्वपूर्ण और अधार ग्रंथ माना जाता है | वैदिक काल में ईश्वर की आराधना करने हेतू ऋगवेद ऋचाओं का गायन होता था | इन्ही गेय ऋचाओं का संग्रह समावेद मे मिलता है | जो मंत्र गाये जाते थे वे ' साम' कहलाते थे | इन्ही ऋचाओके एकत्रिकरण से सामवेद की रचना हुयी | साहित्य की दृष्टी से सामवेद की रचना स्वतंत्र नही है , बल्की ऋगवेद का गेय रुपांतरण सामवेद है | ऐसा कहा जाये तो अनुचित न होगा अपने गेय रुप के कारण ही सामवेद संगीत का एक महत्वपुर्ण ग्रंथ माना जाता है | इसे ' साम संहिता ' भी कहते है | और इसकी ऋचाओ को 'सामयोनी' वृशक भी कहते है |

सामगायान स्वरो का विकास :-

वैदिक काल मे ऋचोओंका गायन एक स्वर से गाथाओ का दो स्वरों सेख, तथा सामगायन तीन स्वरोंसे होतो था | जिनके नाम उदात्त अनुदात्त तथा स्वरित थे ओर जिनका कम आज के तार सप्तक के गरेंसींनी इन चार स्वरोंसे सामगायन होने लगा | धीरे धीरे एक एक स्वर का विकास होता चला गया और आगे चलकर सामगायान सात स्वरोंमे होने लगा | इसका प्रमाण हमे 'मांडूकी शिक्ष के इस भलोक मे मिलता है |' मांडूकी शिक्षा के इस भलोक मे मिलता है | 'सजस्वरास्तु गीयन्ते सामाभिःसामर्गेबुधै' आज जिस तरह संगीत में ' घराना' पध्दति विद्यमान है उसी तरह सामगायनमेभी हजार शाखएँ हुआ करीत थी | उनमेसे आज केवल तीन भाखाएँ प्रचारमे है |

१) राणार्यनिय २) थैमिनिय ३) कौथुमी उन्नती की बुलन्दियों को द्युता हुआ सामवेदकालीन संगीत दिखाई देता है |

रामायणकालीन संगीत :-

वैदिक काल में कवी ' वाल्मिकी' द्वारा 'रामायण' नामक महाकाव्य की रचना की गई | जो गेय काव्य था और आगे चलकर यही महाकाव्य हमारी सांस्कृतिक घरोहर बन गया | रामायण काल मे हमारी संगीत कला के साथ साथ शास्त्र भी विकसित हुआ था | जिसके उल्लेख हम रामायण मे प्राप्त होते है | गंधर्व और अप्सराओंका उल्लेख

मिलता है | जिनमे गंधर्व गायन और विणावादन मे निपुण थे और अप्सराएँ नृत्यनाटक का व्यवसाय नट नर्तक भौलुश आदि जातियाँ करती थी जिन्हे राजाश्रय प्राप्त था | अप्सराओं के गान शिक्षक के रुप में तुंबरुका जिक्र किया गया है | रामाणकाल में यज्ञयागदि धार्मिक अनुष्ठानोमें सामगायन प्रचलित था | यज्ञो मे वेद मंत्रोका सांगीतिक उच्चारण होता था | यज्ञोपरात्न नृत्य और संगीत का आयोजन होता था | स्वयम ' श्री राम ' भी नृत्य और गायन मे निपुण थे ऐसा रामाण कहता है | रामायणकाल मे जीवन के प्रत्येक क्षेत्र मे संगीत व्याप्त था | युध्द में धार्मिक आयोजनों मे संगीत का प्रचलन अधिक था | श्री राम के जन्म तथा विवाह समय देवदुंदभी बजाने का तथा नृत्य और गायन का उल्लेख मिलता है | अतिथि का स्वागत भांख और दुंदभी बजाकर स्तुतिकागायनसे होता था | युध्द में सैनिकों का मनोबल बढाने के लिए और उनमे चेतना जगाने के लिए भेरी, दुंदभी, मृदुंग, पणव, भांख तुर्य , आदि वाद्य बजाये जाते थे | विणा वाद्य मे वल्लकी और विपंची विणा प्रचलित थी और वादकों को ' तुर्य ' कहते थे | रावण एक कुशल संगितज्ञ और एक कुशल विणावादक थे | कहा जाता है की, वे खुद रावणविणा के अविष्कारक थे | रामायण कालीन पाठयक्रम मे सामवेद का अध्ययन संम्मिलित था और यज्ञ के समय उसका नियमबध्द उच्चारण ऋषियों व्दारा किया जाता था | संपूर्ण रामायण में संगीत का उल्लेख कई जगहों पर मिलता है | रामायण कालीन संगीतज्ञ लव ओर कुश संगीत मे विशेष योग्यता रखते थे | अश्वमेघ के समय उनके द्वारा रामायण का आलौकिक गायन किया गया था | रामायण काल मे स्त्रिया भी संगीत मे निपुर थी रावण की सभी रानियाँ विणावादन, गायन और नृत्य में प्रवीण थी, रावण की बहन शुर्पनखा एक संगीतज्ञ थी | इसके अलावा राजदरबार के विवाह तथा पुत्रजन्मके समय संगीत के अनुष्ठान आयोजित किये जाते थे | श्री राम के राज्यरोहण समारोहण के समय इसी तरह के गायन वादन और नृत्य का उल्लेख मिलता है | अयोध्यामें सभी गायक वादक और संगीतज्ञोको आदर और सम्मान मिलता था और राजश्रय प्राप्त था|

कहनाह उचित होगा की रामायण कालमे संगीत मनोरंजन और धार्मिकता का एक सहज साधन था |

महाभारतकालीन संगीत :-

महर्षि व्यास द्वारा रचित 'महाभारत' वैदिक युग का एक आलौकीक महाकाव्य ळै जो रामायण की तरह हमारी सांस्कृतीक विरासत का एक अक्षुण्ण हिस्सा हे |

2017-18

से परीचीत करते है। तथा विवीध कार्यक्रमो की प्रशंसा प्राप्त होती है। उससे उसे मानसीक संतृष्ट व कलात्मक प्रेरणा प्राप्त होती है।

संदर्भ ग्रंथ सुची -

१) रेडीओ और संगीत - डॉ.अशोक कुमार

२) भारतीय संगीत मे वैज्ञानिक उपकरनो का प्रयोग - अनिता गौतम

३) आकाशवानी एवं हिंदुस्थानी शास्त्रीय संगीत - डॉ.शुची स्मिता

४) संगीत विषारद - वसंत.

❑❑❑

35

लोकसंगीत के प्रचार में दृक - श्राव्य माध्यमों का योगदान

प्रा. संतोष एन. वावगे
श्री.शिवाजी कला वाणिज्य व विज्ञान महाविद्यालय, अकोट

लोकसंगीत किसी भी सभ्यता और संस्कृती का महत्वपूर्ण अंग है | यह मानव हृदय में स्थित गहनतम अनुभुतियों की सरलतम और सहज अभिव्यक्ती का साधन है | यह शास्त्रीय संगीत की आधार शिला है| भारत के प्रत्येक प्रान्त का अपना एक विशेष लोक संगीत है,जो वहाँ के आंचलिक क्षेत्र से प्रभावित होता है| लोकगीतों में बहूत से शास्त्रीय रागो का आभास मिलता है | दरअसल शास्त्रीय संगीत के कुछ राग लोक धुनों से ही विकसीत हुऐ है | लोकसंगीत वस्तुतः शास्त्रीय संगीत का उद्गम स्त्रोत है|

आधुनिक समय मै भौतिक विज्ञान व्दारा सांगीतीक क्षेत्र में नई वैज्ञानिक ध्वनी प्रसारण विधी का प्रयोग किया जाता है | संगीत प्रदर्शन के लिए कक्ष, भवन, प्रेक्षागृह इत्यादी की दीवारों, छतों, स्टेज का निर्माण व ध्वनि नियंत्रण एवं अवांछित ध्वनीयो को दूर करने के लिए जिस विधी व सामग्री का प्रयोग किया जाता है, विज्ञान की ऐसी शाखा जिसके व्दारा ध्वनी की विशेषताओं का ज्ञान होता है, उसे एकॉस्टिक पध्दती कहते है | इस पध्दती व्दारा ही आधुनिक सांगीतिक प्रदर्शन प्रभावशाली होता है|

सांगीतिक रिकॉर्डिंग के समय सर्वप्रथम आवश्यक है - ध्वनी की निश्चित आवृति रेंज | साधारण मानव की आवृती रेंज २० से २०,००० चक्र प्रति सेंकिण्ड माना जाती है | विभिन्न सांगीतिक यंत्रो की आकृती रेंज अलग होती है |

रिकॉर्डिंग से अभिप्राय है, ध्वजी को मृद्रित करके संरक्षित रखना एवं उसे आवश्यकतानुसार सुनना व प्रयोग करना | आधुनिक समय में रेकॉर्डिंग की नई वैज्ञानिक सुविधाएं उपलब्ध है जिनके व्दारा उत्तम तकनीक से साऊंड रिकॉर्डींग होती है |

फिल्म स्ट्रिप से अभिप्राय है- स्थिर चित्रों का निश्चित क्रम में होना अर्थात इसमें चित्रों की संख्या एक निश्चित क्रम में लगी होती है | इसके अतर्गत विभीन्न नृत्य मुद्राओं, वाद्यो एवं कलाकारों की

MAH MUL/03051/2012 ISSN: 2319 9318 | UGC Approved Jr.No.62759 | Vidyawarta® | Special Issue January 2018 | 054

16

संगीताच्या विकास प्रक्रियेत तंत्रज्ञानाचे योगदान

प्रा. डॉ. सोपान सि. वतारे
श्री. शिवाजी महा. आकोट

****

प्रस्तावना :-

पाच ललितकलांमधे संगीताला सर्वप्रथम स्थान आहे याचे कारण ही दृकश्राव्य कला आहे. त्याचबरोबर सादरीकरणाची कला आहे. संगीताचे शास्त्र किंवा त्याचे ज्ञान माहित नसलेल्यांना देखील संगीताचा आनंद घेता येतो. म्हणजे अगदी सहज गर्दीत कोठेतरी ऐकु आलेली त्याच्या आवडीची गाण्याची ओळ त्याला अलगद त्याच्या गतकाळात घेवून जावू षकते. आजच्या धकाधकीच्या जीवनात संगीतकला पुर्वीसारखी साधना, तपष्चर्या करावी असे प्रत्येकाला वाटतेच असे नाही, त्यामुळे बदलत्या काळाची गरज लक्षात घेवून संगीताच्या अध्यापन प्रक्रियेत काही बदल घडवून आणणे क्रमप्राप्त आहे. त्यात तंत्रज्ञानाचे महत्व ओळखुन त्याचे उपयोजन करणे संगीताच्या प्रचार व प्रसारासाठी महत्वाचे ठरते.

संगीत क्षेत्रातही स्वरज्ञान तालज्ञान यासंबंधी अचूक मार्गदर्षन करण्यासाठी गुरुचे असणे अनिवार्य ठरते. संगीत ही सर्जनशिल कला आहे. रागदारी संगीतातील स्वरसंवाद, स्वरसमुहातील सौदंर्य, स्वरांच्या नेमक्या जागा कशा घ्यायच्या, गमकेचे प्रकार समजावून सांगणे हे महत्तम कार्य गुरुला करावे लागते. वैदिक काळात गुरुगृही राहून शिष्याला संगीताचे धडे घ्यावे लागायचे. कालांतराने विद्यालय, महाविद्यालयीन शिक्षण पध्दती सुरु झाली आणि आता एकविसाव्या शतकात तंत्रज्ञानाच्या प्रयोगाने संगीताच्या अध्ययन अध्यापन प्रक्रियेतून आमुलाग्र बदल घडवून आणला. तो कसा हे आता टप्प्याटप्प्याने पाहू.

दृकश्राव्य माध्यमांची भूमिका :

आजचे युग 'डिजीटल' आहे. संगीताच्या अध्ययन अध्यापन प्रक्रियेतही दृकश्राव्य माध्यमांमुळे फार मोठया प्रमाणात बदल घडून आला आहे. जसे आकाषवाणी, दुरदर्शन, टेपरेकॉर्डर, डी.व्ही.डी. प्लेअर, संगणक, वॉटस्ॲप इत्यादी.

रेडिओ :

हे श्राव्यमाध्यम जुने तंत्रज्ञान असले तरी त्याचा आवाका हा काळाच्या सोबतच वाढत गेला. ज्याचा परिणाम आज आपणाला असा दिसतो की मोबाईलपासुन ते कारमधे सुध्दा रेडिओद्वारे संगीत श्रवण करता येते. त्याचप्रमाणे एफ.एम. रेडिओचे अनेक बॅन्डस् संगीत रसिकांपर्यंत पोहोचवत असतात.

दुरदर्शन :—

दुरदर्शन हे सुध्दा एक लोकप्रिय अध्यापन साहित्य म्हणुन उपयोगात आणता येवू शकते. याद्वारे देशातीलच नव्हे तर जगभरातील लोकप्रिय संगीत समारोहांचा आनंद तेथे न जाता घरबसल्या घेता येतो. जसे पुणे येथे होणारा सवाई गंधर्व सारखे कार्यक्रम देशभरातील संगीत अध्ययन अध्यापन प्रक्रियेतील घटकांना अत्यंत उपयोगी आहे.

सी.डी.लायब्ररी :—

जुन्या ध्वनीमुद्रिका जतन करणे हे काळापूढील मोठे आव्हान होते. पण आधुनिक तंत्रज्ञानाने दिलेल्या सी.डी.मुळे, एकाच सी.डी. मध्ये अनेक दुर्मिळ ध्वनीमुद्रीकांचे जतन सहजरित्या व दिर्घकाळ करता येते. यांच सी.डी.ची. लायब्ररी तयार केल्यास त्याचा उपयोग विद्यार्थी व अध्यापकांना ही परंपरा समजुन घेण्यात व जतन करण्यास उपयोगी होईल. संगीत विद्यालयात ध्वनीफितींची लायब्ररी असते. विद्यार्थ्यांचा जो राग शिकणे चालू असेल त्या रागाच्या प्रथितयश कलाकारांच्या ध्वनीफिती त्यांचे विवेचन करीत ऐकवणे हे तंत्रज्ञानामुळे शक्य आहे. लोकप्रिय कलाकार जसे उस्ताद रशिद खान, पंडीत जसराज, परवीन सुलताना इत्यादी गायक गायिकांचे गायन श्रवण केल्याने विविध घराण्यांच्या गायगीचे अध्ययन विद्यार्थ्यांना करता येते.

संगणक :—

तंत्रज्ञानाच्या दृष्टीने आधुनिकतेची मुहूर्तमेढ ही

2017-18

भारतीय शास्त्रीय संगीत की शिक्षण प्रणालियाँ

❖ **Publisher :**
Harshwardhan Publication Pvt.Ltd.
Limbaganesh, Dist. Beed (Maharashtra)
Pin-431126, vidyawarta@gmail.com

❖ **Printed by :**
Harshwardhan Publication Pvt.Ltd.
Limbaganesh, Dist. Beed, Pin-431126

❖ **Page design & Cover :**
Shaikh Jahurodden

❖ **Edition: June 2017**

ISBN 978-81-933986-2-3

❖ **Price : 210/ -**

www.विद्यावार्ता™.कॉम

2017-18

अनुक्रमणिका

12

2017-18

भारतीय शास्त्रीय शिक्षा की बदलती धाराऐ : प्राचीन से वर्तमान

प्रा. डॉ. सोपान सि. वतारे
श्री शिवाजी महाविद्यालय अकोट

भारतीय शास्त्रीय संगीत अपने आप में एक अदभूत चमत्कार है | जिसका जन्म तथा सृजन आध्यात्म तथा दैवी परिवेश मे माना गया हैं भारतीय संगीत की पृष्ठभूमि देखते हुए वैदिक काल से वर्तमान तक विभिन्न बदलाव की स्थितियो का अध्ययन करना आवश्यक है | वैदिक युग भारतीय संगीतके इतिहास मे अति प्राचीन युग माना गया है | वैदिक युग के बारे में अनेक विव्दानों में मतभिन्नता दिखाई देती है | कुछ विव्दान इसकी अवधी आज भी स्पष्ट रुप से बतलाना मुमकिन नही हो संका है | परंतु इस पुर्व ६००० वर्ष से संगीत के जानकारी स्त्रोत उपलब्ध है |

भारत मे आर्यो के आगमन से वैदिक युग का प्रारंभ हुआ | इस युग में भारत मे चातुर्वण्य व्यवस्था विद्यमान थी | जिनका ब्राम्हण, क्षत्रिय. वैश्य, क्षुद्र के रुप मे विभाजन किया गया था | इनके ब्राम्हण सर्वश्रेष्ठ माने जाते थे जो अन्य तीन वर्णो को विद्या तथा संगीत सिखाते थे | संगीत की मुख्य धुरा पुरोहितों के हाथ में थी | इस युग मे महिलायें गायन-वादन तथा नृत्य मे संम्मिलीत होती थी उनके लिए विणावादन यह वैदिक युग की विशेष उपलब्धि थी | वैदिक युग की नारियाँ आयोजनों मे बढ चढकर हिस्सा लेती थी और अपनी कला निपुणता का प्रदर्शनी करती थी तथा समाज मे सम्मान तथा लौकीक पाती थी |

वैदिक युग भारत के सांस्कृतिक भारतीय संगीत की शुरुवात वैदिक युग सं मानी गयी है | वस्तुत : इस युग मे संगीत का स्वतंत्र रुपसे विवेचन कही भी दिखाई नही देता किंतु वेदों मे यथास्थान पर संगीत के जो उल्लेख मिलते है उसके आधारपर

तत्कालीन संगीत का अनुमान लगाया जा सकता है | चार वेदों के अलावा अन्य कुछ ग्रंथो से भी वेदकालीन संगीत से संबंधीत जानकारी प्राप्त होती है | जिनमें नारदिय शिक्षा बृहदेशी सामवेद संहिता, ऋक्क प्रतिसाख्य पाणीनी अव्यध्याय वेदपाठ आदि ग्रंथ उल्लेखनीय है |

ऋगवेद कालीन संगीत :-

ऋगवेद वैदिक युग का संस्कृत भाषा का अतिप्राचीन ग्रंथ है जिसमे गायन, वादन, नृत्य, इन तीनों कलाओंका उल्लेख मिलता है | ऋगवेद मे गीत या प्रबंधके लिए गीर, गातु, गाथा, गायत्र, साम, रीती, आदि शब्दों का प्रयोग मिलता है | ऋगवेद की ऋचाओंको स्वरबध्दा करने के बाद उन्हे स्त्रोत्र कहा जाता था | तथा गाथाओंका गायन करनेवालों को 'गाथीन' कहा जाता था | इसी कालमे सामगायन के संकेत मिते है | सामगानके अविष्कार के रुप में अंगिरस भारव्दाज और वशिष्ठ आदि ऋषियोंका उल्लेख ऋगवेद में मिलता है | यज्ञ के समय तथा कही अन्य अनुष्ठानोंमें सामगायन विशिष्ठ छंद में होतो था | ऋगवेद में अर्चिनो, गायन्ति, गाथानों, और समिनी आदि पद मिलते है | इनमे अर्चिक संगीत एक सुर का गथिक दो सुरोंका और समित्क संगीत सामगायन करने के लिए प्रयोग होता था | ऋगवेद काल में सामगान तीन स्वरोंसे होता था | जो अवरोही कम में थे | उनका स्वर करेसां ऐसे तारसप्तक मे था |

उस काल में गायन के साथ वाद्यो को भी प्रयोग होता था | जिनमे वीणा, बाण, तुणवश दुदंमी, वेणु, नाडी, कर्क, गर्गर, गोहम, पिंग अघाटी, वाद्य थे | प्रातःकाल मे मंगल वाद्य के रुपमें विणावाद्य बजाया जाता था | ऋगवेद मे उल्लेखित नृत्यमनो अमृत इस इलाके के आधार पर हम ये कह सकते है की ऋगवेदकालमे गायन और वादन के साथ नृत्य भी प्रचलित था |

यर्जुवेद संगीत :-

यज्ञ और उससे संबंधित कार्यो का विस्तृत विवेचन यजुर्वेद मे मिलता है | और सामायन यज्ञ का एक अनिवार्य अंग है | इस काल में सामवेदके तीन स्वरो को उदात्त अनुदात्त और स्वरीत इन तीन नामो सें संबोधित किया गया | उदात्त स्वर को उँचा और अनुदात्त स्वर को निचला माना जाता था, स्वरित स्वर के संबंध मे विभिन्न मत दिखाई देते थे | कुछ विव्दान उदात्त और अनुदात्त स्वर के बीच में स्वरित स्वर को उदात्ता से उँचा और अनुदत्तोसे निचा मानते थे | सामगायन मे वैदिक संगीत के अलावा गाथा नादवंशी ओंकीक संगीत तत्कालीन समाज मे प्रचलित था | गाथा गीतो मे विरसपूर्ण काव्य होता था | जिनका गायन व्यवसायिक और अन्य आयोजनों में होता था |

महाभारत कालमें भी संगीतके अनेक उल्लेख हमे मिलते है | इस कालमें गायन वादन तथा नृत्य के एकत्रित तथा पृथक आयोजन किये जाने के उल्लेख महाभारत मे है | महाभारतकालीन संगीत को धार्मिक कहा जाये तो गलत न होगा क्यों की महाभारत मे सामगान और गाथाओंके एकत्रित उल्लेख मिलते है | महाभारत युग मे सामगान और गांधर्वगान का समान प्रचलन दिखाई देता है आश्रमों में दैनिक अभ्यास के रुप में और यज्ञों मे अनुष्ठानोमे सामगायन प्रचलित था | महाभारतकालीन सामगायनमे मुख्यत: भारूड बृहत जेष्ठ इ. का जिक्र आता है | संगीत के दिव्य कालाकारों के रुप में गंधर्व और किन्नरोंके नाम महाभारतमें आते है | महाभारत काल में ब्रम्हा, विष्णु, और महेश की आराधना नृत्य गायन से होती थी | राणी और राजकुमारीयों को ललित कलाओंका शौक था | स्त्री और पुरुष दोनो ही कला का आनंद लेते थे | इस काल में गीत वादय और नृत्य का उपयोग जीवन के हर अंगमे किया जाता था | महाभारत मे वाद्यो मे तत् वितत धन सुशिर इन चारो प्रकारोंका उल्लेख मिलता है तंतुवाद्यमे विणा का प्रचलन बहुतायत मे था और उसका प्रयोग यज्ञ, वैदिक संगीत और लोक उत्सवोंमे होता था | विंण तथा वल्लरी और उसके अलावा वेणु मृदुंग पणव मुरजे भेरी पुष्कर तथा भांख इन वाद्योका प्रचलन था | चर्मवाद्यके रुपमे मृदंगे प्रयुक्त होतो था | महाभारत मे अर्जुन को गांधर्व विशारद कहा गया है | गीत वादय तथा साम की शास्त्रीय शिक्षा उन्हे प्राप्त थी|

अज्ञातवास काल मे अर्जुनने विराट राजा की कन्या उत्तरा को नृत्य और गायन की शिक्षा प्रदान की थी |

महाभारत के नायक भगवान श्रीकृष्ण एक कुशल बासुरीवादरक और नर्तक संगीतज्ञ थे | अपने बांसुरी वादन के कारण ही वे मुरलीधन कहलाते | उनकी बांसुरी की तान सारे भारतवर्ष में लोकप्रीय थी | उनके और गोपीयोंके नृत्यभिनयसे समृध्द रासलीला आज भी मन को संम्मोहित करती है |

हरिवंश पुराण के अनुसार चित्रलेख उर्वशी, हेमा, रंभा, मेनका, केतनी तथा तलोत्तमा महाभारतकालीन अप्सरायें भी जो नृत्य गायन में निपुण थी | उस काल में संगीत शिक्षा हेतु संगीत पाठशालाओंकाभी प्रचलन था | ग्राम की संकल्पना महाभारत काल में प्रचलित थी और वीणा के तारोंपर ग्रामों की प्रचलीत थी और विणा के तारोंपर ग्रामों की मुर्च्छानाऐं स्थापित की जाती थी | उस काल में कुशल नृत्यगीत विशारद गंधर्व संगीताचार्य हुवा करते थे | अर्जुन ने इन्ही गंधर्व सांगीतायाचार्योसे संगीत की शिक्षा प्राप्त की थी | 'वि वासू' ' चित्रसेन ' आदि गांधर्व संगीताचार्योका उल्लेख महाभारत मे जगह

जगह मिलता है |

महाभारत कालमें समाजके हर वर्ग में संगीतका प्रचार हुवा दिखाई देता है | कुछ संगित की परिभाषाएं जैसे प्रमाण लय, स्थान , मुर्च्छाना, गान आलाप, तान तथा सातों स्वरों नाम उसवत्क प्रचार मे थे |

