EMERGING RESEARCH AVENUES IN SCIENCE, HUMANITIES, SOCIAL SCIENCES AND COMMERCE

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PREFACE

Science, humanities, social sciences and management have been impacted in recent years by a series of changes which have brought about new aesthetics, new social context and new strategies of management. This book is a reflection of the recent advances in the above-mentioned disciplines. There have been a few defining changes in these fields. Firstly, Science, Humanities, Social Sciences and Management have become interdisciplinary, taking inspiration from environmental studies, human rights, animal rights, digital humanities, natural sciences, life sciences, and international relations.

Among many other things, the concept of beauty has been redefined in various art forms with the artist and the critics getting engaged in a wider search for poetic and literary materials. Anything today has an aesthetic value, starting from the Pandemic to war. The conventional binary of beautiful and ugly has been ruptured in the contemporary era and poetry and art could spring out of the most unpoetic subjects. Race, gender and class are the other prominent issues shaping the cultural sensibilities of the present era. Writers and artists have also identified and subsequently interrogated many prejudices such as queer blindness, speciesism, ageism, ableism, and so on. Meanwhile, social sciences have forayed into unprecedented interdisciplinary engagements. Especially, in the backdrop of the growth of biotechnology, nanotechnology and information technology that have impacted everyday life. The world of business, too, has witnessed landslide changes with traditional business enterprises migrating into new media and digital platforms. Subsequently, categories such as seller, business and customer have been drastically realigned to the context of new experiences of remote buying and selling. This book is a reflection of all the above-mentioned trends in our society and business. The research articles and chapters included in this work reveal these tendencies, marking a significant departure from the conventional models in these domains which demand urgent attention of the academic world and the researchers.

- Editors

ACKNOWLEDGMENT

TABLE OF CONTENT

EFFECT OF TEMPERATURE ON DENSITY, VISCOSITY, REFRACTIVE INDEX AND MOLECULAR INTERACTION STUDY OF BINARY MIXTURES OF THE POLAR SOLVENT 2, 3 DICHLOROANILINE AND 2 ETHOXYEHENOL AT 25^0C, 30^0C, 35^0C, 40^0C

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Abstract:

A new binary mixture system of 2,3 Dichloroaniline (2,3-DCA) and 2-Ethoxyehenol (2-EE). Including those of pure liquids, over the entire composition range were measured at temperatures from 25 ^{0}C, 30 ^{0}C, 35 ^{0}C, 40 ^{0}C. at atmospheric pressure over the whole concentration range using DMA 35 portable vibrating density meter, viscosity by LVDL V-pro II Brook field viscometer and Abbe's refractometer. The physico–chemical properties of density, viscosity and refractive index for the binary mixtures have been determined for varying mole fraction of solvents components. We used to study the associational behaviour and molar refractivity of two weakly interacting liquids. These results have been discussed to study the type of mixing behaviour between the molecules. The obtained data were compared with those available in literature. The temperature dependences of the viscosities and densities for the system were described. To investigate the internal interactions of the binary mixtures. The trend of energetic and charge distribution of all ions and molecules involved in interactions between the 2,3-DCA and 2-EE.

Keywords: 2,3-DCA and 2-EE, Temperature Dependences, Molecular Interactions.

Materials:

2,3-Dichloroaniline (GC Grade) and 2-Ethoxyethanol is obtained from Sigma-Aldrich USA without further purification the two liquids according to their proportions by volume were mixed well and kept 6h in well stoppered bottles to ensure good thermal equilibrium. These liquids used as solute and solvent.

Introduction:

Density and viscosity are very important for obtaining the fundamental data of various molecular liquids mixtures and useful in chemical engineering designs with diverse applications. Recently, the thermophysical properties of binary liquid mixtures There are many reasons to study the thermophysical data of binary mixtures. The most importance of all is to provide information of the intermolecular interplay among liquid molecules [1] for properly designed industrial processes. To understand the type and intensity of intermolecular interplay, the relevance between the thermodynamic behavior and physicochemical properties of the binary mixtures were reported [2-6]. However, it is regretful that the study about thermophysical data

and intermolecular interplay in 2,3-DCA+2-EE binary mixtures are deficient. Study of 2,3-DCA+2-EE binary mixture has not been carried out in the past. As such it was felt that the present study provides most useful information regarding the molecular interaction and the formation of complexes in the binary mixture of 2,3-DCA+2-EE. 2,3-Dichloroaniline is used starting material for synthesis of bioactive Schiff's bases, azetidinones, thiazolidinones, pyrazolines, acetohydrazides and in coupling reactions. It is used in preparation of poly (2,3-dichloroanline-Co-anline) which control conductivity in broad range from 10^{-9} to 10^{-2} S /cm. Also, it is used in preparation in dyes, azo-dyes, isocynates and in plant protection agent [7]. 2-Ethoxyethanol (2-EE) [8] commercially known as "Cello solves" and widely used as complexes of solvents, co emulsifiers, stabilizers of emulsions, varnish removers, degreasing solutions, used in printing industries and an additive for jet fuel to prevent ice build-up.

Experimental:

All the measurements are carried out at temperatures 25^0C, 30^0C, 35^0C, 40^0C by circulating ethyleneglycol + water around the liquid cell and temperature is thematically controlled with $+0.50^0$C thermocontrole using Nevitech pvt. Ltd. Mumbai India. The whole of the equipment is standardized with the help of standard materials like methanol and ethyleneglycol + swater (40:60). The densities, viscosities, and refractive index of the pure components and their binary mixtures are measured by densities, viscosities and refractive index of the pure components and their binary mixtures were measured by using DMA 35 portable vibrating density meter. Anton paar Autria (Europe) having accuracy of density 0.001 g/cm^3, repeatability 0.0005 g/cm^3 and resolution 0.0001 g/cm^3[9], viscosity by LVDL V-pro II Brook field viscometer (USA) [10] and Refractive indices for sodium D-line were measured by using Abbe's refractometer having accuracy up to the third place of decimal [11].

Results and Discussion:

Table 1: Mole fraction (X) of 2,3-DCA and 2-EE, Density (ρ), viscosity (η) and refractive index (η) of binary mixture liquid system of 2,3-DCA+2-EE at 25^0C, 30^0C, 35^0C, 40^0C

Mole Fraction	ρ gm/cm³				η CP				N			
X	25^0C	30^0C	35^0C	40^0C	25^0C	30^0C	35^0C	40^0C	25^0C	30^0C	35^0C	40^0C
00000	0.9291	0.9250	0.9137	0.9013	2.34	2.14	1.95	1.70	1.406	1.401	1.393	1.373
0.1048	0.9511	0.9825	0.9818	0.9750	3.12	2.85	2.34	1.97	1.420	1.410	1.400	1.393
0.2147	1.0821	1.0520	1.0382	0.9112	3.92	3.31	2.75	2.27	1.460	1.450	1.444	1.401
0.3298	1.1212	1.1125	1.0945	1.0552	4.81	3.52	3.24	2.62	1.480	1.470	1.459	1.430
0.4506	1.1314	1.1230	1.1121	1.1003	5.67	4.26	3.65	2.95	1.521	1.510	1.494	1.460
0.5775	1.1561	1.1423	1.2043	1.1844	6.32	4.73	3.70	3.14	1.550	1.530	1.514	1.500
0.7110	1.2801	1.2701	1.2603	1.2407	6.43	5.01	3.74	3.41	1.580	1.560	1.540	1.520
0.8516	1.3612	1.3502	1.3106	1.3015	6.55	5.36	4.10	3.60	1.590	1.580	1.556	1.530
1.0000	1.3751	1.3656	1.3514	1.3410	6.92	5.58	4.36	3.92	1.601	1.592	1.574	1.560

This paper reports the density, viscosity and refractive index data of the binary system of 2,3-DCA with 2-EE over the entire binary composition range at T=25^0C, 30^0C, 35^0C, 40^0C and

atmospheric pressure are reported in table 1. Table 1 show that the density, viscosity and refractive index values gradually decrease with increasing all temperature at the same concentration the density, viscosity and refractive index values increasing with increasing mole fraction of 2,3-DCA at the all temperature [12]. Density, Viscosity and refractive index depend on molecular weight and nature of solution and all values decrease with the increase of temperature as evidenced in Table 1.

Conclusion:

Finally, it can be concluded that the table used for interpolating the experimental data measured in this work provide good results as can be seen by inspecting the values obtained. All the data give more reliable results and are helpful in deducing the internal structure of associates through the fitted values of density, viscosity and refractive index in a hypothetical pure associate and observed dependence of concentration on the composition of a binary mixture.

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SYNTHESIS OF NOVEL TETRAKETONE DERIVATIVES CATALYZED BY BAEL FRUIT EXTRACT

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Abstract:

Tetraketones are one of the most important classes of oxygen-containing organic compounds in the field of synthetic organic chemistry due to their various biological applications. Bael fruit extract was applied as an efficient and ecofriendly catalyst for the synthesis of tetraketones via Knoevenagel–Michael cascade reaction of aromatic aldehydes with 1, 3-cyclic diketones in water ethanol mixture. This protocol has several advantages over traditional chemical synthesis, including simple set-up, simple handling, nontoxicity of the catalyst, low cost, and environmental friendliness.

Keywords: Multi-component Reaction, Tetraketones, Green Chemistry, Dimedone, Active Methylene Compound.

Introduction:

Tetraketone is oxygen containing organic compound and first reported in 1894 by Merling during synthesis of cyclohexane -1, 3-dione from resorcinol.These compounds have a variety of biological and therapeutic effects, including the inhibition of enzymes like tyrosinase and lipoxygenase as well as antibacterial action.[1-3] They have well documented for being used as biological and therapeutic agents against inflammation, asthma and fungal infection.[4] They also investigated for laser technology.[5, 6] A wide variety of physiologically active heterocyclic compounds, such as acridinediones, xanthenediones and thiaxanthenes are synthesized using tetraketones as key intermediates.[7-9] One of the simplest methods to make these compounds is to condense aldehydes with cyclic 1,3-diketones. Various catalysts including Yb (OTf)$_3$–SiO$_2$,[10] nano Fe/NaY zeolite,[11] and recently urea under ultrasound,[12] PVP-stabilized Ni nanoparticles,[13] Al/MCM-41,[14] nano ZnAl$_2$O$_4$[15] have been developed for this reaction.
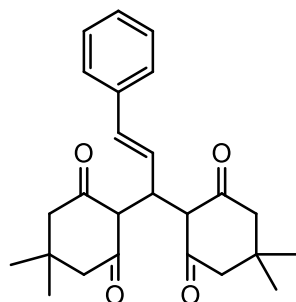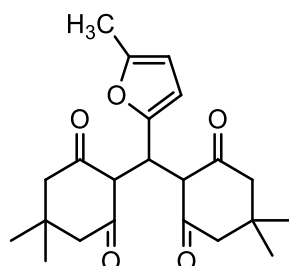
(Antioxidant)   (Lipoxygenase inhabitor)   (Anti-fungal)
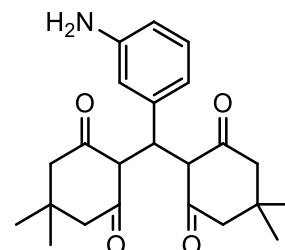
The huge potential of tetraketone derivatives as drugs encouraged among the organic chemists to explore the different methodology for the synthesis tetraketone derivatives. Herein, we report an efficient methodology for the synthesis of bisindolyl methanes by the reaction of

various pyridazine bearing aldehyes, dimedone or 1,3-cyclohexanedione using choline acetate in ethyl alcohol and water at room temperature condition and also natural basic catalyst Bael fruit extract in ethyl alcohol and water at room temperature condition.

Tetraketones are important intermediates in the synthesis of xanthenediones, acridinediones, benzopyrans, and thioxanthenes. These heterocyclic compounds exhibit a wide range of biological activities. Tetraketones also have antioxidant properties and can help with the healing of inflammation and asthma. Tetraketones remained the centre of attention due to their broad-spectrum lipoxygenase, tyrosinase, and protein kinase inhibitory activity. Because of the remarkable chemical and biological properties of the tetraketone moiety, the development of useful methods for obtaining functionalized tetraketones with distinct substitution patterns is a developing area in organic synthesis.

Synthesis of pyridazines bearing tetraketone was achieved by using Bael Fruit Extract (BFE). The synthesis of tetraketone derivatives were done by the condensation reaction between aldehydes and 1, 3-cyclohexadiene in presence of BFE in aqueous ethyl alcohol: water (1:1) mixture at room temperature condition
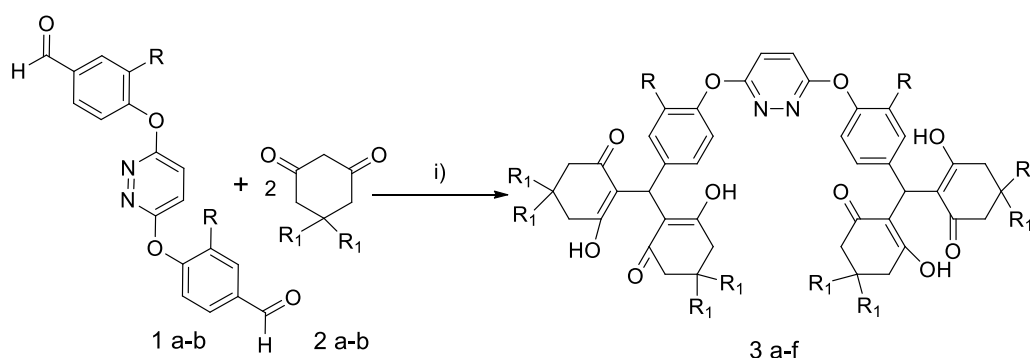
Scheme 1: Reagent and conditions: (ii) BFE, EtOH: H₂O, stir, rt.

Experimental:

General: All the reagents were acquired from Spectrochem or Aldrich chemicals and did not further purified. Determined melting points are not corrected. ¹HNMR and ¹³C NMR spectra were recorded on a **Bruker Avance III Hd 500 MHz spectroophotometer.** The Brucker (Impact II UHR-TOF) mass spectrometer was used to record the mass spectra. IR spectra were recorded on a Perkin Elmer spectrophotometer.

General procedure for the synthesis of tetraketone derivatives: A mixture of aromatic aldehyde (1 mmol), 1, 3-cyclohexanedione (2 mmol) was stirred in water: ethanol (1:1) mixture (5 mL) in the presence of choline acetate (10 %) at room temperature for an appropriate period of time (Table 4). After completion of reaction, product was separated (the reaction mass treated with water and filtered) and purified by recrystallization from appropriate solvent to afford the corresponding tetraketones.

General procedure for the synthesis of bis-tetraketone derivatives: A mixture of substituted bisaldehyde (1 mmol), 1, 3-cyclohexanedione (4 mmol) was stirred in water: ethanol (1:1) mixture (5 mL) in the presence of BFE (3 mL) at room temperature for an appropriate period of

time (Table 4). After completion of reaction, product was separated (the reaction mass treated with water and filtered) and crude was purified by recrystallization from appropriate solvent to afford the corresponding bistetraketones.

General procedure for the synthesis of preparation of BFE: The rind of bael fruits was obtained from the local area for this study. The dry rinds (100 g) were washed and dried in an oven. The dried rinds were broken into small pieces and thermally heated for 2 hours at 900 ^{0}C to produce white soft ash (4.8 g). The resulting ash was stirred in 25 mL of water for 1 hour. The mixture was then filtered to obtain a clear BFE extract.

General procedure for the synthesis of ChOAc: A mixture of ChCl (20 mmol), sodium acetate (20 mmol) and methanol (25 mL) was stirred at 60 ^{0}C for 2 h. Reaction mixture was filtered and methanol was evaporated in high vacuume until the weight of the residue was constant to obtain ChOAc.

Characterization:

Spectra of bis-tetraketone derivative (Table 2, Entry 1)
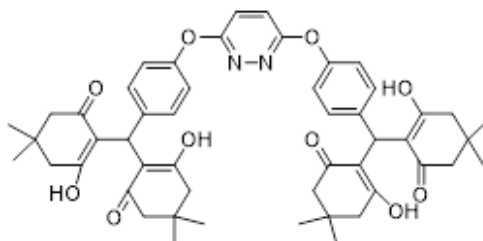
IR (ν max, cm−1): 3060, 2952, 2870,1571, 1440, 845

^{1}H NMR (500 MHz, CDCl$_3$): δ 11.98 (s, 2H, OH), 7.49-7.08 (10H, Ar-CH),

5.50 (s,2H, CH), 2.46-2.32 (m, 16H) , 1.20 (s, 12H, CH$_3$), 1.12 (s, 12H, CH$_3$)

^{13}C-NMR (125 MHz, CDCl$_3$): δ 191.03, 189.24, 162.10, 152.32, 137.46, 131.66, 126.32, 112.34, 47.22, 46.62, 32.73, 31.47, 29.46, 27.55, 22.40

HRMS: m/z 845.9876 (M+H)$^+$.

Spectra of bis-tetraketone derivative (Table 2, Entry 3)
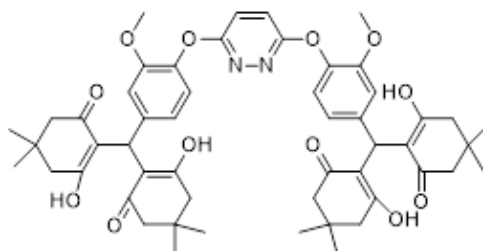
IR (ν max, cm−1): 3054, 2928, 2878,1550, 1430, 847

^{1}H NMR (500 MHz, CDCl$_3$): δ 12.42 (s, 2H, OH), 7.85-7.51 (8H, Ar-CH),

5.52 (s,= 2H, CH), 3.78 (s, 6H, CH$_3$), 2.22 (s, 16H), 1.07 (s, 24H, CH$_3$)

^{13}C-NMR (125 MHz, CDCl$_3$): δ 190.41, 187.86, 163.23, 152.78, 140.35, 131.71, 122.93, 117.28, 115.75, 114.53, 56.10, 46.04, 44.01, 31.57, 30.42, 29.47, 28.28, 23.65

HRMS: m/z 906.0428 (M+H)$^+$.

Result and Discussion:

Here in we describe an efficient protocol for the synthesis of bis tetraketone derivatives from aldehydes and 1, 3-cyclohexanedione at room temperature by using BFE as a catalyst. For this methodology catalyst used was obtained from renewable natural source and solvent system used was water–ethanol in the ratio of 1:1. Initially 4, 4'-(pyridazine-3,6-diylbis(oxy) dibenzaldehyde (1 mmol), 1,3-cyclohexandion (4 mmol) were selected for the optimization of the reaction conditions at room temperature in 5 ml water ethanol (1:1).

The model reaction was carried out in the presence of various organic solvents and the results are shown in Table 3. After two hours in aqueous medium, the model reaction produced only 50 percent of the expected product (Entry5). The reaction could not proceed well when DCM or acetonitrile were employed as the solvent, and even after one hour, the yield was low (Entry 3, 4). It was observed that ethanol and methanol, two polar protic solvents, were effective solvents for the synthesis. Product (34b) was formed in the solvent methanol in 0.5 hours with a yield of 70% (Entry1), and the solvent ethanol reaction achieved a yield of 75% (Entry2). However, there was a considerable improvement in the conversion of reactants into product after 35 minutes when ethanol and water mixture was used as the solvent, with a product yield of 85%. (Entry6).

Table 1: The screening of solvents for the synthesis of bis-tetraketone derivatives[a]

Entry	Solvent	Time (min)	Yield (%)
1	CH_3OH	45	70
2	C_2H_5OH	45	75
3	CH_2Cl_2	90	40
4	CH_3CN	90	47
5	H_2O	120	50
6	$C_2H_5OH:H_2O$	35	85
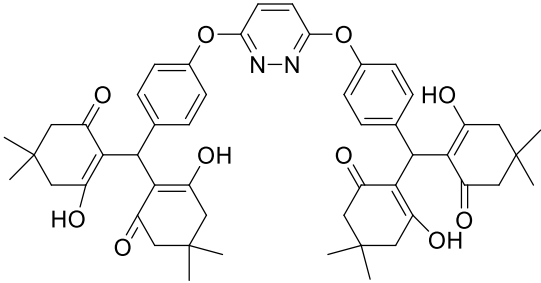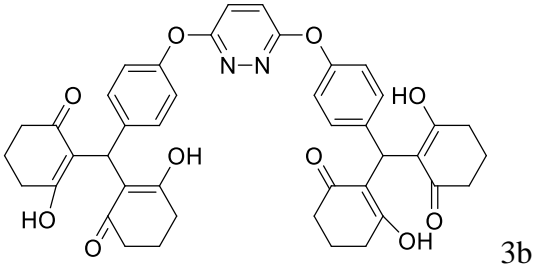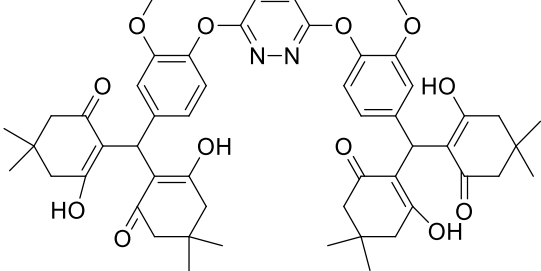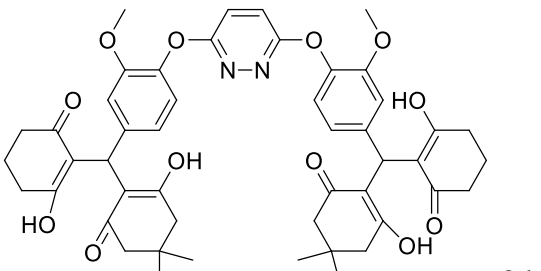
[a]Conditions: 4,4'-(pyridazine-3,6-diylbis(oxy) dibenzaldehyde (1 mmol), 1,3-cyclohexandione (4 mmol), BFE (3 mL), solvent (3mL) at room temperature.

We Therefore, continued our research employing a BFE catalyst at ambient temperature in the solvent of ethanol:water (1:1). Different pyridazine-based aldehydes were used to make the respective bis-tetraketone derivatives to assess the methodology's applicability under optimal reaction conditions. All the reactions proceeds efficiently offering excellent yield of the products (Table 2, Entries 1-4).

Conclusion:

We have developed an environmentally benign method for the synthesis of novel bis-tetraketones derivatives using BFE as a catalyst in ethanol water mixture at room temperature. High yield, simple work up procedure, efficient catalyst obtained from renewable resources and a short reaction time are some of the advantage of the present method.

Table 2: Synthesis of bis-tetraketone derivatives using BFE catalyst

Entry	Product	Time (min)	Yield (%)	M.P. (^{0}C)
1	3a	45	80	172
2	3b	35	85	214
3	3c	40	78	190
4	3d	35	80	175

Condition: Pyridazine based dibenzaldehyde (1 mmol), 1,3-cyclohexadiene (4 mmol), EtOH:H$_2$O (5 mL), BFE (3 mL) at room temperature condition.

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GREEN SYNTHESIS OF AMINO MERCAPTO TRIAZOLE ANALOGS AND THEIR COMPUTATIONAL STUDIES

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Abstract:

Microbial infections lead to several dreaded diseases caused by bacteria, viruses, fungi etc. which are fatal to humans [1]. Recently the epidemic of Covid-19 proved this [2]. Hence it becomes very important to prepare/synthesized the medicinal drugs which can overcome these diseases. The unique synthesized moiety of triazole was used to prepare the Schiff's bases and their reductive products [3]. The reduction of Schiff's bases carried out by using mild reducing reagent. Reductive amination was carried out using ultrasound sonication method [4]. It shows significant reduction in reaction time, no side products simplicity of workup procedure and effective method. Synthesized compounds were characterized by IR and NMR spectroscopic techniques. Structures of the synthesized molecules were docked to the target protein molecules of disease producing pathogens using AutoDock Vina, a docking tool. The molecular docking showed good score of bioavailability of 0.55. Swiss ADME studies shows the passive gastro-intestinal absorption and no brain permeation.

Keywords: Triazole, Reductive amination, Sonication, Computational study.

Introduction:

Microbial infections are major causes of diseases which affects humans as compared to diseases or disorders caused by pollution, heredity. There are varieties of diseases caused by micro-organisms such as bacteria, viruses, fungi etc. These diseases range from very mild seasonable effects on human health to fatal effects. Some new diseases are developed by the micro-organisms [5]. Therefore, there lies the necessity to prepare effective drugs which can prevent/cure these diseases. The resistance shown by pathogens towards the drugs is another factor which force the synthesis of new drugs.