सारांश :-

इस तरह महाभारत काल में संगीत समाज के हर वर्ग में प्रसारित होकर अपने चरम उत्कर्षपर पहुंच गया था | उपरोक्त विवेचन से हम ये कह सकते है की वैदिक काल में संगीत उन्नति पथपर था | गायन के साथ वाद्यसंगीत भी अपनी अलग पहचान बनाए हुये था | वाद्यो के चार भेद उस काल श्रेणी मे हमें दुंदभी, अदंबर, भुदुंदुभी वनस्पती आघडी अदि वाद्य मिलते है | तंतुवाद्योमे विणा और उसके प्रकार जैस काण्डवीणा कर्करीवीणा इ. मिलते है | सुषिर वाद्योंमे तुणव, नांदी, बाकुर इत्यादी वाद्य मिलते है | इस तरह से गायन वादन तथा नृतयसे परिपूर्ण समृध्द संगीत इतिहास हमे वैदिक कालसे प्राप्त होता है | आज हमारे सामने संगीत का जो रुप है | उसका बिजारोपन कई हजार साल पहले वैदिक काल में हो चुका था और हम तो आज उस युगके संगीत का परिष्कृत और परिवर्तित रूप देख रहे है | जो हमारे पुर्वजोने सहेजकर रखा | उन्होने अपनी प्रतिभासे उस संगीत को और निखारा और समृध्द किया | कालानुरुप परिवर्तित होती हुयी संगीत की ये अमूल्य घरोहर हमे प्राप्त हुयी है जिसे हमे सहेजकर रखना है और सम्मान पुर्वक अपनी अगली पिढियों को संप्रेशीत करना है | और यही हमरा प्रथम उद्देश होना चाहिये |

संदर्भ सुची :-

१) भारतीय संगीत का इतिहास - भगवतचरण भार्मा
२) निबंध संगीत - डॉ. लक्ष्मीनारायण गर्ग
३) संगीत शास्त्र विज्ञान - डॉ. सुचिता बिडकर
४) भरतीय संगीत का इतिहास - डॉ. भारदचंद्र परांजपे

❑❑❑

18-19

Impact Factor - 6.261 ISSN - 2348-7143

INTERNITIONIL RESEIRCH FELLOWS ISSOCIITION'S

RESEARCH JOURNEY

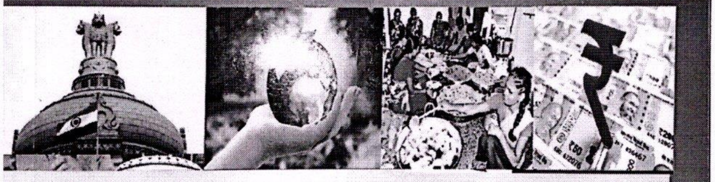
Multidisciplinary International E-research Journal

PEER REFREED & INDEXED JOURNAL

August-2018

SPECIAL ISSUE-LXII

SAMIKSHA



Executive Editor:
Prof. Virag Gawande
Director,
Aadhar Social
Research & Development
Training Institute Amravati

Guest Editor
Dr.Sanjay j. Kothari
Dr. Dinesh W. Nichit
Dr. Shubhangi Dange

Chief Editor
Mr. Dhanraj T. Dhangar,
Assist. Prof. (Marathi)
MGV's Arts & Commerce College,
Yeola, Dist – Nashik [M.S.] INDIA

This Journal is indexed in :
- Scientific Journal Impact Factor (SJIF)
- Cosmos Impact Factor (CIF)
- Global Impact Factor (GIF)
- Universal Impact Factor (UIF)
- International Impact Factor Services (IIFS)
- Indian Citation Index (ICI)
- Dictionary of Research Journal Index (DRJI)

RESEARCH JOURNEY
MULTIDISCIPLINARY INTERNATIONAL RESEARCH JOURNAL

For Details Visit To : www.researchjourney.net

SWATIDHAN PUBLICATIONS

महाविद्यालयीन विद्यार्थीनी मध्ये एच.आय.व्ही./एड्स संबंधी जागरूकता व प्रतिबंधात्मक ज्ञानाचे अध्ययन

प्रा. स्वाती वैद्य
सह. प्राध्यापक गृहअर्थशास्त्र विभाग,श्री शिवाजी कला, वाणिज्य व विज्ञान महा. आकोट

प्रस्तावना:— २१ वे शतक विज्ञाना सोबतच माहीती आणि तंत्रज्ञानाचे युग समजले जाते. तरी ही एच.आय.व्ही./एड्स वर मात करण्यात अजूनही यश आलेले नाही. एच.आय.व्ही. संसर्गीत व्यक्तींची दररोज हजारोंनी वाढ होत असून एच.आय.व्ही.विषाणूंची बाधा शाळा, कॉलेज मधील विद्यार्थी, युवा, युवती, कामगार यांच्या मध्ये झपाट्याने पसरण्याचा धोका WHO ने सुचीत केला होता. " एच.आय.व्ही. संसर्ग सर्वच वयोगटात दिसून येत असला तरी प्रामुख्याने तरुण पिढीवर एड्सने जबरदस्त आघात केला दिसतो. एड्सने बाधीत झालेल्या एकूण रूग्णांपैकी सुमारे ७५ टक्के रूग्ण हे तरुण पीढीतील म्हणजेच १५—३० वर्ष वयोगटातील आहेत."(बावनकर २००७) या तरुण पिढीवर समाजाचे, राष्ट्राचे भवितव्य अवलंबून आहे. एखाद्या कुटूंबातील तरुण मुले एड्सला बळी पडल्यास त्या मुलामुलींचे आयुष्य बरबाद होईल. त्यामुळे केवळ समाजच नव्हे तर संपुर्ण राष्ट्र उध्वस्त होण्याचा धोका निर्माण होईल.

उद्दिष्टे :— १) एच.आय.व्ही./एड्स चा अर्थ, लक्षणे व कारणे जाणुन घेणे.
२) महाविद्यालयीन विद्यार्थीनींमध्ये एच.आय.व्ही./एड्स संबंधी जागरूकता व प्रतिबंधात्मक ज्ञान तपासणे.

गृहीतके :— १)एच.आय.व्ही./एड्स हा गंभीर आजार आहे.
२) विद्यार्थीनीं मध्ये एच.आय.व्ही./एड्स विषयी पुरेसे ज्ञान व जागरूकता नाही.

प्रस्तुत संशोधनाकरीता आकोट शहरातील १०० महाविद्यालयीन विद्यार्थीनींची रॅन्डम पध्दतीने निवड करून एच.आय.व्ही./एड्स संबंधी जागरूकता व प्रतिबंधात्मक ज्ञान तपासण्यासाठी उत्तरदात्या विद्यार्थीनींनी कडून अनुसूची भरून घेण्यात आल्या.

एच.आय.व्ही./एड्सचा अर्थ :
एच.आय.व्ही./एड्स हा शब्द जगातील बहूतांश जनते पर्यंत पोहचलेला आहे. पण अजुनही त्याचा पुर्ण अर्थ कित्येकांना समजलेला नाही. एच.आय.व्ही-(HIV)हा शब्द ह्युमन इम्युनोडेफिशियन्सी व्हायरस या शब्द समुहातील प्रत्येक आद्याक्षर घेवून तयार झाला आहे.

Human- याचा अर्थ मानव म्हणजेच एड्सचा विषाणू फक्त मानवी शरीरातच जीवंत राहू शकतो. मानवी शरीराबाहेरील वातावरणात हा विषाणू जीवंत राहू शकत नाही. फक्त मानवी शरीरातून मानवी शरीराकडे याचे संक्रमण होते. 'Immuno Deficiency- इम्युनो' हा शब्द इम्युनिटी पासून आलेला असून इम्युनिटी म्हणजे रोगप्रतिकारक शक्ती. आपल्या शरीरात अनेक रोगां पासुन रक्षण करण्यासाठी नैसर्गिक सुरक्षा यंत्रणा असते. यालाच रोग प्रतिकारक शक्ती म्हणतात. एच.आय.व्ही. जेव्हा मानवी शरीरात प्रवेश करतो तेव्हा तो या विशिष्ठ पांढऱ्या पेशीवर हल्ला करतो. आणि त्यामुळे हळूहळू मानवी शरीरातील पांढऱ्या पेशींची संख्या कमी होते. व सुरक्षा यंत्रणा कुचकामी होते.

Virus व्हायरस — व्हायरस हा लॅटीन शब्द असून त्याचा अर्थ विष असा असून त्याला मराठीत विषाणू असे म्हणतात.

निष्कर्ष :
एखादया विषयाची कौशल्य आणि माहीती समजून घेण्यासाठी व्यक्तीची वैचारीक पातळी वाढविण्यासाठी ती व्यक्ती शिक्षीत असली पाहीजे. कारण शिक्षणामुळे विचार आणि आचार बदलतात. एच.आय.व्ही./एड्स या गंभीर रोगाची माहीती आणि त्याचे ज्ञान शिक्षणामुळेच येवू शकते. आज औद्योगीक क्रांती शिक्षण, व्यक्ती स्वातंत्र्याची कल्पना, सामाजीक सुधारणा इ. कारणां मुळे संयुक्त कुटूंबाचे प्रमाण कमी होवून विभक्त कुटूंबाचे प्रमाण वाढत आहे. शहरीकरण आणि विभक्त कुटूंब पध्दती मुळे आलेला मुक्तपणा, स्वातंत्र्याचा लाभ प्रसार माध्यमाचा अतीवापर, धकाधकीचे दैनंदीन जीवन यामुळे विशेषतः तरुण पिढी मध्ये वैचारीक बदल होत असून स्वैराचार वाढत असल्याचे दिसते.

एच.आय.व्ही./एड्स हा गंभीर आजार असून असुरक्षीत लैंगिक संबंधामुळे त्याचा संसर्ग होण्याचे एक प्रमुख कारण आहे. परंतु विद्यार्थीनीं मध्ये एड्स बाबद अजून पुरेशी जागृती आलेली नाही. या बाबद विद्यार्थींना प्राथमीक स्वरूपाची माहीती असल्याचे निदर्शनास आले. एच.आय.व्ही./एड्स प्रसार मध्ये युवा पीढीचे प्रमाण जास्त असल्याचे दिसते. आरोग्य विषयक अज्ञान, अर्धवट चुकीची माहीती ही त्या मागील कारणे असावीत. एच.आय.व्ही./एड्स हा गंभीर व जीवघेणा आजार आहे, या विषयी सर्व उत्तरदात्यांना माहीती होती परंतु त्यातील गंभीरता व शास्त्रीय माहीतीचा अभाव आढळला. विद्यार्थीनी मध्ये अजूनही पुरेशी जागृकता आलेली नाही. या बाबत पुरेशी माहीती विद्यार्थीनींना नव्हती. एच.आय.व्ही./एड्स बाबत विद्यार्थीनीनमध्ये अनेक गैर समज असल्याचे निदर्शनास आले.

सारांश :—
एच.आय.व्ही.हा मानवी शरीरात जीवंत राहणारा विषाणु असून त्याची बाधा झाल्यास एड्स हा आजार होतो. शरीरातील सुरक्षायंत्रणेवर हल्ला करून रोग प्रतिकारक शक्ती नष्ट करून अनेक रोगांचा प्रादुर्भाव होवून एच.आय.व्ही./एड्स होतो. असुरक्षित लैंगिक संबंध, एच. आय.व्ही. दुषित रक्त दिल्यास व एच.आय.व्ही.बाधीत गर्भवती माते कडून निच्या बाळाला एड्स होण्याची प्रमुख कारणे आहेत. एच.आय.व्ही./एड्स ही केवळ एक आरोग्य समस्या राहीली नसून ती एक सामाजीक समस्या बनली आहे. त्याच्या आघात तरुण पीढीवर होत आहे. एच.आय.व्ही./एड्स बाबत जागरूकता व प्रतिबंधक ज्ञानाचा महाविद्यालयीन विद्यार्थीनींनमध्ये अभाव दिसून आला. एच.आय.व्ही.चा प्रतिबंध करावयाचा असेल तर त्या बाबतची संपूर्ण शास्त्रीय माहीती समाजात विशेषतः तरुण तरुणी पर्यंत विविध माध्यमाद्वारे पोहचवने आवश्यक आहे.

संदर्भ सुची:

१. बावनकर डॉ. दिलीप (२००७) — 'एड्स' मेहता पब्लीकेशन, पुणे.
२. जोशी डॉ. आनंद, शिधये श्रीराम (२००६) राजहंस प्रकाशन, पुणे.
३. भातखंडे डॉ. प्रकाश (२००२)यौवन की दहलीज पर
४. शेटे अश्विनी (२००६) महाराष्ट्र आरोग्य पत्रीका.
५. दै. लोकमत, मैत्री पुरवणी
६. दै. लोकसत्ता
७. दै. देशोन्नती
८. महाराष्ट्र आरोग्य पत्रीका.

STUDIES IN ULTRASONIC PARAMETERS OF AROMATIC SUBSTITUTED KETIMINE DRUGS UNDER DIFFERENT CONCENTRATION IN 75 % DICHLOROMETHANE (DCM) – WATER MIXTURE AT 303±1 K.

G. B. Andhale[1*], S. P. Wagh[1]
[1] P. G. Department of Chemistry Shri Shivaji Art's, Commerce and Science College, Akot, Dist. Akola (M.S.) India

Abstract: The ultrasonic interferometer (2MHz) and bicapillary pyknometer was used for the measurement of ultrasonic velocity and density of aromatic substituted ketimines in 75 % DCM-Water mixture at 303 K. The obtained data was used to investigate the different acoustical parameters such as adiabatic compressibility, apparent molar compressibility, acoustic impedance, relative association, solvation number and intermolecular free length. These parameters help in understanding the molecular interactions in DCM-Water mixture at 303 K.

Index Terms: Dichloromethane (DCM), adiabatic compressibility, acoustic impedance etc.

Introduction

The sound wave having frequency greater than human audible range (20 Hz to 20 KHz) is known as ultrasonic wave. When the ultrasonic waves travels through a medium, the molecule in the medium vibrate over very short distance in the direction parallel to the stationary wave. During this vibration, momentum is transferred among the molecules. This produces the wave to pass through the medium. In the recent years, the ultrasonic wave has many important practical applications for the study of properties and structure of matter in applied science. Ultrasonic techniques could be used to estimate environmental damage initiation and evolution in adhesive joints [1]. This technique can be applicable to investigate the changes in the internal defects of coal under quantitative loading, which can provide the theoretical basis for applying the technology to determine the structural stability of coal and predict disasters related to the dynamics of coal or rock [2]. Ultrasonic velocity used in geological study [3]. It is used for detecting decay in carbonate rocks [4]. In the field of medical science, the sound waves are being used for the diagnosis of joint pains [5], for elimination of kidney and bladder stones, for detection of bone fractures, cancer tumors, physiotherapy, bloodless surgery, cardiology, gynecology [6] etc. In the recent years, determination of ultrasonic velocity evaluates various parameters of liquids for studying molecular and structural properties. There is an intimate relationship between the ultrasonic velocity on chemical and structural characteristics of molecule of liquids; this gives a property of basic importance to ultrasonic velocity in molecular theory of liquids. Many researchers [7-12] have made ultrasonic study of electrolytic solutions and discussed about the variation of ultrasonic velocity with ion concentration. It has already been observed that extent of a lowering of compressibility and an increase in ultrasonic velocity with reference to that of water are proportionate to the number of ions existing in that medium. Most of the ultrasonic work in non-aqueous systems possesses an interpretation of solute-solvent interactions [13]. Solvation numbers have been obtained from the study of non-aqueous solutions by K.Kannagi et.al. [14]. R. Palani et al. [15] investigated the ultrasonic Studies of Amino Acids in Aqueous Sucrose Solution at Different Temperatures. S.Punitha et al. [16] studied the thermodynamic properties of cellulose in aqueous electrolyte solutions at different temperature. K. Rajgopal et al. [17] investigated molecular interactions of alanine in aqueous paracetamol solution at different temperature. S.Thirumaran et al. [18] has investigated interionic interactions of some α-amino acids in aqueous sucrose solution at varying mass percentages.

Many attempts have been made in recent years to study molecular interactions in pure liquid and binary liquid mixtures. In the present investigation, study of the interaction between solute-solute and solute-solvent of substituted ketimine in 75 % (DCM+water) solvents by measuring ultrasonic velocity, density and other acoustical parameters such as partial molal volume (φ_v), adiabatic compressibility (βs), intermolecular free length (L_f), apparent molal compressibility ($\varphi\kappa$), specific acoustic impedance (Z), relative association (R_A), solvation number (Sn) etc.in different concentration of solute at 303 K.

Experimental

All the chemicals used were of AR grade. The density measurements all the solutions were made with the precalibrated bicapillary pyknometer. All the weighings were made on one pan digital balance (petit balance AD-50B) with an accuracy of ± 0.001 gm. The ultrasonic velocity was measured by using variable path crystal interferrometer (Mittal Enterprises, Model F-81) with accuracy of ± 0.03 % and frequency 2MHz. The instrument was calibrated by measuring ultrasonic velocity of 75 % DCM-water mixture at 303 K. Elite thermostatic water bath was used, in which continuous stirring of water was carried out with the help of electric stirrer and temperature variation was maintained within ± 0.1 °C. The ligands used in the present study are

5- Bromo-2-hydroxy-4-chloro (p-methyl phenyl) ketimine (LA)

5- Bromo-2-hydroxy-4-chloro (p-amino phenol) ketimine (LB)

Calculations:

The distance traveled by micrometer screw get one maximum in ammeter (D), from the value of D, wavelength of ultrasonic wave is calculated using relation.

$$2D = \lambda \quad \ldots\ldots\ldots\ldots (1)$$

Where λ = wave length D = distance in mm. The ultrasonic velocity is calculated by using relation.

$$\text{Ultrasonic velocity (U)} = \lambda \times \text{Frequency} \times 10^3 \quad \ldots\ldots\ldots\ldots (2)$$

From the measured values of ultrasonic velocity some acoustical parameters have been calculated using the standard relations.

The adiabatic compressibility of solvent and solution are calculated by using equations

$$\text{Adiabatic compressibility } (\beta s) = 1/ U s^2 \times ds \quad \ldots\ldots\ldots\ldots (3)$$

$$\text{Adiabatic compressibility } (\beta_0) = 1/ U_0^2 \times d_0 \quad \ldots\ldots\ldots\ldots (4)$$

$$\text{Acoustic impedance } (Z) = Us \times ds \quad \ldots\ldots\ldots\ldots (5)$$

Where U_0, Us are ultrasonic velocity in solvent and solution respectively. d_0 is density of solvent and ds is density of solution.

The apparent molal volume (ϕ_v) and apparent molal adiabatic compressibilities ($\phi_{k(s)}$) of substituted ketimines in solutions are determined respectively, from density (d_s) and adiabatic compressibility(β_s) of solution using the equations

$$\phi_v = (M/d_s) + [(d_o - d_s)\, 10^3] / m d_s d_o \quad \ldots\ldots\ldots\ldots (6) \text{ and}$$

$$\phi_{k(s)} = [1000(\beta_s d_o - \beta_o d_s) / m d_s d_o] + (\beta_s M / d_s) \quad \ldots\ldots\ldots\ldots (7)$$

where, d_o and d_s are the densities of the pure solvent and solution, respectively. m is the molality and M is the molecular weight of solute. β_o and β_s are the adiabatic compressibility's of pure solvent and solution respectively.

$$\text{Intermolecular free length } (Lf) = K\sqrt{\beta s} \quad \ldots\ldots\ldots\ldots (8)$$

$$\text{Relative association } (RA) = (ds / d0) \times (U0 / Us)^{1/3} \quad \ldots\ldots\ldots\ldots (9)$$

$$\text{Solvation number } (Sn) = \varphi^{\kappa} / \beta 0 x (M / d0) \quad \ldots\ldots\ldots\ldots (10)$$

The value of Jacobson's constant is calculated by using relation

$$K = (93.875 + 0.375 \times T) \times 10^{-8} \quad \ldots\ldots\ldots\ldots (11)$$

Where T is temperature at which experiment is carried out. The present investigation is carried out at temperature (T = 303 K)

Result and Discussion:

From table 1 and Fig. 1 it is found that ultrasonic velocity decreases with decrease in concentration for both the ligands. This indicates that, there is significant interaction between ion and solvent molecules suggesting a structure promoting behavior of the added electrolyte. It was found that, intermolecular free length increases linearly on decreasing the concentration of substituted ketimines in different solution of DCM-water mixture (fig. 3). The intermolecular free length increase due to greater force of interaction between solute and solvent by forming hydrogen bonding. This may also indicates decrease in number of free ions showing the occurrence of ionic association due to weak ion-ion interaction. The value of specific acoustic impedance (Z) decreases with decrease in concentration for all substituted ketimines in different percent solutions of (DCM + water) mixture (fig. 4). When concentration of electrolyte is decreased, the thickness of oppositely charged ionic atmosphere may increase due to

decrease in ionic strength. This is suggested by decrease in acoustic impedance with decrease in concentration for all system investigated. With decrease of concentration of solution adiabatic compressibility increase this may be due to dispersion of solvent molecule around ions, supporting weak ion-solvent interaction (Fig. 2). The apparent molal volume increases due to decreasing dielectric constant of medium with decrease in concentration. Thus substituted ketimines are less electro strickted in sheath of non-polar solvent. The positive values of apparent molal volume indicate that it does not restrict molecular motion within the solution. The value of apparent molal compressibility increases with decrease in concentration of all systems in different percent of (DCM+water) mixture (fig. 6). It shows weak electrostatic attractive force in the vicinity of ions causing electrostatic salvation of ions. The value of relative association increases with decrease in concentration for both the ligands (fig. 7). It is found that there is weak interaction between solute and solvent. Relative association is more in case of bulky and more polar substituents. The solvation number increase with decrease in concentration due to weak solute-solvent interaction (fig. 8). The Solvation number in all system increases with decrease in concentration solute indicates the large solvent molecules are present around the solute molecule which increases the solubility of solute.

Table 1: Ultrasonic velocity, density, adiabatic compressibility (βS), Specific acoustic impedance (Z) Intermolecular free length (Lf) in 75 % DCM solvent at 303 K.

Conc. (m) Moles lit^{-1}	Density (ds) Kg m^{-3}	Ultrasonic Velocity(Us) m s^{-1}	Adiabatic Compressibility (βs) $x10^{-9}$ m^2N^{-1}	Inter molecular free length (Lf) $x10^{-11}$ m	Specific acoustic impedance (Z) $x10^5$ kg $m^{-2}s^{-1}$
Ligand LA in 75 % (DCM +water) solvent					
0.01	1224.1	3630.4	6.1983	5.1660	4.44397
0.008	1223.9	3529.6	6.5622	5.3155	4.31741
0.006	1222.3	3433.6	6.9394	5.4661	4.19689
0.004	1221.8	3342.4	7.3287	5.6173	4.08241
0.002	1216.0	3273.6	7.6739	5.7399	3.98070
Ligand LB in 75 % (DCM +water) solvent					
0.01	1220.5	3504.0	6.6732	5.3602	4.27663
0.008	1219.6	3438.4	6.9354	5.4645	4.19347
0.006	1219.6	3401.6	7.0862	5.5236	4.14859
0.004	1218.7	3337.6	7.3660	5.6316	4.06753
0.002	1217.8	3188.8	8.0755	5.8966	3.88332

Table-2: Concentration (m), relative association (R_A), apparent molal compressibility (φκ), apparent molal volume (φv), solvation number (Sn) at 75 % (DCM+ water) solvent at 303 K.

Conc (m) Moles/lit	Apparent molal volume (φv) m3mole-1	Apparent molal compressibility (φk)x10−10 m2N-1	Relative association (RA)	Solvation number (Sn)
Ligand LA in 75 % (DCM +water) solvent				
0.01	2.14784249	2.162954594	0.949525	0.693480
0.008	2.42572500	2.290963957	0.957775	0.734522
0.006	2.88784077	2.423652613	0.965908	0.777064
0.004	3.81053480	2.560563346	0.973897	0.820960
0.002	5.41019130	2.682010292	0.979147	0.859898
Ligand LB in 75% (DCM +water) solvent				
0.01	1.32129503	2.341042447	0.957982	0.747062
0.008	1.38822667	2.433675282	0.963326	0.776623
0.006	1.85096889	2.487001757	0.966787	0.793640
0.004	2.24810880	2.585890583	0.972209	0.825200
0.002	3.43639759	2.836632903	0.986373	0.905213

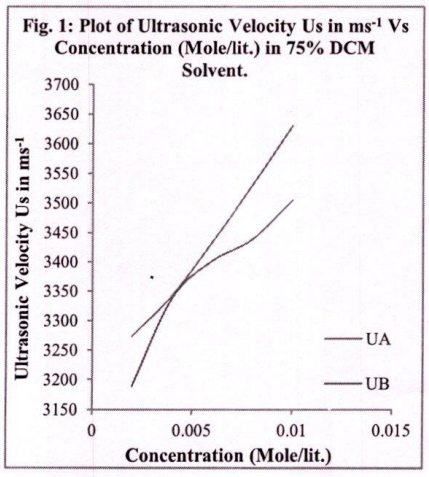


Fig. 1: Plot of Ultrasonic Velocity Us in ms^{-1} Vs Concentration (Mole/lit.) in 75% DCM Solvent.

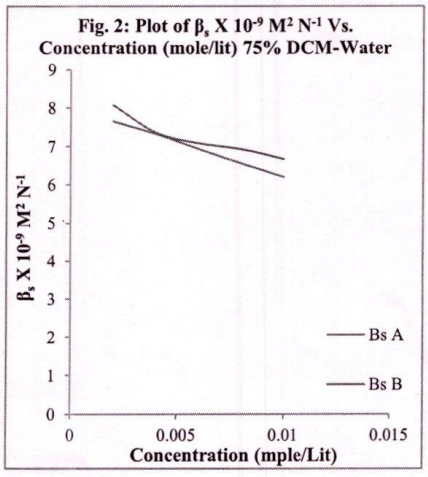


Fig. 2: Plot of β_s X 10^{-9} M^2 N^{-1} Vs. Concentration (mole/lit) 75% DCM-Water

Fig. 3: Plot of Intermolecular Free Length Vs. Concentration (mole/lit) in 75% DCM-Water

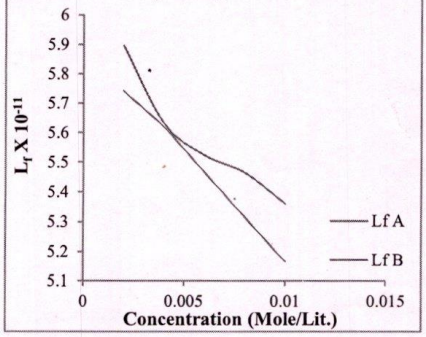


Fig. 4: Plot of Specific acoustic impendance (Z) X 10^5 Kg m^{-2} s^{-1} Vs. Concentration

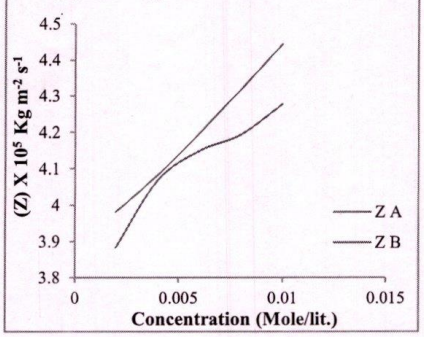


Fig.5 Plot of Apparent molal volume (φv) m^3mole^{-1} Vs. concentration in mole/lit in 75 % DCM solvent

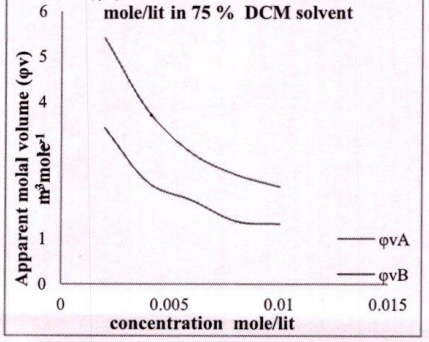


Fig. 6: Plot of Apparent molal compressibility (φk)x10^{-10} m^2N^{-1} Vrs concentration in mole/lit in75 % DCM solvent.

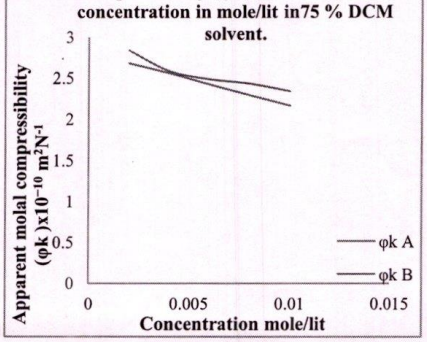


Fig. 7: Plot of Relative Association (R_A) Vs.

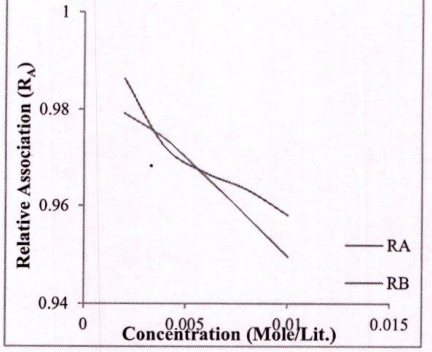
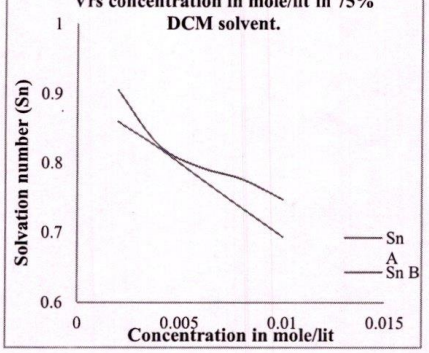


Fig. 8: Plot of solvation number (Sn) Vrs concentration in mole/lit in 75% DCM solvent.



Conclusion

In the present investigation the experimental results for ultrasonic velocity, density and at 303 K presented for substituted ketimines in (DCM-water) mixture. From the experimental data it is concluded that there is a weak solute-solvent and solvent-solvent interaction between substituted ketimines, water and DCM molecules.

References

1. Lavrenty, A. I. and Rokhlin, S. I. (1998). Ultrasonic study of environmental damage initiation and evolution in adhesive joints. *J. Res. Nondestructive evolution*, *10*(1): 17-41.
2. Xiaofei L., Xiaoran W., Enyuan W., Zhentang L., and Xiaoyang X. (2017). Study on ultrasonic response to mechanical structure of coal under loading and unloading condition. *Hindawi Shock and Vibration*, *Volume 2017* Article ID 7643451, p. 12.
3. Nuzzo, L., Calia, A., Liberatore, D., Masini, N. and Rizzo, E. (2010). Integration of ground penetrating radar, ultrasonic tests and infrared thermography for the analysis of a precious medieval rose window. *Adv. Geo. Sci.*, 24, 69-82.
4. Fioretti, G. and Andriani, G. F. (2018). Ultrasonic wave velocity measurements for detecting decay in carbonate rocks. *J. Eng. Geo. and Hydro, 2016*-110.
5. Horinaka H, Iwade T, Kanetaka Y, Ogushi F, (2003). Spectroscopic imaging by using ultrasound velocity change caused by optical absorption. *J. Appl. Phys.*, 42, 3287-3294
6. Topchyan A, Tatarinov A, Sarvazyan N, (2006). Ultrasound velocity in human musclein vivo: perspective for edema studies. *Ultrasonic*, *44* (3): 259-264.
7. Chouhan, M. , Modi, K., Shrivastava, B. and Patil, S. (2017). Thermo acoustic study of electrolytic solution of Aloe Vera juice at 303.15 K. *I. J. Sci. Res. Chem. Sci.*, *4*(4): 1-4.
8. Sasikumar S, Meenakshi G., (2015). Evaluation of acoustical parameters of aqueous solution of sodium chloride and potassium chloride using ultrasonic waves. I. *J. Res. in Eng. and Tech.*, *4*(2): 263-268.
9. Shashi Kant, Parul, Sharma K. (2013). Ultrasonic studies on interionic interactions of potassium chloride in aqueous lactose solution at varying molality's and temperatures. *Int. J. Chem. Tech. Research*, *5*(4): 1948-1958.
10. Sumathi T. and Varalakshmi M., (2010). Ultrasonic velocity, density and viscosity measurement of methionine in aqueous electrolytic solutions at 303K. *Rasayan J. Chem. 3*(3): 550-555.
11. Chandami A. S., Hedaoo D. S. and Wadekar M. P., (2016). Study of some important acoustical parameters of substituted-N,N'-bis(salicyliden)-arylmethanediamines in 60% DMF-Water at 300K *J. Chem. Pharm. Res.*, *8* (3): 646-651.
12. Azhagiri S., Jayakumar S., Padmanaban R., Gunasekaran S. and Srinivasan S., (2009). Acoustic and thermodynamic properties of binary liquid mixtures of benzaldehyde in hexane and cyclohexane. *J. Sol. Chem.*, *38*(4): 441-448.
13. Thirunavukkarasu M. and Kanagathara N., (2012). Ultrasonic studies on non-aqueous solutions of toluene in carbon tetra chloride. *Int. J. Chem. Tech. Research*. *4*(1): 459-463.
14. Kannagi K., Jasmine E. and Vasantha R., (2012). Study of vibrational spectra and solvation number of non-aqueous solution of L arginine through ultrasonic technique. *J. Elixier Ultrasonic*, 49, 10018-10023.
15. Palani R., Balakrishnan S. and Arumugam G., (2011). Ultrasonic studies of amino acids in aqueous sucrose solution at different temperatures. *J. Phy. Sci.*, *22*(1): 131–141.
16. Punitha S., Panneerselvam A. and Uvarani R., (2013), Thermodynamic properties of cellulose in aqueous electrolyte solutions at different temperature *Int. J. Pharm. Bio. Sci. Jan*; *4*(1): 540–548.
17. Rajgopal K., Roy R.and Renold G., (2017), Ultrasonic studies of alanine in aqueousparacetamol solutions at different temperatures. *J. Pharm. Sci. Res.*, *9*(6): 1017-1025.
18. Thirumaran S. and Karthikeyan N., (2014). Thermo acoustical studies on interionic interactions of some α-amino acids in aqueous sucrose solution at varying mass percentages. *Ori. J. Chem.*, 30(1): 133-148.

18-19

IJASRM

International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

www.ijasrm.com

ISSN 2455-6378

Studies in Interaction Between Bivalent Transition and Alkaline Earth Metal Ions with Substituted Ketimine Drugs Under 75% Dichloromethane (DCM) - Water Mixture at 302±1K pH Metrically

Ganesh Andhale[1*] & Sanjay Wagh[1]

[1] P. G. Department of Chemistry Shri Shivaji Art's, Commerce & Science College, Akot. Dist. Akola (M.S.) - 444101 India

Abstract

The interaction between bivalent transition and alkaline earth metals such as Sr(II), Ba(II), Ni(II) and Cu(II) ions with substituted ketimine drugs have been studied pH metrically at 302 ±1 K and 0.1 M (KNO_3) ionic strength in 75% dichloromethane (DCM)- water medium. The observed pH metric data were used to estimate the values of proton-ligand and metal-ligand stability constants. The estimated data of proton-ligand and metal-ligand stability constants (pK and logK) were calculated by using half integral and pointwise calculation methods. From the calculated values of pK and logK the formation of 1:1 and 1:2 metal complexes as well as interaction between metal ions and ligands has been studied.

Keywords: *Dichloromethane (DCM), ketimines, stability constants, metal ligand stability constants, etc.*

1. Introduction

The advances in coordination chemistry invented numerous complex compounds that we utilize in our real life. The coordination compounds has many applications in various fields such as industry, agriculture, medicine, biology, chemical reactions etc. e.g. Coordination compounds have characteristic colors since they are used in dye and pigment industry for coloration to fabrics. These are extensively used for extraction of metals from their ores e.g. Silver and gold extracted from their ores due to formation of soluble cyanide complexes such as $[Ag(CN)_3]^-$ and $[Au(CN)_2]^-$ respectively. Now a days coordination compounds involves their applications as catalyst in various chemical reactions e.g. Complexes of titanium and aluminium are used as a catalysts in polymerization reactions.

The reliable information of stability constants are applicable for correct interpretation of metal complexes and also helps to govern the nature as well as interaction between central metal ion and ligand, therefore stability constant is an important tool for chemist. In the last five decades appreciable work has been done on complexes in liquid medium. The substantial work in the coordination chemistry has been made possible with the help of experimental techniques and predicted number of logistic conclusions which has been remarked by Martell and Calvin [1]. Irving and Rossotti [2], Calvin and Bjerrum [3], Hearson and Gilbert 4], Wilkins and Lewis [5], Rossotti and Rossotti [6] have proposed general methods for determination of stability constants of complexes by pH-metry and potentiometry.

Now a day there has been great interest in the study of metal complexes by pH metric method. Many researchers have studied stability constants of metal complexes by pH metric techniques. Patil [7] investigated interaction of Mn(II), Co(II), Ni(II), Cu(II) and Zn(II) metal ions with nicotinic acid (NA) and ascorbic acid (AA) have been studied by pH-metric technique at 0.1 M (KNO3) ionic strength at 302 ± 0.5 K in aqueous medium. Dhage et al. [8] has investigated PH-metric study of binary and ternary complexes of inner transition metals with carboxylic acids and amino acids. Rajbhoj et al. [9] studied the dissociation constant and stability constants vitamin K3 complexes with transition metal ions in 25% (v/v) methanol-water and 20% (v/v) acetonitrile-water medium at 298K. Mohod and Tayade [10] studied interaction of Cu(II), Cd(II) and Ni(II) metal ions with phenyl thiocarbamidophenol at 0.1 M ionic strength.

IJASRM International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

www.ijasrm.com

ISSN 2455-6378

Jaiswal and Narwade [11] studied interaction of Pr(III), Nd(III) and Sm(III) metal ions with substituted isoxazolines in 70% ethanol-water medium pH metrically. Jahangir Alam et al. [12] studied the stability of ternary complexes of metal ion with 2,2 bipyridyl and oxalic acid, tyrosin ethylenediamine, glycine, α alaline, phenylalanine and tryptophan.

The compound having azomethine group (C=N) has great importance in the field of coordination chemistry because of potentially capable of forming stable complexes with metal ions [13]. Recently the study of chemistry of ketimines continuously is increasing because of their applications in various biological systems, polymer stabilizer, homogeneous and heterogeneous catalysis, medicine, pharmacy and other technologies [14]. This class of compounds shows wide range of biological activities such as antibacterial, antifungal, anti-inflammatory, antiviral and antipyretics [15-16].

So keeping these views in consideration present study deals the behavior of Sr(II), Ba(II), Ni(II) and Cu(II) ions with substituted ketimine drugs pH metrically at 302 ±1 K and 0.1 M (KNO_3) ionic strength in 75% dichloromethane (DCM)- water medium.

2. Experimental

2.1 Ligands: In the present investigation following substituted ketimine ligands were used

1. 5-Bromo-2-hydroxy-4-chloro(p-methyl phenyl) ketimine (LA)
2. 5-Bromo-2-hydroxy-4-chloro(p-amino phenol) ketimine (LB)

2.2 Metals:

Transition metals Ni(II) and Cu(II) Alkaline earth metals Sr(II) and Ba(II).

2.3 Solutions:

Free Acid – 0.01M Nitric acid
Ligand solution – 0.002M
Metal salt solution – 0.0004M
Sodium hydroxide (NaOH) – 0.1M
Solvent System – 75% Dichloromethane (DCM)-Water mixture.
Potassium nitrate (KNO_3) – 1M

2.4 Titration method: The pH metric titrations were performed according to Calvin Bjerrum method and ionic strength of solutions was maintained by adding appropriate amount of 1 M KNO_3 solution. The pH metric titration system consisted-

1. Free Acid
2. Free Acid + Ligand solution
3. Free Acid + Ligand Solution + Metal Salt Solution

titrated against 0.1M sodium hydroxide solution carried out in 75% DCM-Water mixture. The graphs plotted between pH of solution and volume of alkali added (fig. 1-2).

2.5 Instruments: All the titration and pH measurements were performed on Equip-Tronic Digital pH meter model EQ-614A (accuracy ±0.02 units) along with glass and calomel electrode.

3. Observations & calculations:

3.1 Calculation of Proton Ligand ($\bar{n}_A$) and Metal Ligand Formation Number ($\bar{n}$):

The proton ligand and metal ligand formation number were calculated from the experimental results obtained from titration curves. The titration curves are made by plotting pH against volume of alkali (NaOH) added (ml) (Fig. 1& 2). From the titration curves values of V1, V2 and V3 is determined. By using these values, $\bar{n}_A$ and $\bar{n}$ is determined at different pH. The difference (V2-V1) was measured accurately, between titration of free acid (V1) and acid + ligand (V2). It was used to calculate formation number $\bar{n}_A$ using Irving Rossotti equation

$$\bar{n}_A = \gamma - \frac{(V_2-V_1)(E^0+N)}{(V_0+V_1)T^0L} \quad (1)$$

Where,

V_0 = Initial volume of solution
V_1 = Volume of alkali required during free acid titration.
V_2 = Volume of alkali required during free acid +ligand titration.
N = Normality of sodium hydroxide.
E^0 = Concentration of mineral acid (HNO_3)
γ = Number of replaceable hydrogen ion.

The metal ligand formation number ($\bar{n}$) were calculated by Irving-Rossotti's equation.

$$\bar{n} = \frac{(V_3-V_2)(N+E^0)}{(V_0+V_2)(T^0M \times n_A)} \quad (2)$$

The meanings of notation is same as given in equation 1

3.2 Calculation of Proton Ligand and Metal Ligand Stability constants:

The proton ligand and metal ligand stability constants (pK and log K) values of substituted ketimines in 75% DCM water mixture were calculated by half integral and point wise calculation method shown in table 10 & 11.

Half integral method: Initially the values of proton ligand stability constants (pK) were

IJASRM

International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

www.ijasrm.com

ISSN 2455-6378

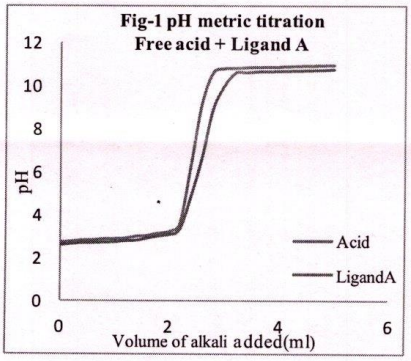
calculated from formation curves $\overline{n}_A$ vs. pH (fig. 3 & 4). From these curves the values of pH where $\overline{n}_A = 0.5$ corresponds to value of pK for only one dissociable group.

Point wise calculation method: For the value of $\overline{n}_A$ and $\overline{n}$ less than 1.0 for 1:1 complexes, accurate values of pK determined and log K determined by using the following equations

$$\text{Log}\frac{\overline{n}}{1-\overline{n}} = \text{Log}K_1 - pH \quad (3)$$

For 1:2 complex formations metal-ligand stability constants are estimated by using equation 4. The values of metal-ligand formation number due to second complex are used to calculate $\text{Log}K_2$ in the region $1 < n < 2$.

$$\text{Log}\frac{(n-1)}{(2-n)} = \text{Log}K_1 - pH \quad (4)$$



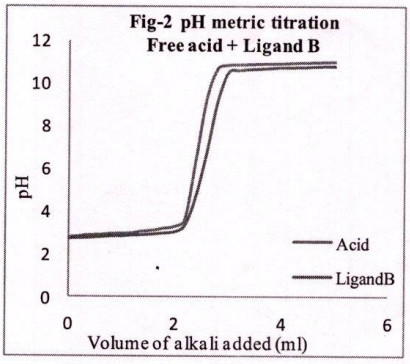


Table: 1 Determination of $\overline{n}_A$ Values of L_A

pH	V_1	V_2	V_2-V_1	$\overline{n}_A$
4.5	2.28	2.34	0.06	0.7801
5.0	2.31	2.40	0.09	0.6705
5.5	2.35	2.46	0.11	0.5978
6.0	2.38	2.51	0.13	0.5252
6.5	2.41	2.58	0.17	0.3798
7.0	2.45	2.63	0.18	0.3443
7.5	2.49	2.68	0.19	0.3088
8.0	2.52	2.71	0.19	0.3096

Table: 2 Determinations of $\overline{n}_A$ Values of L_B

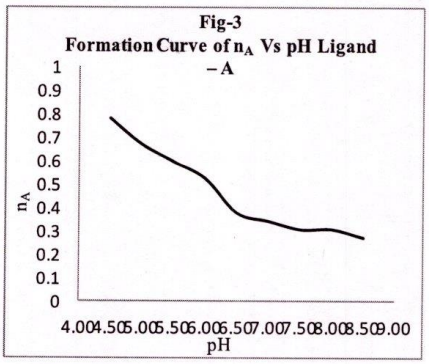
pH	V_1	V_2	V_2-V_1	$\overline{n}_A$
3.50	2.2	2.28	0.08	0.7059
4.00	2.24	2.33	0.09	0.6696
4.50	2.28	2.38	0.10	0.6334
5.00	2.31	2.42	0.11	0.5972
5.50	2.35	2.47	0.12	0.5612
6.00	2.38	2.51	0.13	0.5252
6.50	2.41	2.56	0.15	0.4528
7.00	2.45	2.62	0.17	0.3807
7.50	2.49	2.67	0.18	0.3452

IJASRM

International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

www.ijasrm.com

ISSN 2455-6378



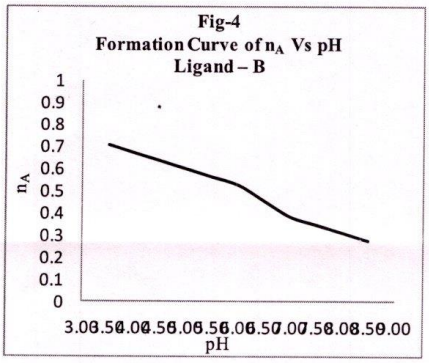


Table: 3 Determinations of $\bar{n}$ [L_A+Sr (II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.23	2.24	0.01	0.2064
4.0	2.29	2.31	0.02	0.4488
4.5	2.34	2.38	0.04	0.9377
5.0	2.40	2.46	0.06	1.6329
5.5	2.46	2.54	0.08	2.4367
6.0	2.51	2.61	0.10	3.4606

Table: 4 Determination of $\bar{n}$ [L_A+Ba(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.23	2.24	0.01	0.2063
4.0	2.29	2.31	0.02	0.4488
4.5	2.34	2.38	0.04	0.9377
5.0	2.4	2.46	0.06	1.6329
5.5	2.46	2.54	0.08	2.4367
6.0	2.51	2.61	0.10	3.4606

Table: 5 Determination of $\bar{n}$ [L_A+Ni(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.23	2.24	0.01	0.2064
4.0	2.29	2.31	0.02	0.4488
4.5	2.34	2.37	0.03	0.7033
5.0	2.4	2.44	0.04	1.0886
5.5	2.46	2.51	0.05	1.5229
6.0	2.51	2.58	0.07	2.4224

Table: 6 Determination of $\bar{n}$ [L_A+Cu(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.23	2.24	0.01	0.2064
4.0	2.29	2.31	0.02	0.4488
4.5	2.34	2.39	0.05	1.1722
5.0	2.4	2.47	0.07	1.9051
5.5	2.46	2.55	0.09	2.7413
6.0	2.51	2.61	0.10	3.4606

Table: 7 Determination of $\bar{n}$ [L_B+Sr(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.28	2.29	0.01	0.260
4.0	2.33	2.34	0.01	0.273
4.5	2.38	2.42	0.04	1.153
5.0	2.42	2.47	0.05	1.527
5.5	2.47	2.53	0.06	1.946
6.0	2.51	2.61	0.10	3.461

Table: 8 Determination of $\bar{n}$ [L_B+Ba(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.28	2.29	0.01	0.260
4.0	2.33	2.34	0.01	0.273
4.5	2.38	2.41	0.03	0.865
5.0	2.42	2.50	0.08	2.443
5.5	2.47	2.56	0.09	2.919
6.0	2.51	2.61	0.10	3.461

Table: 9 Determination of $\bar{n}$ [L_B+Ni(II)]

pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.28	2.29	0.01	0.260
4.0	2.33	2.34	0.01	0.273
4.5	2.38	2.44	0.06	1.730
5.0	2.42	2.49	0.07	2.137

IJASRM

International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

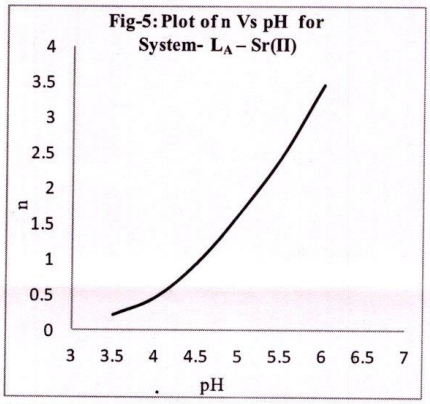
www.ijasrm.com

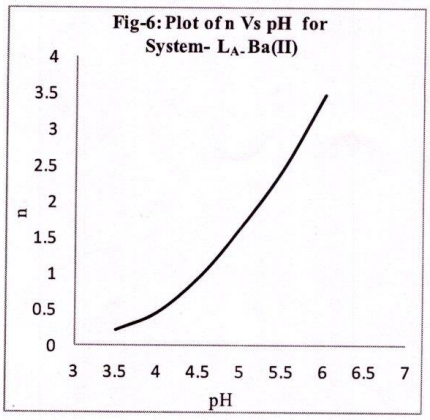
ISSN 2455-6378

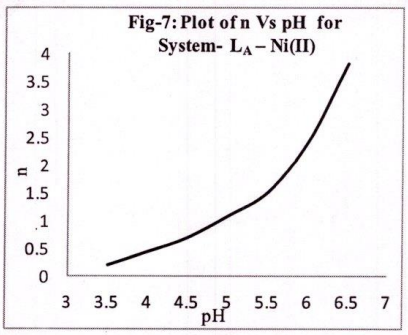
5.5	2.47	2.56	0.09	2.919
6.0	2.51	2.61	0.10	3.461