Many important pharmacological drugs contain triazole nucleus. Triazole nucleus show very wide variety of efficacy to treat various diseases which may cause by fungus, viruses, bacteria, etc. different kinds of micro-organisms and other physiological disorders. Triazoles can be use as antibacterial [6,7], antitumor [8], antimicrobial [9], anti-inflammatory, anticonvulsant, antidiabetic, anti-viral [10], anti-fungal drug [11].

Also, Schiff's bases are very important compounds and show wide variety of pharmaceutical activity [12-14]. The Schiff's bases of triazole are another very prominent medicinal drugs found under study due to presence of triazole moiety itself. The aim of this study was to synthesize the various Schiff's bases of triazole nucleus, to carry out their reduction

using greener methos such as sonication using mild reducing agent like tri-acetoxy sodium borohydride and computational study of these compounds with the help of various computer applications available.

Synthesise Experimental:

Scheme 1 :

carbon disulphide   hydrazine hydrate   thiocarbohydrazide
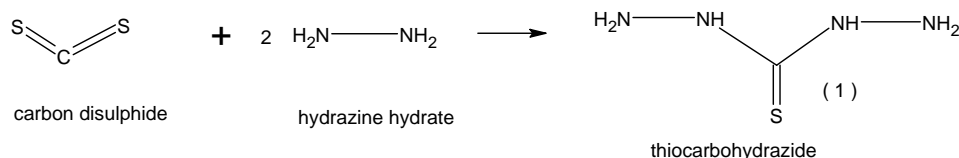
In a round bottom flask of 500 ml fitted with reflux container, 2.06 moles of 99.9% hydrazine hydrate added and stirred at 24 ^{0} C. This vigorously agitated for 60 min, while 25 ml of CS_2 was added slowly to it. After which 100 ml methanol is added. It is then reflux for about 8 hours maintaining a temperature constant of 60 ^{0} C. The reaction mixture was cool to room temperature and kept overnight. The needle shaped crystals of thiocarbohydrazide (1) formed were separated by filtration. The crystals obtained were washed with methanol and dried [15].

Scheme 2:

thiocarbohydrazide   Acetic acid   4-amino-5-methyl-4*H*-1,2,4-triazole-3-thiol
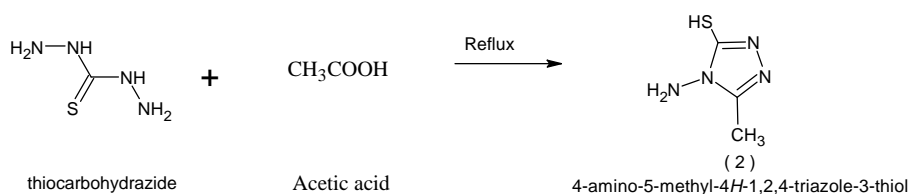
The mixture of compound (1) (0.142 mol, 15 g) and glacial acetic acid (25 ml) was refluxed for 8 hours. The reaction mixture cools to room temperature for a while, at which white solid separates out. The solid was filtered and recrystallized from ethanol to give compound (2)[16].

Scheme 3:

4-amino-5-methyl-4*H*-1,2,4-triazole-3-thiol   Aldehyde   3 (a - l)
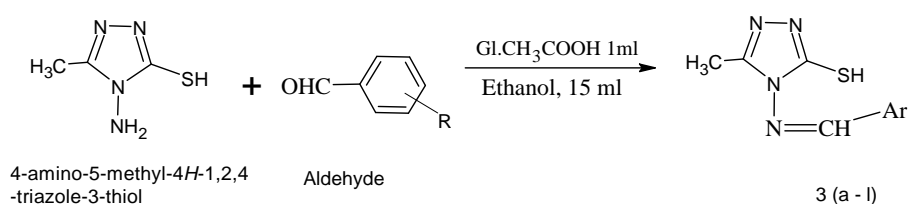
Equimolar amounts of AMMT (2) (0.00385 mmol), substituted benzaldehydes (0.00385) and ethanol (15 mL) were refluxed for about 8 hrs (Scheme 3) in presence of few drops of glacial acetic acid. The completion of condensation of amine and aldehyde [17] was monitored by TLC. After completion of the reaction, the solid product was filtered after cooling and dried on reflect heating. The crude product was recrystallized from ethanol [18].

The Schiff base (0.002 mol) dissolved in 10 ml of methanol. The solid Tri-acetoxy sodium borohydride (0.20 g) was added to the above mixture. The mixture further sonicated for about 18-20 minutes and allowed to stand for few min. The excess of solvent removed by

evaporation. The solid obtained washed with cold water and recrystallized from ethanol to give compound (4)[19].

Scheme 4 :

3 (a - l)   4 (a - l)
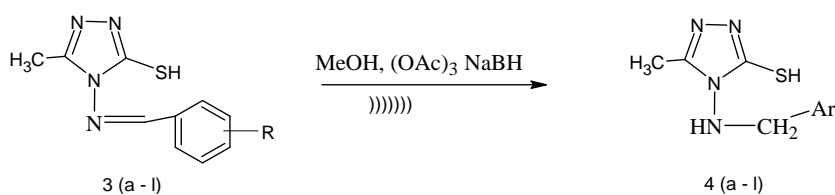
Reductive amination of Schiff's bases of triazole using triacetoxy sodium borohydride

Sr. No.	Compound	Molar Mass	Ar	Conventional Refluxing	Sonication
4a	C10H11N5SO2	265.230		1 hr	18 min
4b	C11H14N4SO	250.234		1 hr	16 min
4c	C11H14N4SO2	266.234		1 hr	16 min
4d	C10H12N4S	220.224		1 hr	16 min
4e	C10H12N4SO	236.223		1 hr	18 min
4f	C10H12N4SO	236.223		1 hr	17 min
4g	C12H17N5S	263.253		1 hr	18 min
4h	C10H11N4SBr	299.128		1 hr	16 min
4i	C8H10N4SO	210.201		1 hr	16 min
4j	C10H11N5SO2	265.230		1 hr	18 min
4k	C12H14N4S	246.246		1 hr	18 min
4l	C14H14N4S	270.268		1 hr	16 min

Computational analysis:

a) Ligand preparation:

The compounds i.e Schiff's bases of triazole and reductive products of these Schiff's bases were synthesized and used for the computational study against proteins of various disease producing pathogens such gram +ve bacteria (*Staphylococcus aureus, Bacillus subtilis*) and gram -ve bacteria (*Escherichia coli, Pseudomonas aeruginosa*) [20]. The molecular structure of these ligand were converted to PDB format using *Avogadro 2* app [21].

b) Preparation of Target Protein:

The proteins of gram +ve bacteria (*Staphylococcus aureus* (PDB ID:2ZCO), *Bacillus subtilis* (PDB ID:2CFX)) and gram -ve bacteria (*Escherichia coli* (PDB ID:1COU), *Pseudomonas aeruginosa* (PDB ID:3OSV)) were refered, which is repository of protein data, in PDB format. The protein receptor further prepared by removal of water molecule, adding polar hydrogen atoms, adding charges and atoms, then converted into PDBQT form using Auto Dock Tool -1.5.7[22].

c) Molecular Docking:

Table 1: The molecular docking score[27]

Docking scores (kcal/mol)				
	Gram- positive		Gram-negative	
Compound	***S. aureus***	***B. subtilis***	***E. coli***	***P. aeruginosa***
	2ZCO	**1SNN**	**1CVU**	**3OSV**
4a	-7.9	-6.8	-7.7	-7.3
4b	-7.3	-6.3	-7.2	-6.5
4c	-7.5	-6.4	-7.5	-6.9
4d	-7.1	-6.4	-6.7	-6.2
4e	-6.4	-6.4	-6.9	-6.6
4f	-6.3	-6.4	-7.1	-6.0
4g	-6.7	-6.2	-6.9	-6.0
4h	-7.9	-6.8	-6.9	-6.4
4i	-5.3	-5.5	-6.3	-5.9
4j	-6.6	-6.5	-7.0	-6.0
4k	-7.6	-6.2	-7.4	-6.1
4l	-8.4	-7.8	-7.8	-7.3

All the synthesized drug molecule structures were docked to the target protein molecules of disease producing pathogens using Auto Dock Vina 1.5.7, a docking tool [23,24]. For this process the Grid map optimization is done. The Grid Box co-ordinates can be saved so that ligand/synthesized drug molecules can be dock exactly at that position. There is alternative way called as blind docking which can be use. The use of blank docking is to find out other probable sites on which ligands can be dock to the target protein molecules. In this study blank docking

processes [25] were used to find out positions as well as the highest binding energies [26]. Molecular docking applied at different stages for the drug designing/drug preparation such as to predict binding mode of known ligand, to identify novel or potent ligands, to find binding affinity. Different algorithms used to predict the biological activity of compounds by studying interactions between ligands and targeted pdb proteins of microorganisms. Molecular docking produces valuable data related to location of binding pocket, hydrogen bonding, etc. It can be compared with instrumental analysis.

Molecular docking generally used to find out virtual screening of ligands or the synthesized drug molecule to targeted protein of pathogenic micro-organisms. It is useful to determine binding affinities by following various steps such as preparing PDBQT files for proteins and ligands, Grid Box optimization, etc. The proteins in this study were kept rigid and ligands flexible.

d) Visualization and Molecular Interactions:

The molecular interactions can be viewed using various visualization tools such as PyMOL, BIOVIA, Discovery Studio Visualizer etc. 2D and 3D interaction plots of ligand and protein were derived. The hydrogen bond interactions, were studied, visualized. The binding affinity of the ligand-protein is the resultant of all such interactions and binding energy existing between them. The various conformations of ligands viewed using visualization tools and their positional pockets on the protein[28].
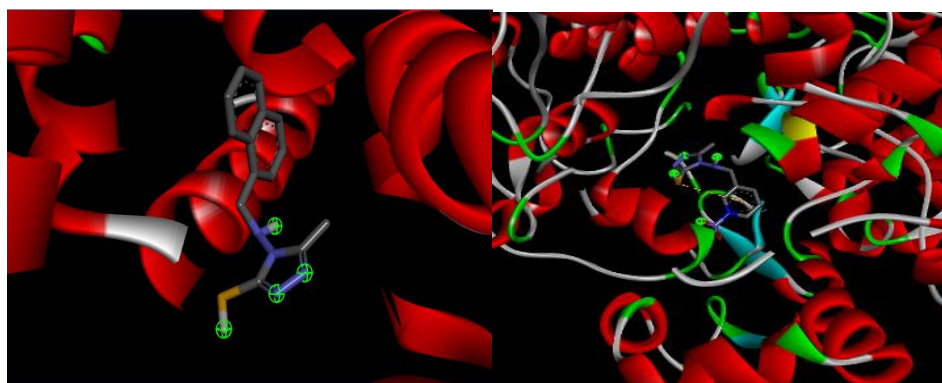
Fig. 1: 3D Interaction of 4l with target protein of 2ZCO and 3D interaction of 4a with target protein of 1cvu.
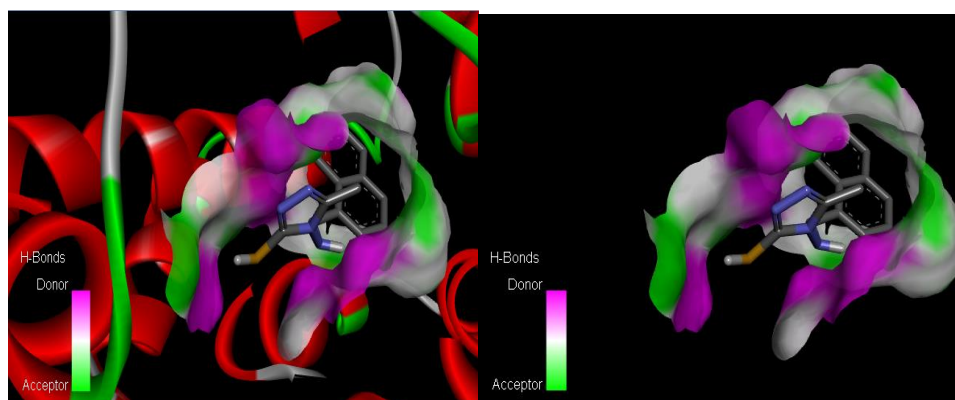
Fig. 2: H-bonding 4l with target protein of 2ZCO.
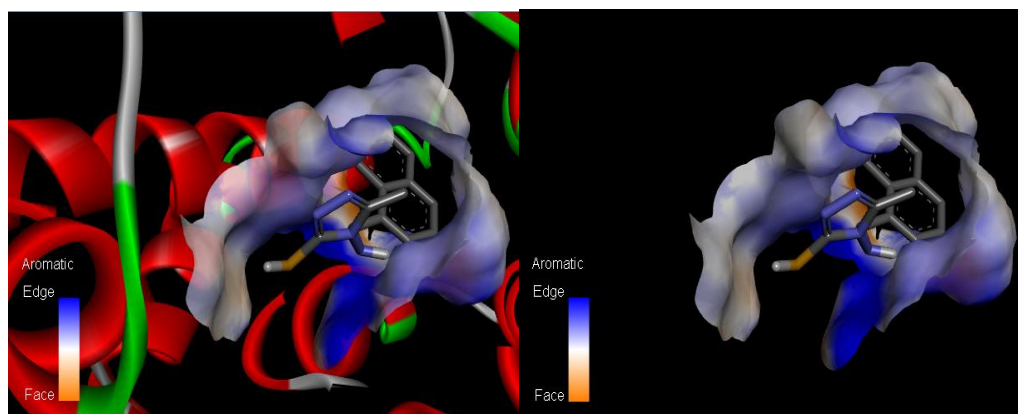
Fig.3: Aromatic character of 4l with target protein of 2ZCO.
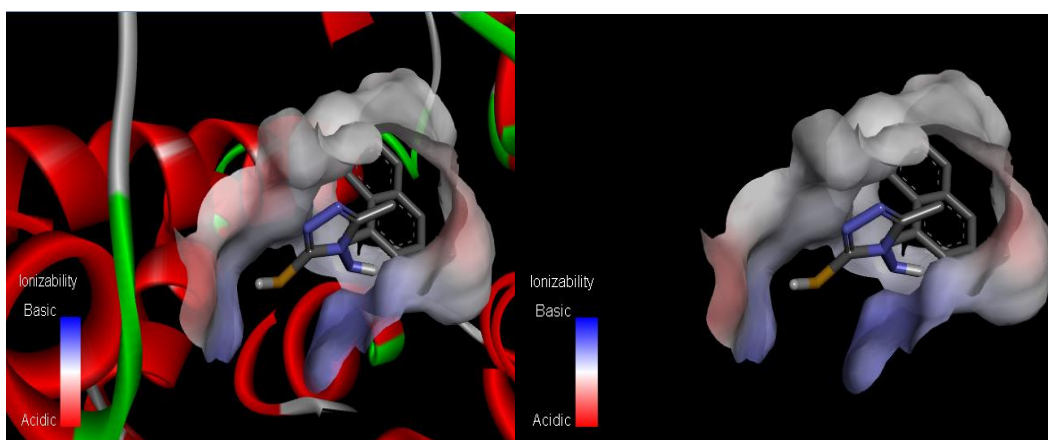
Fig. 4: Ionizability of 4l with target protein of 2ZCO.
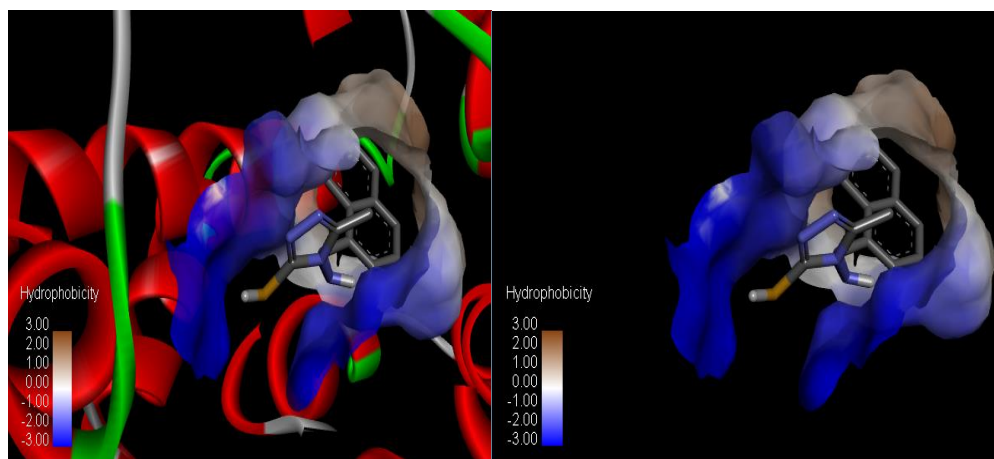
Fig. 5: Hydrophobic character of 4l with target protein of 2ZCO.
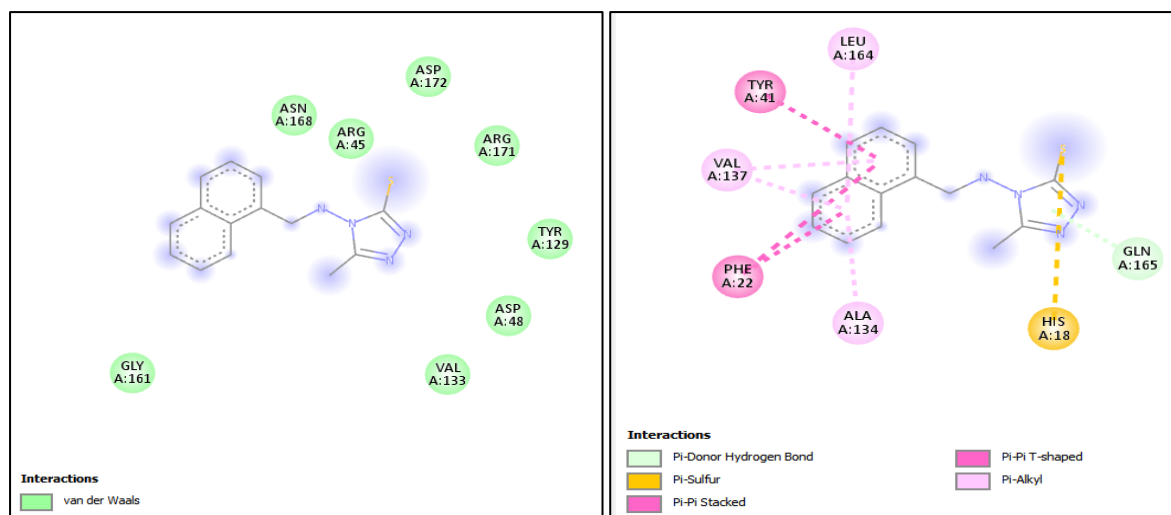
Fig. 6: 2D interaction of 4l with target protein of 2ZCO.
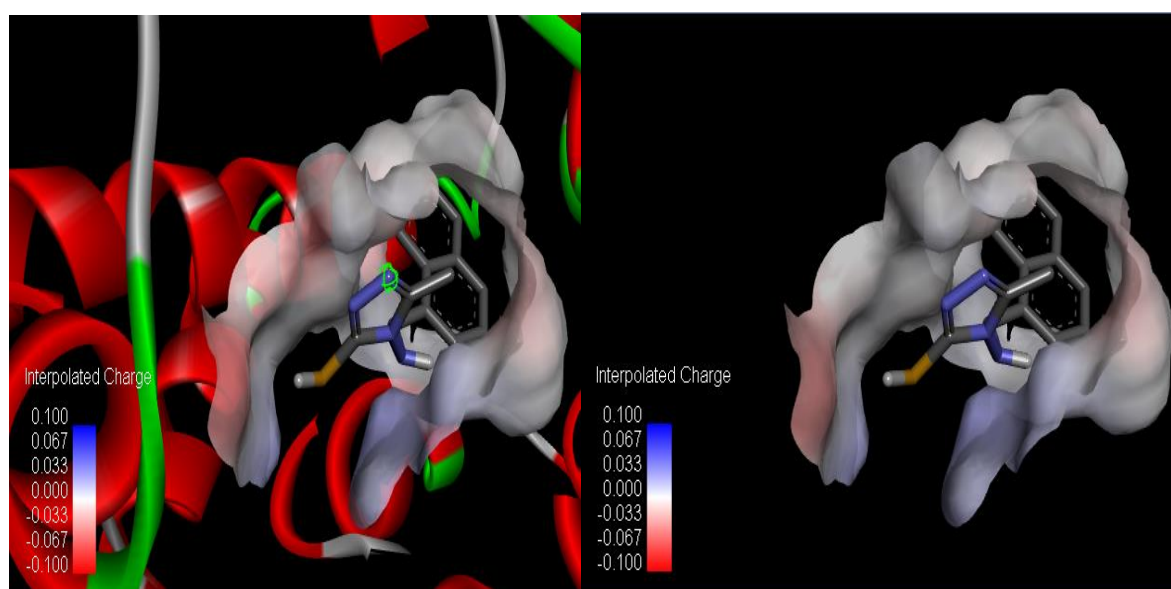
Fig. 7: Interpolated charge of 4l with target protein of 2ZCO.

ADME analysis:

Large number of drug candidates synthesized fails to act as drug against expected pathogenic micro-organisms. There is need to first find out possible drug candidates and their drug likeness during discovery phase. Now a days it is done by using various online computer aided tools such as SWISS ADME [29]. This generally done to avoid loss of time, chemicals, manpower, expenditure etc. In this adsorption, distribution, metabolism, and excretion (ADME) properties were studied at the time of discovery. Pharmacokinetics allows one to study drug's ability to permeate blood brain barrier (BBB), adsorption from Gastro-intestinal tract (GI), obtained from BOILED EGG model. BOILED-Egg method works by processing the polarity and lipophilicity of synthesised/designed molecules. It is fast, reproducible, and instinctive. It also helps to predicts whether drug-candidate can act as inhibitor against several protein enzymes.

Pharmacokinetics:

The Schiff's bases of triazole, from the table-2 showed that they are inhibitors of CYP1A2, whereas some of them are inhibitors of CYP2C19 also. All the studied compounds showed high GI absorption. There is no violation of Lipinski rule of five shown by all the ligand molecules. Some of the ligand molecules but violated the Leadlikeness. The total polar surface area (TPSA) values are in range of 81.54-127.36 (Table-3). The quite good 0.55 oral bioavailability score was achieved in the docking process.

Table-2: Pharmacokinetic profile of the compounds.

Molecule	GI absorption	BBB permeant	CYP1A2 inhibitor	CYP2C19 inhibitor	CYP2C9 inhibitor	CYP2D6 inhibitor	CYP3A4 inhibitor
4a	High	No	Yes	Yes	No	No	No
4b	High	No	Yes	No	No	No	No
4c	High	No	Yes	No	No	No	No
4d	High	No	Yes	Yes	No	No	No
4e	High	No	Yes	No	No	No	No
4f	High	No	Yes	No	No	No	No
4g	High	No	Yes	No	No	No	No
4h	High	No	Yes	Yes	No	No	No
4i	High	No	Yes	No	No	No	No
4j	High	No	Yes	Yes	No	No	No
4k	High	No	Yes	Yes	No	No	No
4l	High	No	Yes	Yes	Yes	No	No

Table-3: Lipophilicity and physiochemical property profile [30]

Molecule	4a	4b	4c	4d	4e	4f	4g	4h	4i	4j	4k	4l
WLOGP	1.18	1.28	0.99	1.28	0.98	0.98	1.34	2.04	0.87	2.04	1.83	2.43
TPSA	127.4	90.77	111	81.54	101.8	101.8	84.78	81.54	94.68	81.54	81.54	81.54

It analyzes the various points such as drugs likeness, permeation of Blood Brain, Total polar surface area [31], GI absorption analysis. The ADME analysis let know if a drug candidate is having pharmacological effect and provides specific targets for future research.