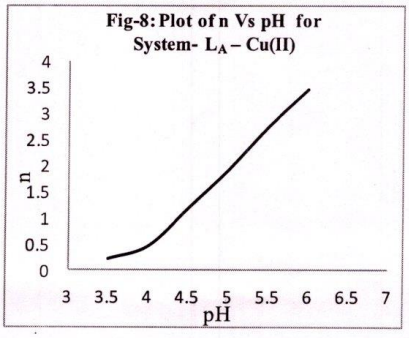
Table: 10 Determination of $\bar{n}$ [L_B+Cu(II)]

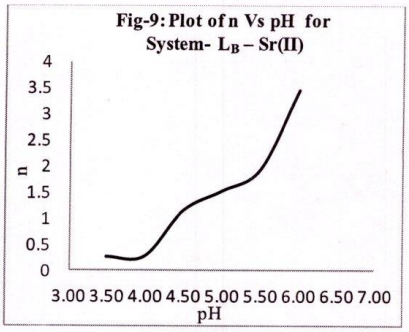
pH	V_2	V_3	V_3-V_2	$\bar{n}$
3.5	2.28	2.29	0.01	0.260
4.0	2.33	2.34	0.01	0.273
4.5	2.38	2.41	0.03	0.865
5.0	2.42	2.48	0.06	1.832
5.5	2.47	2.55	0.08	2.595
6.0	2.51	2.61	0.10	3.461









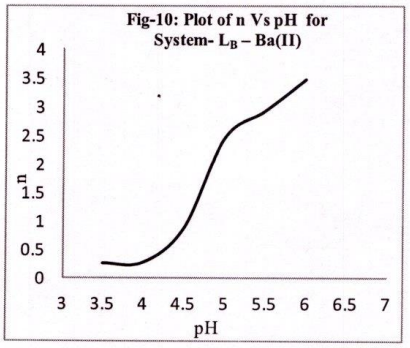


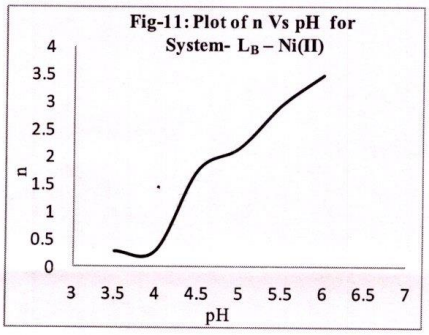
IJASRM

International Journal of Advanced Scientific Research and Management, Volume 4 Issue 6, June 2019

www.ijasrm.com

ISSN 2455-6378





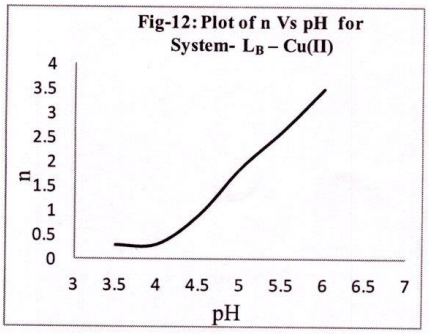


Table 11: Proton-ligand stability constants (pK)

Ligand	pK (Half Integral Method)	pK (Pointwise Method)
L_A	6.09	6.440
L_B	6.15	6.410

Table 12: Metal ligand stability constants (log K)

Ligand	Metal	$\log K_1$	$\log K_2$	$\log K_1/\log K_2$	$\log K_1 - \log K_2$
L_A	Sr(II)	4.7747	4.0338	1.1837	0.7409
	Ba(II)	4.7647	4.0438	1.1783	0.7209
	Ni(II)	4.7447	3.4638	1.3698	1.2809
	Cu(II)	4.7947	4.2338	1.1325	0.5609
L_B	Sr(II)	4.7647	4.5338	1.0509	0.2309
	Ba(II)	4.6947	4.2838	1.0959	0.4109
	Ni(II)	4.7947	4.6038	1.0415	0.1909
	Cu(II)	4.6847	4.1838	1.1197	0.5009

4. Result and discussion:

From table-11 it was observed that there is a close resemblance in the proton ligand stability constants (pK values) between point wise calculation method and half integral method. From these values metal ligand stability constants of substituted ketimines were calculated as shown in table- 12. Fig. 1 & 2 shows significant separation started from pH 3.58 for all metals, which predict conformation of complex formation.

The values of metal ligand stability constants (log. K_1 and log. K_2) presented in table 12 were determined form the formation curves (Fig. 1 & 2) at formation number 0.5 and 1.5 respectively and point wise calculation method. The ratio of log K1/logK2 has + ve values and greater than 1 in all the systems (Table 12). This indicates that there is a no steric hindrance to the addition of secondary ligand molecule. Also it has been observed that if the ratio is less than 1.5 then there is simultaneous complex formation take place. While if the ratio greater than 1.5 then there is step wise complex formation take place. Table 12 shows that the entire metal ion has smaller ratio than 1.5 since both the ligands shows simultaneous formation of 1:1 and 1:2 complexes with all the metal ions.

5. Conclusion:

The experimental results in the present investigation for proton ligand and metal ligand stability constants of aromatic substituted ketimine drugs estimated at 302K in (DCM-water) mixture. From the experimental data it is concluded that there is a simultaneous formation of 1:1 and 1:2 complexes with all the metal ions.

References:

[1] Martell A. E., and Calvin M., "Chemistry of metal chelate compound, Prentice Hall INC., England, Cliffs N. J. (1962).

[2] Irving H. and Rossotti H., The calculation of formation curves of metal complexes from pH titration curves in mixed solvents, J. Chem. Soc., 76, 2904-2910, (1954).

[3] Bjerrum J, Calvin M, "Metal amine formation in aqueous solutions". Hass and Son, Copenhagen (1941), Reprinted in (1957).

[4] Hearson J. Z. and Gilbert J. B., J. Am. Chem. Soc., 77, 2594, (1955).

[5] Lewis J and Wilkins R G, "Modern Coordination Chemistry", Interscience Pub Co, New York. (1960).

[6] Rossotti F. J. C. and Rossotti H. S., "The Determination of Stability Constants", McGraw Hill Book Co. INC, New York, (1961).

[7] Patil A. B., Equilibrium studies of ternary complexes of some transition metal ions with penicilamine, Rasayan J. chem., 5(4), 490-492, (2012).

[8] Dhage S. D. and Swami M.B., pH metric study of binary and ternary complexes of inner transition metals carboxylic acids and amino acids IOSR J. App. Chem., 2(6), 36-38, (2012).

[9] Rajbhoj A. S., Gaikwad M. N. and Gaikwad S. T., Potentiometric study of vitamin K_3 complexes with transition metals in methanol-water and acrylonitrile-water medium., J. Chem. Tech. Res. CODEN (USA), , 4(4), 1392-1395, (2012).

[10] Mohod S.O. and Tayade D.T., pH metric study of phenyl thiocarbamidophenolwith Cu(II), Co(II), Cd(II) and Ni(II)metal ions at 0.1M ionic strength., Int. J. Pharm. Pharm. Res., 8(3), 25-30, (2017).

[11] Jaiswal G.R. and Narwade M.L., Studies in stability constants of Pr(III), Nd(III) and Sm(III) metal ions complexes with some substituted isoxazolinein 70% ethanol water medium pH metrically., Ind. J. Res. Pharm. Biotech., 5(2), 168-172, (2017).

[12] Jahangir Alam M., Ullah M.R. and Mousume Akther, Stability of ternary complexes of Cu(II) metal ion with some bio active compounds, IOSR J. App. Chem. 11(1), 1-4, (2018).

[13] Souza P., Garcia-Vazquez J. A. and Masaguer J. R. C: 3 Transitions Met. Chem., 10, 410, (1985).

[14] Upadhyay K. K., Kumar A. and Upadhyay S., Mishra P., C.: 9. Synthesis, characterization, structural optimization using density functional theory and superoxide ion scavenging activity of some Schiff bases. J. Mol. Struct., 873, 5–16, (2008).

[15] Dhar D. N. and Taploo C. L. Sciff's bases and their applications. J. Sci. Ind. Res., 41 (8), 501-506, (1982).

[16] Przybulski A, Huczynski A. Pyta K., Biological properties of imines and azo derivative of phenols., Curr. Org. Chem., 13(2), 124-148, (2009).

'RESEARCH JOURNEY' International E- Research Journal
Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013)
Special Issue 110 (B) : Chemistry
UGC Approved Journal
ISSN : 2348-7143
February -2019

Refractometric Study of Substituted Ketimines Under Different Concentration in Dcm-Water Mixture At 308k

G. B. Andhale, Dr. S. P. Wagh
P. G. Department of Chemistry
Shri Shivaji Art's, Commerce
& Science College, Akot.
ganeshandhale005@gmail.com

Abstract

The densities(ρ), Refractive index(n), molar refraction (Rm)and polarizability constants (α) of substituted ketimines derivatives under different concentration of binary liquid mixture such as 75 % DCM-Water at 308K have been measured by Abbe's refractometer. It could be observed from the results that the molar refraction and polarizability constants of substituted ketimines increases with increase in percentage of organic solvents. The measurements were used to analyze the solute-solvent and solute-solute interactions.

Key word: Densities (ρ), Refractive index (n), Molar refraction (Rm) and Polarizability constants (α), DCM etc.

Introduction

The refractive index is a fundamental physical property of a substance, it is often used to identify a particular substance, confirm its purity or measure its concentration. Refractive index is used to measure solids, liquids, and gases. Most commonly it is used to measure the concentration of a solute in an aqueous solution. When a beam of light passes from one substance to another, the beam bends, so that it travels in different direction. When light enters a liquid it changes direction; this is called refraction. Refractometers measure the degree to which the light changes direction, called the angle of refraction. If it is passed from less dense to high denser medium it is refracted toward normal to form angle of refraction which is less than angle of incident. The refractive index is the ratio of angle of incident to the angle of refraction. The properties of liquid such as viscosity, refractive index and ultrasonic velocity of binary mixtures are studied by many researchers. Bhatia et al[1] studied refractive indices at 303K, 308Kk and 313K for binary liquid of (Decane-Benzene) over the entire composition range. Narendra Kolla et al[2] have studied molar refraction of binary liquid mixtureat different temperature. S. Sharma[3] has investigated refractive indices for binary mixture at 303K, 308K and 313 K. The properties of liquid such as refractive index, molar refraction and polarizability constants of binary mixture were studied by many workers[4-9]. Wadekar[10] have investigated the change in concentration of solute and solvent on molecular refraction and polarizability constantsof some thiopyrimidine derivatives. Javed Khan[11] evaluated additive and constitutive properties of binary liquid mixture of water-ethanol, toluene-benzene and benzene ethanol.

However, study of molar refractivity and molar polarizability constant of substituted ketimines in binary mixture of DCM and water under identical set of experimental condition. The present work deals with the study of molar refraction and polarizability constants of (L1, L2, L3 &L4) different ligands at different concentration in 75% (DCM + water) solvent and in different % of DCM-water mixtures at 308K.

In the present work refractometric study of substituted ketimines was carried out at different concentrations such as,

a. 5- Bromo-2-hydroxy-4-chloro (p-methyl phenyl) ketimine (LA)
b. 5- Bromo-2-hydroxy-4-chloro (p-amino phenol) ketimine (LB)
c. 5- Bromo-2-hydroxy-4-chloro (p-nitro phenyl) ketimine (LC)
d. 5- Bromo-2-hydroxy-4-chloro (m- nitro phenyl) ketimine (LD)

Experimental

In the present work all the solutions of ligand in different percentage of DCM-water mixtures as well as in different concentration (0.01M, 0.008M, 0.006M, 0.004M and 0.002M) in 75% (DCM+water) mixture were prepared by measuring weight. All weighings were made on one pan digital balance (petit balance AD-50B) with an accuracy of + 0.001 gm. The densities of solutions were determined by a bicapillary pyknometer (± 0.2%) having a bulb volume of about $10cm^3$ and capillary having an internal diameter of 1mm. The refractive indices of solvent mixture and solutions were measured by Abbe's refractometer at (35 ± 0.1°C). The accuracy of Abbe's refractometer was within ±0.001 units. The constant temperature of the prism box is maintained by circulating water from thermostat at $35^0C \pm 0.1^0C$. Refractometer was calibrated by using glass test piece of known refractive index supplied with the instrument.

The molar refraction of solvent and solution are determined by using Lorentz-Lorentz equation.

The molar refraction of solvent, DCM-water mixtures are determined from-

$$R_{DCM\text{-}W} = X_1R_1 + X_2R_2 \quad \text{.....(1)}$$

where,

R_1 and R_2 are molar refractions of DCM and water respectively.

The molar refraction of solutions of ligand in DCM-water mixtures are determined from-

$$RMix = \frac{(n2-1)}{(n2+2)} + \left\{\frac{[X1M1 + X2M2 + X3M3]}{d}\right\} \quad \text{..... (2)}$$

where, n is the refractive index of solution, X_1 is mole fraction of DCM, X_2 is mole fraction of water and X_3 is mole fraction of solute, M_1, M_2 and M_3 are molecular weights of DCM, water and solute respectively. 'd' is the density of solution.

The molar refraction of ligand is calculated as –

$$R_{lig} = R_{mix} - R_{DMF-w} \quad \text{..... (3)}$$

The polarizability constant (α) of ligand is calculated from following relation-

$$R_{lig} = 4/3\ \pi N_o \alpha \quad \text{..... (4)}$$

where, N_o is Avogadro's number.

Results and discussion:

Table- 1: Values of Molar Refraction of Different % of DCM- Water Mixture

Percentage of DMF	[R]
60 %	12.52493213
70 %	11.56280903

80%	10.19855495
90%	8.042837541
100%	4.181985301
75%	10.94400152

Refractometric Measurements at Different Concentrations of ligand in 75% (DCM + Water) solvent.

Table 2: The values of refractive index (n) and density (gm. /cm-3) at 35 + 1 ^{0}C.

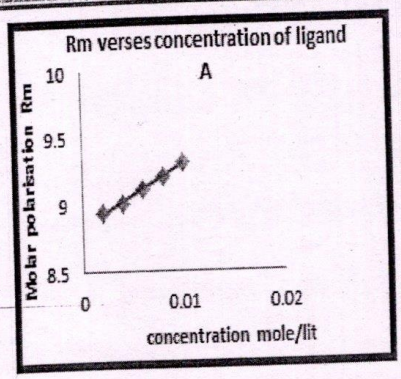
Conc in Mol/Lit	75% DCM+ Water system	
	Refractive index (n)	Density(d) gm/cm^3
Ligand A		
0.01	1.413	1.22419
0.008	1.411	1.22329
0.006	1.409	1.22238
0.004	1.407	1.22148
0.002	1.405	1.21604
Ligand B		
0.01	1.414	1.22057
0.008	1.412	1.21967
0.006	1.410	1.21967
0.004	1.409	1.21876
0.002	1.408	1.21786
Ligand C		
0.01	1.409	1.22963
0.008	1.408	1.22691
0.006	1.407	1.22419
0.004	1.406	1.22329
0.002	1.404	1.22238
Ligand D		
0.01	1.426	1.22601
0.008	1.425	1.22238

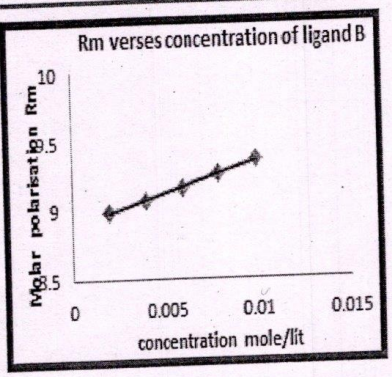
0.006	1.423	1.21604
0.004	1.422	1.21333
0.002	1.421	1.21242

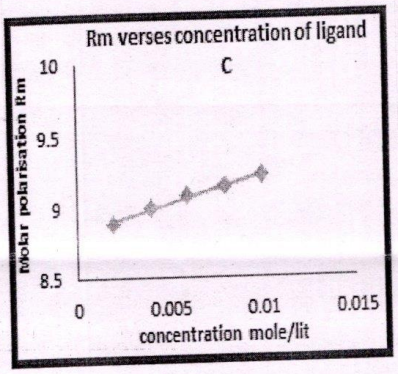
Table 3: The values of Molar refraction (Rm) and polarizability constant(α) at 35 + 1 ^{0}C.

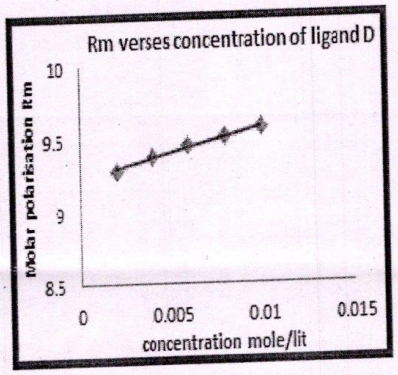
Conc in Mol/Lit	75% DCM + Water system	
	Rm x10^3 cm^3/mole	α x10^{-24} cm^3
Ligand A		
0.01	9.30842	3.6914
0.008	9.20803	3.6516
0.006	9.107967	3.6119
0.004	9.008091	3.5723
0.002	8.94174	3.5460
Ligand B		
0.01	9.35769	3.71097
0.008	9.256553	3.67086
0.006	9.14892	3.62818
0.004	9.06798	3.59608
0.002	8.98700	3.56397
Ligand C		
0.01	9.215544	3.6546
0.008	9.143713	3.62611
0.006	9.071736	3.59757
0.004	8.98622	3.56366
0.002	8.881437	3.52210
Ligand D		
0.01	9.579022	3.79874
0.008	9.512454	3.77234
0.006	9.447158	3.74645
0.004	9.373011	3.71705
0.002	9.284893	3.68210

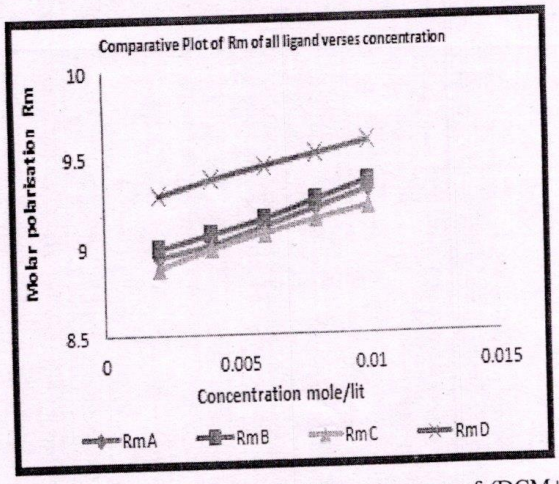
Graphical representation of molar polarization (Rm) of all ligand verses change in concentration in 75% DCM solvent











The value of molar refraction of different percent of (DCM+water) solvent shown in table-1. From the data it is observed that value of molar refraction goes on decreasing with the decrease in amount of water in percent mixture. Molar refraction is greater in polar protic

solvent(water) than polar aprotic solvent (DCM). This is due to the ability of formation hydrogen bonding of protic solvent(water).

The value of molar refraction (Rm) and molar polarizability constant (α) of polar solvents like water are found to be greater than non-polar solvents like DCM this indicate that the polar solvent involves H-bonding, may form complex with solute, but non-polar solvent does not contains H-bonding and it may form complex with solute. This may also be attributed to the fact that the dipole in the compound lies perpendicular to the longer axis of the molecule. Considerable dipole association take place, which would be accompanied by increase in polarizability constant as well as molar polarization with increasing concentration because of mutual compensation of dipoles. It is observed that the values of molar refractivity and polarizability constant decrease with decreasing concentration of substituted ketimines in 75% (DCM+ Water) solvent. The calculated value of molar refraction and molar polarizability constant for different concentration of substituted ketimines in 75% (DCM+ Water) solvent shown in table-3. It could be seen from table-3 that, the values of molar polarization and polarizability constant decrease with decrease in concentration of solution

References:

1. S.C. Bhatia, Tripathi, Dubey, Ind. J. Chem., 41(A), 266-269, 2002.
2. Narendra Kolla, P. Murthy, Ch Srinivasu, Asi. J. App. Sci., 4(S), 535-541, 2011.
3. S. Sharma, E. J. Chem. 4(3), 343-349, 2007.
4. Wadekar M.P., Chaudhary P.P., Chandami A.S., J. Adv. App. Sci. Res., 7(3), 120-126, 2016.
5. RK Shukla, Atul Kumar, U. Srivastava, Arb. J. Chem., 9(5), 1357-1367, 2016.
6. J. Khan, Farooqui, S.H. Quadri, Ras. J. Chem., 4(4), 944-946, 2011.
7. Sahar M., Tawfik, Farid M., Farag, Egy. J. Chem., 61(3), 401-413, 2018.
8. Dutt, Prasad, Int. J. Chem. Liq., 33(3), 171-179, 1996.
9. Sawale R.T., J. App. Pharm. Sci., 6(3), 120-124, 2016.
10. Wadekar M.P., Shrirao A.S., Tayade R.R., Der. Pharm. Chemica, 6(6), 90-96, 2014.
11. Javed Khan, Int. J. Bas. App. Chem. Sci., 3(3), 56-58, 2013.

'RESEARCH JOURNEY' International E- Research Journal | ISSN : 2348-7143
Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013) | February -2019
Special Issue 110 (B) : Chemistry
UGC Approved Journal

Batch Study for The Removal of Pb (II) Metal Ions By Using Activated Carbon Prepared from Phyllanthus Emblica Tree Bark

A. R. Somwanshi
Department of Chemistry,
Shri Shivaji Arts, Commerce and
Science College, Akot.
E-Mail: uechaudhari@gmail.com,

U. E. Chaudhari
Department of Chemistry,
Mahatma Fule Arts, Commerce and
Sitaramji Chaudhari Science College, Warud
anilsomwanshi40@gmail.com

Abstract:

This paper describes the adsorption of Pb (II) metal ions from aqueous solutions by activated carbon prepared from Phyllanthus Emblica tree bark (AC-PETB). The adsorption isotherms were obtained in a batch reactor. It is observed that, the process of uptake followed Langmuir and Freundlich models of adsorption. Effects of variations in parameters such as pH, contact time, adsorbent dose, initial Pb(II) concentration and temperature were also studied. The activated carbon is expected to be an economical product for metal ion remediation from water and wastewater.

Keywords: Chromium (VI), Adsorption, Phyllanthus Emblica, Langmuir, Freundlich

Introduction

Rapid industrialization has led to increased disposal of heavy metals into the environment[5]. The harmful effects of cadmium include a number of acute and chronic disorders. A number of techniques are available for the removal of inorganic pollutants (heavy metals) from industrial waste water[11]. The removal of heavy metals from (drinking) water can be achieved through precipitation, flocculation, solvent extraction, ion exchange, reverse osmosis, etc[7]. Chemical precipitation methods are not very suitable when pollutants are present in trace amounts and also a large amount of sludge is produced. Ion exchange is expensive[2, 4, 11]. The process of adsorption has now become one of the preferred methods for the removal of toxic contaminants from water as it has been found to be effective, economical, versatile and relatively simple[8-10]. Activated carbon (granular or powdered) is the traditionally used adsorbent, and has been applied with good success for the removal of both heavy metals and organic pollutants from contaminated water[3, 6]. It has attractive properties such as large surface area, microporosity, and high adsorption capacity.

Taking these aspects into account, the present study was aimed to characterize the metal-binding ability of activated carbons derived from Phyllanthus Emblica Tree Bark for the removal of heavy metal ions from aqueous solution.

Materials And Method:

Preparation of Solutions:

The lead was estimated by Dithizone method and absorbance of the cherry red colour complex was measured at 480 nm. Lead nitrate solution 0.01M was prepared by dissolving 3.312

grams of Lead nitrate in 1 liter double distilled water. An aliquot 10 ml of the 0.01M solution diluted to 1 liter double distilled water and used as a stock solution[1].

Batch Study:

Effect of pH:

The effect of pH can be done experimentally by taking 0.5 gm of adsorbent with working volume of Pb (II) 200 ml having constant initial metal ions concentration and the contact time of 3 hours with shaking speed 1000 rpm. The result indicates that maximum uptake capacity for Pb (II) was found to be at pH 5 with AC-PETB. The adsorption capacity of Lead (II) as a function of pH it was observed that percentage removal of Lead (II) is maximum of pH = 5 and then decrease with increase of pH.

Effect of Contact time:

The effect of contact time for the removal of Pb (II) metal ions by using activated carbon prepared from tree bark was investigated at pH 5 by taking 200 ml know concentration of metal ions and 0.5 gram of adsorbent. It is observed that initially the rate of adsorption is rapid up to 130 min and then there was no further change in equilibrium concentration. Equilibrium time was found to be 270 min for Pb (II) adsorption on AC-PETB.