Brain penetration (BBB) and gastrointestinal absorption (HIA) study:

The BOILED-Egg model generally indicates the BBB and HIA evaluation where the Blue dots (PGP+) shows the molecules to be effluated. The Red dots (PGP-) addresses the molecules not to be effluated by the P-glycoprotein from central nervous system. The Yellow (yolk) region indicates high likelihood of brain penetration. The White region shows the region having passive gastrointestinal absorption. The plot of WLOP versus TPSA in figure -8, showed all the synthesized molecules (4a to 4l) having high HIA passive absorption and not accessing the brain as Red dots and in white region.
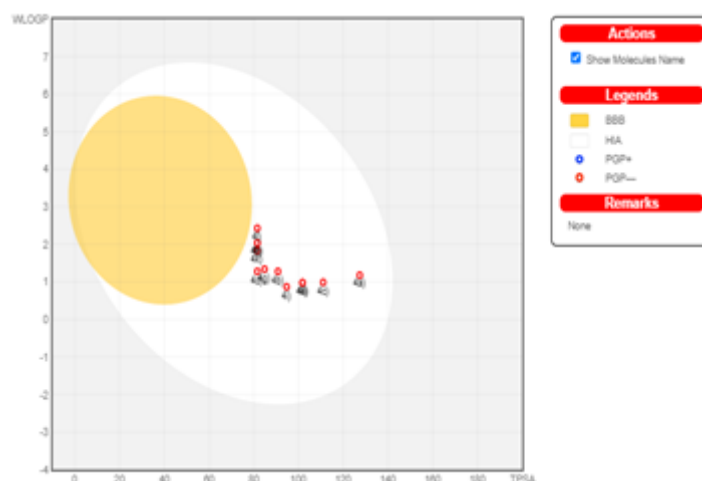
Fig. 8: Brain permeation and passive gastrointestinal absorption (BOILED-Egg) of synthesized molecules.
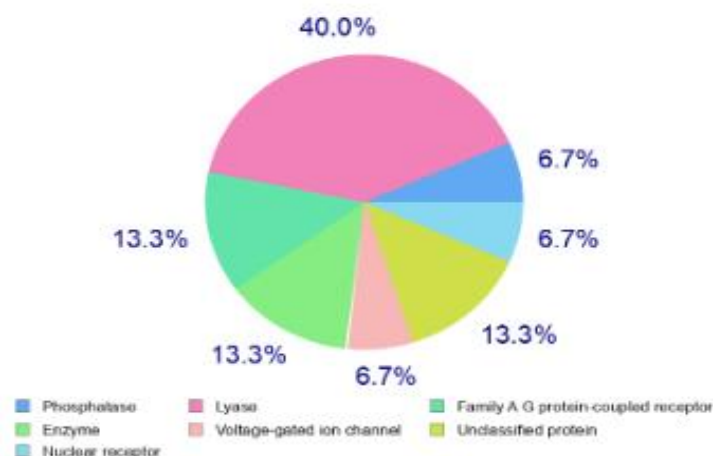
Fig. 9: Swiss target prediction graph of 4l.

Conclusion:

The computational study analysis showed that the synthesized Schiff's bases of 1.2.4-triazole molecules could bind with the receptor proteins. The antibacterial activity was suggested by the synthesized molecules in docking studies with moderate negative values of binding affinity. These compounds (4a to 4l) may be considered as promising candidates for

antimicrobial investigation. The molecular docking showed good score of bioavailability of 0.55[32].

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THE ANTIOXIDATIVE PROPERTIES OF SOME METAL ION CHELATES

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Abstract:

Corrosion is an oxidation process when iron rod kept open rusting takes place. Rusting is oxidation of iron. The retardation of oxidation is a inhibition process. All metallic corrosion process occurred by transfer of electronic charge in aq. Solution and are considered to be electrochemical in nature. Inhibition is one of the most important applications in the corrosion process. Inhibitor protect the metal by adsorbing onto the surface and retard metal corrosion in aggressive environment. Selecting the appropriate inhibitor for specific environment and metal is of great importance, since an inhibitor that protect one particular metal may accelerate the corrosion of another. A survey of literature reveals that the applicability of organic compound as corrosion inhibitors for steel has been recognized for long time. In the present work we studied the effect of heterocyclic compound and it's metal complexes on corrosion.

Keywords: Corrosion, anti-oxidative, ligand, metal ion chelate.

Introduction:

Corrosion is an oxidation process when iron rod kept open rusting takes place. Rusting is oxidation of iron. The retardation of oxidation is an inhibition process. All metallic corrosion process occurred by transfer of electronic charge in aq. Solution and are considered to be electrochemical in nature.

Chemistry of Corrosion:

Corrosion reaction is electrochemical in nature. They involve the transfer of charged ions across the surface between a metal and the electrolyte solution in which it is immersed. There are two types of electrode reactions occurring at the metal surface i) Anodic ii) Cathodic.

Consider the corrosion consisting of formation of rust on iron. Oxygen gas and water must be present along with iron to rust. Some part of metal surface serves as anode where oxidation takes place.

$$2Fe \rightarrow 2Fe^{+2} + 4e^- \text{ (oxidation.)}$$
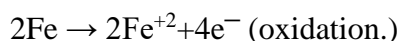
The electrons given up by iron reach another region of the same metal surface, where oxygen of air is reduced to water by H+ ions as

$$O_2 + 4H^+ + 4e^- \rightarrow 2H_2O \text{ (reduction.)}$$
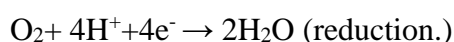
The reduction reaction occurs in an acidic medium. The origin of H^+ ions is carbonic acid formed by atmospheric carbon dioxide and moisture or water

$$H_2O + CO_2 \rightarrow H_2CO_3$$
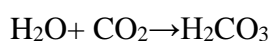
The net corrosion reaction is obtained by adding two reactions.

$2Fr+O_2+4H^+ \rightarrow 2Fe^{+2}+2H_2O$
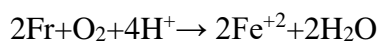
The oxidized Fe + ions are further oxidized by oxygen in presence of water into the rust in the form of hydrate ferric oxide.

$4Fe^{2+} +O_2+2(x+2)H_2O \rightarrow 2Fe_2O_3+ xH_2O+ 8H^+$
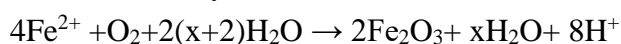
Mechanism of rusting:
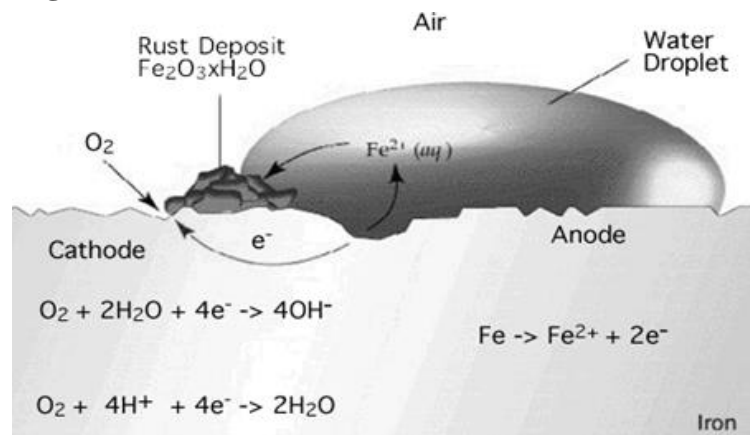
It is well known in surface chemistry that surface reactions are strongly affected by the presence of foreign molecules. Corrosion process being surface reaction can be controlled by a compound known as inhibitors which adsorb on the reacting metal surface. The term adsorption referes to molecules attached directly to the surface, normally only one molecular layer thick and not penetrating into the bulk of the metal itself. The technique of adding inhibitor to the environment of metal is well known method of controlling corrosion. The inhibiting compound contributes to the formation of thin layer on surface which stifles the corrosion process.

Inhibition is one of the most important applications in the corrosion process. Inhibitor protect the metal by adsorbing onto the surface and retard metal corrosion in aggressive environment. Selecting the appropriate inhibitor for specific environment and metal is of great importance, since an inhibitor that protect one particular metal may accelerate the corrosion of another. A survey of literature reveals that the applicability of organic compound as corrosion inhibitors for steel has been recognized for long time. A large number of organic compounds, particularly those containing nitrogen, oxygen or sulphur in a conjugated system are known to be applied as inhibitors to control corrosion of iron and steel. The inhibition process has been shown to occur via inhibitor adsorption isothermal and the efficiency of the inhibitor strongly depend on the structure and chemical characteristic of the adsorbed inhibitor layer formed under particular experimental condition. It has been reported that the adsorption of an organic compound onto the surface of metal is dependent on the following properties of the inhibitor molecule such as steric factors, functional group, electron density at the donor atoms and π orbital character of donating electrons and on the nature of substrate metals and the type of interaction between organic molecules and the metallic surface. In other word the efficiency of an organic compound as corrosion inhibitor depends not only on the characteristics of the environment in which it acts the nature of the metal at the interface, but also on the structure of

the inhibitor itself, which includes the number of adsorption active centers in the molecule, their charge density m the molecular size , the mode of adsorption, the formation of metallic complexes and projected area of the inhibitor on the metallic surface.In the present work we studied the effect of heterocyclic compound and it metal complexes on corrosion.

Experimental:

In this experiment one ligand and their three metal ion chelates are used which are previously reported. Structure of ligand (refer as CBMBTH) and metal ion chelates are as follows.

Structure of ligand
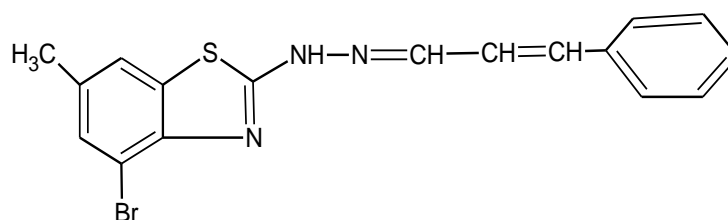
(cinnamyl)- 4-bromo-6-methyl benzothiazolyl hydrazones (CBMBTH)

Structure of Metal ion chelates
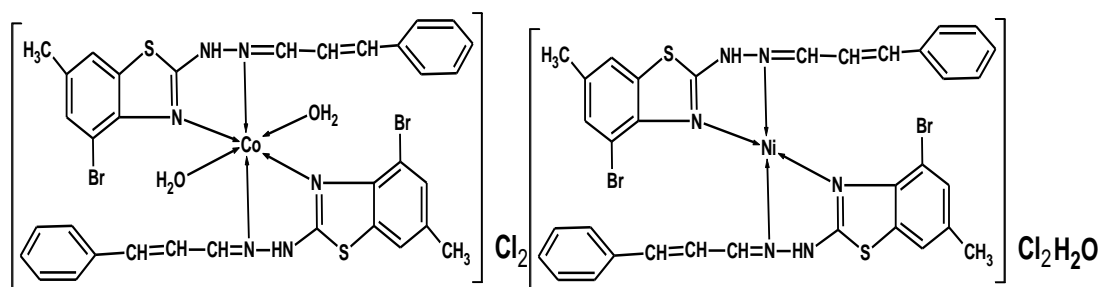
[Co(CBMBTH)₂]Cl₂H₂O [Ni(CBMBTH)Cl]Cl H₂O
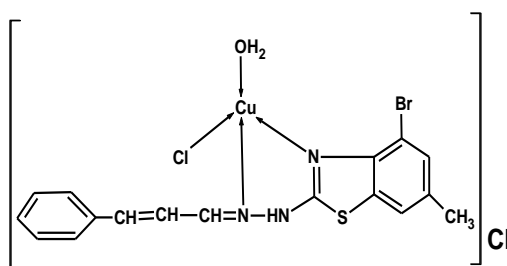
[Cu(CBMBTH)H₂O]Cl₂

For the study of antioxidative effect of ligand and its metal complexes, steel wire is used for the experiment. Wire is purched from local market. First of all wire is cleaned by regmal paper (sand paper) then it is washed with distilled water and cleaned by filter paper. Then it is dried in oven. Then near about length of 3.5 cm pieces are made by cutter. Its weight are taken on digital one pan balance. In second step 0.5 N solution of H_2SO_4 is prepared and standardized by NaOH. then 5 beaker, of 100 ml taken, they are cleaned with distilled water and dried. Labeled them by number 1 to 6. In each beaker contain 10 ml of 0.5 N H_2SO_4 acid. In addition to this beaker number 2 contain legend (CBMBTH). In beaker number 3,4,5 contain metal complexes Co, Ni, Cu of ligand (CBMBTH) respectively. In each beaker added metal pieces

which is previously weighed and kept it for 48 hours. After 48 hours metal pieces are taken out and cleaned with water and followed filter paper and its weight are taken. Weight of metal wire pieces before experiment, after experiment, loss in weight, % loss is calculated by usual method. % inhibition efficiency is calculated by using following formula

$$I.\,E. = \frac{Wu - Wi}{Wu} \times 100$$

where,

I. E. = Inhibition Efficiency, Wi. = Loss in weight in inhibitor solution,

Wu = weight loss in control solution.

Result and Discussion:

Table 1:

Sr. No.	Compound	Initial wt.	Final wt.	Loss in wt..	% Loss in wt.	I. E.
1	control	1.523	1.306	0.217	14.258	--
2	CBMBTH	1.452	1.283	0.169	11.655	18.199
3	$[Co(CBMBTH)_2]Cl_2H_2O.$	1.257	1.124	0.133	10.580	25.331
4	$[Ni(CBMBTH)Cl]Cl\ H_2O$	1.259	1.130	0.120	9.531	33.106
5	$[\ Cu(CBMBTH)H_2O]Cl_2$	1.345	1.211	0.134	9.962	30.087

Table 2:

Sr. No.	Compound	I.E.
1	CBMBTH	18.199
2	$[Co(CBMBTH)_2]Cl_2H_2O.$	25.331
3	$[Ni(CBMBTH)Cl]Cl\ H_2O$	33.106
4	$[\ Cu(CBMBTH)H_2O]Cl_2$	30.087

From the observation table it indicates that ligand as well as metal complexes have corrosion inhibitive properties. Among the metal complexes obtained form ligand CBMBTH the complex $[Ni(CBMBTH)Cl]ClH_2O$ is more corrosion inhibitor than $[Co(CBMBTH)_2]Cl_2H_2O$ and $[Cu(CBMBTH)H_2O]Cl_2$ and $[Co(CBMBTH)_2]Cl_2H_2O$ is less inhibitive than $Cu(CBMBTH)H_2O]Cl_2$ complex.

Graphical representation of inhibition efficiency is as follolws.
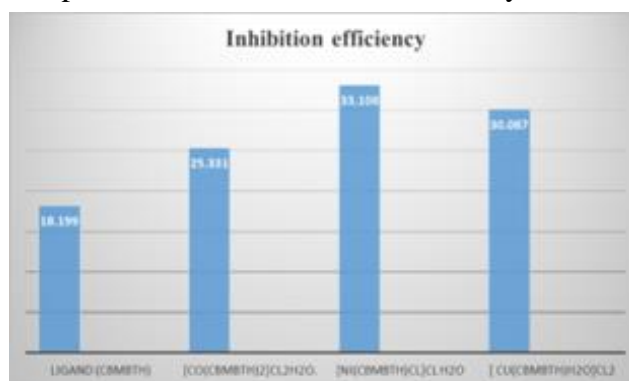
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PREPARATION, STRUCTURAL ELUCIDATION AND APPLICATIONS OF 6-BROMO-3-FORMYL CHROMONE BASED SCHIFF BASES AND THEIR TRANSITION METAL COMPLEXES

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Abstracts:

Coordination compounds of Ni(II), Cu(II), Co(II) and Fe(III) with Schiff base obtained through the condensation of 6-bromo-3-formylchromone and 8-aminoquinoline were synthesized. The characterization of the newly formed from compounds was done by ^{1}H NMR UV-Visible, IR, elemental analysis and molar conductivity. The analytical data was studied which indicate that the metal to ligand molar ratio is 1:2 in all the complexes. Molar conductivity data have been shown that entire complexes are neutral in nature. The in vitro antibacterial and antifungal activity are tested against pathogens which revealed metal complexes were more potent than the Schiff base.

Keywords: 6-Bromo-3-Formylchromone, 8-Aminoquinoline, Disc Diffusion Method, Antibacterial Activity, Antifungal Activity.

Introduction:

Many metabolic processes in the human body run by the vital role of coordination compounds and it is proved that many organic compounds in pharmaceutical field do not have a purely organic mode of action, some are activated or bio transformed by metal ions metabolism. The ample of drugs shown antimicrobial activity and pharmacological properties in the form of metal complex and the role of Schiff bases through azomethine (C=N) moiety showing broad spectrum of biological activity and incorporation of metals in the form of complexes showed some degree of antibacterial, antifungal and anti-inflammatory activity [1].

Schiff base are the organic molecules containing azomethine (-C=N-) chromophre. Schiff base were firstly reported by Hugo Schiff in 1864 and these are the condensation product of aldehydes and ketones with primary amines [2].

Chemist pay their more attention on synthesis of chromone derivatives due to pharmaceutical activities including antimycobacterial, anticonvulsant, antimicrobial, anticancer, antioxidant and mushroom tyrosinase inhibition activities [3-6]. Schiff bases derived from 3-formylchromone and its complexes have significant role in biological, clinical and pharmaceutical areas [7-9]. In the present work we have synthesized the Schiff base 3-((quinolin-8-ylimino) methyl) -4H-chromen-4-one and their Ni(II), Cu(II), Co(II) and Fe(III) complexes. The prepared compounds were characterized by various analytical tools and their biological significance done by disc diffusion method.

Experimental:

1. Materials: 8- aminoquinoline, 6-bromo-3-formyl chromone, Nickel chloride hexahydrate, Copper chloride dehydrate, Cobalt chloride hexahydrate and ferric chloride hexehydrate and solvent used were AR grade.

2. Physical measurement: Molar conductance of the complexes was measured in DMF at 1×10^{-3} M using Elico CM-180 conductometer. Elemental analysis (CHN) was carried out using Thermo finnigan, Italy CHN analyzer. Thermal analysis carried out on a Perkin Elmer USAA TGA instrument at heating rate 10 ^{0}C/min and temperature range 30 ^{0}C to 1150 ^{0}C. The IR spectra (4000-400 cm^{-1}) in KBr disc were recorded on Bruker, Germany spectrophotometer. The NMR spectra were carried out by mercury plus 300 MHz NMR spectrometer, using TMS as internal standard. The solvent used were chloroform-d$_6$ for Schiff base and DMSO-d$_6$ for metal complexes. Electronic spectra were measured by using Shimadzu UVmini-1240 spectrophotometer. The magnetic moment data obtained by Gouy-type magnetic balance at room temperature using Hg[Co(NCS)$_4$] as calibrant.

3. In vitro antimicrobial studies: The antibacterial and antifungal activity of Schiff base ligand and its Ni(II), Cu(II), Co(II) and Fe(III) complexes towards the bacteria *Klebsiella pneumoniae, Staphylococcus aureus* and *Proteus vulgaris* and fungi *Candida albicans* and *Aspergillus niger* was carried out by disc diffusion method. The detailed descriptions of disc diffusion method were determined using literature method [10].

4. Synthesis of ligand: The Synthesis of Schiff base (L) was carried out by refluxing hot ethanolic solution of 8-bromo-3-formyl chromone (10 mmol, 2.53 gm) in 40 ml of alcohol and 8-aminoquinoline (10 mmol, 1.44 gm) in 15 ml of alcohol. The reaction mixture was refluxed for 2 hours. The progress of reaction was monitored by TLC. The resulting yellow coloured product precipitated, filtered off and washed with ether. The product thus obtained was recrystallized form ethanol.
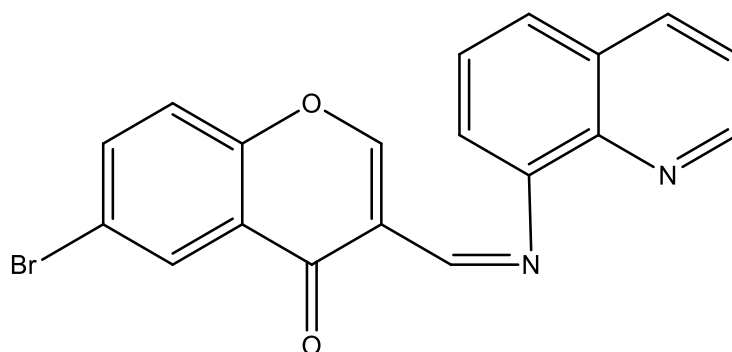
Figure 1: Proposed structure of Ligand (L).

5. Synthesis of the complexes: A hot ethanolic solution of ligand (10 mmol, 3.78 gm) was added to ethanolic solution NiCl$_2$6H$_2$O (5 mmol, 1.18 gm), CuCl$_2$2H$_2$O (5 mmol, 0.85 gm), CoCl$_2$6H$_2$O (5 mmol 1.18 gm) and FeCl$_3$6H$_2$O (5 mmol 1.35 gm). The resulting reaction mixture was refluxed for 3-4 hours. After cooling, the coloured precipitate obtained was collected, filtered, washed with ether, recrystallized from ethanol and dried in vacuum.

Result and Discussion:

All the complexes are coloured, non-hygroscopic and stable in air. The solubility of ligand is in chloroform solvent. The solubility of complexes are in DMF and DMSO but are insoluble in many common organic solvent. The analytical, physical, molar conductance data and magnetic moment values are given in table 1. The analytical data predicted that the metal to ligand is 1:2 in both the complexes. The molar conductance value of complexes in DMF at 1×10^{-3} M are mentioned in table 1 indicating their non-electrolytic nature[11].

Table 1: Physical, analytical, molar conductivity and magnetic moment data of Ligand and their complexes

Compounds	Mol. Wt.	Colour (%Yield)	M.P. (^{0}C)	% Found (cald)				Molar Cond. (ohm^{-1}cm^{2}mol^{-1})	μ_{eff} (BM)
				C	H	N	M		
L	378.9	Yellow (72)	256	60.33 60.17	3.31 2.9	6.47 7.38	—	7	—
[Ni(L)$_2$(Cl)$_2$]	888.05	Green (83)	330	50.02 51.34	2.7 2.47	6.92 6.3	6.74 (6.60)	10	3.22
[Cu(L)$_2$(Cl)$_2$]	892.9	Turmeric (84)	308	51 51.06	2.73 2.46	6.33 6.27	7.25 (7.11)	13	1.8
[Co(L)$_2$(Cl)$_2$]	888.89	Brown (79)	298	51.03 51.33	2.55 2.47	6.28 6.3	6.81 (6.63)	12	3.72
[Fe(L)$_2$(Cl)$_2$]	885.2	Brown (77)	340	51.52 51.51	2.37 2.48	6.01 6.32	6.43 (6.30)	11	3.47

IR spectral data:

IR spectral data are given in table 2. The ligand and complexes have been characterized in detail by studying their IR spectra. The IR spectral graph of ligand and Ni(II), Cu(II) and Co(II) complexes are given in fig. 2 to 5 respectively. The IR spectrum of ligand displayed strong band at 1610 cm^{-1}in the assignable toυ(C=N). In the spectra of respective complexes this is shifted lower frequency wavenumber by 15-20 cm^{-1}[10-11], representing the coordination of azomethine nitrogen to the metal center. The υ(C=O) vibrations in the free ligand is at 1654 cm^{-1}, in the complexation, the υ(C=O) group is shifted to 6-40 cm^{-1} to a lower wave number in its complexes indicate carbonyl oxygen involved in coordination to the metal ion [10-13]. The band at 482-497 cm^{-1}is assignable to υ(M—O) [14]. Weak band at in the region of 524-540 cm^{-1}are assignable to υ(M—N) [14].