Effect of Adsorbent dose:

The effect of varying the adsorbent dosage of AC-PETB from 0.2–1 gram for adsorption of Pb (II) from their aqueous solutions having known volume of initial concentration was studied at pH 5.0 It has been found that the percent removal of Pb (II) increases with increase in adsorbent dose up to some extent, thereafter further increase adsorbent dose.

Effect of Initial Metal ions concentration:

Study were carried out by varying initial metal ions concentration and AC-PETB using adsorbent dose 0.5 gram at pH 5.0 having agitation speed 1000 rpm, contact time 3 hours. Result indicates that with increase in initial metal ions concentration percent of adsorption decreases.

Effect of Temperature:

Effect of temperature was studied by varying the temperature from 30°C to 60°C with working volume 200 ml having known concentration. Study was carried out at pH 5.0 and at 1000 rpm with contact time 3 hours. As the temperature increases porosity increases and percent of adsorption increases up to certain extent and then remains constant this is due to chemisorptions process. In chemisorptions as the temperature increases adsorption increases up to certain extent and then decreases while in physisorption process as the temperature increases adsorption decreases. From the study it was observed that the phenomenon was chemisorptions. All the batch parameters are indicated in table number 1.

Table 1: Batch parameter for Pb(II) adsorption

Sr. No.	Working Volume	pH	Contact time	Adsorbent dose	Initial concentration	Temperature
1	200 ml	5	130 min	0.5 gm	Adsorption decreases with increase in concentration	29°C+1°C

Isotherm Modelling:-

Langmuir Adsorption Isotherm: -

In Langmuir adsorption isotherm Q_o values found to be comparable with commercial activated carbon. Value of R_L lies between 0 and 1 indicate the favourable adsorption. It indicates the applicability of Langmuir adsorption isotherm. The calculated value R^2 confirms the applicability of Langmuir adsorption isotherm shown in table 1.

Freundlich Adsorption isotherm: -

Freundlich plot for the adsorption of Lead (II) on AC-PETB shows that the values of adsorption intensity $1/n < 1$, reveal the applicability of Freundlich adsorption shown in table 1.

Table 2: Adsorption Isotherm Constants

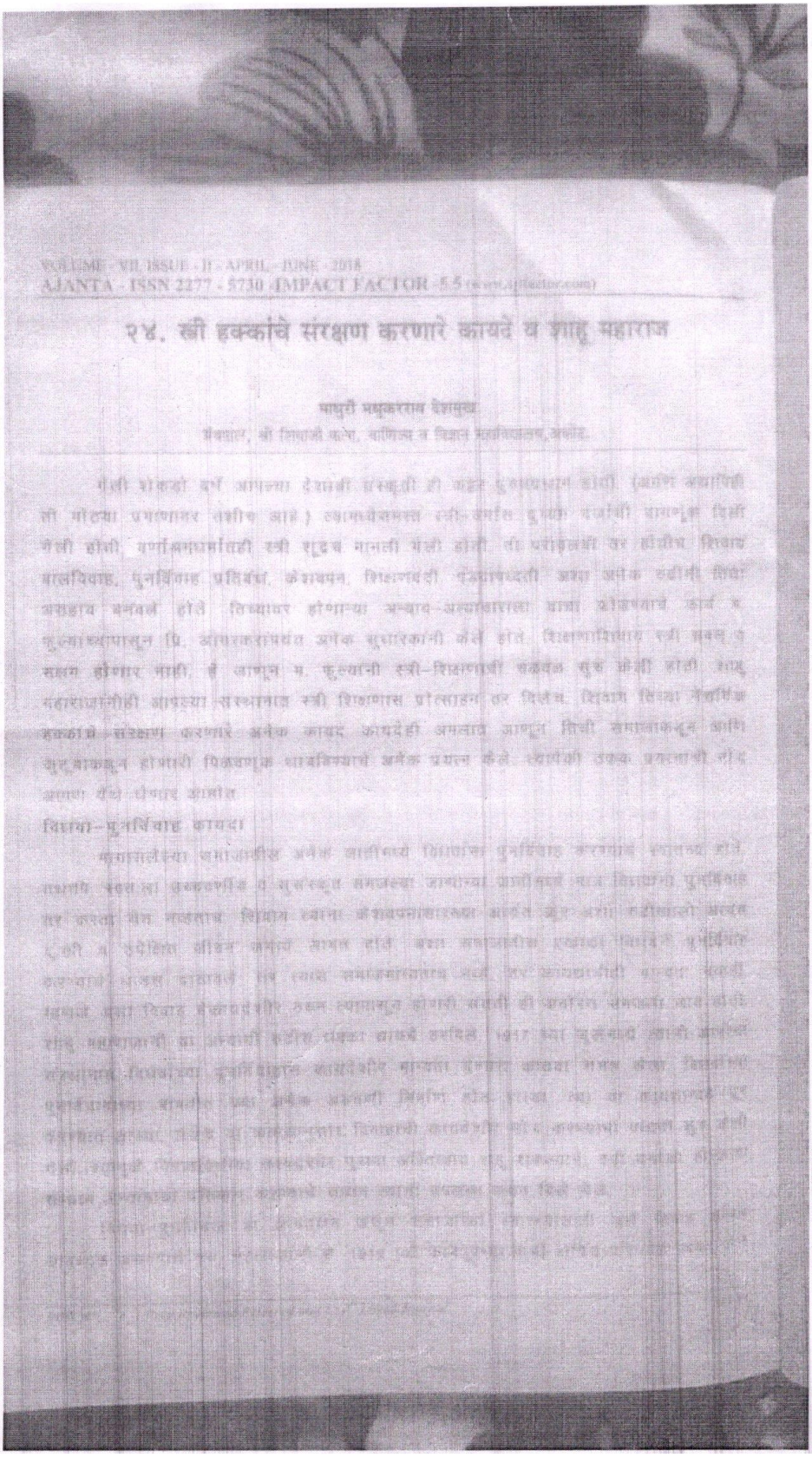
System	Langmuir Isotherm				Freundlich Isotherm		
	Q_o	b	R_L	R^2	K_f	1/n	R^2
AC-PETB-Pb(II)	6.8795	0.0243	0.1027	0.994	2.0452	0.3846	0.995

Conclusion:

1. Activated carbon prepared from Phyllanthus Emblica tree bark shows good agreement for the removal of Pb (II) metal ions at pH 5.
2. Investigation shows that temperature, adsorption dose, contact time increases adsorption capacity increases while decreases with increase in initial metal ions concentration.
3. The adsorption process shows good agreement with Freundlich and Langmuir adsorption isotherm.
4. The process of adsorption is economically feasible, easy to handle in small scale and large scale also. Regeneration studies are not necessary with the view that the cost of the adsorbent is very low and it can be disposed of safe.
5. It is calculated that the adsorbent prepared from Phyllanthus Emblica tree bark could be exploited for commercial application.

References:

1. A.K. Wanjari and U. E. Chaudhari, Removal Of Cr(VI), Pb(II), Mn(II) And Bi(III) From Aqueous Solutions Using Granular Activated Charcoal Prepared From Cordia Macleodii Tree Bark. Rasayan J. Chem., 10(1), 82-85(2017) Http://Dx.Doi.Org/10.7324/Rjc.2017.1011556
2. Bareket, G., Aroguz, A.Z., Ozel, M.Z., 1997. Removal of Pb(II), Cd(II) and Zn(II) from aqueous solution by adsorption on bentonite. J. Colloid Interface Sci. 187, 338–343.
3. Petrov, N., Budinova, T., Khaveson, I., 1992. Adsorption of zinc, cadmium, copper and lead ions on oxidized anthracite. Carbon 30, 135–139.
4. M.A.A. Zaini, K. Yoshihara, R. Okayama,M. Machida, H. Tatsumoto, Effect of out gassing of $ZnCl_2$-activated cattle manure compost (CMC) on adsorptive removal of Cu(II) and Pb(II) ions, TANSO 234, 220–226, 2008.
5. A.K. Wanjari, Evaluation of Adsorption Effiency of Ferronia Elefuntum Fruit Shell for Rhodamine-B Retrieval from Aqueous Solution, International Journal Of Pharmaceutical And Chemical Sciences, Vol. 2 (1) Jan-Mar 2013, 457-460.
6. Babel S. and Kurniawan T.A. Cr (VI) removal from synthetic wastewater using coconut shell charcoal and commercial activated carbon modified with oxidizing agents and/or chitosan. Chemosphere, 5(7), 951-967, 2004.



VOLUME - VII, ISSUE - II - APRIL - JUNE - 2018
AJANTA - ISSN 2277 - 5730 IMPACT FACTOR - 5.5 (www.ajantajournal.com)

२४. स्त्री हक्कांचे संरक्षण करणारे कायदे व शाहू महाराज

माधुरी मधुकरराव देशमुख
सेवक्षाए, श्री शिवाजी कॉलेज, वाणिज्य व विज्ञान महाविद्यालय, अकोट.

AJANTA- ISSN 2277 - 5730 IMPACT FACTOR - 5.5

10. The Fundamental Duties of India

Madhuri Madhukarrao Deshmukh
Shri Shivaji Arts Science & Commerce College Akot.

Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013)
Special Issue 182(E)- Contemporary Innovation in Library Science
UGC Approved Journal
2348-7143
April-2019

Resource Sharing, Networking and Library Consortia: A Vital Role in Libraries

Madhuri Madhukarrao Deshmukh
Librarian
Shri Shivaji Arts, Commerce & Science College, Akot District- Akola
email id - deshmukhmadhuri123@gmail.com

Abstract:

The emerging Information Technologies have brought many changes in libraries. These technologies have facilitated LIS professionals to work together to acquire and share library collection and provide digital library services to the user community. Increase of the literature in all subjects and shrinking of the library budget made the libraries depend upon each other. This leads to library cooperation, resource sharing and networking. Now the more accepted system of resource sharing is library consortia. Consortia approcch is one of the many ways of maintaining cooperation and coordination among the libraries and in fact it has emerged as the 'state of the art' in library cooperation in recent years. The online databases; electronic journals are facilitate the formation of consortia among the libraries.

Keywords: Library cooperation; Library networking; Resource sharing; Library consortia

IntroductionIn

In the present era of Information technology, the information needs of the users have been increased so enormously that no single library on its own can meet their information needs. The information needs of the society are growing continuously at tremendous speed, hence the production of information. Only answer to manage this new information scenario is the resource sharing. The ever growing information needs of the modern age can be satisfied by the resource sharing among the library and information centers. This has necessitated the need for effective linkages and cooperation between libraries and information centers for sharing of available resources and information through networking. The consortia for library can be considered as a major step towards library cooperation in sharing electronic resources. The consortium should take lead role in the development of a national strategy for information provision for research in higher education.

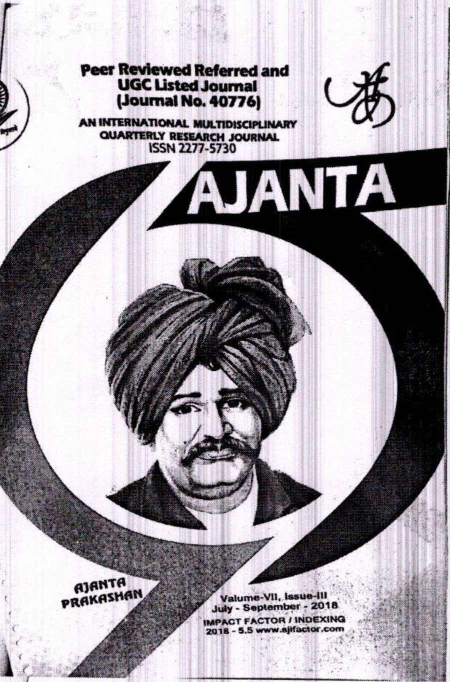
Library resource sharing and networking

The term resource applies to a thing, person or action to which one resorts to in times of need and sharing indicates allotting, apportioning or contributing something that is owned, to benefit others. Resource sharing, therefore, refers to reciprocity, implying a partnership where each member has something useful to contribute to others and which each is willing and able to make available when neede.

Resource sharing is an empty concept, but for the approach permitting resource sharing to work is that which

- Entails having resources to share
- Having a willingness to share them, and
- Having a plan for accomplishing resource sharing

Resource Sharing is an integral part of modern library services. In the developed countries, no library services can be thought without sharing of resources. In the past, RS was limited to the



ISSUE - III - JULY - SEPTEMBER - 2018
ISSN 2277 - 5730 -IMPACT FACTOR -5.5 (www.sjifactor.com)

१५. राजर्षी शाहू महाराज व जातीप्रथा निर्मुलन

प्रा. डॉ. प्रशांत प्रल्हादराव कोठे
प्राध्यापक व इतिहास विभाग प्रमुख, श्री. शिवाजी कला, वाणिज्य व विज्ञान महाविद्यालय, आकोट, जि. अकोला.

राजर्षी शाहू महाराजांचे सामाजिक कार्य महाराष्ट्राच्याच नव्हे तर भारताच्या इतिहासाला कलाटणी देणारे त्यांचा आंतरीक पींड समाज सुधारकाचा दिसून येतो. त्यांनी राजसतेचा उपयोग लोक कल्यानासाठी करीत, समाज सुधारनेवर भर दिला. त्यांनी राज्याची सुत्रे हाती घेतली त्यावेळी चातुवर्ण व्यवस्था असतीत्वात असल्याने, समाजाची स्थिती अतिशय वाईट होती. "त्यामुळे समाज वेगवेगळ्या वर्गात विभागला गेला होता. समाजात ब्राम्हणेत्तरांना अतिशय हिन दर्जाचे अपमानास्पद जीवन जगावे लागत होते. पण या सर्वात शुद्र समजल्या जाणाऱ्या दलीत, अस्पृश्य जातीतील माणसाची अवस्था तर गुरा ढोरा पेक्षाही हिन–दिन झाली होती.[1] समाजाचा सर्वात मोठा असलेला घटक बहूजन समाज शिक्षणापासुन कोसो दुर होता. जाती भेद व जाती प्रथा मोठया प्रमाणात असल्याने सामाजीक समता, स्वातंत्र्य, बंधुता व न्याय या उदार मतवादी तत्वांना केव्हाच तिलांजली मिळाली होती. ही व्यवस्था सहजासजी बदलने सोपे नव्हते. हिंदू समाजातील प्रत्येक जात आपले स्वतंत्र अस्तीत्व जपत होती. व स्वतःला इतरांन पेक्षा श्रेष्ठ समजत होती. जातीजातीतील रोटी बेटी व्यवहार बंद होता. या जाती अंतर्गत पुन्हा अनेक उप जाती किंवा पोट जाती असत व त्या एकमेकात श्रेष्ठ कनिष्ठ भेद मानीत असत. विशेष म्हणजे प्रत्येक जात खालच्या जातीस आपल्या पेक्षा कमी समजत होती. एव्हढेच नव्हे तर अस्पृश्य जातीतही हा उच्चनिच भाव होता.[2] जाती भेदाच्या या विषारी वृक्षास अस्पृष्यतेचे विषारी फळ आले व या अस्पृश्यतेने समाजाची अक्षम्य दुरावस्था करुन टाकली. जाती प्रथा व अस्पृश्यता हे मानवजातीचे दोन शत्रू नेस्तानाबुत करण्याच्या महान कार्याची सुरवात महात्मा फुले यांनी केली.तीच पुढे राजर्षी शाहू महाराजांनी आपल्या हाती सत्ता आल्यावर सत्तेचा व साधनांचा वापर करुन मोठया जीदीने जातीचा अंत व अस्पृश्यता निर्मुलनासाठी संघर्ष उभा केला.

२ एप्रिल १८९४ मध्ये राज्य कारभाराची सुत्रे घेतल्यावर राज्यकारभाराची उद्दीष्ट स्पष्ट करतांना जाहीरनामा काढला त्यात ते म्हणतात,"आमची प्रजा सतत तृप्त राहून सुखी असावी, तिच्या कल्यानाची सतत वृधी व्हावी व आमच्या संस्थानाची हर एक प्रकारे सदोदीत भरभराट होत जावी, अशी आमची उत्कट इच्छा आहे. ....ही आमची कारकीर्द दिर्घ कालीन चालून सफल करावी अशी मी त्या जगन्नियत्या परमात्म्याची एक भावे प्रार्थना करतो."[3] या वरुन राजर्षी शाहू महाराजांची समाज सुधारणा व समाज उध्दाराची आंतरीक तळमळ स्पष्ट होते.

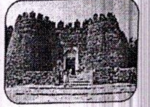
राजर्षी शाहू महाराजांनी विविध जाती समुहांनी आयोजीत केलेल्या सामाजीक परिषदांमधुन जी विचारपुर्वक भाषणे केली त्यातुन त्यांचे जाती प्रथा व जाती भेदा संबंधीचे विचार स्पष्ट झाले आहेत. समाजात विषमता, अन्याय व शोषण या सारखे जे दोष निर्माण झाले आहेत, त्याचे मुळ जाती भेदात आहे. तसेच भारताच्या हजारो वर्षांच्या गुलामगीरीचे मुख्य कारणही जातीभेद आहे असे शाहू महाराजांचे स्पष्ट मत होते.[4] म्हणून त्यांनी जाती प्रथेस विरोध करुन जातीभेद निर्मुलना संबंधीचे विचार वेळोवेळी व्यक्त केले आहे.

ISSN: 2393-8900 IMPACT FACTOR : 1.9152(UIF) VOLUME - 5 | ISSUE - 2 | OCTOBER - 2018
HISTORICITY RESEARCH JOURNAL

विदर्भात यादवांचा सत्तेचा विसतार व उत्कर्ष एक दृष्टीक्षेप

प्रा. डॉ. प्रशांत प्रल्हादराव कोठे
सहयोगी प्राध्यापक व इतिहास विभाग प्रमुख, श्री शिवाजी कला, वाणिज्य व विज्ञान महा.
आकोट जि. अकोला.

प्रस्तावना :



बाराव्या शतकाच्या अखेरीस देवगिरीच येथे यादवांची सत्ता उदयास आली. त्यांची विदर्भावर सत्ता निर्माण झाली होती. यादवांची माहिती सिंहणाचा पिता जैत्रपाल यापासून मिळते. त्याच्या पराक्रमाचे वर्णन रामटेकच्या लक्ष्मणाच्या देऊळातील लेखावरुन मिळते.[१] त्याने रुद्र आंध्राधिपती, चोड याचा पराभव केला होता. त्याच्यानंतर त्याचा मुलगा सिंहण गादीवर आल्यावर वऱ्हाड जिंकून आपल्या राज्याला जोडला होता. बुलढाणा जिल्ह्यातील अमडापूर येथे एक शिलालेख सापडला आहे (तो मिराशींनी — एपिग्राफिया इंडीका २१, पृ. १२७–१२८ मध्ये प्रकाशित केला)[२] एका कोरीव लेखावरुन सिंहण नंतर त्याचा नातू कृष्ण गादीवर आला असे कळते.[३] त्याच्या काळचा शके ११७७ (१२५४–५५) चा मराठी लेख वऱ्हाडात अमरावतीच्या ईशान्येस २० मैलावर नांदगांव (खंडेश्वर) येथील टेकडीवर खंडेश्वर, देवी व नरसिंह या तीन देवतांचे मिळून एक समान सभामंडप असलेले देवालय आहे. त्याच्या बाहेरील भिंतीवर लेख कोरला आहे. हे देऊळ हेमाडपंती आहे. म्हणजेच रामदेव यादव नृपतीचा प्रधान हेमाद्रि याने प्रचलित केलेल्या शिल्पपद्धतीचे आहे.[४] त्या देवळातील देवाच्या पूजेकरीता फुलाच्या लाखोल्या वाहाव्या म्हणून कित्येक गद्याणके (सोन्याची नाणी) दिल्याचा उल्लेख आहे. कृष्णाचा आणखी एक लेख चांदा जिल्ह्यातील मार्कंडीस सापडला आहे.[५]

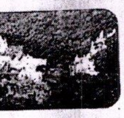
कृष्णाचा मुलगा रामचंद्रराय हा लहान असल्यामुळे त्याचा भाऊ महादेव हा देवगिरीच्या गादीवर आला. त्याने उत्तरकोकणाधिपती शिलाहार वंशीय सोमेश्वराचा उच्छेद केला.[६] महादेवानंतर त्याचा पुत्र आमण गादीवर बसला. त्याच्यानंतर कृष्णाचा मुलगा रामचंद्राने त्याच्याकडून क्रांती करुन गादी हिसकावून घेतली याचे वर्णन महानुभाव वाङ्मयाच्या लीळाचरित्रात आले आहे.[७] तो श्री ज्ञानेश्वराचा समकालीन होता. त्याच्याच काळात रामटेक येथील लक्ष्मणाच्या देवळाकरिता काही (बहुधा त्याचा जीर्णोद्धार) केल्याचा उल्लेख त्या देवळाच्या गर्भगृहात लावलेल्या शिलालेखात आहे. त्यातच रामचंद्रदेव हा विलासात रममाण झाला असा उल्लेख आहे.[८] त्याच्याच काळातील भंडारा जिल्ह्यातील लांजी येथे एक तत्कालीन भग्न शिलालेख सापडला आहे. ज्यात वज्राकराच्या राज्याचा समूळ उच्छेद रामचंद्राने केला असे म्हटले आहे. तो गडचिरोली जिल्ह्यातील वैरागड होय. या ठिकाणी मुसलमानी काळापर्यंत हिऱ्याच्या खाणी होत्या. म्हणून प्राचीन लेखात याला वज्र किंवा वज्रागड असे म्हटले आहे (ऐनी–अकबरी, नारटेकृत भाषांतर, पृ. २२९–३०)[९]

ISSN: 2393-8900 IMPACT FACTOR : 1.9152(UIF) VOLUME - 5 | ISSUE - 1 | SEPTEMBER - 2018
HISTORICITY RESEARCH JOURNAL

जैन धर्मीय राजा ईल व शिरपूर, मुक्तागिरी एक अभ्यास

प्रा. डॉ. प्रशांत प्रल्हादराव कोठे
सहयोगी प्राध्यापक व इतिहास विभाग प्रमुख, श्री शिवाजी कला, वाणिज्य व विज्ञान महा.
आकोट जि. अकोला.

प्रस्तावना



"विदर्भात जैन धर्मीयांची प्रदीर्घ आणि समृद्ध परंपरा राहीली आहे. अकोला जिल्ह्यातील राजनापूर खिनखिनी येथे मिळालेल्या कास्य जैन प्रतिमा हा त्याचा पुरावा आहे. त्या इ.स. नवव्या शतकातील आहेत. या युगात जैन धर्म प्रचलित झाला होता. या काळात विदर्भावर राष्ट्रकूट वंशाचे शासन होते. राष्ट्रकूट वंशात प्रथम अमोघवर्ष हा जैन होता. त्याने 'आदीपुराण' चा रचीता जिनसेन किंवा गणितसारसंग्रहाचा कर्ता महावीराचार्य सारखे जैन विद्वानांना त्याने राजाश्रय दिला होता. याशिवाय येथे जैन धर्मासंबंधी अनेक पुरावे मिळतात."[१] त्यातील शिरपूर, कारंजा, अकोला, एलिचपूर, मेहकर, केळझर इ. पैकी शिरपूर, एलिचपूर आणि कारंजा यांचा उल्लेख मोठ्या प्रमाणात येतो.

इ.स. च्या १० व्या शतकात या भागात राष्ट्रकूटांचे राज्य होते. "त्यांचा मांडलिक म्हणून राजा ईल उर्फ श्रीपाल हा जैनधर्मावलंबी होता, त्यामुळे वेरूळ येथील लेण्या, शिरपूर येथील गावाबाहेरील अंतरीक्ष पार्श्वनाथ, पवरी दिगांबर जैन मंदीर व मुक्तागिरी येथील दिगांबर जैन मंदीरे या राज्याच्या कारकिर्दीमध्ये प्रामुख्याने निर्माण झाल्याचा इतिहास आढळतो. विदर्भातील प्रसिद्ध इतिहास संशोधक स्व. श्री. य. खु. देशपांडे, श्री. वि. भि. कोलते तसेच श्री यादव माधव काळे या सर्वांचे या बाबतीत एकमत आढळते. ईल हा राजा दिगांबर जैन धर्मावलंबी असल्यामुळे या सर्व स्मारकांची ठेवण, घडण व त्यामधील मुर्त्या या त्यानुरुप असणे स्वाभाविक आहे."[२]

विदर्भात जैन संस्कृतीचा प्रसार राजा ईलमुळे झाला असे सर्वत्र जैन ग्रंथात आढळते. राजा ईलच्या पूर्वजीवनाविषयी फारशी माहिती मिळत नाही. तो वंश परंपरेने गादीवर आला असे दिसत नाही. "इल्ली देशाच्या अचलपूरला तु जा. हरिवर्ष नावाचा राजा तिथे राज्य करतो आहे. त्याचा मरणकाल निकट आलेला आहे. तेव्हा ती राज्यलक्ष्मी तुझी प्रतिक्षा करीत आहे."[३]

श्रीपाल किंवा श्रीगोपाळ शिरपूरला तपश्चर्या करीत होता, त्यावेळी त्याला जिनेंद्र प्रसन्न होऊन जो दृष्टांत झाला त्यावेळी त्यात वरील विधान आले आहे. गोपाळ राजा बनण्याच्या आधी वऱ्हाडात इल्ली वंशाचे राज्य असून त्याची राजधानी अचलपूर होती. त्याठिकाणी हरीवर्ष नावाचा राजा राज्य करीत होता. त्याला संतती नसून त्याचा मृत्यू जवळ आला होता. या दृष्टांतामुळे श्रीगोपाल उर्फ ईल अचलपूरकडे आला. त्यावेळी राजा हरिवर्षाचा मृत्यू झाला. त्याला मूलबाळ नसल्याने दरबारातील लोकांनी राजा निवडण्यासाठी हतीला वश करण्याची अट ठेवली. ती श्रीगोपाळने स्वीकारली व हतीला वश केले. त्यामुळे ठरल्याप्रमाणे त्याचा राज्याभिषेक झाला. त्यानंतर त्याने श्रीपाळ असे नाव धारण केले.