Table 2: IR spectral data of Ligand and their metal complexes

Compound	υ(C=N)	υ(C=O)	υ(M—O)	υ(M—N)
L	1610	1654	-	-
[Ni(L)$_2$Cl$_2$]	1570	1597	490	533
[Cu(L)$_2$Cl$_2$]	1596	1615	497	524
[Co(L)$_2$Cl$_2$]	1576	1608	482	540
[Fe(L)$_2$Cl$_2$]	1595	1636	485	539
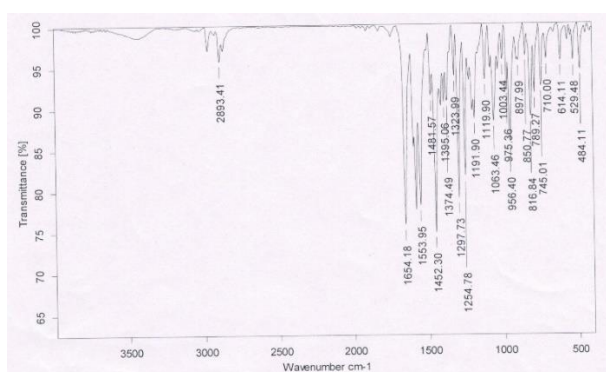
Figure 2: IR spectra of Ligand
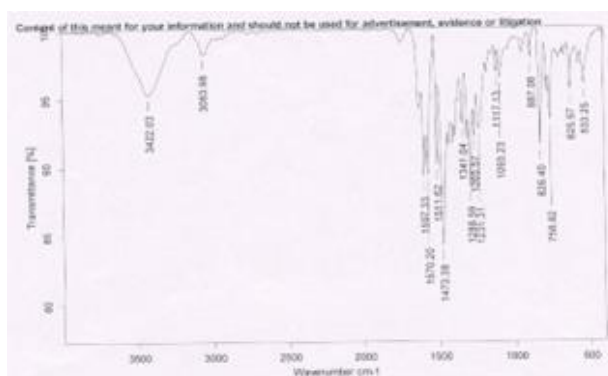
Figure 3: IR spectra of Ni(II) complex
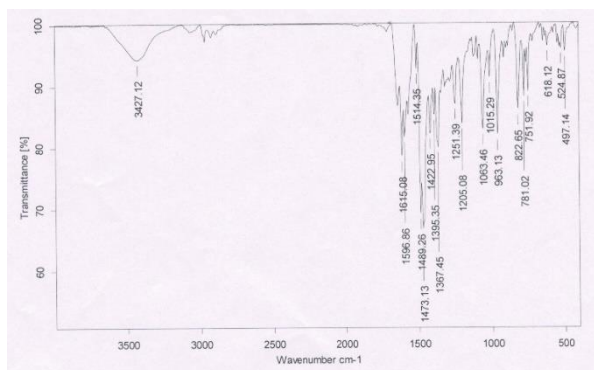
Figure 4: IR spectra of Cu(II) compex
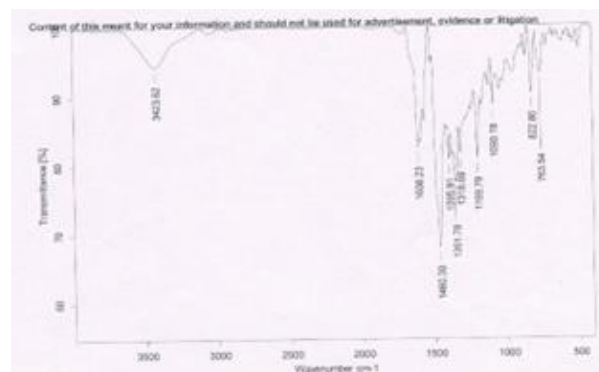
Figure 5: IR spectra of Co(II) complex

^{1}HNMR spectra:

The ^{1}HNMR spectrum of ligand recorded in chloroform and its Ni(II), Cu(II), Co(II) and Fe(III) metal complexes recorded in DMSO. The spectrum of ligand shows following signals: 8.14 ppm (H, S, -HC=N- azomethine proton); 6.8-7.5 ppm (m, aromatic protons of chromone nucleus); 7.8-9.0 ppm (m, aromatic protons of quinolone nucleus). The figure 6 shown ^{1}HNMR spectrum of ligand. However, in metal complexes the NMR signal of azomethine proton shifted to downfield as compared to NMR signal of azomethine proton in Schiff base [10, 15]. In Ni(II), Cu(II), Co(II) and Fe(III) complexes resonance signal for azomethine proton at 8.38 ppm, 8.39

ppm, 8.36 ppm and 8.34 ppm respectively. Thus, there is confirming the metal complex formation [10, 15].

Table 3: 1H NMR spectral data of Ligand and their metal complexes

Compounds	Chemical shift (ppm)	Assignment
L	8.14	(H, S, -HC=N- azomethine proton)
	6.8-7.5	(m, aromatic protons of chromone nucleus)
	7.8-9.0	(m, aromatic protons of quinolone nucleus)
[Ni(L)$_2$Cl$_2$]	8.38	(H, S, -HC=N- azomethine proton)
	6.5-7.7	(m, aromatic protons of chromone nucleus)
	7.9-8.6	(m, aromatic protons of quinolone nucleus)
[Cu(L)$_2$Cl$_2$]	8.39	(H, S, -HC=N- azomethine proton)
	6.8-7.8	(m, aromatic protons of chromone nucleus)
	7.9-8.9	(m, aromatic protons of quinolone nucleus)
[Co(L)$_2$Cl$_2$]	8.36	(H, S, -HC=N- azomethine proton)
	6.2-7.6	(m, aromatic protons of chromone nucleus)
	7.8-9.0	(m, aromatic protons of quinolone nucleus)
[Fe(L)$_2$Cl$_2$]	8.34	(H, S, -HC=N- azomethine proton)
	6.5-7.9	(m, aromatic protons of chromone nucleus)
	8.0-9.1	(m, aromatic protons of quinolone nucleus)
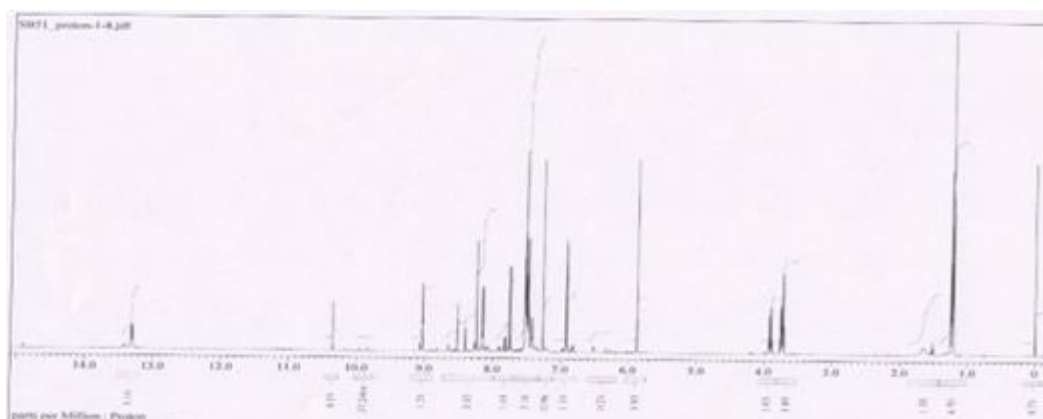
Figure 6: 1H NMR spectrum of the Ligand

Electronic spectra and magnetic moment:

The absorption spectra of Schiff base and its Ni(II) Cu(II), Co(II) and Fe(III) complexes were measured in DMSO solution in wavelength range of 200-1100 nm. The electronic spectra of ligand show two bands, one band at 22379 cm^{-1} is attributed to the n→π* transition. Another band at 32765 cm^{-1} is due to the π→π* transition [16]. The Ni(II) complex showing three bands at 8734 cm^{-1} , 15367 cm^{-1} and 22738 cm^{-1} assignable to the $^3A_{2g}$ (F)→ $^3T_{2g}$ (F) (υ_1), $^3A_{2g}$ (F)→ $^3T_{1g}$ (F) (υ_2), $^3A_{2g}$ (F)→ $^3T_{2g}$ (P) (υ_3) transition respectively characteristic of octahedral geometry

[16].The electronic spectra of Cu(II) complex exhibit bands at 12683 cm^{-1}, 14529 cm^{-1} and 21874 cm^{-1} are assigned to $^2B_{1g} \rightarrow {}^2B_{2g}$, $^2B_{1g} \rightarrow {}^2E_g$ and LMCT transitions, respectively. These bands are characteristic for distorted octahedral geometry. Octahedral geometry of Cu(II) complex was also confirmed by magnetic moment value (1.8) [17-18]. The electronic spectra of Co(II) complex shown three bands at 8428 cm^{-1}, 15110 cm^{-1} and 18727 cm^{-1} are assignable to $^4T_{1g}$ (F) $\rightarrow {}^4T_{2g}$ (F) (υ_1), $^4T_{1g}$ (F) $\rightarrow {}^4A_{2g}$ (F) (υ_2), and $^4T_{1g}$ (F) $\rightarrow {}^4T_{1g}$ (P) (υ_3) transitions, respectively, characteristic of octahedral geometry. Octahedral geometry of Co(II) complex was also confirmed by magnetic moment value (3.72) [17-18]. The electronic transition of Fe(III) complex are generally spin forbidden and hence weak, and are often masked by charge transfer spectra [17-18]. The Fe(III) complex showing band at 22831 cm^{-1} which can be assigned to the $^6A_{1g} \rightarrow {}^4T_{1g}$ transition characteristic of octahedral structure [19-21].The magnetic moment value of all the metal complexes as shown in table no.1 which also confirm their octahedral geometry[18,20]. The figure 7 to 11 are electronic spectra of Schiff Base ligand and their Ni(II), Cu(II), Co(II) and Fe(III) complexes.
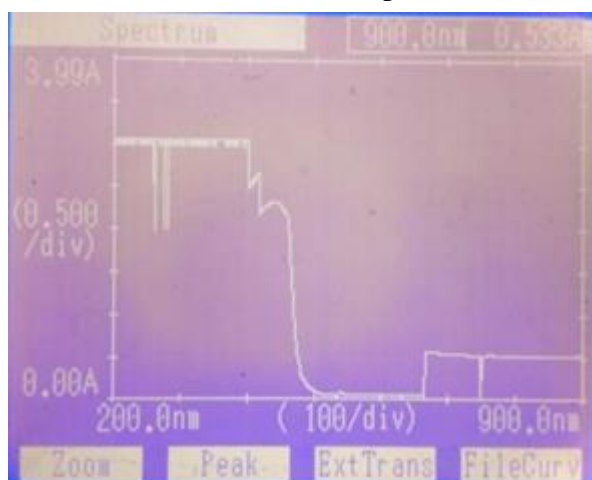
Figure 7: Electronic spectra of Ligand
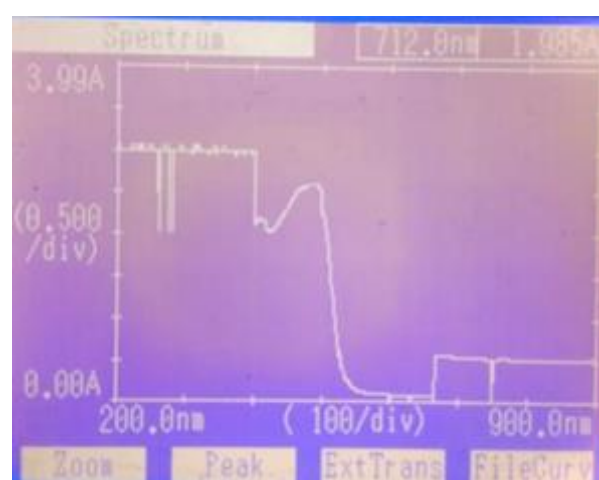
Figure 8: Electronic spectra of Ni(II) Complex
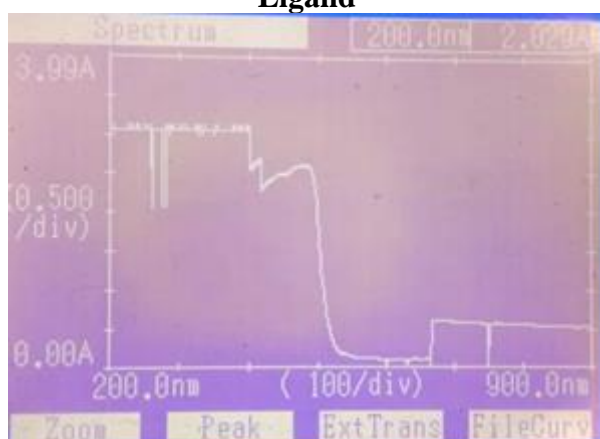
Figure 9: Electronic spectra of Cu(II) Complex
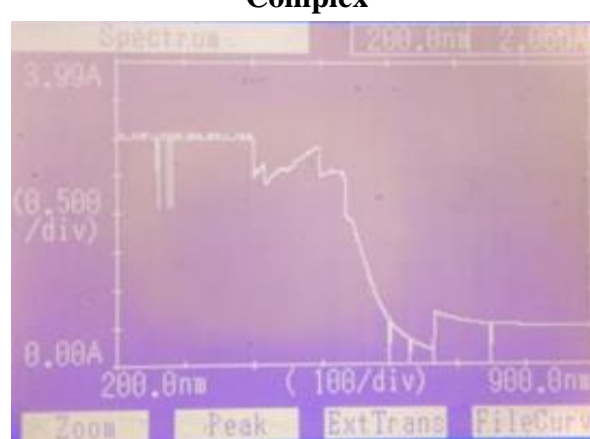
Figure 10: Electronic spectra of Co(II) complex

M= Ni(II), Cu(II), Co(II) and Fe(III)
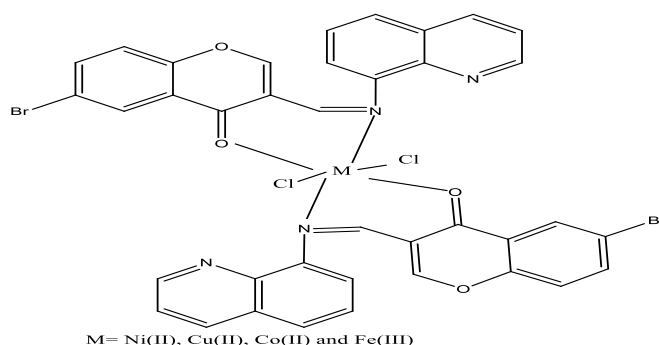
Figure 11: Proposed structure for all metal complexes

Antimicrobial activity:

The antimicrobial screening studies revealed that the metal complexes were shown more antibacterial and antifungal activity compared with parent ligand under similar experimental condition on the same pathogens. Table 4 and 5 shown antifungal and antibacterial activity respectively of Schiff Base ligand and their Ni(II), Cu(II), Co(II) and Fe(III) complexes. All the results are compared with standard tetracycline. On complexation, metal complexes enhanced their therapeutic value. These compounds gave fruitful outcome as a biological activeness. The ligand (L) is more active than their metal complexes against *Klebsiellapneumoniae* and *Proteus vulgaris.* The Cu(II) and Ni(II) complexes are more active than ligand (L) against *Staphylococcus aureus* at 250 - 500 ppm concentration. The Overtone's concept and Tweedy's chelation theory can be explained for the better activity of the complexes compared to that of ligands. The theory states that the complexation causes reduction in the polarity of the metal ion due to the partial sharing of its positive charge with donor groups [22].

Table 4: Antifungal activity of Ligand L$_4$ and their metal complexes by disc diffusion method (% inhibition)

Compound	*Candida albicans*				*Aspergillusniger*			
	250 ppm	**500 ppm**	**1000 ppm**	**2000 ppm**	**250 ppm**	**500 ppm**	**1000 ppm**	**2000 ppm**
L	5	8	11	12	3	5	9	11
[Ni(L)$_2$Cl$_2$]	6	9	12	13	7	10	11	13
[Cu(L)$_2$Cl$_2$]	6	9	11	13	4	7	11	12
[Co(L)$_2$Cl$_2$]	7	9	12	13	11	13	14	15
[Fe(L)$_2$Cl$_2$]	7	9	12	15	5	9	11	13
Tetracycline	14	14	17	19	11	12	14	16

Table 5: Antibacterial activity of L₄ and their metal complexes by disc diffusion method (% inhibition)

Compound	*K. pneumoniae*				*S. aureus*				*P. vulgaris*			
	250 ppm	500 ppm	1000 ppm	2000 ppm	250 ppm	500 ppm	1000 ppm	2000 ppm	250 ppm	500 ppm	1000 ppm	2000 ppm
L	12	7	14	16	5	7	12	13	9	11	12	15
[Ni(L)₂Cl₂]	5	7	10	12	7	9	11	12	3	6	8	11
[Cu(L)₂Cl₂]	3	6	11	14	6	9	11	15	9	10	13	14
[Co(L)₂Cl₂]	4	8	11	13	5	7	11	16	3	9	12	14
[Fe(L)₂Cl₂]	5	9	11	13	3	7	9	13	4	6	9	11
Tetracycline	15	17	18	20	14	16	16	17	17	19	20	20

Conclusion:

In the present work, Ni(II), Cu(II), Co(II) and Fe(III) complexes were prepared from 6-bromo-3-formylchromone and 8- aminoquinoline Schiff base and are analyzed by various spectral techniques. The analysis of IR spectral data revealed that the nature of ligand is bidentate, coordinating through azomethine nitrogen and carbonyl oxygen atoms. Magnetic and Electronic spectral data indicate octahedral geometry for all the complexes. All the prepared compounds exhibited significant antibacterial and antifungal activity. Metal complexes have shown potent antimicrobial activity than the ligands.

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STUDY OF A CONDUCTING POLYMER COATED ON GOLD BY ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY

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Abstract:

Electrochemical Impedance Spectroscopy (EIS) is used as an effective tool for determining interfacial charge transfer, capacitive, diffusion properties of a system. It is used for better understanding of the polyaniline (PANI) electrolyte interface. When different DC potentials were applied change in shape of the Nyquist plots were observed as a function of pH, morphology and redox states of PANI. Thus, change in shape of the Nyquist plots with potential could be considered as an outcome of switching between the different states. As conducting polymers can exist in different oxidation states, electron transfer reactions take place in the polymer matrix. Due to these electron transfer reactions ion insertion and expulsion also takes place to compensate for the charges in the polymer matrix in order to maintain electro neutrality. In these polymers both electronic and ionic conduction changes are involved. To understand this property EIS is a very useful tool. The EIS study helped in understanding the interfacial processes in a better way. The change in shape of the Nyquist plots with the change in potential showed the electroactive nature of PANI. EIS was used to study the transport processes across these PANI membranes.

Keywords: Capacitive; Redox; Electro-Neutrality

Introduction:

PANI is known for its remarkable properties. Its environmental stability, tuning between different states, process ability, ease of manufacturing, high conductivity and other optical properties gives it a distinct position in the area of conducting polymers. Thus, PANI has been widely used in the field of drug delivery, electro chromic devices, sensor applications. Again, the porous nature of the polymer is extensively utilized. Several reports dealing with the electronic and ionic conductivities of the polymer for its various applications were studied. [1]

PANI can be synthesized chemically or electrochemically using galvanostatic, potentiostatic or potentiodynamic method. Of these methods we choose potentiodynamic method. Electrochemical Impedance Spectroscopy (EIS) is advantageous as measurements can be performed under stationary conditions. EIS was used to understand the ionic transport across

these membranes. Microporous polycarbonate (PC) membranes were modified potentiodynamically by depositing polyaniline (PANI) either on the surface as a film or inside the pore along the pore walls as hollow tubes. An approach has been made to understand the transport properties through the PANI membrane at two different pH levels. Electrochemical transport studies were carried out at these two pH levels. For better understanding the role of electronic and ionic conductivity on the transport processes electrochemical impedance spectroscopy was also carried out.

Experimental:

A three-electrode system was used. The reference electrode (saturated calomel electrode) was made of a glass bulb placed in long glass tube. Working electrode was gold coated on porous PC with geometric surface area of 1.22 cm^2 for 0.2 µm and 1.36 cm^2 for 1.2 µm set up respectively available for transport. The membranes were coated with polyaniline by electrodepositing a film onto the gold-coated membrane support. PANI was electropolymerized from a solution of 0.1M aniline in 0.5M sulfuric acid. The potential was cycled between -0.2 V and 0.8 V versus SCE at 0.05 V s^{-1} for 11 or 45 cycles to deposit a film. The effect of the potential at pH ~ 1 and pH ~ 5 were observed by polarizing the membranes in the potential range between -0.2V to 0.6V. Before application of each potential the membranes were conditioned for 300 seconds at each potential for potentiostatic EIS measurements.

Results and Discussion:

In this work two different approaches have been made to deposit PANI electrochemically on gold coated PC membranes. In the first approach a thin layer of PANI was deposited on the surface while in the other approach PANI was grown through the pores of the membrane. The thickness of the PC is around 10µm. Figure 1 shows the CV of PANI during polymerization.
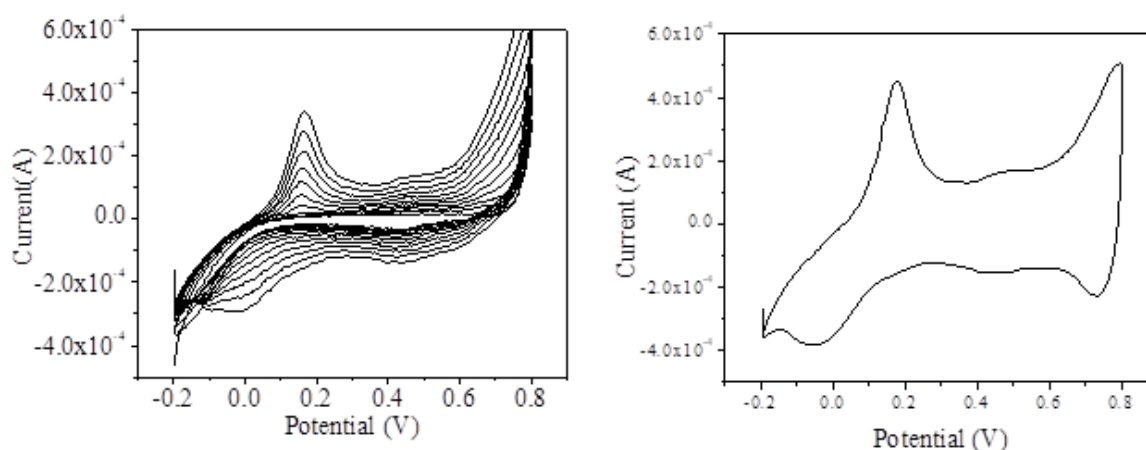
Figure 1. (a) CV of PANI during 11 cycles of polymerization. (b) CV of PANI after polymerization on gold coated PC membrane cycled between -0.2 to +0.8 V at a scan rate of 0.05V/s.

EIS is used here for better understanding of the PANI-electrolyte interface at two different pH.

When different DC potentials were applied change in shape of the Nyquist plots (Figure 2) were observed as a function of pH, morphology and redox states of PANI. Thus, change in shape of the Nyquist plots with potential could be considered as an outcome of switching between the leuco emeraldine, emeraldine, pernigraniline states. At -0.2 and -0.1V the Nyquist plots show mixed kinetic and diffusion behavior.
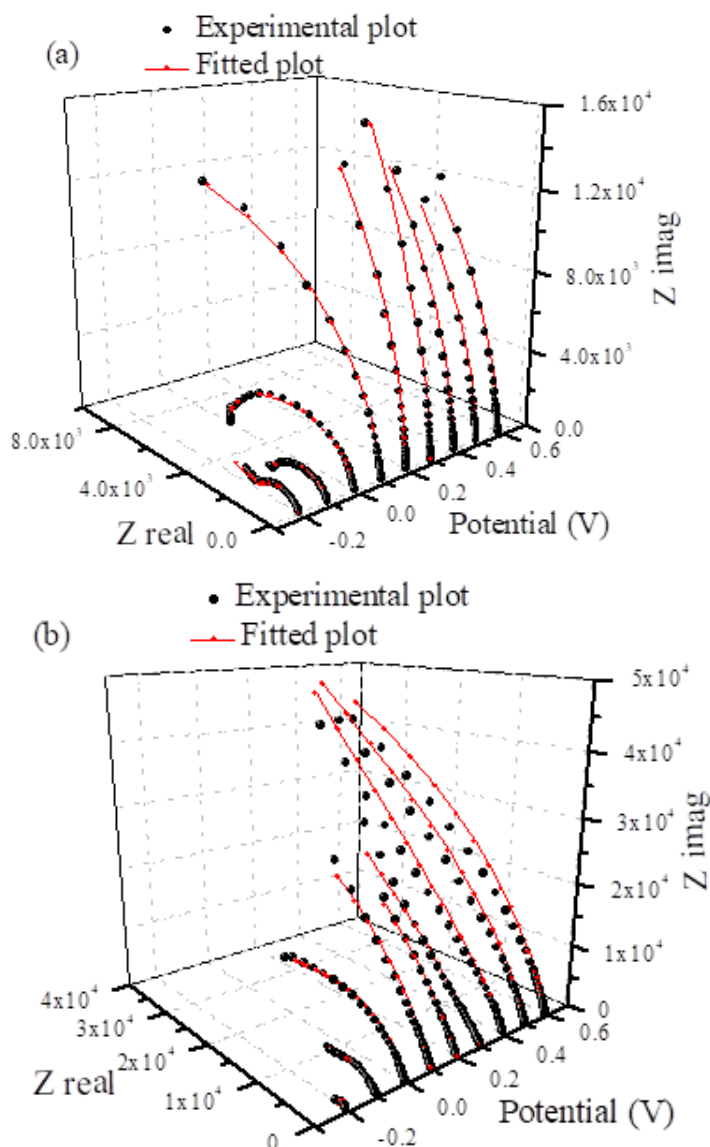
Figure 2: 3D representation of Nyquist plots vs potential for PANI (11cycles of polymerization) deposited on 0.2 μm pore of membrane at pH~1(a) and pH~5(b).