VOLUME - VII, ISSUE - III - JULY - SEPTEMBER - 2018
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR -5.5 (www.sjifactor.com)

45 Mark

५. देशभक्ती गीत एवं स्वतंत्रता संग्राम

2018-19

प्रा. डॉ. सोपान सिताबराव वतारे
श्री शिवाजी महाविद्यालय, अकोट

लोकगीत लोक साहित्य का एक अनिवार्य एवं महत्वपूर्ण अंग हे । इसका संबंध साधारण ग्रामिण समाज के लोगो के दैनिक जीवन के साथ–साथ सामुदायिक चेतना से भी होता है । लोकगीत द्वारा युग–युग से चली आ रही सामाजिक – सांस्कृतीक परंपराओ का परिचय होता है ।

सन 1857 के भयंकर स्वतंत्रता संग्राम से स्वदेषाभिमान और स्वधर्माभिमान का स्फूरण जब देष के योध्दाओं और क्रांतीकारीओ मे संचारीत हुआ तब ग्रामीण जनता के कंठ से इतिहासीक वीरगाथाए क्रांतीगीतो मे व्यक्त हुयी । क्षेत्रीय गीतो द्वारा देष के विभिन्न क्षेत्रो मे बोली जाने वाली भाषाओ मे विद्रोहियो और क्रांतीकारीयो की गतीविधीया मधूर और सजीव रुप मे अभिव्यक्त हुयी । इन गीतो मे क्रांतीकारीयों के संघर्ष और स्वाभिमान के स्तर सुनाई पडते थे । स्वतंत्रता संग्राम और उनके दमन की ध्वनिया जो भारत की विभिन्न भाषाओ के लोकगीतो मे सुनने को मिलती है ।

भारत की स्वतंत्रता संग्राम के दौरान भारत के विभिन्न क्षेत्रीय भाषाओ के लोकगीतो मे अंग्रेजी हुकूमत से मुक्ती के लिए संघर्ष की ध्वनिया सुनाई पडती है । और वे सभी राष्ट्रीय सांस्कृतीक जीवन की अभिव्यक्तीया है । अपने देष और इसके विभिन्न क्षेत्र की भाषाओ की लोकगीतो मे कही गयी अभिव्यक्तीया प्रतिगामी एवं साम्राज्यवादी शक्तीयो के लिए कही अधिक खतरनाक होती है । इसवजह कही अधिक रचनाए प्रतिबंधीत कर दी गयी थी । वास्तमे क्रांतीगीतो मे असिम शक्ती एवं स्फुर्ती निहित होती है । क्यों की उनमे जनता का जीवन स्पंदन और संकल्पना निहित है । सुप्रसिध्द आलोचक बंषीधर सिंह का स्पष्ट मानना है की जीवन संघर्ष की अंतर्ध्वनिया लोकभाषाओ मे सहजता से व्यक्त होती है । ब्रिटीष हुकूमत के विरोध मे ग्वालीयर के सिंधीया के समक्ष कवी पद्माकर लिखते है.....

"मीनागढ बंबई – समुद मंदराबंग । बंदर को बंदकारी बंदर बसावैगो । ।
कहे पद्माकर कसकी कासमीर कोहू । पिंजर सो धेरी के कलिंजर हुडावैगो । ।
बंकानृप दौलत अली जा महाराज कबौ । साजिदल पकरि फिरंगीन दबावैगो । ।
दील्ली दहपट्टी, पटना हू को झपट्टीकरि । कबहूँक सत्ता कलकत्ता के उडावेगो । ।

इसीप्रकार अंग्रेज साम्राज्यवाद के विरोध के स्वर राजस्थन लोकसाहित्य मे भी मिलते है ।

"उतन विलायत किलकता, कानपूर आविया,
ममोई लंक मदरास में ला ।
वलम धुर वहण अंग्रेज, वारत शल,

VOLUME - VII, ISSUE - IV - OCTOBER - DECEMBER - 2018 2018-19
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

११. तुकडोजी महाराजांची शैक्षणिक भुमिका

प्रा. संतोष नारायणराव वावगे
श्री शिवाजी महाविद्यालय, अकोट.

महाराज म्हणतात की, जे आपण लोकांना शिकवितो, ते आपण आचरणात आणावे. नुसते पुढारी म्हणून मिरवण्याने आदर वाढत नाही. प्रत्येक जण कुणीतरी पुढाकार घेण्याची वाट पाहत असतो. दुसऱ्यांच्या चुका काढत असतो. तेंव्हा नेहमी गावास वेधून घेईल असे अंगी आकर्षण व्हावे. पवित्र आहार विहार चेहऱ्यांवर प्रसन्नता, वृध्दी, बल, चातूर्य वर्तनात हवे. साधी राहणी व उच्च विचार असावे. सार्वजनिक कार्य करावे, आप पर भाव मानू नये. प्रामाणिकता, सरळपणा आणि प्रेमळता अंगी असावी. वेळेचे आणि शब्दाचे बंधन असावे, लोकांच्या बोलण्याची लाज बाळगू नये. लोकांची मने जिंकून आपलेसे करावे, आणि ज्याला समाजाचा जिव्हाळा आहे, त्याला आपल्या कार्यात सहभागी करावे. ढोंगी, गुंड या लोकांपासुन सावधान राहावे. बोलण्यात जिंकतात आणि आचरणात मागे राहतात. अशा बोलक्यांपेक्षा अबोल कर्तबगार व्यक्ती बरा. सर्वांनी मिळून काम करावे. गांव आदर्श करण्याचा हा एकच उत्तम मार्ग आहे.

'आदर्श न करितां जीवन
कैसा मिळेल आदर्शाचा यांना
कैसा आदर्श होय निर्माण ? तुकडया म्हणे'

प्रचार हा कोणत्याही कार्यासाठी सर्वात उत्तम असा ऊपाय आहे. आणि तुकडोजी महाराजांनी 'ग्रामगीतेची निर्मीती प्रचारासाठी केली. प्रचाराशिवाय सेवादेखील हा एक मार्ग आहे.

''प्रचार न करता सेवा ।
आकर्षक करु षके गावा ।
हाची रस्यबोध बरवा ।
मिळे याठायी''

लोक उपदेश पाहत नाही तर वर्तन पाहतात. सेवा करणाऱ्यापुढे लोकही नतमस्तक होतात. आज पर्यत सेवा करणारेच थोर पुरुष म्हणून गौरवल्या गेले. सेवेच्या नावाखाली गोरगरीबांना राबवून उपाशी मारले यावरुन प्राण्यांचा सुड देऊन केलेली सेवा काहीच कामाची नाही. आपण राबावे आणि श्रेय दूसऱ्यास मिळावे, यास सेवा म्हणता येणार नाही. विश्वशांतीच्या नावाखाली यज्ञ करतात आणि त्याचे सेवकच त्याचा फायदा घेतात. सेवेमुळे सहकार्य वाढावे दुसऱ्याची गरज भागवावी त्यात लोभ नसावे. जनाजिवनाची शांती बिघडेल अशी प्रतिष्ठेपुरती स्वार्थी सेवा नसावी.

'सुर्य सकळांची सेवा करी ।
बदला न मागे तिळमरी ।

VOLUME - VII, ISSUE - IV - OCTOBER - DECEMBER - 2018 2018 · 19
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

१०. राष्ट्रसंत तुकडोजी महाराजांचा सांगीतिक दृष्टीकोण

प्रा. डॉ. सोपान सिताबराव वतारे
श्री शिवाजी महाविद्यालय, अकोट.

महाराजांची स्वलिखीत "ग्रामगीता" म्हणजे सर्व संत ग्रंथांचे सार होय. ज्यामध्ये सर्व धर्मांचा समन्वय, विश्वशांतीचा उपाय, लोकसुधारणेचे विद्यालय, ब्रम्हज्ञानाला सक्रीयता देउन जीवनात समन्वय घडवून आणणाऱ्या संतबोधावर आधारीत समाज रचनेचा मार्ग, आत्मोन्नती, ग्रामोन्नती साध्य करुन प्रत्येक गाव व नागरीक स्वावलंबी व स्वयंपूर्ण बनविण्याचे शास्त्र तसेच जीवनाशी संबंधीत विवाह–मृत्यू, सण, उत्सव आदी सर्वांगीण तत्वज्ञान रचलेले असून ते मानवी जीवनात प्रत्येक प्रसंगी व क्षणोक्षणी मार्गदर्शक ठरणारे आहेत. महाराजांनी समाजाच्या सर्वांगीण विकासाच्या दृष्टीने ग्रामगीतेला केंद्रबिंदू मानुन यातील मार्गदर्शक तत्वांना संगीत कलेच्या माध्यमातून भजनाद्वारे जनतेसमोर मांडले. त्यामुळे ग्रामगीतेला 'युगगाथा' म्हणावयास हरकत नाही.

राष्ट्रसंत तुकडोजी महाराज दैवीगुण संपन्नतेचे धनी असल्याकारणाने त्यांना बहुतेक विषया संबंधीचे ज्ञान होते, त्यामुळे संगीत हा विषय सुध्दा अपवाद नसावा. त्यांच्या संगीत व काव्य बांधणीवरुन असे लक्षात येते की, महाराजांनी सर्वसामान्य जनतेला समजतील अशी काव्यरचना करुन ती गाण्यास सुलभ व्हावी याकरीता लोकप्रीय व मधूर सिनेमागीतांची निवड करुन लोकांपर्यंत पोहचविली. याठिकाणी अध्ययनाच्या दृष्टीने प्रश्न निर्माण होतो की, महाराजांनी ज्या स्वतंत्र चालींची बांधणी केली आहे त्यांचा आधार काय होता ? अर्थात शास्त्रीय संगीताचा आधार घेतला होता काय? सुगम संगीता ऐवजी शास्त्रीय संगीताचा आधार घेतल्यास प्रबोधन कार्य अधिक परिणामकारक होउ शकले असते काय? किंवा परिणामकारक होऊ शकेल काय ? किंवा यामधील काही ऊणीवा असाव्या काय ? तसेच भविष्यामध्ये महाराजांच्या काव्याला शास्त्रीय व उपशास्त्रीय संगीताची जोड दिल्यास प्रबोधन व प्रचार कार्यात सकारात्मक बदल होण्याची शक्यता किती प्रमाणात असेल? तसेच काव्य आणि संगीत याचा परस्पर विकास साधण्याच्या दृष्टीने ग्रामगीतेचे काय योगदान असू शकेल. अशा पध्दतीने तुकडोजी महाराज द्वारा लिखित संगीत विषयाच्या विभिन्न अंगांच्या दृष्टीने संबंधीत विषयावर अध्ययन होणे महत्वपूर्ण वाटते.

दैवी गुणसंपन्नता लाभलेल्या तुकडोजी महाराजांना बालपणापासुनच भजन, किर्तन, श्रवण तसेच संत सहवास इत्यादींची गोडी होती. केवळ अकरा वर्षाच्या काळात भजन गात–गात रामटेकच्या अरण्यात पोहचले. या अभयारण्यात त्यांना दिव्यत्वाची प्राप्ती होऊन लेखन कार्याची प्रेरणा मिळाली. दरम्यानच्या काळात महाराजांना हनोती महाराजांकडून गायन व उत्तम खंजरी वादनाचे धडे मिळाले. पुढे ग्रामगीतेची रचना करुन अखिल भारतीय गुरुदेव सेवा मंडळाची स्थापना केली, ज्याद्वारे ध्यान, योग व ज्ञान योग साधनेद्वारा निष्काम कर्म करुन आत्मोन्नती करण्याकरिता राष्ट्रसंत तुकडोजी महाराजांची भुमिका संपूर्ण राष्ट्रासाठी दिपस्तंभाप्रमाणे प्रेरणादायी ठरली.

राष्ट्रसंत तुकडोजी महाराजांचा स्वलिखीत 'ग्रामगीता' हा ग्रंथ अत्यंत महत्वाचा माणला जातो. ज्यामध्ये देवदर्शन, धर्माध्ययन, आश्रम–धर्म, संसार व परमार्थ, वर्णव्यवस्था, आचार, प्राबल्य, सेवा सामर्थ्य, संघटन शक्ती,

'RESEARCH JOURNEY' International E- Research Journal
Impact Factor - (SJIF) - 6.261, (CIF) - 3.452(2015), (GIF)-0.676 (2013)
Special Issue 110 (G)- Zoology
UGC Approved Journal
ISSN : 2348-7143
February-2019

Toxic Effects of Parthenium Hysterophorus on Histology of Liver of Freshwater Fish Labeo Rohita

Vikhar A. M[1]., R.G.Jadhao[2]; S. M. Chede[3]
1. Research student, Deptt. Of Zoology,
Associate professor and Head, corresponding Author, Deptt. Of Zoology,
Shri Shivaji Science College, Amravati (M.S.)
Assistant professor, Deptt. Of Zoology,G.S. Gawande MV. Umerkhed.
Email: pradipdkhedkar@rediffmail.com

Abstract:

Toxicity study was conducted on freshwater fish Labeo rohita to evaluate the histological effects of Parthenium hysterophorus on liver of Labeo rohita upto 96hrs. duration i.e. 24,48,72 and 96 hrs. which shown toxic effect on liver. In the present study, an attempt has been made to observe possible haematological and histological changes in certain vital tissue like, liver of the fish Labeo rohita exposed to sub-lethal and concentrations of plant Parthenium hysterophorus extract.

Keywords: Parthenium hysterophorus,liver Histology,Labeo rohita.

Introduction:

Fresh water is an important natural resource necessary for the survival of all ecosystems. The use of water by humans for activities such as irrigation and industrial applications can have adverse impacts on down-stream ecosystems. Chemical contamination of fresh water can also seriously damage eco-systems. Some can use salt water but many organisms including the great majority of higher plants and most mammals must have access to fresh water to live. . Schwarzenbach et al.,(2006) reported that about 300 million tons of synthetic compounds seep annually into water systems (rivers, lakes and sea) leading to water pollution. Histopathological disturbs by pollutants vary with the body parts, medium, nature of the pollutant and period of exposure (Venkataramana et al., 2001). The food from land is so limited that it may not be able to satisfy even the basic requirement of the ever increasing population. To encourage the fishery is necessary for ever increasing demands for protein rich food to earn valuable foreign exchange (Varadharajan, 2012).

Rohu is the natural inhabitant of freshwater sections of the rivers. Rohu is a bottom feeder. It is diurnal and generally solitary. It is commonly eaten in Bangladesh and the Indian states of Bihar, West Bengal. The fecundity of rohu varies from 226,000 to 2,794,000, depending upon the length and weight of the fish and weight of the ovary. The spawn of this fish is collected from rivers during monsoon and reared in tanks and lakes (Talwar and Jhingran 1991). . Rohu is the most commonly used fish in Pakistan and is usually eaten fried, or in a sauce with spices. Plant extracts are referred to as botanicals and when poisonous to fish is called piscicides (Singh and Singh, 2009). The use of toxic plants for catching fish is a common practice worldwide.

Parthenium hysterophorus is an aggressive ubiquitous annual herbaceous weed. Root extracts are useful in dysentery (Singh et al. 1996). It is used as folk remedies in West Indies and Central America (Navie et al. 1996). It is applied externally on skin disorders and decoction of the plant is often taken internally as a remedy for a wide variety of ailments (Dominguez and

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

1. Toxic Effects of Parthenium Hysterophorus on LC50 of Freshwater fish Labeo Rohita

Vikhar A. M.
Research student, Deptt. Of Zoology.
R. G. Jadhao
Associate Professor and Head, corresponding Author, Deptt. Of Zoology, Shri Shivaji Science College, Amravati (M.S.)
S. M. Chede
Assistant professor, Deptt. Of Zoology,G.S. Gawande MV. Umarkhed.

Abstract

Toxicity study was conducted on freshwater fish *Labeo rohita* to evaluate the lethal concentration of *Parthenium hysterophorus* up to 96hrs. duration i.e. 24,48,72 and 96 hrs. Toxicity is species-specific, lending cross-species analysis problematic. Newer paradigms and metrics are evolving to bypass animal testing, while maintaining the concept of toxicity endpoints. In the present study, an attempt has been made to observe possible haematological and histological changes in certain vital tissue like, liver of the fish *Labeo rohita* exposed to sub-lethal and concentrations of plant *Parthenium hysterophorus* extract.LC_{50} is customary to represent the lethality of a toxicant to a test species in terms of lethal concentration (for aquatic animals) and lethal dose (for terrestrial animal). It is always expressed in terms of gram or mg/kg body weight of the animal and lethal concentrations (LC) in terms of Parts/million (ppm) or parts/billion (ppb) or milligram/liter (mg/L). The relationship between the concentration of an environmental toxicant and its lethal effects on living organisms is often a sigmoid curve.

Keywords: Toxicity,*Parthenium hysterophorus*, LC_{50},*Labeo rohita*.

Introduction

Fresh water is an important natural resource necessary for the survival of all ecosystems. The use of water by humans for activities such as irrigation and industrial applications can have adverse impacts on down-stream ecosystems. Chemical contamination of fresh water can also seriously damage eco-systems. India is a country having great cultural diversity associated with all kinds of climates, rich flora and fauna, and supporting an estimated total of eight percentages of the globally documented species. It is experiencing increasing pressure on its bio-resource and

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

9. Limnology of Lasanapur Nala Sewage Water, Dist. Amravati

R. G. Jadhao
Associate Professor and Head, Department of Zoology, Shri Shivaji Arts, Commerce and Science College, Akot (M.S.)

Abstract

The sewage water quality of Lasanapur Nullah and its physico chemical Pararmeter were studied. The water quality analysis includes pH. DO, Conductivity, TDS, Salinity, T.S.S.,Total hardness andCl. The Water Sample were collected from five station of Lalkhadi Nullah (Station I to V) from The month Nov. 2017 to Jan. 2018 and analyzed for suitaibility of cultivation of vegetables. It was found that the sewage water was good for cultivation of vegetables because vegetales were cultivatied in the fields of Lalkhadi village shown the accumntation of Chloride, Magnesium in traces which will gets accumulated in the body of peoples who ate vegetables purchased from Cotton market vegetable seliers, Amravati.

KeyWords: Lasanapur Nala sewage water, physicochemical parameters.

Introduction

Healthful environment is fandamental right of every person. Health aware people are always intersted about the impact of environment on them. But recently it was observed that human action affect the natural condition of environment. Due the heman action, the environment is greatly gets disturbed in the form of water pollution. Also, various parts of our Nation, on contrary are experiencing drought clamatic changers. Water plays a vital role in human life and it forms a major source of irrigation in urban and rural areas. As water is an universal solvent & it's an "Elixier of life". The sewage water contains substance like Chloride,Magnesium etc. Some harmful substances like Arsenic, calcium, & magnessium salts are found present more than the permissible limits leads to pollute water bodies .

Therefore in view of above, it has great importance and its parameters were studied. The sewage water analysis of Telkhadi nullah involved pH, conductvity, Chloride, TSS, TDS, total hardness, DO,salinity etc. The disposal of sewage sludges of soil acts as a fertilizar for agriculture is the most attractive application. Because shudge acts as a source of nutrients for

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

3. Physicochemical Parameters of Lalkhadi nala Sewage Water, Dist. Amravati

R. G. Jadhao
Associate Professor, Head, Dept. of Zoology, Shri Shivaji Arts, Commerce and Science College, Akot(M.S.).

Abstract

The sewage water quality of Lalkhadi Nullah and its physico chemical Pararmeter were studied. The water quality analysis includes pH. DO, Conductivity, TDS, Salinity, T.S.S.,Total hardness andCl. The Water Sample were collected from five station of Lalkhadi Nullah (Station I to V) from The month Nov. 2017 to Jan. 2018 and analyzed for suitaibility of cultivation of vegetables. It was found that the sewage water was good for cultivation of vegetables because vegetales were cultivatied in the fields of Lalkhadi village shown the accumntation of Chloride, Magnesium in traces which will gets accumulated in the body of peoples who ate vegetables purchased from Cotton market vegetable sellers, Amravati.

KeyWords: Lalkhadi Nala sewage water, physicochemical parameters.

Introduction

Healthful environment is fandamental right of every person. Health aware people are always intersted about the impact of environment on them. But recently it was observed that human action affect the natural condition of environment. Due the heman action, the environment is greatly gets disturbed in the form of water pollution. Also, various parts of our Nation, on contrary are experiencing drought clamatic changers. Water plays a vital role in human life and it forms a major source of irrigation in urban and rural areas. As water is an universal solvent & it's an "Elixier of life". The sewage water contains substancelike Chloride,Magnesium etc. Some harmful substances like Arsenic, calcium, & magnessium salts are found present more than the permissible limits leads to pollute water bodies .

Therefore in view of above, it has great importance and its parameters were studied. The sewage water analysis of Telkhadi nullah involved pH, conductvity, Chloride, TSS, TDS, total hardness, DO,salinity etc. The disposal of sewage sludges of soil acts as a fertilizar for agriculture is the most attractive application. Because shudge acts as a source of nutrients for

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

18. Fish and Zooplankton Dynamics of Erai Dam, Dist. Chandrapury

R. G. Jadhao
Associate Professor and Head, Department of Zoology, Shri Shivaji Arts, Commerce and Science College, Akot (M.S.)

Abstract

The huge availability of food in the term of zooplankton and phytoplankton shows the growth of aquatic vertebrates like fishes. Rich biotitic Community of Erai dam indicates that Fish culture activity can be encouraged amongst farmers of this area by utilization of Erai dam water, so that farmers of this area get benefited and their economic condition will be raised.

Keywords: Fish Dynamics, Zooplankton status of Erai dam.

Introduction

Fish forms are rich source of food as well as provide several by products. Fist flesh contains protein, Fat, vitamin A and D. The Phosphorus and other elements also found in them which impart good taste. All fish flesh component gets early digested and do not play role in boost of Cholesterol. Fishes of Inland water bodies have been Studied by Day (1994), Jayram (1999) Talwar and Jhingran (1991), Rao el al, (1999).

Material and methods

Fishes from Erai dam were collected with help of local fisherman from August 2017 to Jan 2018, brought to the laboratory for observation, identification and color pattern. Collected fishes were preserved in 10% formalion and identified by the key of Talwar and Jhingran (1991) Day (1994) And Jayram (1999).

Result and Discussion

Amongst zooplankton rotifers contributed with high density 21 species of rotifer were recorded which belongs to 13 genera (Arora 1966), Vashistand Sharma (1976). Rotifer followed by copepods, among copepods cyclops occupied top position. The Cladocera were shown in moderate patterns of their population.

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

9. Studies on Biodiversity of Common Weeds and its Medicinal Value of Akot Region, Maharashtra, India

Santosh N. Patole
Anil R. Somwanshi
Shri Shivaji Arts, Commerce & Science College, Akot.

Abstract

The present work deals with the study of 30 common weeds belonging to 20 families were occurring in crop fields of Akot Tahsil of Akola district, Maharashtra. Thorough investigation indicated that these plant species are used to cure diseases like diarrhea, dysentery, gonorrhea, rheumatism, headache fever, ulcer, cough, jaundice, blood purification and boils, etc. In this paper, the enumeration is given with botanical Name, Family and mode of utilization.

Key Word: Biodiversity, Akot, weed plants, medicinal value

Introduction

Weeds are not desired in cultivated lands since they compete with crop plants for nutrients, soil moisture, sunlight and space. They have often been given special identity as a fast growing troublesome exotic and noxious plant, in other words known as unwanted plants growing among the normal seasonal crops. These weeds cause great loss to cultivated crops and are responsible for less production since weeds have competition with main crops for water, light and nutrient. These weeds can be useful to us if we learn to use them, they can use as bio pesticides or controlling many diseases like cold, asthma, dermatitis, etc. The weeds can be utilized as manure, fodder, livestock beds and their therapeutic because of the presence of some chemicals like glycosides and alkaloids. These studies have provided substantial useful traditional information about different plants. But only meager studies have been done on crop weeds. Therefore an attempt has been made to explore the abstract and concert relationship of the people with the weeds of their croplands. :/

MATERIALS AND METHOD

The present study has covered different localities. Several visits were made to croplands at monthly and fortnightly intervals during most of the weeding periods. During field visits,

ethnobotanical information on weeds was collected through oral interviews with local people, as they are more involved in the management of weeds. Voucher specimens of weeds were collected at flowering and fruiting periods for making herbarium sheets by standard method (Jain and Rao 1977).