Conclusions:

The EIS study helped in understanding the interfacial processes in a better way. The change in shape of the Nyquist plots with the change in potential showed the electroactive nature of PANI. This study of the interfacial processes keeps potential in development of conducting polymers in the field of membrane separation techniques.

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USE OF CATTLE WASTE AS A 'BIOSTIMULANT'

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Abstract:

Cash crops like Cotton and Onion are important in agricultural economy. But now days to get more and more production of these and many other cash crops, farmers are using chemical growth enhancers in very high quantity which damages the quality of soil and its fertility. The crops produced by the help of chemical growth enhancers are becoming hazardous for human consumption due to the presence of residues of chemicals in and on them. To avoid this use of organic growth enhancers is necessary. Therefore, by using cattle wastes such as Urine and Dung, which is a great source of Phosphorous solubalizing bacteria (PSB) and Potash solubalizing bacteria (KSB) as well as macro and micro nutrients, industrial waste such as Molasses; a substance is made called 'Biostimulant'. It is totally organic, non-hazardous to the soil as well as to the handling person and crop also and the most important is that, the preparation cost of the product is too much low than the chemical growth enhancer ones which are available in market. During this experiment we used all the materials which are totally organic in nature and easily available. The results obtain by this are better than the the regular methods.

Keywords: Biostimulant, KSB and PSB, Macro and Micro Nutrients, Molasses, Animal Urine and Animal Dung.

Introduction:

Biostimulants:

The term biostimulant is a substance that is neither a plant nutrient nor a pesticide, but has a positive impact on plant health. A biostimulant is an organic material that, when applied in small quantities, enhances plant growth and development such that the response cannot be attributed to application of traditional plant nutrients. It acts as for the soil and as bio-catalyst for the plant (Patrick, 2015). A biostimulant is a growth miracle for your plants and all in one organic growth enhancer. Biostimulants have been shown to influence several metabolic processes such as respiration, photosynthesis, nucleic acid synthesis and ion uptake, loosens and mellows the soil, promotes larger root systems, increases nutrient and water intake Biostimulants are not fertilizers meant to correct a severe nutrient deficiency, but are mixtures of one or more things such as microorganisms, trace elements, enzymes, plant hormones, and seaweed extracts. A legal definition of biostimulants has yet to be decided (Mahyar and Radhakrishnan, 2020). However, the European Biostimulants Industry Council describes them as "Substances and/or microorganisms whose function when applied to plants or the rhizosphere is to stimulate natural processes to benefit nutrient uptake, nutrient use efficiency tolerance to abiotic stress, and/or crop quality, independently of its nutrient content." There are many

categories of biostimulants. The most popular are humic acids, seaweed extracts, liquid manure composting and beneficial bacteria and fungi. (Nelson and Pagliari, 2018).

Cow urine and its properties:

In our experiment we decided to use cow urine instead of other animal urine. Because the use of gomutra (cow urine) in India can be traced back to the Vedic times. In Vedas it has been well documented as a purifying substance and as an ingredient of the Panchayagavya Milk, Urine, Dung, Ghee and Curd of Cow as a good antimicrobial agent as a good biofertilizer etc. Amongst urines, cow urine is best (Kumar *et al.,* 2014; Randhava and Sharma, 2015). In Ayurveda where ever urine is mentioned, it is to be understood as cow urine. Therefore, cow urine is beneficial. Ancient literature in Ayurveda states that cow's urine is one of the best natural remedies to cure many bacterial and fungal diseases, especially skin diseases (Mohanty *et al.,* 2014). Research states cow's urine to contain nitrogen, sulphur, phosphate, sodium, manganese, carbolic acid, iron, silicon, chlorine, magnesium, citric, titric, succenic, calcium salts, Vitamins A, B, C, D and E, minerals, lactose, enzymes, creatinine, hormones, urea and gold acids. Urea, a key chemical in urine, is known to kill fungi and bacteria (Bhadauria, 2002). This is the principle behind Gomutra being an effective fungicide as well as antibacterial agent, the urine micturated first (early morning) would have more macro and micronutrients along with other enzyme/urea content, that could make it more effective as a fungicide (Chauhan and Garg, 2003). Current researches even exploit the enzymatic activity of the same, indicating that this natural source of enzymes and nutrients can cure many diseases. In the rural villages on India, cow's urine is being used since a very long time, as an effective antiseptic for wounds, skin diseases, bathing, etc. After the plating of cow urine samples, we observed that the cow urine contains Potash solubalizing bacteria (KSB) and Phosphorous solubalizing bacteria (PSB) (Randhawa, 2010). Therefore, it can be applied to the farms as a plant growth enhancer. Generally, the KSB and PSB are available in market at very high prices but if we use cow urine instead of them, then a big amount of money of farmer can be saved. Hence we decided to use cow urine in our experiment.

Properties of cow dung:

The composition of cow dung manure is basically digested grass and grain. The grass and grain which they eat is not easily digested and remain up to some extent in their residue. The grass has the high cellulose content, although there are some species of microorganisms found in the guts of these animals. They actively work upon the grass and other substrate material to break it into their simpler compounds (Nene, 1999; Brown, 2003). The part which is not digested here is forwarded to stomach where in presence digestive juice its gets digested. It has the high roughage content. Cow dung provides high levels of organic materials and rich in nutrients. It contains about 3 percent nitrogen, 2 percent phosphorous, and 1 percent potassium (3:2:1 NPK). In addition, one of the other advantages it is very useful for the farmers to use cow dung manure because it contains high levels of ammonia which is potentially dangerous for pathogens. The growth of the pathogens is almost ceased due to its use (Pongrácz and Pohjola, 2004). For this reason, it's usually recommended that it be aged or composted prior to its use as cow manure

fertilizer. Cow dung contain macro and micro elements in large quantities and hence it is very beneficial for the plants considering their growth. Therefore, we decided to use cow dung in our project.

Properties of *Tamarindus indica* (Chinch):

We used *Tamarindus indica* (Chinch) mainly to avoid the growth of other microorganisms than KSB and PSB during the fermentation process and in the filtrate, product obtained after fermentation process. which may be harmful to the plant because, tartaric acid increases the acidity of a solution and acts as an anti-microbial agent (Kuru, 2014; Gumgumjee, 2012). Therefore, our Biostimulant will act as an anti-microbial agent also.

Properties of flour mill waste:

Flour contains a high proportion of starches, which are a subset of complex carbohydrates also known as polysaccharides. Proteins are present in very high amount in the gram flour. The total protein content of the gram four is 41.00%. It contains vitamins such as, Vitamin A, Vitamin C, Vitamin D, Vitamin E (Alpha Tocopherol), Vitamin K, Thiamin, Riboflavin, Niacin, Vitamin B6, Vitamin B12, Pantothenic Acid etc (Ibraeva, 2021; Braia *et al.,* 2021). It will act as a protein source for the microorganisms (KSB and PSB) during the fermentation process and help them in their growth. Therefore, gram flour is used in the experiment.

Aims and Objectives:

To turn the farmers towards the use of organic growth enhancers in farm by avoiding chemical fertilizers. To minimize the cost amount which farmers wasting over the other organic growth enhancers available in the market. To educate the farmers for the use of pure organic growth enhancers instead of chemical ones.

Materials and Methodology:

Materials:

Cow urine, Animal dung (of Cow), Waste Jaggery Solution, *Tamarandus indica* (Chinch), Flour mill waste etc.

Methodology:

1) Take the all materials in the appropriate quantity and mix them properly and adjust the final volume to 1000 ml.

2) Fill this mixture into a vessel or jar. Tightly close it, firstly with a polythene paper and then by a cloth.

3) Allow this set for the process of fermentation for 7-8 days. During this regularly mix the material present in jar twice a day with the help of stirrer or glass rod as to homogenize the mixture properly. This process of fermentation is called as 'Manure Fermentation'.

4) After the completion of fermentation period, filter the fermented material properly. The prepared filtrate is called "Biostimulant".

5) Fill it in the washed glass bottles and place it at cool and dry place.

6) Use prepared biostimulant for spraying and drenching as suggested follow:

a) For spraying- 5 ml into 1000 ml/Acre.

b) For drenching- 10 ml into 1000 ml/Acre.

Observation:

1] Onion plant:

| **Control** | **Treated** |

Fig.1 indicate as compared to the control plant, treated plant shows more number of leaves and branches. Size of the bulb is also bigger than the control plant.

2] Cotton plant:

| **Control** | **Treated** |

Fig.2 indicate as compared to the control plant, treated plant shows more number of leaves and branches. The number of flowers is also more than the control plant.

Table 1: Showing information about control and treated plants of Onion and Cotton

Onion		Cotton	
Control	**Treated**	**Control**	**Treated**
1) Less number of leaves.	1) More number of leaves.	1) Less number of healthy leaves.	1) More number of healthy leaves.
2) Leaves are not healthy	2)Leaves are not healthy	2) Less number of healthy branches.	2) More number of healthy branches.
3) Size of bulb is small.	2) Size of bulb is Large	3) Number of flowers is less.	3) Number of flowers is more.

Results and Discussion:

The results obtained after using the biostimulant are showing good and healthy growth in both the plants of onion and cotton. It suggests that the biostimulant is providing necessary nutrients to the onion and cotton. The prepared biostimulant is totally organic and free from chemical constituents.

Conclusion:

As indicated in figure 1 and figure 2 and observation table 1, the treated plants of onion and cotton showing more healthy growth than the control plant, so the prepared biostimulant is beneficial and applicable for farmers in various cash crop farming practices.

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SPIDERS AS BIOLOGICAL CONTROL FOR INSECTS AND PESTS

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Abstract:

India is Nation where you find Unity in Diversity. About 60 % to 70 % peoples are involved in actual farming as farmers and other peoples are doing business related o farming Examines the current view of what constitutes an effective predator and how pest control is affected, then compares the spider to the model predator showing how it deviates in some important aspects. An alternative model is suggested which emphasizes the stabilizing effect that assemblages of self-limiting generalist predators can have on associated assemblages of prey. Experimental evidence is presented that demonstrates the role of the spider community in limiting exponential increase in insect populations in both natural and agricultural systems. Also discussed are the means by which the spider predatory effect on prey can be augmented in agricultural systems. Realistic application of spider control of insect pests in the India as part of integrated pest management is considered. All spiders are predators, feeding almost entirely on other arthropod animals, especially insects. Some spiders are active hunters that chase and overpower their prey. As they are predacious arachnids in the animal kingdom over 56,836 different spider species are identified up to 2022. They feed exclusively on insects and pest yet little attention is given in India in view of suppressing the total population of arthropods. In the present study tried to explore the relationship between spider and insect.

Keywords: Spider, Insect, Pests Economy.

Introduction:

Spiders (Araneae) occur in high abundance in all terrestrial ecosystems including agroecosystems. They are a very heterogeneous group of animals with different hunting tactics and therefore, they play very different ecological roles. At family level these tactics are rather similar thus properties and behavior found in different species of one family can be seen as characteristic for the whole family. A qualitative evaluation of pest-spider relationship was carried out for a whole range of agro-ecosystems.

All spiders are predators. Because of their abundance, they are the most important predators of insects. Spiders have been used to control insects in apple orchards in Israel and rice fields in China. Large numbers of spiders have also been observed feeding on insects in South American rice fields and in fields of various North American crops. Modern pest-management strategies emphasize the use of insecticides that do the least damage to natural predators of insect pests.

Although many spiders produce venom for use in capturing prey, few species are toxic to humans. The venom of the black widow (genus *Latrodectus*) acts as a painful nerve poison. The

bite of the brown recluse and others of the genus *Loxosceles* may cause localized tissue death. Other venomous spiders include the tarantula-like funnel-web spider (genus *Atrax*) of southeastern Australia and some African members (baboon spiders) of the family Theraphosidae of Africa and South America. In North America *Cheiracanthium mildei*, a small, pale spider introduced from the Mediterranean, and the native *Cheiracanthium inclusum* may enter houses in late fall and are responsible for some bites. Occasionally tissue death at the site of the bite occurs. Some American tarantulas throw off abdominal hairs as a defense against predators. The hairs have tiny barbs that penetrate skin and mucous membranes and cause temporary itching and allergic reactions.

Certain species of orb weavers (Araneidae), tarantulas (Theraphosidae), and huntsman spiders (Sparassidae) and members of family Nephilidae are suspected predators of bats, especially species of vesper bats (family Vespertilionidae) and sheath-tailed bats (family Emballonuridae). Birds have also been known to become trapped in spider webs, and in some instances, spiders have been observed feeding on birds. These reports have led scientists to propose that flying vertebrates may be an important source of prey for certain species of spiders.

Spiders are often the most diverse and abundant predators in agroecosystems (Benz, 1987, Michalko *et al.,* 2019), particularly in temperate tree fruit orchards (e.g., apples, pears, cherries) (Knight *et al.,* 1997, Amalin *et al.,* 2001, Gontijo *et al.,* 2013). They have been found to be highly effective predators, in part because they control pests as a community, with different species occupying complementary niches (Riechert and Lockley, 1984, Sunderland, 1999, Pekar, 2012). As generalist predators, spiders may be particularly important early in the season when specialist natural enemies have not yet arrived or increased to sufficient abundances for pest control (Pekar, 2012).

As generalist predators, spiders may be particularly important early in the season when specialist natural enemies have not yet arrived or increased to sufficient abundances for pest control (Pekar, 2012). In perennial systems, spiders may play a key role in pest management, because habitat structure and egg sacs are not removed at harvest (Riechert and Lockley, 1984). In North America and Europe, the orchard spider community is dominated by philodromid and salticid species (Wisniewska and Prokopy, 1997b, Horton *et al.,* 2001, Horton *et al.,* 2002, Miliczky and Horton, 2005, Lefebvre *et al.,* 2017, Happe *et al.,* 2019).

Early season pesticide applications may be even more detrimental to spiders, resulting in reduced abundance late in the season (Pekar, 2012). Some researchers suggest spraying at midday when many spider species are inactive or sheltered (Riechert and Lockley, 1984), but this may interfere with other orchard operations or prevent an applicator from avoiding poor spray conditions. Therefore, choice of herbicide, as opposed to timing, may be an easier strategy for orchardists to implement, especially when choosing between options with similar efficacy and target weed species.

Use of spiders as biological agents against crop pest is an important alternative to the chemical insecticides. Prey searching ability, wide host range, case of multiplication and polyphagus nature of spiders make them a biological suppresser.

The intensive study and detailed understanding of specific organisms enables research programs that can address important and timely questions and topics, such as climate change, disease transmission, pest management, and biomaterial engineering (Maher, 2009; Alfred and Baldwin, 2015). The natural world around us harbors surprises that even the most educated and creative minds could not fashion de novo (Bonabeau *et al.,* 2000; Sarkar *et al.,* 2008; Place *et al.,* 2009; Grzybowski and Huck, 2016). Thus, the study of organisms allows scientists and non-scientists alike to travel outside the limits of their own imagination.

Unfortunately, as a species, Homo sapiens is losing its collective knowledge, understanding, and appreciation of the organisms with which it shares the planet. There exists a growing trend for youth and adults alike to be increasingly physically inactive and, associated with this, to spend less and less time outdoors (Guthold *et al.,* 2010; Hallal *et al.,* 2012; Schaefer *et al.,* 2014; Tremblay *et al.,* 2014). Simultaneously, as science funding becomes harder and harder to acquire, basic natural history information and organism based studies are more difficult to not only justify, but also to publish (Greene, 2005; Middendorf and Pohlad, 2014; Tewksbury *et al.,* 2014; LoPresti *et al.,* 2016). Additionally, in higher education there has been an increasing emphasis on pedagogical tools and practices that focuses on learning objectives, associated with broad concepts and critical thinking, with less focus on skills of observation and foundational facts associated with organismal biology McLaughlin andMetz, 2016; Fleischner *et al.,* 2017. The result is that it is more and more difficult to expose teachers, learners of science, and scientists themselves to the incredible wealth of facts, wonders, and curiosities offered by organismal biology—see, e.g., the numerous examples in Carwardine (2008).

Currently, there are almost 50,000 described spider species from 129 families. With few exceptions, spiders are all predators of other invertebrates, and even small vertebrates. They occur in a huge variety of habitats and are considered to be important in biological control programs and M. viridescens Fabr., Coleoptera, Nitidulidae) are among the major pests responsible for significant yield losses (Williams, 2010). Carabid beetles and spiders have a high potential for biological pest control and are among the most abundant invertebrate predators on agricultural fields in Europe (Riechert and Lockley, 1984; Williams, 2010). Carabid beetles are omnivorous species, contributing to pest and weed control in various cereal crops.

By predating on aphids that fall from the vegetation, carabids have been shown to significantly reduce wheat aphid abundance in cereal crop fields (Kromp, 1999). Spiders feed almost exclusively on insects, and reductions of crop pest damage through spider predation of herbivores such as green bugs, leaf flies, and leafhoppers are well documented (Li *et al.,* 2018; Riechert and Lockley, 1984; Schmidt *et al.,* 2003). Parasitism of wheat aphids may have a stronger effect on controlling aphid pest densities than predation by other natural enemies (Schmidt *et al.,* 2003)

In particular, spider communities in areas with a temperate climate achieve equilibrium in the control of agricultural pests. In spite of this, they have not usually been treated as an important biological control agent, because there is so little information on the ecological role of spiders in pest control (Riechert and Lockley, 1984).

However, their role as naturally occurring biological control agents in agroecosystems has been well documented, including their significant top-down effects (Riechert and Lockley, 1984). Therefore, their use in conservation biological control in crop systems is best achieved by preserving the presence and density of indigenous spiders.

Material and Methods:

The spiders *Clubionid spider, Cheiracanhium mildei* were kept in Lab and allowed for predation on Zig zag leaf hopper, Rice skipper, Rice thrips, Rice whorl maggot, Mealy bug and Mole cricket. The present study was carried out in the month of June-2019 upto October-2019. Observation is carried out every Saturday and Sunday particularly in September and October months. The data is analysed by using Microsoft office Excel-2010.

Objectives:

To introduced the required numbers of spiders in the crop fields to help the farmers.

To control the harmful insects and pests in Paddy fields.

To enhance the Economy of Nation.

Clubionid spider, *Cheiracanhium mildei*

Results and Discussion:

I expect that Arachnology will remain strong and hope that this contribution will help to draw future Arachnologists into the world of spider research. However, global threats such as habitat loss, fragmentation and climate change are likely to affect the survival of a vast number species inhabiting a range of different habitats (Leroy *et al.,* 2013, 2014; Kuntner *et al.,* 2014; Mammola, Goodacre and Isaia, 2017). They play a fundamental role in the ecosystem. Despite their ecological importance, the conservation issues about this animal group are largely neglected (Rix *et al.,* 2016)

Considerable predation by spiders was observed of the key pear pest, the pear suckers (*Cacopsylla* spp.) and of the pear lace bug (Stephanitis pyri) common in IPM orchards in the vegetative period. In the latter case it was observed that the Clubionid spider, *Cheiracanhium mildei* showed a positive numerical response to prey density in the field, indicating density dependent mortality resulting in a better natural control. The predatory capacity of clubionid spiders was estimated to be 3.3 mg at 10 °C to 5.7 mg at 20 °C per day with a model based on

digestion and egestion characteristics. This indicates a daily potential killing rate of 3-6 small (LrL3) caterpillars of leaf rollers depending on temperature. The size of the population in an paddy field was estimated to be 60.000 clubionids / ha (22 per plant) by mark-recapture method using double-release protocol in spring.

Rice armyworm- *Spodoptera frugipeda*. Armyworms are the caterpillars that attack paddy. There are rice ear caterpillars, swarming caterpillars and common cutworm. Some insects that attack rice fields are paddy stem borer i.e BPH (Brown Plant Hopper) *Nilaparata lugens* and WBPH (White-backed plant hopper) *Sogatella furcifera*. Natural enemies like egg parasitoids, mired bugs, water striders and Spiders prey on BPH. Mass production of those natural enemies and release of them into the field during the BPH attack. Some other common insects seen are Black bug, zigzag leaf hopper, Rice skipper, Rice thrips, Rice whorl maggot, Mealy bug, Mole cricket and Ants.

These two findings indicate that spiders can be important in reduction of paddy field pests, indeed. Special attention is paid to the differences in spider fauna of paddy field situated in different growing regions, because this knowledge can contribute to improve regional IPM programs. The great differences indicated that the composition of spider communities is basically determined by geographical locations. Although both the pesticide treatments and the different prey densities can significantly influence the densities of spiders, their effects on the composition of spider communities are limited. The effect of conventional (based on broad-spectrum insecticides, e.g. OP's (Organophosphates) and Pyrethroid) and integrated pest management systems on the field, herbaceous-layer and ground level inhabiting spider communities was investigated. The results lead to the conclusion that in case of applying integrated pest management there are possibilities to develop more complex spider communities. The negative effect of broad-spectrum compounds on spiders can be observed only on the field and to a lesser extent on the herbaceous-layer but not at the ground level. Regardless the pesticide treatments the composition of spider communities was similar.

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A RAPID BIO COMPOSTING PROCESS FOR DRY LEAVES, GARDEN WASTE AND GROUND WASTE FROM WORK PLACE

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Abstract:

The word biocompost is defined as plant matter that has been decomposed and recycled as a manure or fertilizer. Biocompost is a main ingredient used in organic farming. Compost which is ready to be used as an additive is brown or black in color. It is very rich in nutrients. There is a simple process of biocomposting by pilling up wastes in the field or any other outdoor place and then keep it without disturbing for a particular time. This process is very useful in ecosystem for soil erosion, landfill cover etc. Usually, the method for these is collecting the plant matter, then to add sufficient water in it and also maintain moisture level in it, also add some content like different types of soils, cow dung and then mixing it to provide a better aeration. Addition of worms and fungi helps in decomposition. They break up the complex compound into simpler ones and during the process lots of heat, carbon dioxide and ammonium is produced. The ammonium is again utilized by the microbes which are available for the plants as nitrates. In the present study this biocomposting work has been done to manage work places dry leaves, garden, and ground waste. This technique is easy to use and eco-friendly alternative to waste dumping. Formulation is simple to mass produce and versatile for different wastes. Here compost generated can be used for as a good soil conditioner and nutrient source. This technique is based on the single, safe, and beneficial microbe, and hence simple to adopt. It will also be an important contribution towards the "SWACHH BHARAT ABIYAAN." It is Therefore, great initiative to create awareness among people, entrepreneur's, manufacturers, biological experiments conducting institutes and local authorities to adopt simple steps to treat and recycle waste at its own.

Introduction:

Composting is one of the most crucial environmentally friendly and natural processes for recycling organic matter, such as kitchen and garden waste, manufacturing waste, industrial and institutional waste into a valuable fertilizer that improves soil fertility and aids plants in obtaining the nutrients they need. As this process is very simple and adoptable for any places like homes, gardens, institutes, and other workplaces to manage their daily wastes. Biofertilizer are substance that contain micro-organism which when added to the soil increase its fertility and promotes plant growth. It contains microbes like bacteria, fungi, algae which helps in promoting the growth of plants and trees by increasing the supply of essential nutrient to the plants. It improves your soil fertility because, Important nutrients are replenished in the soil by compost. We can keep a necessary resource out of the garbage by using compost, which also saves you other resources. Compost has the ability to retain moisture, so you will need less water in your

garden. There would be no need to use any kind of fuel, which would save the expenditures related to waste collection. This aids in preserving the soil's fertility and condition. Composting is of two types depend on the nature of decomposition of organic matter. a) Anaerobic decomposition, in this process oxygen is absent or may be present in little amount and usually occurs at low temperature b) Aerobic decomposition, it occurs in the presence of oxygen and aerobic organisms' breakdown organic compounds and produce carbon dioxide, ammonia, water and humus as product. Compost is a well-known gentle natural fertilizer that releases nutrients into the soil. In contrast to chemical fertilizers, it does not harm the soil. The texture of the soil is improved by compost. Moreover, it enhances airflow in dense soils. It also helps in saving money from buying chemical fertilizers because it is responsible for polluting water sources like ponds, rivers, lakes, and streams. Composting only requires a minimal time commitment, but the benefits to our community are priceless. They will be able to have their trash disposed of by us, and we will be able to safeguard the environment while improving the productivity of our workplaces and enriching the soil. Although making compost from garden waste is not particularly enjoyable, you always want to appreciate and do it because of its many advantages. The world urgently needs this procedure to handle waste generated during work.

Aim:

Managing Garden trash at work to produce bio fertiliser that boosts soil fertility.

Objective:

The main objective behind compost making is to manage the daily waste of workplaces by decomposition of organic matter into stable humus, which aids in enhancing soil quality, is one of the composting's desired goals. 2) To control the garbage produced in the gardens as well as certain kitchen garbage. 3) Assist in boosting the soil's fertility. While a quicker reaction is preferred, the composting process is slow and takes place over time as the food and other organic waste are left unattended. A few ancient and traditional waste management techniques have emerged as a result of years of research, helping to manage office trash, advance bio fertilizer technology for better quality and delivery, and aiding in the soil's ability to retain moisture. When discarded in the backyard, food scraps and garden trash produce an offensive odor and detract from the area's aesthetic appeal. As a result, waste management businesses all around the world have made the decision to assist people by gathering trash and composting them to produce a valuable substance known as humus and it helps the plants in gardens and the crops in the fields to grow properly. It benefits farmers also, and waste can be cut by 70% as a result. Regulated circumstances aid in maximizing the accomplishment of targeted goals. The oxygen supply, temperature, and pH of the degraded components are all controlled. Temperature rises at first during a regulated composting process, then falls. Eventually, the volume of the compost produced is significantly decreased.

Material and Methods:

The necessary materials for composting are dry soil 200gm, cow dung 200gm, red soil 200gm, garden waste like leaves stems flowers stems etc 1kg, water 1 litre, one container to

compost. After collecting these all materials, we can start the procedure a) collect dry leaves, stems, flowers, herbs, and all garden waste. b) chop into small pieces of leaves, stems, herbs, flowers, etc. c) Add it into container, and add dry soil, cow dung, red soil in it. d)Add water and mix it well and pack it tightly. e) Cover it with a fine mesh to prevent it from contamination and foreign particles. f) maintain temperature around 45 to 50-degree c. g) keep it for 22 to 30 days for conversion of waste into fertilizer. h) After formation of fertilizer, compare the normal different soil with fertilized soil by using biochemical tests. Requirements for biochemical tests in glass wares are beaker, pipette, motar and pestle, test tubes reagent like acetic acid, potassium ferrocyanide, hypoiodite reagent, diphenylamine, Conc. H_2SO_4. Methods for bio chemical tests methods are Copper Test-Add sample solution in test + tube +Acetic acid in solution +IF reddish brown +ppt is observed then Cu^{2+} is present. Magnesium test- Add solution in test tube+ Add hypoiodide reagent in solution+ If reddish brown +colour of ppt is observed then MG^{2+} is present. Nitrogen test-Add solution in test tube+ Add diphenylamine in solution+ Add conc. H_2SO_4 +If intense blue colour is observed then NO_3 is present. PH testing take a solution in test tube + add water in it and + insert pH paper in solution. For compost making, Container contains- Dry soil-200gm, cow dung -200gm, garden waste-1kg, water-500ml, red soil-200gm. Glassware- Beaker, pipette, mortar and pestle, test tubes. Reagents- Acetic acid, Potassium ferrocyanide, Potassium ferrocyanide, Diphenylamine, Conc.H_2SO_4.

Results and Obsrevation:

Dry leaves, stems, and garden waste gathered from the workplace have been used to create bio fertiliser. After being dried and crushed, all these components were put in a container with water. Also, biochemical tests are carried out to determine the content of nitrogen, copper, potassium, and magnesium. All elements necessary to promote soil fertility and to compare it to various soil samples.

Biochemical Test:

Elements	Normal soil	Fertilized soil of garden waste
Mg	1.63	2.5
N	1.50	2.7
Cu	0.72	2.0
Zn	2.0	2.5
P	0.6	0.14

Physical Test:

Physical characteristics	Normal soil	Fertilized soil
pH	6.5	5.5
Texture	Dry (fined particle)	Slightly moist
Temperature	40-50^{0}C	40-50^{0}C
Colour	Light Brown	Dark Brown

Obesrvation:

The health of garden is mostly determined by the quality of your compost. Tested the quality of compost before adding it to garden to make sure we are giving it the nutrients it needs. By examining compost's colour, odour, texture, and temperature, we can quickly determine its quality. When compared the compost to a typical soil sample, the presence of components including copper, zinc, magnesium, nitrogen, and phosphorus has also been determined which was found to be higher in biocompost.

Comparism of Normal Soil and Fertilized Soil

The concentrations of the basic elements Mg, Cu, Zn, P, and N, which improve soil fertility, were measured in various soil samples from various places. A variety of soil samples were collected, and after adding manufactured biocompost, the concentration of the essential elements was once more assessed. It was shown that biofertilizers have larger concentrations of these essential elements, helping to increase the fertility of the soil. Fenugreek seeds were sown in the fertilised soil to gauge the efficiency of the compost.
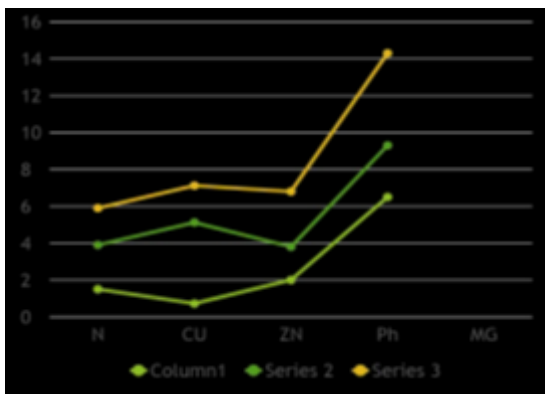
Figure 1: Normal soil
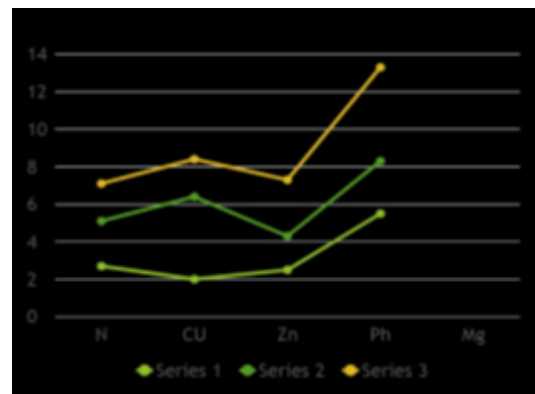
Figure 2: Fertilized soil

Conclusion:

The experiment demonstrated that in order to increase soil fertility, more of the essential components were required than in usual soil samples. The compost containing soil was found to be of greater quality than ordinary soil as a result. Some of the materials used, including cow manure and red soil, can make compost quickly because they contain nutrients essential for plant growth. The compost was made ready for use by plants. This is a chemical-free, all-natural method that can also be used for trash management. We can take inferences from several biochemical tests done on fertilised and unfertilized soil. The nutrients that plants require were discovered to be in great plenty in the treated soil.

Figure 3: Normal soil plant growth   **Figure 4: Fertilized soil plant growth**

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STUDIES ON ECOLOGICAL ASPECTS OF A HERITAGE SIGHT:
FORT GUMTARA NEAR MOHILI

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Abstract:

Ecotourism has a primary focus on exploring and experiencing natural areas in the vicinity for conserving, and understanding cultural legacy of that areas. India a historic and cultural place which has ancient evidence that shows the role of eco-tourism in conserving biodiversity. The present communication is aimed at assessing the ecological status in terms of biodiversity and ascertain futuristic remedial measures forconservation of Gumtara fort located at Mohali village near Dugad which is adjutant to famous Tungareshwar bird sanctuary. The well-known Sanjay Gandhi National Park Borivali and Tansa Wildlife Sanctuary is also located in the vicinity of fifty kilometres from this fort. Present research area monitored since last two decades by the authors, but no scientifically or an ecological point of view this heritage site was studied. Keeping this view in this mind the present work is an attempt to highlight and document the importance of Gumtara an ancient fort and heritage sight of this locality and to produce the document for future academic development.

Keywords: Gumtara, Mohili, Ecology, Biodiversity, Heritage.

Introduction:

Ecotourism has a primary focus on exploring and experiencing natural areas in the vicinity for conserving, and understanding cultural legacy of that areas. India a historic and cultural place which has ancient evidence that shows the role of eco-tourism in conserving biodiversity. "Rocky country, solid country, country of stones. Shri Maharashtra Desha should pay my respects." The importance of the forts and forts of the state of Maharashtra was underlined in this poem by the great poet Kusumagraj which shows the glory of Maharashtra. Maharashtra is blessed with numbers of forts with its historic and environmental importance. Gumtara is a unique but neglected fort located in a very remote area of Bhiwandi taluka in Thane district. Gumtara fort, or Ghotara fort, or Dugad fort, which bears witness to the glorious history of the Marathas, has recently become famous. Situated in a dense forest and away from human interference, the fort is a vibrant structure that is a living testimony to its historical, geographical and natural diversity. The first mention of Gumtara fort is found in the history of Marathas in 1689. References to the construction of Gumtara fort in 1818 are available in Thane Gazette. Historical documents record a battle between Maratha chief Ramchandra Ganesh and British general Colonel Hartley in the village of Dugad at the foot of the fort in 1869 (December 8 to 12). The present study is aimed at assessing the ecological status in terms of biodiversity and ascertain futuristic remedial measures for conservation of Gumtara fort located at Mohali village near Dugad which is adjutant to famous Tungareshwar bird sanctuary. The well-known Sanjay

Gandhi National Park Borivali and Tansa Wildlife Sanctuary is also located in the vicinity of fifty kilometres from this fort. Present research area monitored since last two decades by the authors, but no scientifically or an ecological point of view this heritage site was studied. Keeping this view in this mind the present work is an attempt to highlight and document the importance of Gumtara an ancient fort and heritage sight of this locality and to produce the document for future academic development.

Gumtara fort basement area:

Water reservoir at Gumtara fort:

Material and Method:

The present study is based on frequently field visit and topographical survey for scientific data collection. Visit to some site has been undertaken to know the environmental status. Gumtara is surrounded by variety and richness of all the plants and animals species in a region. It has direct relation with geography, climate and patterns of vegetation and it is seen in ecosystem such as forest, grassland, lakes, rivers, wetlands, mountains and hills. During visits flora and fauna were recorded and identified in the department of zoology laboratory of B. N. N. College Bhiwandi. With the help of referred standard keys available from literature.

Topography of Study Area:

Gumtara Fort has an important chain of forts connecting Nalasopara Port to the west and Junnar Province to the east. It is like this - 'Bhairavgad - Mahuli - Gumtara - Kamandurg - Nalasopara.' The location of Gumtara fort was key in this trade route. The foothills include Dongar Dugad, Mohili, Vedhepada, Peerachi Wadi, Ghotgaon (Ghotwad), Usgaon (Dam), Brahman Pada, Tilher, Gothanpada. The height of this fort is 1949 feet (585 meters). The

range or climb is moderate. It takes an average of 2 to 2.5 hours to reach the fort from the foothills. Also 4-5 roads are available in different directions.

Nestled on a lofty hill, the fort is surrounded by dense forests, accompanied by a serene tranquillity. About 150 feet long carvings, Tashiv ramparts, circular bastions, Balekilla spread over about 4 to 4.5 acres, Gomukhi Darwaza, temple of Goddess, 7 water tanks, (only one tank contains water, it is not potable) and perennial drinking water at the foot of the hill. There is an available water source.

Gumtara Fort - A precious treasure

Result and Discussion:

The forest area and the fort are included in the boundary area of Tungareshwar Sanctuary and 16.9 km to the east of the fort. Mahuli fort at a distance, 24 km to the north. Landmark fort at a distance of 22.87 km to the northeast. In the distance are forts like Kamandurg. From the center of the fort, there is a beautiful view of Tungareshwar forest, Usgaon dam, Lohpe Lake, Kamandurg and Bhiwandicha province. At that time, Sakritdarshani pointed out that there should be an ideal place to keep an eye on all these areas.

The dense forest surrounding the fort, the majestic Gumtara is not just a splendour of the area but a boon. Because the ground water level of the villages near the fort is high. The climate is pollution free and very fragrant. These jungles are giant lungs.

Millions of people depend on various forms of biodiversity for their livelihood such as fishing, collection of honey, fuel wood and timber and other forest product. The livelihood of the local tribal people depends on the forest. A wide variety of legumes - Amla, Karwande, Kosam, Biboti, Jambul, Athurani, Asane, Dhamne, Bore, Rankeli, Quality Honey, Rainfed Vegetables, Crabs, Fish are available in abundance. There are also plenty of herbs. The forest around Gumtara fort is truly rich in biodiversity. There are many types of trees, shrubs, trees, vines, animals and birds. Birds include peacocks, carpenters, eagles, wild pigeons, rabbits, eagles, bhardwajs, parrots and many birds and rats, rabbits, buffaloes, mongooses, bhekar (small species of deer), foxes, various types of snakes.

This neglected and mysterious fort is a place with huge potential for development in terms of eco-tourism, historical tourism, and cultural tourism. The fort must be revived. The work done by the youth of the area through Sahyadri Pratishthan and Shivsmaran Pratishthan in raising awareness about the fort is remarkable.

Table 1: Trees observed in Gumtara fort area

Sr. No.	Name	Family	Economic Potential
1.	*Mangifera indica* (Mango)	Anacardiaceae	Food
2.	*Wrightia tinctoria* (Kuda)	Apocynaceae	Medicine, Wood
3.	*Holarrhena antidysenterica* (Kuda)	Apocynaceae	Medicine, Wood
4.	*Borassus flabellifer* (Tad)	Arecaceae	Fruits and Valuable Neera.
5.	*Orxoxylum indicum* (Tetu)	Bignoniaceae	Fire wood
6.	*Cardia dichotoma* (Bhokar)	Boraginaceae	Fruits are valuable
7.	*Calycopteris floribunda* (Ukshi)	Combretaceae	
8.	*Terminalia tomentosa* (Ain)	Combretaceae	Timber wood
9.	*Diospyros melanoxylon* (Tembhurni)	Ebenaceae	Medicine
10.	*Bridelia retusa* (Asana)	Euphorbiaceae	Timber, Medicine
11.	*Trewia nudiflora* (Petari)	Euphorbiaceae	Fruits
12.	*Tamarindus indica* (Chincha)	Fabaceae	Fruits
13.	*Acacia catechu* (Kheir)	Leguminosae	Medicine, valuable Sap (Kat), Medicine.
14.	*Bauhinia racemosa* (Aapta)	Leguminosae (Caesalpinaceae)	Leaves for Bidi
15.	*Butea monosperma* (Palas)	Leguminosae (Papilionaceae)	Leaves use for Plates and dishes.
16.	*Dalbergia latifolia* (Shisam)	Leguminosae (Papilionaceae)	Timber
17.	*Pongamia pinnata* (Karanj)	Leguminosae (Popilionaceae)	Biodiesel
18.	*Lagerstroemia lanceolata* (Bondara)	Lythraceae	
19.	*Tectona grandis (Sag)*	Verbenaecae	Timber

***Strobilanthes callosus* (Karvi)**

Table 2: Shrubs and Herbs observed in Gumtara fort area

Sr. No.	Name	Family	Economic Potential
1.	*Strobilanthes callosus* (Karvi)	Acanthaceae	Use in House building by Tribal people.
2.	*Achyranthus aspera* (Aghada)	Amaranthaceae	Medicinal plant
3.	*Celosia argentia* (Kurdu)	Amaranthaceae	
4.	*Carissa congesta* (Karvand)	Apocynaceae	Fruits
5.	*Calotropis gigantean* (Rui)	Apocynaceae	Medicinal plant
6.	*Gloriosa superba* (Kallavi)	Colchicaceae	Medicinal plant
7.	*Calycopteris floribunda* (Ukshi)	Combretaceae	
8.	*Momordica indica* (Kantoli)	Cucurbitaceae	Valuable Vegetable
9.	*Cyperus rotundus* (Lavhala)	Cyperaceae	
10.	*Jatropha curcas* (Erand)	Euphorbiaceae	Medicinal plant
11.	*Cassia tora* (Takla)	Fabaceae	Medicinal plant, Vegetable
12.	*Mucuna pruriens* (Kuhili)	Fabaceae	Medicinal plant
13.	*Abrus precatorius* (Gunja)	Fabaceae	Medicinal plant
14.	*Vitex negundo* (Nirgudi)	Lamiaceae	Medicinal plant
15.	*Lawsonia alba* (Mendi)	Lythraceae	Ornamental and Medicinal plant,
16.	*Thespesia lampas* (Ranbhendi)	Malvaceae	
17.	*Nelumbium speciousum* (Lotus)	Nymphaeaceae	Flowers are valuable
18.	*Xanthium indicum* (Vinchavi)	Pedaliaceae	

Since author is a resident of the village at the foot of the fort and my roots are in this area, author have a special fascination and emotional connection with the Gumtara fort and the forest area. From time to time, he always visits the fort. So, author get consciousness and energy and get mental satisfaction. In fact, summer plantations are harmful to the forest area and the fort. This is a big problem. With the co-ordination of local citizens, forest department and NGOs working on environment, awareness can be created and the extent of forests can be controlled. If this happens, the forest area will be more prosperous and the forest deities and animals and birds will be pleased and get their blessings.

Conclusion:

This paper uses scientific data to make comprehensive analysis of ecotourism. The objective of the paper is to bring in picture about Gumtara fort and its natural biodiversity. As this area is very sensitive from ecological point of view, it will be important to be environmentally conscious while developing tourism. Gumtara Fort is a place with its historical and cultural heritage. At the same time, the surrounding dense forest is a paradise. The study area was frequently visited for collecting scientific data during last two decades, Thane district is

bestowed with large forest cover. But scanty work is done or carried out for its scientific documentation. Many tourist and wildlife visitors visit Gumtara fort but without scientific documentation. There is need for long term research on issues and investigation of other sites experiencing the importance of eco-tourism. Enormous potential of biodiversity near Gumtara fort will benefit the society and environment and lead to economic development of the region and conserve endemic species. The ecosystems representing biodiversity have become the major resource for ecotourism.

Recommendations:

1. The tourism promotional strategies designed should match environment quality, social equality, community empowerment, cultural integrity and economic efficiency through training and awareness programmes for all stakeholders.

2. Tourists need to be aware of historical and environmental considerations when coming for tourism.

3. Plastic and other rubbish should not be dumped in the fort and forest area as it will disturb other wildlife. It is our duty to take care of it and increase its glory and prosperity.

4. Excessive tourist activities is harmful to FOREST and grassland ecosystem.

5. Forest has natural tendencies of recovering itself if undisturbed and keep as it is for some time. The habitat of small birds like Quails, Pheasant etc. is reducing rapidly due to loss of grassland.

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THE SEASONAL CORRELATION WITH THE PLANTS AND FESTIVALS OF MAHARASHTRA

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Abstract:

Maharashtra is a state with a great heritage of celebrating culture and festivals. Along with the celebrations, these festivals have a special correlation to the seasonal flora of that season. The state shows climatic conditions due to geographical variations. That emphasizes mainly either offering the plant in worship or use of that plant to prepare one or other traditional cuisine which is again a seasonal characteristic. This correlation is needed to study, as festivals are the treasure of our culture. The future generation should know the importance of that celebration apart from the fantasy. The scientific approach behind that should be followed. The study has been conducted from various literature surveys from Ayurveda, popular traditional systems and ethnomedical practitioners, and elderly knowledgeable persons from various parts of Maharashtra. The questionnaire and interview results were used to create the list of plants for their different uses. According to the" Indian National Calendar" system *"Chaitra"* is the first Marathi month of the year and begins with "*Gudhipadwa*" which is the first festival. Traditionally and in folklore medicine, in dietetics, *Neem* leaves along with the *jaggery* consumed to provide a cooling effect and make the body compatible with the changing climate from winter to summer. In the present study, Socio-medico-religious aspects have been reviewed. Importantly it has been mentioned that the medico-religious system depends upon *"Rutu"* and it is reflected in dietary intake. It has significance in human health and diet which is to be followed in a particular festival celebration. Thus, it can be concluded that almost all the instructions by the medical scholars with regards to the maintenance of good health crept into the common practices of the people in various seasonal religious celebrations and festivals.

Keywords: Maharashtra, Festivals, Seasonal Plants, Socio-Medico-Religious Aspects.

Introduction:

The State, Maharashtra, is in the north centre of peninsular India. It is situated north of 14^0N and south of 22^0N, bounded by the Arabian sea on its western side. The state of Gujarat, lies north of it, while Madhya Pradesh and Chattisgarh lie on the northern and eastern sides of Maharashtra respectively. On the southern side, it is bounded by Karnataka and Andhra Pradesh. The Western Ghats (Sahyadri) run north to south separating the coastal districts of Thane, Mumbai City, Mumbai Suburban, Raigad, Ratnagiri and Sindhudurg from the rest of

Maharashtra. There are four meteorological subdivisions, viz. Konkan, Madhya Maharashtra, Marathwada and Vidarbha in the state.

Climate:

The climate of Maharashtra can be classified under the following main types:

I. Monsoon: This type characterised by an annual rainfall of more than 100 cms is confined to the coastal belt and the adjoining Ghats region covering the districts of Thane, Raigad, Ratnagiri, Sindhudurg and the western hilly parts of Pune, Satara and Kolhapur districts. The coastal region experiences very small annual range of temperature, not exceeding 5o C. The mean daily temperature is above 22o C throughout the year. The mean daily relative humidity is high, generally above 60 percent. The coastal belt is thus hot and humid with plentiful rain during the southwest monsoon season. Over the remaining portion covered by this climate type, the mean daily temperature of the coldest month is between 18o C and 22o C. Relative humidity is reduced, but remains above 50 percent for more than 8 months in a year.

II. Dry climate: This type covers the semi-arid portions of Jalgaon, Nashik, Aurangabad, Pune, Beed, Satara, Osmanabad and Kolhapur and almost the whole of Dhule, Nandurbar, Ahmednagar, Solapur and Sangli districts. Mean daily temperature is between 18o C and 22o C during winter and above 22o C during remaining months. Annual rainfall is low being 60 to 90 cms and is confined mainly to southwest monsoon season. Mean daily relative humidity is less than 50 percent throughout the year, except in monsoon season, falling below 30 percent for 2 to 3 months during summer in the central parts of the region.

III. Tropical Rainy: Parts of Nashik, Jalgaon districts, eastern portions of Aurangabad, Jalna, Beed and Osmanabad, as well as the remaining districts of Marathwada viz. Hingoli, Latur, Parbhani and Nanded and entire Vidarbha have tropical rainy climate. The precipitation is confined to the monsoon season and is above 70 cms. The average relative humidity is above 60 percent except during summer when it is even less than 30 percent for 1 or 2 months. Mean daily temperature is between 180 °C and 22 °C during winter and above 22 °C during the remaining months (1-3).

In Maharashtra, Agriculture is the main occupation. The coastal peoples were following fishing as a main business. Here, different tribes like Warli, Bhil Gond, Kolam, etc. People in fond of loves near to nature, and forests. They worship trees or a special zone in forests known as *Devrai*. The folklore medicine was very popular among the local people and has a great heritage in the form of traditional healers almost in all the villages. The knowledge has not been transferred to the next generation due to the consumption and virtue of certain communities.

Suja has mentioned a few folklores medicinal therapies popular in western ghats. the diversity of Maharashtra flora, especially in the Western Ghats, about 50 species hold a very high value in the folk and herbal health forms for the treatment of different forms of ailments. The most common plants like the *Mimosa pudica, Hibiscus angulosus, Leucas aspera, Phyllanthus neruri, Calotropis gigantea, Tridax procumbens, Parthenium hysterophorus* (which is considered to be a noxoious weed) are all found to have cure for many major ailments like jaundice, asthma, piles, bronchial and blood disorders. The A*nona squamosa, Buchanania*

lanzan, Semecarpus anacardium, Dioscorea bulbifera and Aphanamixis polystachya are recommended for various forms of tumor. Plant parts of Pepper (fruit) and Cinnamom (bark) when mixed together make up a very strong formula for curing Migraine. Frequent doses of medicinal plant extracts of *Rhincanthus nasuta, Momordica dioica, Cinnamomum zeylanicum, Ophiorhizza mungos* relieves cancer patients.

Due to the high demand and less supply adulteration and exploitation of the plant has been observed in certain area all over Maharashtra. Most of the medicinal plants are found to occupy forest types like deciduous forests and evergreen forests. They are found in fallow lands and waysides. It can be noted that the plants that were very common in the area when they were first studied have gotten into the IUCN Red List over the years. *Rauvolfia serpentina, Saraca asoca, Gymnema sylvestre, Gloriosa superba, Strycnos nux-vomica* are included in the list which is very rich in their medicinal strength but is on the verge of extinction.