Enumuration

The species are arranged alphabetically, Botanical name of the plant is followed by family in parentheses; local name in Tamil and voucher specimen numbers and plant parts and mode of utilization.

1. *Acalypha indica* L.
   Family- Euphorbiaceae
   Uses- Leaf juice is given to cough, bronchitis and asthma. It is also used for externally to cure skin disease.
2. *Achyranthus aspera* L.
   Family- Amaranthaceae
   Uses- Leaf juice is taken orally for piles, asthma, cough and as drops in earache.
   Root paste is applied externally in scorpion sting.
3. *Amaranthus spinosa* L.
   Family-Amaranthaceae
   Uses- Juice of the plant is used to cure piles.
4. *Amaranthus viridus* L.
   Family -Amaranthaceae
   Uses- Leaf paste is applied on swelling, boils and wounds.
5. *Argemone mexicana* L.
   Family -Papaveraceae
   Uses- Yellow milk juice is used to cure ulcers, eczema and leprosy. The seeds are used to cure cough, headache
6. *Boerhavia diffusa* L.
   Family -Nyctaginaceae
   Uses- Decoction of root is used to cure anemia, swelling and rheumatism.
   The plant leaves also used as vegetable and act as blood purifying agent.

7. *Chenopododium album* L.

   Family -Chenopodiaceae

   Uses- Plant is used as vegetable to cure jaundice, coughs and piles.

8. *Commelina benghalensis* L.

   Family- Commelinaceae

   Uses- Paste of leaves is applied on boils, swellings, erysipelas and burns.

9. *Cynodon dactylon* L. Pers

   Family -Poaceae

   Uses- The whole plant is taken orally to cure ulcer. Leaf paste is applied for piles.e)ttp://lifescien.ning.com/ PEER-REVIEWED Page | 60

10. *Cyperus rotundus* L.

    Family- Cyperaceae

    Uses- Rhizome powder is used for diarrhoea and dysentery.

11. *Digera muricata* L. Mark.

    Family -Amaranthaceae

    Uses- Leaves are used as vegetable in constipation, dysuria and calculi.

12. *Eclipta prostata* L.

    Family- Asteraceae

    Uses- Decoction of plant is given to cough, jaundice, diabetes and piles.

13. *Euphorbia hirta* L.

    Family Euphorbiaceae

    Uses- Decoction of plant is given in coughs, asthma, colic and bronchitis

14. *Evolivulus alsinoides* L.

    Family -Convolvulaceae

    Uses- The leaf is given to asthma. The whole plant is given for stomach pain and scorpion sting.

15. *Sida cordata* Borss.

    Family- Malvaceae

    Uses- Decoction of root is used for dysentery and gonorrhea.

    Root paste is used to cure boils and wounds.

16. *Sida acuta* Burm.

    Family -Malvaceae

    Uses- Root pastes are applied on wounds. Leaf is given in gastric disorder and stomach pain.

17. *Indigofera tinctoria* L.

    Family- Fabaceae

    Uses- Leaf juice with honey is given to jaundice and spleen swelling.

18. *Leucus aspera* Sperng.

    Family -Lamiaceae

    Uses- The root decoction is used to cure rheumatism and asthma

19. *Mimosa* pudica L.

    Family -Mimosaceae

    Uses- The leaves and root extract is used to cure piles and fistula.

20. *Mullugo nudicaulis* Lam.

    Family- Aizoaceae

    Leaf paste is used to drawn out the pus.

21. *Oldenlandia corymbosa* L.

    Family Rubiaceae

    Uses- Whole plant decoction is given for jaundice, liver diseases and fever.

22. *Oldenlandia Umbellata* L.

    Family -Rubiaceae

    Uses- Leaf and root extract is given for bronchitis.

23. *Phyla nodiflora* L. Greene

    Family- Verbenaceae

    Uses- Paste of plant is applied on boils, erysipelas, swellings and ulcers.

24. *Phyllanthus amarus* Schum. & Thonn.

    Family -Euphorbiaceae

    Uses- Whole plant extract is given for jaundice.

25. *Phyllanthus maderaspatensis* L.

    Family- Euphorbiaceae

    Uses- Leaf paste is applied on head ache.

JASC: Journal of Applied Science and Computations ISSN NO: 1076-5131

5131

ADSORPTION OF COBALT (II) METAL IONS FROM AQUEOUS SOLUTION ONTO ACTIVATED CARBON PREPARED FROM *PHYLLANTHUS EMBLICA* TREE BARK

A. R. Somwanshi[*1], U. E. Chaudhari[2]

1. Department of Chemistry, Shri Shivaji Arts, Commerce and Science College, Akot.

2. Department of Chemistry, Mahatma Fule Arts, Commerce and Sitaramji Chaudhari Science College, Warud

E-Mail: uechaudhari@gmail.com, anilsomwanshi40@gmail.com

ABSTRACT

Adsorption of Co(II) from aqueous solutions using Activated Carbon of *Phyllanthus Emblica* tree bark (AC-PETB) was investigated. The aim of this study was to utilize the locally available material for scavenging the heavy metal. The effects of pH, contact time, temperature and adsorbent dosage on the adsorption of Co(II) were studied. The different experimental conditions were investigated in this study. It was observed that the amount of Co(II) adsorbed increases rapidly initially, then system approaches equilibrium within 300 minutes. The extent of Co(II) removal increased with increase in time and adsorbent dosage. Langmuir and Freundlich adsorption model is used for the mathematical description of the adsorption equilibrium and isotherm constants are evaluated. Equilibrium data fitted very well to the Langmuir and Freundlich model.

Keywords: Cobalt(II), Adsorption, *Phyllanthus Emblica*, Langmuir, Freundlich

I. INTRODUCTION

Presence of heavy metals in wastewater is of interest because of their known toxic effects on the receiving environment and also on the performance of biological treatment processes [1-3]. On the other hand, the performance of wastewater treatment processes in terms of metal removal is also of great importance in determining the quantity of heavy metals discharged into receiving waters, especially in areas where water re-use is practiced [4-5]. Therefore, recovery of heavy metals from wastewater became an important environmental issue, recently. Environmental pollution has become a key focus of concern for all the nations worldwide, as not only the developing countries but developed nations as well are affected by and suffer from it [6-8]. The water of aquatic systems gets polluted by domestic activities, mining activities, municipal wastes, modern agricultural practices, marine dumping, radioactive wastes, oil spillage, underground storage leakages and industries. Conventional methods for the removal of Co(II) from wastewaters include chemical precipitation, ion exchange, filtration, chemical reduction, electrodepositing and adsorption on activated carbon [8-10]. But due to operational demerits and high cost of the treatment, some new technologies have been tried for a long time. Among them less expensive non conventional adsorbents are being investigated. Many reports have appeared on preparation of activated carbon from cheaper and readily available materials [8,11].

II. MATERIAL AND METHOD

Preparation of Adsorbent

Activated Carbon was prepared from *Phyllanthus Emblica* tree bark. It was cut in to small segment and kept in oven for 3 Hrs. Till gets carbonised material then dried in sunlight until almost all the moisture evaporated. Then it was ground to get desired particle size. It was then soaked 2 hours in 0.1M NaOH solution to remove any foreign content. Excess alkalinity was then removed by neutralizing with 0.1 N HCl. The **AC-PETB** was then washed several times with distilled water till the washings are free from color and turbidity. The washed **AC-PETB** was oven dried at 200°C for 24 hrs and stored for the study.

Preparation of solutions

The stock solution of Co(II) were prepared by dissolving $Co(NO_3)_2.6H_2O$ in double distilled water. The analytical grade salts used for analysis. The desired solutions were obtained by diluting the stock solution in double distilled water.

III. BATCH STUDY METHOD

Effect of pH

pH plays an important role while removing the metal ions from aqueous solution or wastewater. In this study pH was done from the range 2-6. In the study it was observed that on increasing pH the metal ions uptake on adsorbent also increases. At higher pH the effect of competition from H^+ ions deceases and metal ions get adsorbed on the surface of adsorbent. The optimum pH was chosen for adsorption of Co(II) 4.0 shown in fig-I.

Effect of Contact Time

The effect on contact time on the uptake of the studied cations on to the adsorbent is shown in Fig.2.this was achieved by varying the contact time from 30 to 300 minutes. Equilibrium contact time was found to be 360 minutes for Co(II). The removal efficiency for Co(II) at these contact time was 65%. Result shown in Fig-II.

Effect of Adsorbent Dose

The effect of varying the adsorbent dosage of **AC-PETB** from 0.2–1 gram for adsorption of Co (II) from their aqueous solutions having known volume of initial concentration was studied at respective pH as studied earlier. It has been found that the percent removal of Co (II) increases with increase in adsorbent dose up to some extent, thereafter further increase adsorbent dose. This is due to availability of more functional groups and surface area at higher dosages. Result shown in fig-III.

Effect of Temperature

Effect of temperature was studied by varying the temperature from 30°C to 60°C with working volume 200 ml having known concentration. Study was carried out at pH 5.0 and at 1000 rpm with contact time 3 hours. As the temperature increases porosity

increases and percent of adsorption increases up to certain extent and then remains constant this is due to chemisorptions process. Result shown in fig-IV.

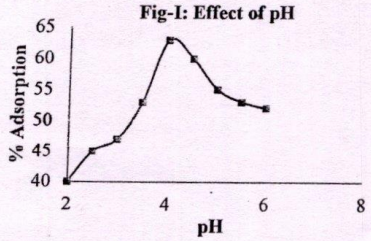


Fig-I: Effect of pH

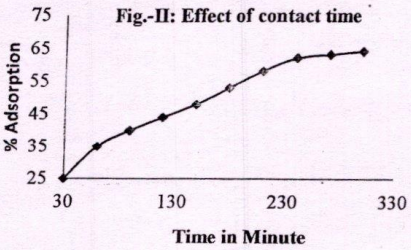


Fig.-II: Effect of contact time

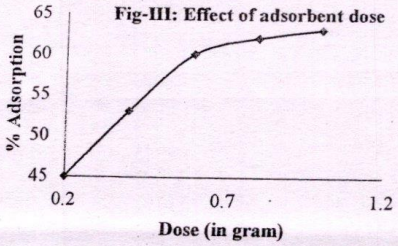


Fig-III: Effect of adsorbent dose

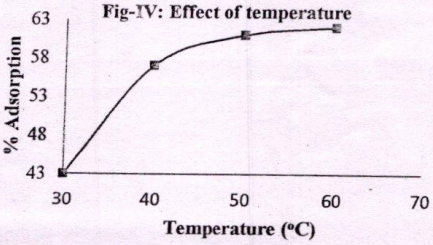


Fig-IV: Effect of temperature

IV. CHARACTERIZATION BY SCANNING ELECTRON MICROSCOPY (SEM)

The surface morphology of adsorbent i.e. AC-PETB before and after metal ions adsorption was observed using scanning electron microscopy. There are significant changes are observed to the surface morphology of adsorbent after metal ions uptake shown in fig-V: A and B..

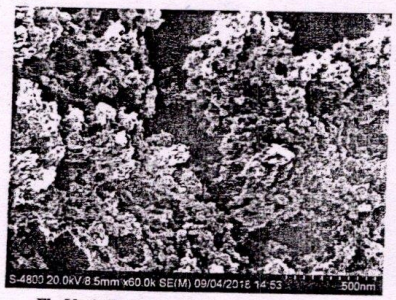
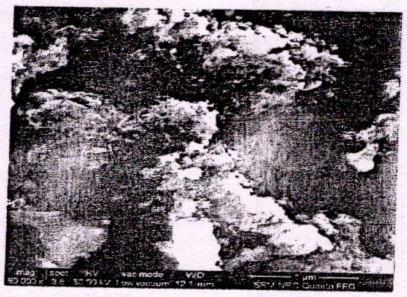


Fig.V: A. Before metal ions adsorption



B. After Metal ions adsorption

ADSORPTION ISOTHERMS

Equilibrium isotherm equations are used to describe the experimental adsorption data. The parameters obtained from the different models provide important information on the sorption mechanisms and the surface properties and affinities of the adsorbent. The most widely accepted surface adsorption models for single-solute systems are the Langmuir and Freundlich models. The correlation with the amount of adsorption and the liquid-phase concentration was tested with the Langmuir and Freundlich isotherm equations. Linear regression is frequently used to determine the best-fitting isotherm, and the applicability of isotherm equations is compared by judging the correlation coefficients.

***Langmuir Adsorption Isotherm*: -** In Langmuir adsorption isotherm Q_o values found to be comparable with commercial activated carbon. Value of R_L lies between 0 and 1 indicate the favourable adsorption. It indicates the applicability of Langmuir adsorption isotherm. The calculated value R^2 confirms the applicability of Langmuir adsorption isotherm shown in table 1.

***Freundlich Adsorption isotherm*: -** Freundlich plot for the adsorption of Co (II) on AC-PETB shows that the values of adsorption intensity $1/n < 1$, reveal the applicability of Freundlich adsorption shown in table 1.

Table 1: Adsorption Isotherm Constants

System	Langmuir Isotherm				Freundlich Isotherm		
	Q_o	b	R_L	R^2	K_f	1/n	R^2
AC-PETB-Co(II)	5.3521	0.0189	0.1120	0.995	2.462	0.2684	0.995

V. CONCLUSION

Adsorption of Co(II) metal ions from aqueous solutions using AC-PETB as adsorbent was studied. The following results were obtained: These studies show that AC-PETB is an inexpensive adsorbent for Co(II) removal from aqueous solutions. The adsorption of Co(II) ions on AC-PETB was dependent on the pH, quantity adsorbent dose, temperature and contact time. Amount of removal of Co(II) metal ions from aqueous solution on AC-PETB was found to be maximum at pH 4. The equilibrium time for the adsorption of Co(II) ions on AC-PETB from aqueous solutions is estimated 300 minutes. The adsorption process of Co(II) ions can be described by Langmuir isotherm and Freundlich isotherm model. The process of adsorption is economically feasible, easy to handle in small scale and large scale also. Regeneration studies are not necessary with the view that the cost of the adsorbent is very low and it can be disposed of safe. It is calculated that the adsorbent prepared from *Phyllanthus Emblica* tree bark could be exploited for commercial application.

REFERENCES

1. A.K. Wanjari, Evaluation of Adsorption Effiency of Ferronia Elefuntum Fruit Shell for Rhodamine-B Retrieval from Aqueous Solution, *International Journal Of Pharmaceutical And Chemical Sciences*, Vol. 2 (1) Jan-Mar 2013, 457-460.
2. A.K. Wanjari and U. E. Chaudhari, Removal Of Cr(VI), Pb(II), Mn(II) And Bi(III) From Aqueous Solutions Using Granular Activated Charcoal Prepared From *Cordia Macleodii* Tree Bark. *Rasayan J. Chem.*, 10(1), 82-85(2017) Http://Dx.Doi.Org/10.7324/Rjc.2017.1011556
3. Bareket, G., Aroguz, A.Z., Ozel, M.Z., 1997. Removal of Pb(II), Cd(II) and Zn(II) from aqueous solution by adsorption on bentonite. J. Colloid Interface Sci. 187, 338–343.
4. Petrov, N., Budinova, T., Khaveson, I., 1992. Adsorption of zinc, cadmium, copper and lead ions on oxidized anthracite. Carbon 30, 135–139.
5. M.A.A. Zaini, K. Yoshihara, R. Okayama,M. Machida, H. Tatsumoto, Effect of out gassing of $ZnCl_2$-activated cattle manure compost (CMC) on adsorptive removal of Cu(II) and Pb(II) ions, *TANSO* 234, 220–226, 2008.
6. Wanjari AK et al., Physico-Chemical Investigation of Quality of Drinking Water Affected by Ganapati Visarjan in Maharashtra, India. *American Journal of PharmTech Research* 2015.
7. Babel S. and Kurniawan T.A. Cr (VI) removal from synthetic wastewater using coconut shell charcoal and commercial activated carbon modified with oxidizing agents and/or chitosan. *Chemosphere*, 5(7), 951-967, 2004.
8. Atul K. Wanjari, Adsorption of manganese (II) by nitric acid treated granular activated charcoal prepared from *Cordia Macleodii* tree bark, *Der Pharma Chemica*, 2016, 8(18):87-94.
9. C. Moreno-Castilla, M.A. Alvarez-Merino, M.V. Lopez-Ramon, J. Rivera-Utrilla, "Cadmium ion adsorption on different carbon adsorbents form aqueous solutions. Effect of surface chemistry, pore texture, ionic strength, and dissolved natural organic matter", *Langmuir* 20, 8142– 8148, 2004.
10. Namasivayam.C. Kadirvelu, K., 1994. Coirpith: an agricultural waste by-product for the treatment of dyeing wastewaters. Bioresour. Technol. 48, 79–81.
11. Kumar, P., Dara, S.S., 1980. Modified barks for scavenging toxic metal ions. Indian J. Environ. Health 22, 196–202.

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

22. Social Reformation in Vijay Tendulkar's Play Silence! The Court is in Session

Dr. Rahul S. Sudke
Shri Shivaji College, Akot.

Love marriages make it possible for on to get a wife or a husband of one's choice; if you marry a person with whom you are in love and who is in love with your married life will be genuinely happy and harmonious. Likewise, much can be said against the practice of permitting only arranged marriages: if one has to spend one's life with a person one is not in love with, one's life will become hellish as it will be full of squabbles, quarrels, abuses and misuses. Yet one thing is certain: if a society does not permit love marriages, no girl will find herself in the situation in which Leela finds herself when her lover and maternal uncle refuses to marry her after he has physically exploited her. In the light of this fact it is safe to infer that Vijay Tendulkar is rejecting the practice of love marriages in the play Silence! The court is in session.

In Vijay Tendulkar's play silence ! The court is in session, there come to light the risks involved in having in a society the practice of love marriage as opposed to that of arranged marriage and in the light of those risks we can make an attempt to grasp the dramatist's views on the issue.

In the play,LeelaBenare, the protagonist of the play, has to face the wrath of the society on the issue of marriage too and finds herself too weak to make the society accept her stand on the issue when the chairman of the Education Society orders he dismissal, he issues the instruction: t is a sin to be pregnant before marriage. It would be still more immoral to let such a woman teach, in such a condition! There is no alternative. This woman must be dismissed....Send the order for my signature"[2] (p.69) though nothing in her performing her duties as a teacher has ever earned disapproval, as the tellssamant: "In school, when the first bell rings my foot's already on the threshold. I haven't heard a single reproach for not being on time these past eight years. Nor about my teaching. I'm never behind hand with my lessons! Exercises corrected on time too! Not a bit of room for disapproval-I don's give as inch of it to anyone!" (pp. 3-4) and is regarded as a food teacher as shed say's "My children will do anything for me.

For I'd give the last drop of my blood to teach them" (p. 4.) Let us see why and how it so happens.

When the play opens, LeelaBenare is still an unmarried woman, thought she has made attempts to get married. In the first attempt she made to get married she tried to marry her maternal uncle with whom she was in love and who was in love with her, as she confesses: "I was in love with my mother's brother....He gave me love...I insisted on marriage So I could live my beautiful lovely dream openly. Like everyone else!" (p.74). This love did not lead to marriage in spite of the fact that both the boy and the girl were in love with each other because there stood between them a rule of their society which declared the marriage of a girl with her maternal uncle a sin, as she reports: "How was I to know that if you felt like breaking yourself into bits and melting into one with someone if you felt that just being with him gave a whole meaning to life and if he was your uncle, it was sin! Why. I was hardly fourteen!" (p.74). In this case.Leela was absolutely earnest in her love, yet she failed to get married because a custom/tradition of her society deemed the marriage of a girl and her maternal uncle to be an act of sin and it became an impediment to the marriage of true minds. In this case the girl was flouting the social norm but the boy who must have tried to give his beloved the impression that he was a brave person, was not that bold, as she reports:"I insisted on marriage...And my brave mam turned tail and ran" (p.74). But the girl did not come out of the episode unharmed, as she reports: "I did commit a sin" (p.74). With the result that now she is helpless and can only gnash her teeth at the man and say: "I felt like smashing his face in public and spitting on it" (p.74). However, she has lost her innocence forever and cannot claim any more that she is a virgin...if the practice of getting married through a love affair had not been prevalent in her society; she would still have been innocent. In other words, it is she practice of love marriages that has caused an irrepairable damage to Leela.

The play also brings to light the fact that a love marriage is a culmination of intimacy between the boy and the girl as Leela and her uncle became intimate with each other before they came to the question of getting married. In other words, in love marriage intimacy precedes the marriage. This implies that the intimacy that develops between two persons may lead to their marriage or may end in itself. It means that the practice of love marriages permits intimacy between unmarried persons but does not ensure every intimacy to lead to a marriage. Leela's not being able to get her first lover as her husband signifies that it is quite possible for a boy to get

undue advantage of his intimacy with a girl and to refuse to marry her. In such a case the girl may find herself to have lost her innocence and still to have remained unmarried. The institution of marriage is based on the understanding that the husband and wife intimately know none else than each other and are virgins at the time of marriage, as is implied in the following observation of the Hindu law-giver Manu: "A boy or a girl should marry after he/she has systematically studied all the four vedus, or two vedus, or at least one veda, when he/she is still a celibate. "[3] If a girl has lost her virginity before her marriage she, if she gets married somehow, may find herself in the situation that Tess in Hardy's novel less of the d'Urbervilles Faces after she has married Angel Clare and has revealed to him her past and Angel leaves for Brazil or the situation in which Madhu in ShashiDeshpande's novel small remedies* finds herself when she has revealed to her husband som that she had lost her virginity on the day her father died long before her marriage and her husband loses all his happiness with the result that Madhu resolves to leave her husband's house to live a lonely life elsewhere.

Leela's efforts to get married through a love affair make her behave like the animals having the herd instinct, as opposed to those having the coupling instinct, as first she falls in love with her maternal uncle (see supra), then she falls in love with professor Damle as she confesses: "I fell in love. As a grown woman. I threw all my heart into it; I thought, this will (sic) be different. This love is intelligent. It is love for an unusual intellect....But it was the same mistake. I offered my body on the altar of my worship.

The repeated reports of this vulgar behavior of hers signify that according to the narrator she is trying to entice samant. If the practice of love marriages had not been there in LeelaBenare's society, she would not have behaved in such a vulgar way.

Love-marriages make it possible for on to get a wife or a husband of one's choice; if you marry a person with whom you are in love and who is in love with your married life will be genuinely happy and harmonious. Likewise, much can be said against the practice of permitting only arranged marriages: if one has to spend one's life with a person one is not in love with, one's life will become hellish as it will be full of squabbles, quarrels, abuses and misuses. Yet one thing is certain: if a society does not permit love marriages, no girl will find herself in the situation in which Leela finds herself when her lover and maternal uncle refuses to marry her after he has physically exploited her. In the light of this fact it is safe to infer that Vijay Tendulkar is rejecting the practice of love marriages in the play Silence! The court is in session.

References

1. Tendulkar, Vijay. Silence! "The court is in session, (trans.) PriyaAdarkar New Delhi: Oxford University Press, 2007 (1978), p.69. All the subsequent quotations that follow in the article are from this text.
2. Manu, Mamismriti III, 2. Manu's Sanskrit couplet reads as follows: Vedaandheetyavedaunaavedanvaapiyathakramamm! Aviluphrahamchrayograhstha-thramavishet!!
3. Hardy, Thomas. Tess of the d'Urbervilles Harmondsworth: Penquin, 1979 (1891). Deshpande, Shashi. Small Remedies New Delhi: Penguin, 7001 (2000).

VOLUME - VIII, ISSUE - I - JANUARY - MARCH - 2019
AJANTA - ISSN 2277 - 5730 - IMPACT FACTOR - 5.5 (www.sjifactor.com)

5. The Portrayal of Social Concern in the Novels of Kamala Markandaya

D. B. Wankhade
Assistant Professor, Dept. of English, Shri Shivaji Arts, Commerce & Science College Akot, Dist. Akola (M.S.) India.

Abstract

Kamala Markandaya is a novelist of concern with the social change in India throughout her literary arts. Markandaya, who hitched an Englishman, chose to live in a nation which isn't her claim, is recognizable with the East- West tussle and the resultant character emergency. Cherish, which is past caste, creed and community, joins together a man and a lady. The foremost prevalent and much looked for after and investigated subject is East - West experience. Kamala Markandaya, impacted by the western culture, emphatically accepts within the control of science to progress the fabric conditions and advance and correspondence among all men and ladies. The sense of separation and deterioration of rustic life as a result of industrialization, or since of the relocation of youth to cities, reinforced labor, opportunity battle, nourishment riots, territorial jealousies and police brutality, all this make up the unsteady world of her Indian stories.

Keywords - Social Concern, Hunger, Realism, Change etc.