Despite having different geographical conditions, living habitats diets and floral diversity the festivals are celebrated all over Maharashtra in the same enthusiastic way. The flora and fauna of that particular geographical location have an impact on the customs involved in the celebration of that festival.

Objectives: The study is based on the following objectives-

1. To find the correlation in between custom and geographical locations impacts on Festival celebrations,
2. The importance of plants in cuisines for festivals.
3. To study the role of flora in Socio-medico-religious aspects of the festivals.

Methods:

The collection of data from various locations has been done. The conversation with knowledgeable elders and traditional healers. Reviewing different journals, books and research papers for Geography, Meteorological surveys, the Indian Ayurvedic system and the cuisines of Maharashtra.

As per the Ayurvedic traditional system, Ahara (Food) is one of the *Trayopasthamba* (Three supportive pillars of the body). As it is responsible for both the formation of the body and the manifestation of the disease. Acharyas have also emphasized the concept of *Pathya-Apathya* (Dietetics), where Ahara and Vihara which are beneficial and nutritional to the body and also give happiness to the mind is known as Pathya and opposite to that is known as *Apathya*. The literal meaning of Festival is, in Latin *Festa* means religious holiday. It came into English via French, as the adjective "Festival" (relating to the religious feast). A day or period of celebration, typically for religious reasons.

As per the "Indian National Calendar" (Shalivahan Calendar) system the *Chaitra, Vaishakha, Jaishtha, Aashadha, Shravana, Bhadrapada, Ashwina, Kartik, Margshirsha, Pausha. Magha* and *Phalguna* are the Marathi months. These are divided into Six seasons known as *Rutu*. They are Vasant, Sharad, Hemant, Shishir, Grishma, Varsha. Studying this *Rutu* system is one of the interesting branches that significant the dietary impact of that particular climate on human beings, animals and nature.

The *Rutucharya,* is a discipline in Ayurveda that focuses on consuming seasonal produce and living a lifestyle that is in tune with each season. By keeping the body and mind synchronizing with nature, one can avoid seasonal illnesses.

The Sanskrit word *"Ritucharya"* is comprised of two words. *"Ritu"* means season, and *"Charya"* means regimen. *Ritucharya* in ancient Ayurvedic practice is maintaining a lifestyle and diet routine to deal with the physical and mental impact one faces during seasonal changes.

Ritucharya, in Ayurveda, helps to build physical and mental strength. Thus. it became easy to coagulate with various ailments that may happen due to seasonal changes. Therefore, practicing this regime enables one to balance the three doshas such as *Pitta*, *Vata* and *Kapha* in our body (12).

Ayurveda divides a year into two phases known as *"Kaalas"* periods, and each Kaal is further divided into three seasons. So, according to Ayurveda, there are six seasons in a particular year. Each of these seasons lasts approximately two months, and they are synonymous with the weather seen in the Indian subcontinent.

It can be further explained in detail. The first phase or period or *"Kaala"* is known as *Adaan Kaal* or *Uttarayan* or Northern Solstice. The duration of it is from 14th January to 14th July.

This *"Kaala"* is characterized by intense sunlight and powerful winds, and as a result, all the strength and energy from humans gets sapped away. Moreover, the Sun also takes away the Earth's cooling quality during this time. This *Kaala* is divided into the following three subcategories or seasons (4-5).

1. *Shishir Ritu* Normally we call it a Winter season. In the Shishir Ritu, the Earth's environment is cold and windy. As a result, people's strength decreases. The cold and wet season also increases the Kapha energies in one's body. If you want to keep the aggravating *Kapha* balanced, your Agni element should burn even brighter. The Duration for *Shishir Ritu* is in between mid-January to mid-March.

As per Ayurveda, the diet suggested includes more sour foods like Amla during this season. According to *Ritucharya*, consumption of more salty, fatty, sweet and fermented food items. Also, the consumption of food items like pulses, cereals, rice and milk. It would be best to incorporate condiments like ginger, garlic, Pippali and Haritaki in your meals. On the contrary, it is advisable to avoid consuming food that has astringent or cooling properties. *Ritucharya* also recommends avoiding pungent and bitter foods during this season as it will increase the *Kapha* levels in your body.

Lifestyle: Massage your scalp and body with oil and shower with lukewarm water. Wear warm clothes and expose yourself more to sunlight, especially after a bath.

2] *Vasant Ritu* normally called it a Spring season. Generally, people often refer to spring as the season of flowers; during *Vasant Ritu*, new flowers and leaves bloom everywhere. An individual's strength tends to be at moderate levels during this time. The Earth and Air elements combine to create a lively transition. Furthermore, the *Kapha* energies also start decreasing during this season. The duration for Vasant Rutu is in between mid-March to mid-May.

As per Ayurveda, the Diets should incorporate food that can be easily digested into your daily diet during this season. Eat more rice, old barley, Moong dal and cereals. Pungent, bitter and astringent foods like bitter gourd and neem should also be a part of a *Rutucharya*-based diet. Besides, you must incorporate honey in your meals and beverages. Avoid foods that are sour, sweet, cold and heavy.

Lifestyle: You should avoid sleeping during day time during this season. It is also a good idea to perform Nasya to clear out the nasal passageways.

3. *Grishma Rutu* is known as Summer season. In the Grishma Ritu, the weather is usually extremely hot and unhealthy winds called "loo" blow during this time of the year in most parts of India. Lakes and rivers dry up easily, and plants start to look lifeless and become weak. Moreover, the Fire and Air energies dominate during this time, so the Pitta and Vata energies increase in one's body. One's Agni remains at an all-time low during this season, so it is important to consume light to digest food. One should also avoid long exposure to sunlight and heavy exercise. The duration of this season is mid-May to mid-July.

The diet suggested as per Ayurveda is more mineral-rich, light, sweet and cold foods is recommended to include in the diet. Even drinking of more water and fruit juices to stay hydrated. Some ideal produce for the summer seasons is fresh coconut water, watermelon, fresh seasonal fruits and vegetables and leafy greens. Also, avoid the consumption of warm, pungent and sour foods.

Lifestyle: Nap in the daytime and staying in cool and shaded places when going outside are some recommended by *Ritucharya*. You can also apply sandalwood before and after the shower if possible. Avoid excess consumption of alcohol and cold water, which lowers digestive Agni. The second Phase called as *Visarga Kaal* or *Dakshinayana* or Southern Solstice.

The duration of this period is between the month of 14th July and 14th January.In this Kaal, the days are shorter, and nights are longer. Moreover, in India, people often discourage one from participating in or hosting auspicious works. The three different seasons under this Kaal are:

4. Varsha Rutu, we called it the Monsoon season. In this season, the sky remains cloudy and it rains almost all the time. Generally, thunderstorms do not accompany these rainfalls. Monsoons bring great respite to humans and nature because the dry lakes and rivers are again filled with water. However, one's Agni gets extremely dampened during this season as the Earth and Fire energies are elevated in this season. The duration for this season is mid-July to mid-September.

According to *Ritucharya* in Ayurveda, it is suggested to include more sour, salty and oily foods during monsoon. Drinking lots of soup and incorporating lots of ginger in the meals. Start the season with light meals but slowly transition into oily foods to not shock your body. It is advisable to avoid difficult-to-digest food and excess liquid and wine.

Lifestyle: Avoid getting wet in the rain and napping in the daytime. Additionally, you should also avoid hanging out near river banks.

5. Sharad Ritu is known as Autumn. This season provides one last surge of dryness and warmth just after the rainy season. The Agni and digestive fire in a human's body again starts to gain strength. Moreover, this season pacifies the weakened Vata and Pitta Doshas.

The Duration of this season is between mid-September and mid-November. The Ayurveda has suggested the diet for this, to consume sweet, bitter and easy-to-digest food items. Some food items you can incorporate in your meals are wheat, sugar, honey, patola, green grams, and animal meat like goat meat. On the contrary, you should avoid consuming fats, fish and oil.

Lifestyle: During this season, you should eat only when you are hungry. Furthermore, *Ritucharya* suggests that you use water that is kept out in the Sun so that sunlight sanitizes the water. It is also recommended to opt for Panchakarma practices like *Raktamokshana*.

6. Hemant Ritu is known as Late Autumn or Early Winter. In this season, a cool breeze and chill in the air. Earth and Water elements dominate during Hemant Ritu. Moreover, this season pacifies Pitta doshas in one's body. Individuals regain all their strength, which is highest at this time.

The Duration for this season is between the Mid- November to till Mid- January. The Diets suggested by Ayurveda for this season should follow a diet with lots of sweet, salty, sour and unctuous food items. The food made with flour, green grams and newly harvested rice must be included in the daily consumption. Additionally, increase the intake of milk and milk products, fats, meat, sesame and fermented foods.

Lifestyle: During this season, you should exercise regularly and massage your head and body parts with oil. Furthermore, you should bathe in warm water and sunbathe if possible. You should avoid napping during the day and exposing yourself to cold winds.

Ritucharya in Ayurveda has always preached about living a life in tune with the ongoing seasons. Individuals should eat seasonal fruits and vegetables as they grow during that season and are more suitable for that weather. Though the seasonal products are available throughout the year, it is advisable to stick to natural diets (6-11). Consuming something unsuitable for a particular season leads one to contract various unwanted health issues. That is why it is important to follow the diet and lifestyle lessons of *Ritucharya*.

Observations:

On the basis of various literature surveys, articles and observations an attempt has been made to understand the correlation between the seasons which is based on diet and geographical regions. Also, it is very interesting to note that festivals have their virtue on diet and seasons too. The festival celebrations are the identity of the culture of that region. The state of Maharashtra is unique in that. The scientific approach of *Ayurveda*, towards festival celebration shows a healthy lifestyle since ancient times which has significant value in terms of celebrations.

The *Rutucharya,* is important for maintaining immunity throughout the year. Each new season has its own celebration due to its characteristic changes in the environment. That can be considered as a welcoming of that season and makes the human body adjust to that season through diet.

These seasons are correlated with the festivals. The festivals are all about celebrations. The celebration comes with lots of eatables, and preparations of traditional offerings during the festive time to express joy and gratitude. Somewhere these seasons and festivals are based on nature, especially the plants. In other words, the flora, of that region is highly fascinating in various seasons and festivals too. The most Important and Famous Festivals in Maharashtra are discussed below in which season and festival are showing correlation with the flora. In which an attempt has been made to find the one or other specialty of that plant either in that region or characteristic feature of that plant. Also, the scientific approach towards human health behind using that plant can be flowers, seeds, leaves, fruits etc.

The first festival of the Marathi month is *Gudhi Padwa*, which is also known as *Chaitra Pratipada*. This is a celebration of the new year according to the Indian calendar system. Everywhere in Maharashtra, on this auspicious day, Marathi people celebrate the new harvest of crops, symbolizing a new beginning. This festival is celebrated during the months of March and April. On this day, people decorate a 'gudi' (a bamboo staff) with a colored cloth and a cup to symbolize victory. As mentioned earlier, this festival Chaitra month denotes the *Vasant Ritu*. It is the tradition at various places of Maharashtra that, to consume a mixture of *Neem* leaves and *Jaggery*. It serves as a natural vaccination against cough and cold disease. As such kind of diseases mainly occur in *Vasant Ritu* due to vitiated cough for the subside of cough Neem leaves mixture with jaggery, *Chana dal* and *Jeera powder* is very useful. Hence, some or other ways are included in the traditional diet in Nashik, Western ghat, Marathwada and Vidarbha regions. Where hot flashes were started with Vasant Rutu.

The Akshay Tritiya is a festival, that arrives in *Vaishakh* Month denotes the Grishma season. Especially, in the Konkan region the king of fruit Mango is highly preferable in this festival. The juice of it has *Sheet guna* which calms and soothes the internal body during the hot summer of Grishma. Also provides natural nutrients from the pulp of Mango.

The Naag Panchami, Festival is celebrated in all over Maharashtra in the Varsha Rutu of Shravan Month. Here, mainly in the western ghat region, Roasted cereals of Jowar are offered as a *Naivaidyam*. It indicates that *Varsha Rutu* has a natural tendency to weaken the digestive fire. Therefore, roasted cereals can easily get digested.

The Ganesh Festival is celebrated all over Maharashtra which also occurs in the *Shravan* Month. In *Ganesha* Festival. The traditional recipe of *Modaka* is offered to Lord Ganesha. It has lot of nutritive significance. The filling has Jaggery and graded coconut along with various dry fruits with aromatic *jaiphal* and cardamom powder. The covering, in Konkan made up of Rice flour and in other regions, it is made up of wheat flour. The steaming is provided to get it cooked.

It is consumed with Desi ghee. Hence, the *Modaka* are a rich source of food which provides more energy to coagulate with the climate of heavy rains that normally occurs during *varsha Ritu*. The most glorious festival Diwali, is celebrated in all over Maharashtra in *Hemant Rutu*. In this season cold winds are formed. Thus, dryness in all over the human body. According to the Aayurvedic system, *Abhyangam with Seasome oil* has recommended. The oil has *Ushna*

guna property. In *Diwali*, different types of sweets are prepared and shared. The diya and lanterns lit up during the celebration of the festival.

The *Makarsankranti* festival is celebrated in *Shishir Rutu* which arrives in Magh month. The celebration includes the preparation of *Teel-gul* laddoos. Teel and Jaggery are rich sources of fats and sugars. During this festival, high energy is required the due to cold and chill temperatures in the climate. To maintain high energy in the body it is beneficial to include *laddu* in the diet.

Conclusion:

These festivals are a thread among society, which connects the people with each other, by their hearts. The tradition for the celebration and diet of festivals shows high impact due to the climate, geographical conditions and flora of that particular region. In our modern busy lives, these festivals bring little moments of joy. People celebrate them with families and relatives. The Ayurveda has significantly simplified the season's virtue in Maharashtra. Hence, it is necessary to follow it the traditional seasonal diet instead of following Western culture. Thus, it can be concluded that, despite different geographical locations the balance has been achieved due to the celebration of such festivals with the specialty and uniqueness of the region.

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AESTHETICS OF GENDER: FICTIONAL STRATEGIES FOR GENDER SENSITIZATION IN THE EAST AFRICAN CONTEXT IN ANANDA DEVI'S *EVE OUT OF HER RUINS*

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Abstract:

Gender and gender related issues have generated ample amount of literary works. These themes have also influenced fictional narratives by providing distinct characteristics to plot, characterization, narrative technique, style and dialogue in fictional narratives. Hence, one can state that fictional aesthetics is closely linked with the gender politics that the work addresses. Gender also conditions the way a novel has to be read and understood ever since the impact of Feminism, Womanism and Africana Feminism. It could also be assumed that the textual and thematic features of a novel written by a woman is impacted by the way a particular gender is perceived in the society. Further, fiction also offers an alternate aesthetic and discursive space for marginalized genders. These aspects are particularly true in the case of East African women novelists who try to articulate gender related issues with the cross-cutting issues such as race, class ethnicity.

This paper is an attempt to scrutinize 'Eve out of Her Ruins', a novel written by Ananda Devi, a novelist from Mauritius and of Indian origin. The paper analyses various fictional strategies deployed by Ananda Devi in constructing her brand of aesthetics of gender. It will also examine how fiction becomes a mode of resistance and creativity in the face of poverty and violence. Also within the purview of this paper is the scrutiny of the role of four narrators in the novel in constructing an aesthetic and redeeming fictional discursive space.

Keywords: Aesthetics, discursive space, narrative technique, fictional strategies, womanism.

The term 'Aesthetics' is often defined as relating to or dealing with the beauty in art forms. It is also identified with an appreciative effort or a responsive one to art, literature and other artefacts. It is also considered as a branch of philosophy that deals with art, beauty and fine taste. Aesthetic theory concerns itself with the conception of beauty in art. In the context of literary art, aesthetics are those aspects that add literariness with the use of elements like style, figures of speech, literary devices and all those factors which contribute to the beauty of a work.

Gender and Aesthetics are closely allied in contemporary critical and philosophical perspectives. Aesthetics of gender is about scrutinizing the role of gender in generating certain ideas about art. Conversely it is used in a work of art in looking at gender related themes. Carolyn Korsmeyer, in her study on gender and aesthetics, maintains that feminist approaches are influential in the study of art theory, culture studies and visual studies. She also discusses what is also known as Feminist Aesthetics, which in general, explains the role of women in art,

pleasure and beauty; women in music, literature and painting; the role of gender in taste and food and women's responses to disgust and sublime. (Korsmeyer 11)

Feminist perspectives in Aesthetics are also concerned with the cultural influences that exert a power on the subjectivity of an individual who examines an art form. It is also concerned with the ways in which a novel or a play perpetuates the social and cultural constructions of gender, sexuality and identity. This formulation implies that art has a significant role in negotiating genders and gender politics. For instance, a novel or a play is an ideal aesthetic medium to construct transgender or gay identities.

Feminist aesthetics also implicates that aesthetics is an interdisciplinary domain which draws from language, style, philosophy, sociology and psychology. It also emphasizes the role of women as influential writers and as interpreters of art and popular culture.

Korsmeyer, also explains how feminist aesthetics operates beyond the domain of art, venturing into identity politics:

Much feminist art repudiates the aesthetics values of femininity extolled in earlier times, including the very basic notion of beauty. Indeed, many feminist artists have turned the idea of beauty inside out and experimented with arousing disgust and other disturbing emotions in the process of disclosing, questioning, or debunking myths of female identity. But the prevalence of disgust in art of today is more than a critique of traditional ideals of beauty. (Korsmeyer 9)

Korsmeyer also points to the feminist strategies in art which have considerable impact on how an art form is experienced and what could be the impact of the gender of the artist on the art form:

Feminist artists have explored many avenues of expression, from outright political messages to allusive, indeterminate "writing from the body". Feminist art is situated in the midst of the complex terrain of contemporary art in general, both the "high" art traditions and popular entertainment. Because it employs venerable images while subjecting them to critique and exploration, the works tread a treacherous border between the new and the old, the unfamiliar and the stereotyped. This makes understanding the theoretical approaches to art all the more urgent, for often ambiguity cannot be resolved without the context that theoretical aesthetics provides for the practice of art. (Korsmeyer 152)

What Korsmeyer indicates is that women writers mobilize sensual details, feminine corporeality, concern with disgust, negotiation with patriarchal theories of art, articulation of subjectivity, desires and a strategic ambiguity as some of the features of feminist aesthetics. Ananda Devi's *Eve out of Her Ruins* is a complex novel that reveals the above mentioned features of feminist aesthetics apart from telling a layered story involving two Mauritian women and two Mauritian men – Eve, Savita, Saad and Clelio. This novel also constructs identities of these characters, mostly at the margins of the society in an island nation.

Eve out of Her Ruins establishes the idea of feminist aesthetics with a reference to the centrality of a woman's body in experiencing the literary sensibility. It is revealed in a prefatory poem:

The Sun's gotten into my body. It's the core of what I'm writing.

A portrait of Eve in the echoes of my room. Sentences that

describe her, that draw her out. I'm in love.

I believe in possibilities. Yes, even here. Even hurtling down our slopes. *(Devi* 5)

Eve out of Ruins is a distinct woman-centric novel which develops many fictional strategies including dialogue and interior monologue to compel the readers to understand women's world and women's mode of telling a story. For instance, the novel begins with the first-person narrative of Eve, the female protagonist. This point of view constructs a sense of alarm with the help of rich sensory details. These images indicate a distinct feminine corporeal experience based on the senses: "I clear my own path. What was once deep within me – the slow drip of life that has slipped away and turned me into this livid creature sucking the night dry – no longer matters. The silence that fills me takes my breath away" *(Devi* 13).

Eve's narrative revolves around traumatic memories. These memories are also marked on her body. This experience splits herself from her corporeal being. The following extract sensitizes the readers about the close alliance of a woman's body and her memories:

I was wearing a red T- shirt, with a soccer player's name on it. I don't remember who anymore. His hand stopped at my breasts, slowly moved up and down, just over the small black points. There was hardly anything there. I heard other children shouting and playing. They seemed far away. It was another world. The boy had slipped his other hand in. His skin turned blotchy. His cheek was hot. He took his time, even though he was scared. But I didn't feel anything. I was out of my body. *(Devi* 23-24)

Eve's ambivalence about her body and identity is articulated further with a sense of disgust which is so typical of what Korsmeyer observes as a part of feminist aesthetics: "I am a permanent negotiation. My body is a stop-over. Entire sections have been explored. Over time, they blossom with burns and cracks. Everyone leaves some trace, marks his territory" *(Devi* 25).

Eve's sense of disgust at the physical contact is amplified further to show how she detests violence and fixities: "The more they touch me, the more they lose hold of me. The ones who dare to look into my eyes feel dizzy. They're so simple. The inexplicable frightens them. They have fixed ideas. A girl to marry, a girl to conquer and toss aside" *(Devi* 26).

Ananda Devi portrays the victimization that the women face and the way they try to cope with the abuse with her bold yet aesthetic language. She also forces the readers to ponder, realize and be sensitized through the text. Eve's disgust, numbness and a feeling of surreality is evident in her narrative – the way of coping, surviving, trying to forget:

The hand around your ankle doesn't let you go. Its grip tightens. You have no choice now. You can only scrub your burdened flesh again and again, without realising that you're also erasing your own self. Forgetfulness is the common link between day and night, the smooth wall that protects you from yourself. You go deaf. You no longer hear the roaring that once tormented your ears. You no longer hear the music in total contradiction to what you see. *(Devi* 37)

Feminism has always sought to highlight the disastrous impact of patriarchy upon women's life. Women are subdued and exploited not only in public sectors but also in private sectors. As the socialist feminist Simone de Beauvior said "Only man has the freedom to choose and subject. In contrast, women are both inessential and object" (Beauvior 23). Women are always at the mercy of a man's desires, wrath and abuse. They are so used to such a treatment that they no longer try to even acknowledge their own trauma or the injustice done to them and in many cases to their daughters, let alone protest against it. This women's apathy (Eve's, her mother's), the disembodiment of feelings, the acceptance of inevitability in a patriarchal society is portrayed aesthetically by Ananda Devi in the novel *Eve Out of Her Ruins*:

I sleep. I wake up. Mould seeps into my room. The shower next door drips all night. Humidity seeps through the walls. I feel like I am the one seeping through. I hear my father shoving my mother around. I hear my mother's apathy. Tomorrow her arms will be black and blue. Tomorrow, she'll walk with a waddle. Tomorrow, he'll have sulphurous eyes and he'll smell harsh, like a man. *(Devi* 47)

Sexist attitudes within the classroom, the work place, etc. continue to plague the lives of women who have to deal with biases, subtle, sometimes bold sexual abuse. The fact that Sexism exists, even in the 21st century in every sphere is portrayed with brutal honesty in *Eve Out of Her Ruins* through Eve's narrative. Women are considered objects of desire, things to be molested, used and thrown as per convenience, something men have a right to possess, condemn and judge is reflected in the novel. Ananda Devi tries to sensitize the readers to this issue through the bold and heart wrenching narrative of the protagonist, Eve, set in the island nation of Mauritius, where Eve has to trade her body, let people fondle her in return of pens, pencils and books – even her professors:

He helps me, of course. So it's a trade-off. He gives me books, he pays more attention while correcting papers. He makes sure, in class, not to look at me more than anyone else, not to ogle me with his milky, wandering eyes, but everybody knows. The smell of a man around the woman he's lusting after doesn't fool anyone. His jerky steps toward her doesn't either. *(Devi* 63)

As Carolyn Korsmeyer indicates in her study of gender and aesthetics, the feminist aesthetic strategies encompass the feelings of hollowness, emptiness and the hopelessness of an abused woman. She starts looking at herself as an object rather than a woman. The continual abuse embitters her and exhausts her. There is self-loathing. She stops letting herself 'feel'. She blocks herself out and distances herself from her core as well as the outside world. What remains is just a hollow outer shell. She is plagued by exhaustion and her face is a blank mask. This kind of a coping mechanism is reflected in Eve's narrative:

A cigarette to mask the bitterness in your mouth. Eyes open, you work. Seventeen years old and you dream of nothing. Except continuing to walk beside yourself, fleeing your reflections. Seventeen years old and you think you know everything. Your face is stony and your hands exhausted.