Introduction

The concept 'Realism' in writing alludes to the introduction of things precisely in genuine life. Numerous literary craftsmen such as Bhabini Bhattachariya, R. K. Narayan and Ruth Prawar Jhabvala have displayed authenticity in their fictions. Like Kamala Markandaya, the other writers had depicted the diverse sorts of authenticity in their works. They are classified as takes after, Social authenticity. These sorts of authenticity are well depicted by Kamala Markandaya in her books, particularly in Nectar in a Sieve, Ownership and a modest bunch of Rice. In her first novel, Nectar in a Strainer, Nathan the head of the family passed on due to starvation. These distinctive sorts of authenticity are brilliantly portrayed by the creator.

Kamala Markandaya, an Indian by birth, hitched an English man and settled in Britain. Born in a noble Brahmin family of South India in 1924, she had voyage broadly and in this

advance to balance among all men and ladies. In spite of the fact that she has completely received western ways of life, in her viewpoint.

The books of Markandaya uncover her profound pre-occupation with the changing Indian social and political scene, her cautious, cognizant craftsmanship and her capable utilize of the English dialect for imaginative purposes. She exceeds expectations in recording the inward workings, of the minds of her characters, their individual perplexities and social showdowns. She endeavors to depict them as people developing into themselves, unfurling the sensitive forms of their being getting to be. She handles characters, discourse and portrayal with expertise. All three are coordinated, commonly steady, so that the fiction is amazing since it makes warm and throbbing people. Her characters are all standard individuals. Heightening mindful of the section of time, they battles, cherish or move to another nation, in look joy. Her books cover a wide extend of groups. Her primary subject is the portrayal of Indian life.

The sense of separation and crumbling of rustic life as a result of industrialization, or since of the relocation of youth to cities, reinforced labor, opportunity battle, nourishment riots, territorial jealousies and police brutality, all this make up the unsteady world of her Indian stories. And when the rough powers eject within the climatic scenes in her books, the uncover more than themselves; they uncover the quality and nature of life in post-Independence India. Her chief interest lies in story-telling. Individuals of different strolls of life and of distinctive places, both rustic and urban, and of diverse countries are spoken to in her fiction. Kamala Markandaya returns to the scenes of her childhood and youth in her works.

The novel 'A Handful of Rice' is the common grouping of Nectar in a Sieve' which uncovers the hardships that one ordinarily experiences in a town and a handful does the same within the town. The social treachery once more fills Kamala Markandaya with anguish. In A Handful of Rice, Ravi, a man driving a Bohemian life chooses a repetitive life since of his cherish for a tailor's girl. This novel depicts the pickle of the hero Ravi Shankar caught up in mental struggle. Within the present day world social treachery produces destitution, starvation and misuse. The lasting values are in peril. The genuine endure and the slanted thrive; realism damages mysticism; eagerness swallows down satisfaction; want for the atomic family born out of childishness imperils the gifts of the joint family framework. The attitudinal crevice between the youthful and the ancient extends; the sociological hole between the wealthy and the destitute gets to be greater and greater; the separating line between the great and the terrible blurs.

one of those engine cars that murmured along the Marina, he felt, would keep him and his family over half a lifetime. He never would, not in the event that he sewed a dozen shirts in a dozen hours each day of the week for a dozen a long time! No ponder at that point that youthful men like him felt the tingle, as he himself had done, to urge into those same cars and drive away…"

Markandaya's totally persuading characters are drawn with understanding and sensitivity. The shinning, sparky Ravi is brilliantly differentiated with his cold father-in-law, the withered, savvy Apu. His unfriendly mother-in-law, the forceful, uncontrolled Jayamma: and the minor characters, such as Ravi's sluggish, jealous brother-in-law, Puttanna. A novel to studied to get it where the pushing, energetic India of nowadays, with its towering financial victory, has come from.

Works cited

1. Dhawan R.K. (1995). "Indian Women Novelists", Delhi: Prestige Books.
2. Kumar Shiv K. (1957). "Some Indian W riters of EnglishFiction" in Modern Indian languages edited by Golak Delhi: Delhi Publication Division.
3. Markandaya K. (1957). Some Inner Fury. Bombay: Jaico, 1957.
4. Markandaya K. (1986). A Handful of Rice. Delhi. Orient Paperbacks.
5. Mukherjee M (1971). The Twice Born Fiction, New Delhi: Heinemann, 1971.
6. Niven A (1978). The Yoke of Pity.New Delhi: Kalyani Publishers, 1978.Novels," Studies in English, Rajasthan University Press.
7. Srinivasa IKR (1968). "Indian Writing in English", Bombay: Asia Publishing House.

Research Guru
Online Journal of Multidisciplinary Subjects (ISSN : 2349-266X)
UGC Approved Journal No. 63726
Impact Factor:4.081 Volume-12, Issue-4, March-2019 www.researchguru.net

GARY SNYDER: THE HARBINGER OF HONING HARMONY IN POETIC PROPORTION OF HUMANISM, BUDDHISM AND NATURE

D. B. Wankhade
Assistant Professor, Dept. of English, Shri. Shivaji Arts, Commerce & Science College, Akot, Dist. Akola (M.S.) India
dbwan79@gmail.com

Dr. Amol Raut
Research Supervisor, Head, Dept. of English, Yashoda Girls' Arts & Commerce College, Nagpur,
amolsaroj@rediffmail.com

Abstract: Gary Snyder is the receiver of several literary honors and prizes, including a Pulitzer Prize for *Turtle Island*. As an ecologist, naturalist, conservationist, environmentalist, humanist and traveler throughout the world, his life bears the indelible stamp of various vicissitudes. The other aspect of his life sketch is full with content spiritual belief in Buddhism. A thorough study for Buddhist perspective in Snyder's poetry will come across a conclusion that Snyder is a literary ambassador of global human preservation of which each human from fetus to the stage of demise is a member with mere expectation of 'live and let live'. His artistic vision and philosophical inclination is so firmly cemented that it appears outwardly and authentically as 'Nature in Buddhism' and 'Buddhism in Nature'. Snyder has become a sort of prophet for human good, and a great rescuer with Buddhist spirituality sprouted through his fertile writing, wrapping in natural wildness under its wing. The present paper focuses on the Buddhism, humanism and nature as triangles of Snyder's poetic corners reflected in equal proportion throughout his writing.

Keywords - Ecology, Eco-Buddhism, Universal Unity, Nature etc.

Introduction: As a learner Snyder's surveillance of landscape painting rests in Chinese library which shows with genuine harm to wilderness, appealed him more. Though now a concrete figure, the layers of toils and task are full of thorns in shaping the consummate personality like Gary Snyder. Buddhism is now nicely installed within the West, with all of the numerous Asian schools and flavors represented, and with Buddhist temples, universities and meditation classes thriving in maximum main Western cities. As a child Snyder's love with earth and the traditions of primitive people around him are the sparks of inspiration for him. The nature and its 'Wild Wonder' allured him more.

Influenced by the Buddhist scholar D. T. Suzuki and author Alan Watts, Snyder began translating Chinese language Buddhist poetry and became a disciple of a celebrated Japanese Zen master. In the 1970's Snyder established his own Zen community in the Sierra foothills of California. Renowned Beat poet Allen Ginsberg sooner or later has became a follower of Tibetan Buddhist teacher Chogyam Trungpa

Rinpoche. Many of the Beat writers seemed at the school to train and give lectures and readings. Other Beat writers including poets Phillip Whalen, Michael McClure and Diane Di Prima became followers of Zen in San Francisco.

Snyder held the series of jobs and get experiences in the wilderness and mountains which would give plenty of substance for poetic output amalgamating the routines of physical task with the life of the intelligence. Reed College was an immensely inspiring occurrence for Snyder and a decisive mode in determining the rational route of his future life. It was Reed where Snyder gave the soft shape to coarse creativity by publishing his first poems in a student journal. He was fascinated not only by some of the teachers he had but also by the folk of friends, many of whom were significant future writers.

The Beat writers popularized Buddhism in the West, speaking approximately in their novels and poetry, making it contemporary and applicable. They exposed Buddhist ideas to the college educated middle class youth who were exploring opportunity approaches of thinking and living. One can nod in agreement as we read Gary Snyder's influential 1969 book *Earth, House Hold*, in which he argues that any real social or political change within the international level would require a new type of recognition. He pointed to Buddhism because the way to awaken this new consciousness, requiring the insight into the basic self or void.

According to Snyder the definition of nature is multi-dimensional, and his three categories, fetch forth an appealing perception to conversation of the ecological crisis, in which contamination, industrial pollution, and the continuous emanation of greenhouse gases into the environment intimidated human life. Natural wildness is a boon for mankind if its benefits and usages are taken on the basis of humanity. Human life and Nature is a bond of forever. The atmosphere of rivers, rivulets, fountains and flowers is an antidote to human illness. The values of water, air, fire and earth have been playing an important role in human life right from evolution to exist time. The fair use of flora and fauna has helped the universe to attain the acme of success. But as civilization advanced Nature declined. Industrial Revolution and Scientific Progress destroyed the wonder of wild woods. The extra greed of mankind from Nature polluted it with bones which goaded Snyder.

The ecosystem of Nature is degenerated due to imbalance of Nature. The dehumanization of nature has appealed to the nature worshippers, environmentalists, scholars and earth lovers all over the globe for the restoration of its primitive alive charm. The preservation of Nature in its genuine stage is the need of hour. To restore Nature in its ancient value, Snyder peeps into Buddhism which provides peace and content of life on the level of medium path of Lord Buddha. The sense of meditation, casting off the yoke of corrupt human senses, love for all, the concept of 'All in Nothingness and Nothing in All', are the trends of Buddhism rested in dark and deep woods, in high mountains and meadows, appealed to Snyder as he illustrates in the poem 'Tomorrow's Song' from *Turtle Island*.

We look to the future with pleasure
We need no fossil fuel
Get power within
Grow strong on less.

In compare to other proponents of deep ecology, in which nature is a stagnant concept, outside of human culture, Snyder's views are far more nuanced. When speaking of nature, Snyder proposes three categories: nature, the wild, and wilderness. Bookchin and Snyder would be in agreement in defining nature. Bookchin, drawing from Hegel, sees human culture as a second nature, as nature rendered self-conscious. Thus both humans and non-human are an expression of nature. Similarly for Snyder, nature is the physical universe along with all its properties. The second category is the wild, which is the organic process and essence of nature. The wild is the ongoing process of the evolution of nature. Finally wilderness is that aspect of nature which exists outside of the human world.

Human society is an appearance of nature. It is natural. In contrast to civilization, wilderness is a part of the physical world that is largely free of human agency. Human greed and carelessness have endangered Wild nature at utmost level. 'Wild' is an important word. It relates to the procedure or situation of nature on its own, without any kind of human interference. It is a method, a state, not a place only. The wild is a place where wild process rules. It is the nature we have, which includes human culture, and the wilderness, which is beyond of human society. We have the wild that is an intricate practice of becoming. Ecology, for Snyder, is a vociferous shorthand term for complication in movement. The non-human nature has the capacity to transform the Humans more wild by getting in touch with it. Humans can reconnect with their biological selves, better understanding their place in the world through vesting time in the wilderness, ascertaining aspects of themselves exterior of human civilization.

Snyder's examination of nature is not either romantic or one-dimensional. He has spent an ample deal of occasion in hiking trails, and working as a fire for the complexity of the natural world as life in the world is not just eating berries in the sunlight. He asserts that he like to imagine a depth ecology that would go to the dark side of nature, the ball of crunched bones in a seat, the feathers in the snow, and the tales of insatiable appetite.

Snyder has recently mentioned that the direction of his future work after the completion of *Mountains and Rivers without End* will be religious and philosophical. He has also stated that after that work has been completed; he may donate his books to the local library and retire to the anonymity of friends and family life in the mountains. This desire and such a life are, of course, in the true oriental style. However if Snyder ends his poetic career after this decade, it would even then be premature to make any final pronouncements. Although the figure of Gary Snyder as a man may still overshadow that of Snyder as the poet, certain tentative statement can now be made. First of all, Snyder's reputation as a poet rests at present on *Myth and*

Texts, his most complete work; on a few excellent poems from *Riprap, The Back Country and Turtle Island;* on the cycle of poems in regarding wave and especially on the more recent sections where Snyder's work reaches synthesis in his magnum opus *Mountains and Rivers Without End.* In these poems, one finds directness and simplicity of statement, clarity and brilliance of mind, and profundity and depth of emotional range. In these instances, Snyder's poetry is of incredible power and beauty.

Snyder's stature both as a counterculture figure and an innovative and important mainstream, the poets place him in an uncommon position in contemporary literature. Although only briefly involved with the San Francisco Beat Movement of the 1950s. Snyder's influence on the Beats was nevertheless significant and he is often linked with them however, unlike most Beat writers, Snyder has also received extensive serious scholarly attention. Whereas a rejection of literary traditions characterizes much Beat writing, Snyder's work is seen to embody the influence of such literary giants as Walt Whitman, Ezra Pound and Ralph Waldo Emerson. His reputation as a significant author, though not uncontested, is largely secured.

An in-depth study of the overall observation of Snyder's literary career will sufficiently shows that environment, ecology, enlightenment and elements of eco-Buddhism are breathing waves of his lifeline. His internal and external identity is integrated so spontaneously with Wild Nature and Buddhist Belief as sunflower turns towards sun. Yet, the major predominant factors of Snyder's literary output with which one can justify his role as an important individual are many. So also for the systematic and sound study of Snyder's creativity a few features appeared outwardly among which the mention may be made of i.e. the Zen Buddhist follower, Ecological Consciousness, Buddhism as Naturo-friend, earnestness for Earthly Balance and Organic Unity and the relevancy of eco-Buddhism in exist situation. He is the champion of Buddhist spiritual thought to unveil the union of wisdom and emptiness which is the essence of Buddha-hood or well- known as Buddha-nature.

The environmental pollution has assumed such a large proportions nowadays that man has been forced to apprehend the presence of an ecological crisis. Going through global warming and the evil environmental disaster, Snyder's decade-old thoughts appeared as if a permanent solution to the global burning problem of today. On this, his imaginative and prescient of a humble, clear-minded humanity acknowledging its dependence at the properly being of different lifestyle forms could show very helpful. The seeds of this modern flowering of the Dhamma had been first planted by the writers of the Beat generation, and now blossomed as their best and most essential legacy. A number of the Beat writers, one of the greater serious students of Buddhism became Pulitzer Prize prevailing poet Gary Snyder, who studied Zen in Japan for many years during the 1950's and 1960's has now become the symbol of universal harmony.

Works cited -

1. Abbey, Edward. *Desert Solitaire: A Season in the Wilderness*. New York: McGraw- Hill, 1968.
2. Aitken, Robert. *A Zen Wave: Basho's Haiku & Zen*. Weatherhill, 1978.
3. Alan Watts, Nature, Man, and Woman, Vintage Books, 1970
4. Bates, Marston. *The Nature of Natural History*. Princeton: Princeton University Press, 1990.
5. Bill Devall, The Deep Ecology Movement, Natural Resources Journal, 20, 1980
6. Fromm, E., Suzuki, D. T. and De Martino R. *Zen Buddhism and Psychoanalysis*. New York: Harper and Row, 1970.
7. Joanna Macy, Dharma and Development, Kumarian Press, 1985
8. Wright, D.S. *Philosophical Meditations on Zen Buddhism*. Cambridge Studies in Religious Traditions 13. Cambridge University Press, 1998.

(42)

ICT BASED TEACHING LEARNING AND EVALUATION-NEED OF THE DAY

PROF. AVINASH R. PAWAR
Assistant Professor in Commerce, Shri Shivaji Art's Commerce & Science College,
Akot. Dist. Akola. Email - avipawar75@yahoo.in

ABSTRACT:

Teaching Shakespeare in a literature classroom has really become a pleasurable activity with use of projector/screen. A teacher can use as many resources as she/he has available at hand. A good kind power point presentation can serve the purpose. Different types of online resources can be supplied while teaching the splay like other no one may use picture/image from flicker or Google search. YouTube video, delivered lectures by scholars or can have an online workshop or webinar on the same topic. We also can show the Hollywood / Bollywood movies, based on the play; e.g. Bollywood movie Omkara is based on Hello. This creates an interest among students and causes to change their habits of learning student get complete and standing of the play with its various facets. It increases the level of confidence of students and their learning can be tested at the end of class by asking some questions, distributing handouts for the homework or they can be said to prepare a seminar or short presentation on the topic. Globalization has brought about an immense.

Change in every walk of life right from the habits of eating to habits of working how education sector can be exception to this alteration? It has gone thought a great change in the country like India we have moved from our ancient heritage education system of Gurukula to the modern day techno savvy university education system, Today, education has become all inclusive process covering almost all aspects of life social, cultural political, economic, national, etc. Present is the era of information communication technology (ICT) which made transmission and spread of information enabling the teaching/earning community to compete the global market with sustainable growth and development. Teaching learning and evaluation is the base and center of our education system.

INTRODUCTION:

The inclusion of Information and Communication Technology (ICT) issues in the curriculum and provision of these technologies in our schools have raised many issues of concern to educators, parents and politicians. Some of the most important issues are the role of the ICT in the curriculum, and how these issues should be addressed in the curriculum, and most importantly how they impact teaching and learning. The other issue of concern is the impact of these technologies in terms of increasing access to quality education. Learners in our schools today will require considerable ICT knowledge, skills and awareness if they are to be successful in the future. The economy will depend on a high level of ICT capability from its people if it is to develop technologically and to compete internationally.

OBJECTIVES:

- To enable students to acquire skills needed for the digital world for higher studies and gainful employment.
- To provide an effective learning environment for children with special needs through ICT tools.
- Promote critical thinking and analytical skills by developing self-learning skills of the learner leading to student-centric learning.
- To promote the use of ICT tools in distance education, including the employment of audiovisual medium etc.

RESEARCH METHODOLOGY:

Exploratory or formulate, descriptive Diagnostic, Experimental methods studies firstly before research methodology and after that comparison between above 4 methods and after that take a decision which usable method for research. In the research paper use the method of descriptive research collect the information use of primary and secondary sources. In this method for research working use of data don't collect at he personally secondary sources divided into parts.

OTHER INFORMATION:

WHAT IS ICT?

ICT is an acronym that stands for "information communication technologies". Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT considers all the uses of digital technology that already exists to help individuals, business and organization. It is difficult to define ICT because it is difficult to keep up the changes they happen so fast. ICT is concern with storage, retrieval, manipulation, transmission or receipt of digital data. The definition taken from the guidance in the QUA schemes of work for ICT is "ICTs are the computing and communication facilities and features that variously support teaching, learning and a range of activities in education."

THE IMPORTANCE OF ICT IN LEARNING:

One of the most critical questions asked by educators is: What is the long term impact of the introduction of ICT in the curriculum? Computes, in particular, have positive effects on learning and are motivating for learners (Reeves, 1998). They are accepted by more teaches than other technologies and are widely supported by administrators, parents, politicians, and the public in general. Reeves argue that computers increase equity of access, and reduce the time needed to accomplish a given set of objectives. One of the goals of the Ministry of Educating is equity of access to quality education for all; hence this technology is essential if we are to achieve this goal.

According to Reeves (1998) computer-based cognitive tools such as databases, spreadsheets, communication software, etc., have been intellectually developed to function is intellectual partners to enable and facilitate critical thinking and higher order learning.

With the aim to facilitate sharing and uptake of high quality ICT-based learning designs amongst academics in higher education, the Australian Universities Teaching Committee funded project,: Information and Communication Technologies (ICTs) and Their Role in Flexible Learning, examined a number of previously implemented high quality, ICT-based learning implementations to determine if the learning designs employed can be re-disseminated in the form of reusable guidelines, templates, and/or software tools. An evaluation instrument was developed to analyses the degree to which the learning designs have potential to foster high quality learning. This paper focuses on this

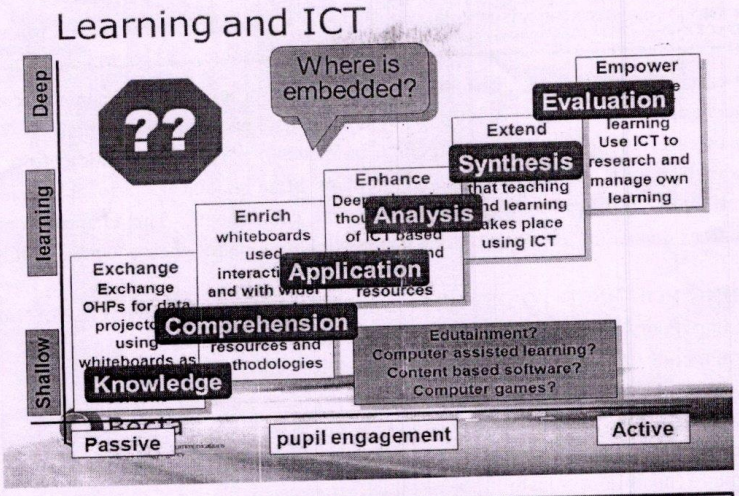
students. These tests are conducted in the group setting. The content coverage is poor and students cannot use them at their own. These tests are evaluated by the teachers and they may not give feedback immediately to each and every student. It may be due to this that students are unable to know their weakness and do not make any attempt to improve upon them. The ICT can be made use in the evaluation. One such attempt has been made by Sansanwal and Dahiya (2006) who developed Computer Based Test in Research Methodology and Statistics. It has been titled as Test your Understanding: Research Methods and Statistics. This test can be used by individual student to evaluate his learning. The student can instantaneously get the feedback about the status of his understanding. If the answer is wrong his even can get the correct answer. It goes a long way in improving the learning and teacher has no role to play in it. It is left up to students to use it. Such tests can be uploaded on the website for wider use. The students form other institutes can also make use of it. Not only the students even the teachers can also use it to assess their own understanding of the subject. If used by teachers before teaching the topic, they can prepare the topic properly. Such software can be used for internal assessment. Thus ICT can be used to improve the quality of pre as well as in-service teacher's training.

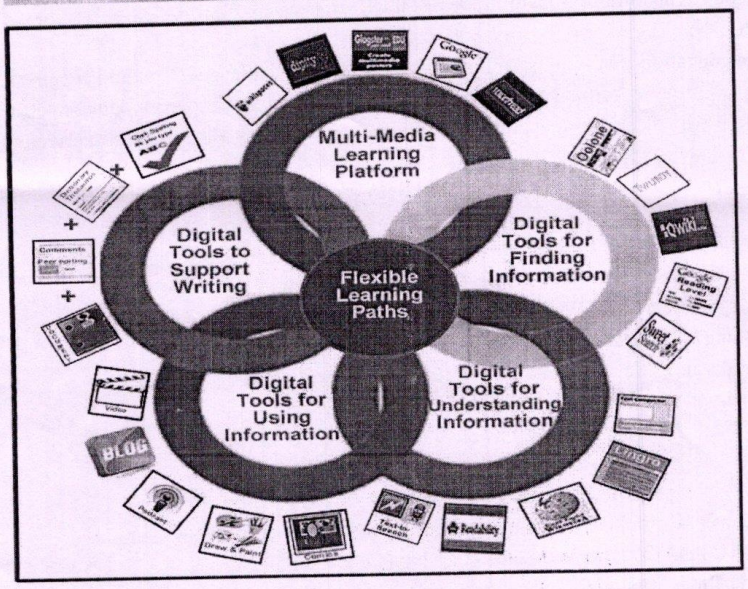
USE OF ICT IN TEACHING:

Teaching at School as well as Higher Education, mostly, concentrates on giving information which is not the sole objective of Teaching. Along with giving information, the other objectives are:

- **Developing understanding and application of the concepts.**
- **Developing reasoning and thinking power.**
- **Development of judgment and decision making ability**
- **Improving comprehension, speed and vocabulary.**
- **Developing self-concept and value clarification.**
- **Developing proper study habits.**
- **Developing tolerance and ambiguity, risk taking capacity, scientific temper etc.**

With the present infrastructure, class size, availability of teachers, quality of teachers, training of teachers, etc., it is difficult to achieve all the objectives. Further, most of the teachers use Lecture Method which does not have potentiality of achieving majority of above mentioned objectives. The objectives are multi-dimensional in nature, so for their achievement multiple methods should be used in an integrated fashion. At present ICT may be of some use. It is a well-known fact that not a single teacher is capable of giving up to date and complete information in his own subject. The ICT can fill this gap because. It can provide access to different sources of information. It will provide correct information as comprehensive as possible in different formats with different examples. ICT provides online interaction facility. Students and teachers can exchange their ideas and views, and get clarification on any topic from different experts, practitioners, etc. It helps learners to broaden the information base. ICT provides variety in the presentation of content which helps learners in concentration, better understanding, and long retention of information which is not possible otherwise. The learners can get opportunity to work on Amy live project with learners and experts from other counties. The super-highway and cyber space also help in qualitative improvement of Teaching Learning Process. ICT provides flexibility to learners which are denied by the traditional process and method. Flexibility is a must for mastery learning quality learning.





COMPARATIVE ANALYSIS OF POLICIES FOR ICT IN EDUCATION

Robert B Kozma International handbook of information technology and secondary education, 1083-1096, 2008 National policies and programs can be an important tool for the realization of ICTs promise in education and some of their major components are the focus of this chapter. The