When I walk under the mango trees, they wave to me like they know me. I think I look like lots of things – organic, or mineral, or strange and sloughed – off, but I don't look like a woman. Only a reflection of a woman. Only an echo of a woman. Only the deformed idea of a woman. *(Devi 66-67)*

Women writers mobilize sensual details and desires. This is so aptly indicated by Korsmeyer. Ananda Devi's *Eve Out of Her Ruins* is no exception. The indication, that women writers mobilize sensual details and desires is evident in Eve's and Savita's narratives hinting at a lesbian bond:

Eve's silence is the rumble deep within a volcano. It hurts me to see her so fragile when she thinks she's so strong. When she's serious, her face is like a child's shocked in a dream, her eyes filled with lights. Her laugh is so rare, but when it comes it's like a hurricane. When I get close to Eve, she sweeps me off my feet. *(Devi 69-70)*

Feminists have always argued that women, irrespective of their caste, creed, religion, economic and social background are abused by men, all over the world. Often men dominate or abuse women sexually to cover up their impotence. The more ashamed they are, the more they exploit women sexually. They strip a woman of her dignity completely. They don't spare her even in death. This fact that women are judged, condemned and considered as property of men is once again highlighted in *Eve out of Her Ruins*. A woman being stripped of her dignity, a man's – a vile man's one-upmanship's prevalence and survivor's guilt is reflected in Eve's narrative:

He refused her any dignity and threw her into a skip. He decreed: You are nothing. You don't exist. You've lived for nothing. You're not useful for anything. You're over.

The man, in his uselessness, prevails. What does she say? What does she do? Does she cry? Does she accept the inevitable? Is she happy that she's been finished off? Does she think of me in her final moments? Does she ask me, why aren't you there? *(Devi 110)*

A woman scorned, a woman at the end of her tether, a woman who has had enough, a woman who just can't take it anymore, who just wants to finish it once and for all even if it means getting imprisoned and knows that that's the only way she could ever get some semblance of peace – some getting back at the world for all the injustice meted out to her, a woman who is so exhausted that she just doesn't care anymore about whether she is alive or dead, who is in fact already dead inside – that shell of a woman is most aesthetically described by Ananda Devi, as only a woman writer is capable of doing. The emotions, the inevitability, the feeling of poetic justice are all palpable in the minds and hearts of the readers who irrespective of their gender are forced to acknowledge that women have to undergo all sorts of discriminations even in the 21st century. These myriad feelings and reactions and sensitization are blatantly revealed in Eve's last narrative:

The gun is heavy, but it's not very big and fits comfortably in your hand. You wonder if the safety catch is switched off, if you know how to shoot. The waxy skin you're looking down at doesn't look human at all. It looks more dead than Savita's skin at the morgue. You think about her again, as you saw her last. It's because of him that she had this purplish tinge, this

rigidity, this absolute stillness. It's because of him that she contradicts everything she ever was: a girl, who was laughing, thoughtful, warm and alive, above all, alive… You will not forgive him. *(Devi* 169-170)

Ananda Devi uses chunks of texts in italics as a narrative strategy. These texts, indicate a disembodied voice which aligns itself with a feminist consciousness. It also ironizes and there by attacks patriarchal perspective on woman and her body:

The weakness of a female body, its lack of fighting strength. At the very first blow, they give up. What remains is a passionless thing, maybe not even a thing. An annihilation. A disappearance. But she was already dead long before, this little girl who was your friend, long before he put her in a skip while thinking that this was what they did, those guys who lived in this neighbourhood, if they had to kill. (Careless, irrevocable contempt.) *(Devi* 150).

Ananda Devi thus mobilizes a variety of textual and literary devices to construct the perspective of a woman and feminist consciousness. She makes her narrators to write from their bodies to, locate memories in their bodies and to reveal an aversion for patriarchal appropriation and objectification of female body. The whole novel is an enterprise in constructing a narrative out of unpleasant woman-centred experiences. It, thereby, manifests the aesthetics of gender which narrativizes the politics of gender.

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NEW AESTHETICS OF HORROR MASHUP: ANALYSIS OF NICK MAMATA'S
MOVE UNDER GROUND

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Abstract:

Mashup fiction is a new sub-genre of novels which combines various styles, eras, concerns and characters to create a fictional remix. This genre challenges the conventional notions of authorship and advances the idea of collaborative writing with the writers of the past. Open to fantasy, futurism, and absurdism, mashup fiction subverts some of the tenets of fictional narratives. Mashup retains some part of the original narrative though it also re-renders classics in the postmodern remixes.

This paper is an attempt to analyse the horror mashup novel, *Move Under Ground* written by Nick Mamatas to show how the narrator mixes various styles and conventions to create the new aesthetic experience of reading a novel. It also explains how the beat narrative of the 1960s gets re-rendered in postmodern contemporary style. The novel also takes a back-glance at the iconic figures of beat movement but with a contemporary playful mode. This paper also documents the features, techniques, and aesthetic purpose of a mashup narrative.

Keywords: Mashup, Remix, Aesthetics, Beat movement.

The word aesthetic is concerned with beauty especially in the context of art. It is also related to ideas such as appreciation and response to art. Further, aesthetics is a branch of philosophy dealing with the nature of beauty, art and taste. Also, implicated by the term is the theory of beauty in art and literature. However, with the changing socio-cultural background, the notion of aesthetics has also undergone changes. Consequently, one could talk about the aesthetics of suffering, aesthetics of pain, aesthetics of trauma, aesthetics of horror and so on.

In the later decades of the 20th century there were many attempts to redefine some of the notions of art and its appeal. These attempts were triggered by the developments in cognitive science, reader response and other similar changes in the world of art appreciation. Consequently, what is considered as art has also been redefined. Modernism and Postmodernism have also ruptured the traditional notions of art and literature. Many strategies such as style, narrative techniques, characterization and setting have undergone drastic alterations to accommodate some new aesthetic urges. What was traditionally considered non-literary and non-aesthetic have been mainstreamed into literature and art. One such development which made an impact in the world of fiction is that of mashup narrative. Eduardo Navas professes:

Remix is a discourse that encapsulates and extends shifts in modernism and postmodernism; for if modernism is legitimated by the conception of a Universal History, postmodernism is validated by the deconstruction of that History. Postmodernism has often been cited to allegorize modernism by way of fragmentation, by sampling selectively from

modernism; thus, metaphorically speaking, postmodernism remixes modernism to keep it alive as a valid epistemological project. (Navas 04)

Mashup fiction or mashup novel is a narrative which is often a parody of a canonical work. It combines a pre-existing literary text with another genre, making a single narrative. Usually, a classic novel is welded with a horror plot to create a bizarre and anachronistic narrative. Many elements of horror fiction such as vampires, spirits and zombies populate this genre. Also known as a literary remix, a mashup narrative often retains 60 to 80 percent of the original text with new twists added to it. The author of a mashup novel considers himself/herself as a contemporary co-author.

Mashup fiction is inspired by the music industry, wherein remixes are very common. However, the term mashup novel was first used by Seth Graham-Smith in his 2009 novel Pride and Prejudice and Zombies. Also known as parody and literary hybrid, this genre gained popularity in the early decades of the 21st Century. Mashup narratives mostly depend on fictional plots, though a few of them are also based on historical figures and events. A classic example is the work – *Abraham Lincoln: Vampire Hunter*.

Irina Perianova observes that hybrids are common in natural science and mythology. She cites the examples of mermaids, Greek Gods, Egyptian Gods and the Hindu God Ganesha to indicate how hybrids have attracted attention from the time immemorial. She argues that hybrids are also a part of social and psychological experiences. She further uses hybrid as a springboard to erase the boundary between various disciplines and genres. She also connects hybrids to the notion of post-reality indicating that reality eludes narration and what remains is a hybrid discourse. She also maintains that the contemporary era is that of hybrids generated by the internet and artificial intelligence. She also connects the idea of hybrid to post-reality:

But the new post reality is not only about wilful or random lies or untruths. The entire lifestyle is changing. Exams and interviews on Skype become increasingly common and "real" – with the consequence that the phrase "in person" acquires new meaning. For many drivers GPS is much more of an authority and much more "real" than their own senses – as a consequence, they may head down a one-way Street this disbelieving their eyes' evidence of oncoming cars. (Perianova 6)

Perianova indicates that the world of hybrids is a world of post-reality and crossovers. This notion can be applied in the world of mashup as well, in which the very truth of authorship itself is challenged apart from the challenges to the so-called historical facts. A mashup novel is a hybrid of many genres and voices. By contaminating the voice of the author, a mashup writer brings into question the very basic issue of authorship.

This paper analyses Nick Mamatas' mashup novel, *Move Under Ground* which is a brave take on the 1960s' sensational beat generation work, *On the Road* by the author Jack Kerouac. Kerouac was the first to introduce the concept of 'Beat Generation'. His most popular novel *On the Road,* therefore, becomes the epitome of a beat generation text, exemplifying most of the confessional and socio-culture features associated with beat generation writings.

A truly confessional narrative, Kerouac's *On the Road* is the chronicle of his journeys with one of his renowned contemporary authors Neal Cassady. Kerouac's observations on his road trips expose the common feeling of alienation of the entire 1960s' American society, which has always been the underlying theme of beat authors. The essence of beat generation works is transgression against the social acceptance of authority. This desire for anarchism and revolt transforms into the conceited literary devices such as disruptive expressions, glorification of Jazz culture, crude obscenity and sexuality. These techniques and features are employed by Kerouac in his novel (also by all beat authors in their works) to subvert the false formalities of their contemporary social structure. Interracial comments, cross cultural experiences and a quest for some unexplained equivalent of God and spirituality with the insights of Buddhism are also regarded as the central themes of the novel – *On the Road*.

On the other hand, as a true mashup novel, *Move Underground* retains most of the plot of Kerouac's work with the transgressive essence of the beat generation and re-renders it in postmodern contemporary style. This novel creates a perfect Petri-dish for fusing the elements of two absolutely dissimilar genres and eras – the social comment of 1960s' beat generation and the1920s' Lovecraftian horror.

The remix culture is built upon the technology-based practice of applying new techniques on old music, video games, art and in this case literary works. Steven A. Hetcher Defines mashup as: "A term roughly synonymous with remix frequently used in a musical context is "mashup," which "[t]ypically consist[s] of a vocal track from one song digitally superimposed on the instrumental track of another" (Hetcher 1872). Mamatas' mashup novel *Move Underground* borrows this formula of remix and applies the modern horror techniques on the American Beat Gen classic – *On the Road*, where The Mythopean lore of the seminal work of Lovecraft – The Call of Cthulhu, engulfs the despondent world of the beat writers. An utterly bizarre new aesthetic paradigm emerges from this mashup which challenges readers with cognitive dissonance as the eccentric alignment of two unrelated realms of literary universe collide: the ghastly paranormal features with the hard-hitting reality of a distressed generation.

This amalgamation of two forms points out to another feature of mashup which is – the bland parody and allegory. Mamatas mimics certain beat-link conventions to generate a motiveless parody of the literary and philosophical discourses of the 1960s. His narrative is laced with allegories which become intertextual references of both; the traditions of the 1960s and 1920s. This technique decontextualizes both the literary conventions and generates a collision of styles, tropes and themes. The interpolation of the beat philosophy with Lovecraftian horror trivializes and ironizes, in a postmodern way, both the conventions. The resultant incongruity is a postmodern appendage to both the genres and the aesthetics of fiction.

Right at the onset of the novel, an outright violent revenge of the old God Cthulhu (referred to as the "Great Old Ones" in Lovecraftian fiction and "the Dreamer" by Mamatas) seems imminent as Jack Kerouac is placed at the centre of disturbing paranormal events of mass suicides and mindless mass murders by God-like creatures. He confesses: "As weird as the jazz

massacre was last night, as insane as the spontaneous mass suicide of two days ago" (24); "Damn, I've seen gods and suicides and ghosts and bug faced businessmen, all in the past two days" (Mamatas 25).

Mamatas cleverly turns a cryptic letter from one of the beat writers, Neal Cassady, into an indication of catastrophe and renders the transition of the plot from Kerouac's road trip logs to the chronicles of an underground quest to rescue the world from apocalyptic events. The central character exclaims: "…I knew from my adventures on the road with him, but I didn't learn what was eating him 'till I got that letter that drove me to move under ground" (Mamatas 01).

The above-mentioned transition in the plot highlights the pastiche of two styles and voices in the novel. Mamatas retains the diction of 1960s America, the jazz quaintness and winding narration style of Kerouac. However, the ghastly element of horror evolves with a subversive postmodern style. In fact, Mamatas brought Kerouac, Niel and Allen (the prominent beat writers) in the fore as characters in his fiction, transforming Kerouac, the author, into one of his own creative fictional personae. It is apparent that the postmodern element of remix is employed thoroughly in this text to allegorize the original work of modernism:

The remix is always allegorical following the postmodern theories of Craig Owens, who argues that in postmodernism a deconstruction – a transparent awareness of the history and politics behind the object of art – is always made present as a "preoccupation with reading." [8] The object of contemplation in our case Remix, depends on recognition (reading) of a pre-existing text (or cultural code). For ovens, the audience is always expected to see within the work of art its history. (Navas 67)

Thus, by effacing the allusion of pseudo-names (Sal and Dean for Kerouac and Cassady) used by Kerouac in his original work, the narration collapses into the real life of the author, blurring the boundaries of fiction and reality. This also creates a meta narrative with a critical commentary on the narrative styles and literary themes of the writer as the intentions and personalities of the beat gen characters unfold in the course of the tale, whether it is "…the divine fool Neal…" (Mamatas 31) or Allen with his pocket full of pills: "I knew he wasn't going to be moving tonight. Maybe he had a pocket full of pills to keep him up and frantic in the dark, maybe he'd sleep in his own piss or jerk it all night…" (Mamatas 45).

Kerouac and the beatniks, as they were called by their contemporaries, sought an escape from the social norms of their generation. They rejected American values and especially socio-political authority. Mamatas mashup becomes a platform to critique how the beat generation's bleak temperament and their disagreement with the post-war society were actually blown out of proportion in their literary expression, always portraying the social norms and regulations as a hazardous threat to their generation. They also considered themselves – in their literature, as the only people aware of this doom and declared their ventures as rescue missions. *On the Road* captures this essence of beat generation philosophy as Kerouac and Neal Cassady embark on their journey on the American roads believing firmly that the society is threatened by the post

war consequences and they earnestly believe that their desire and quest for a God like figure will provide some kind of salvation for the world.

"He could feel it too, how the world was pulling itself apart somehow, and how some dark dream had begun to ooze into the American cracks…. He was trying to stich something together; he had some weird forlorn hope that he could save the world from what we both could feel was lurking in the Outer Deep." (Mamatas 09)

Mamatas mocks the vain intensity with which the beatniks attack the social degeneration and their contemporary society by transpiring the beat gen fear of a falling apart nation and doomed society in to an evil God, which is personified into the rise of the age old devil of doom threatening to pull apart the world. Hence, the real conditions of 1960s America are represented by the horror trope of a terrifying ancient entity which has taken most of the human race under its trance and now reigns the entire sky. Hence, in *Move Under Ground* the beats have the mission to save all ordinary citizens from their ignorant existence under the trance-like regulations: "We have to save the world. Only Beats and grifters and bums and junkys are immune to the Call" (Mamatas 84). The novel also exposes the self-glorifying attitude of the beat writers who declared themselves saviours of the society. The character of Neal is bestowed the status of saint when Jack declares that: "If there was anyone who could shake America by the shoulders, and wake it up to the threat it faced, it'd be Neal. He was a bodhisattva himself…". (Mamatas 33)

Lastly, it can be observed that, these horrific happenings indeed intrigue the readers as they transpire amidst the most unexpected setting of an original beat generation confessional and transgressive narrative resolved to challenge its contemporary norms and notions. The narrative mocks the beat attitude as it makes sure not to tolerate the slightest error of its faulty society even in a life-threatening situation. Apparently, the protagonist doesn't fail to casually slide a sly comment on the degeneration of the alcoholic negligent America of his era. Jack Kerouac, being true to his beat temperament, made sure to mock: "The one thing the town was not without was alcohol...Didn't see a school. But Bars. Oh the bars, four bars in a cul-du-sac waiting for me at the end of this little town." (Mamatas 20-21)

Hence, it can be concluded that this convergence of literary styles and telescoped plots churn out a postmodern discourse linking forcibly the two co-authors, the genres and the two eras with a new aesthetic of horror in Mamatas' mashup novel *Move Under Ground.*

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CHILD SUBJECTIVITY AND AGENCY IN THE NEW GENRE OF JUVENILE DETECTIVE FICTION: ANALYSIS OF SOWMYA RAJENDRAN'S *ASHWATHY AND THE BOOT OF GOD*

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Abstract:

Juvenile detective fiction is a sub-genre of detective novels which has gained popularity in recent years. This recent advancement in crime fiction focuses mainly on a juvenile detective and his/her abilities. It becomes exciting as the genre has its plot, characterization, setting and style conditioned by the perspective of a child protagonist. Elements such as fantasy, adventure, fear and excitement are also woven into this kind of narrative. Further, it also foregrounds the subjectivity and agency of the juvenile detective who also mobilizes imagination, emotions and intuition in cracking a complicated crime.

This paper is an attempt to examine the identity construction in and the features of Sowmya Rajendran's novel, *Ashwathy and the Boot of God*. It also explains how Ashwathy, the child protagonist, reveals her subjectivity, agency and identity in the narrative. Further, the paper analyses the narrative to show how the genre of Juvenile detective fiction operates and creates a new aesthetic. This paper also explores the psychological, social and cultural implications of juvenile detective and her views.

Keywords: Juvenile Detective Fiction, Agency, Fantasy, Subjectivity, Identity.

Subjectivity is a term that means an individual who has conscious experiences including views, opinions, emotions, desires, personhood, agency and expressions. It is also considered as the opposite of being objectified, rendered without identity and mind of one's own. When someone is a subject, he/she has an agency which means the ability to act upon some other entity.

Subjectivity, in philosophy and psychology, is also linked with scepticism, the tendency to ask questions and develop doubts. It is also considered as a part of individuation that is the process of becoming an individual by exercising mental and intellectual abilities.

Child subjectivity or childhood subjectivity is a term that indicates a psycho and social development of a child in the context of construction of identity, expression of feelings and thoughts and the child's awareness of identity. In traditional situations, children are often classified under dependent identity. However, studies have proved that children and young adults have both subjectivity and agency. It is also often considered that children get involved in the process of subject formation by employing many strategies of identifications and disidentifications.

Michael O'Loughlin describes the term subjectivity in the context of childhood:

Subjectivity describes our sense of being in the world. Notions such as individual identity and autonomous self are problematic because they postulate static and essential notions of selfhood, and because they are premised on the assumption that we can separate ourselves from the world and define ourselves independently of it. Nothing could be further from the truth. Children are born into families and communities that embody specific languages and discursive practices. (O'Loughlin, 49)

O' Loughlin also explains the process of one becoming a subject. The cases of identification and disidentification are explained here: "We become subjects through processes of identification and disidentification. We clarify our gender and ethnic identity, for example, by some combination of identification with desired gender- or ethnically- identified objects, and disidentification with objects that we perceive as other-that-what-we-desire" (O'Loughlin 50).

Loughlin further states that a child's individual subjectivity manifested through identification is often reflected in the relationships. A child's tendency to like certain people as their caregivers is a part of identification. Child's hatred on the other hand is considered as an instance of disidentification.

Loughlin also considers discourse as a site for the construction of subjectivity. He maintains that language and expressions can also construct the subjectivities of children. He explains in detail various constituencies of discursive subjectivity:

While it is important to acknowledge the situated nature of our subjectivities, this does not mean that children or adults lack agency. In fact, an important virtue of our capacity to disidentify is that it endows us with the capacity to reject received ways of being. Being is, after all, a dynamic process. While the discursive climates in which children grow do matter, of greater interest to us as educators are (1) the ways in which children choose to identify or disidentify with aspects of their discursive possibilities in constructing possible selves. (Loughlin, 59)

While agency is defined as the capacity to act, children's agency is often understood as their ability to exercise choices. Their perceptions of opportunities also add to the sense of agency. In the context of a society, this indicates children's autonomy in the face of adults' authority. Children's agency is also considered important in their survival of traumatic events. While social practices generally looked down upon children's insights and opinions, fiction, particularly fantasy, brings to the fore these aspects. Children involved in decision making are common characters in the fantasy genre.

Juvenile crime fiction or juvenile detective fiction is a subgenre of crime fiction which has a child or adolescent as the protagonist who reveals extraordinary intelligence or sixth sense to crack a crime mystery. Such a novel depicts the regular concerns of a child along with his/her problem-solving ability. Further, this form of narrative shows that children are not insulted from crimes and that they have their own views and insights about a particular crime. Broadly classified under juvenile fiction, juvenile mystery has a boy or a girl as the detective.

Sowmya Rajendran's *Ashwathy and the Boot of God* is a juvenile detective narrative which foregrounds a child's subjectivity and agency effectively. The very beginning of the narrative emphasizes Ashwathy's rare sensibility and her interest in crime mystery. "When Ashwathy first saw the boot, sticking out of a pile of leaves, she thought she'd discovered a dead body. This made her happy, of course. Ashwathy was very fond of watching psycho movies and it was her greatest dream to stumble upon a scene of crime someday" (Rajendran, 1).

When a woman in a photograph starts talking to her as a voice of God, Ashwathy is not scared. Till then Ashwathy was an atheist and after this incident she becomes a detective for God, trying to crack a murder mystery. She also develops a power to read the minds of others. She is also able to strike up conversations with the spirits around her. She realizes that a woman named Sreeja has been murdered. She also doubts the abilities of God. This indicates her growing sense of identity and her agency: "Ashwathy flushed. Could it be… could it be that God knew? Was she really omniscient, the way the scriptures said she was? Ashwathy avoided God's eyes and put her back into the boot. Then, she opened her math notebook and looked at the sums. But she couldn't get herself to focus" (Rajendran 23).

Ashwathy realizes that she has practical difficulties in being a God's detective. She is smart enough to know that a child detective will not be taken seriously. She tells God:

I was thinking of all the difficulties that lie before me. I don't know Sreeja's family but it's necessary that I talk to them myself. But I don't imagine they will want to talk to a school girl…a complete stranger at that. Why would they? But then I thought…what if I wasn't a fourteen-year-old girl at all? What if I was someone they'd actually want to talk to? (Rajendran 36)

Like a seasoned investigator, Ashwathy develops certain doubts in her visit to Sreeja's house. Rajendran indicates Ashwathy's rare ability to observe details: "On her visit to Sreeja's house, Ashwathy had noticed that the bushes near the well appeared disturbed, as if someone had hidden amongst them. When she'd asked Lalitha, Sreeja's mother-in-law, about it, she'd replied with a vague expression in her face that a goat must have got in" (Rajendran 42).

When she decides to carry out an investigation on a cigarette stub found at the crime scene, Ashwathy takes the help of her friend Radhakrishnan. Together they collect some cigarettes and stubs under the pretext that they are doing a project. They tell Leela, Ashwathy's mother, that they are involved in a project work based on the effects of smoking. Here again, Ashwathy reveals her agency which is way beyond her age.

Ashwathy also reveals her identity and agency in the context of the role that she plays in school drama. She plays a role of Shoorpanaka and justifies her selection of role: 'I'd rather be Shoorpanaka than Sita! At least Shoorpanaka did something when she was insulted!' (Rajendran 87).

Ashwathy makes her friends Malavika and Geeta also very confident. The narrator explains how Ashwathy manages to do that: "As they walked down the road, Malavika and Geeta felt increasingly confident about themselves. Just as Ashwathy had said, everyone looked

at them with great respect, giving way and maintaining a reverent distance from them" (Rajendran 91).

Ashwathy further disguises as a Swamy and visits Sreeja's mother-in-law. As she enters her house, she has some genuine doubts about Shivam and a woman she has already met. This ability to look at things and people with suspicion is also a significant aspect of Ashwathy's agency: "As they entered the drawing room, Ashwathy noticed a woman sitting on the sofa, engaged in deep conversation with Shivam. Was it the same woman she had spotted in the bus? Ashwathy couldn't be sure but she was of the same complexion and build" (Rajendran 93).

Ashwathy also comes across Shreeja's dairy. From this diary she finds out a few clues about the crime. Her way of interpreting the diary reveals her intelligence. She also explains to God how she had to trick the constable at the police station to get access to CCTV tape. Here again her identity and agency are revealed in feeding the constable a rotten samosa from a roadside shop: "And because his stomach was upset, he kept visiting the toilet and I took one of those opportunities to appear as him in the police station. Nobody asked me anything when I opened the cupboard and took out the tape. I don't think they even remember that they had put it there!" (Rajendran 130).

Ashwathy reveals great maturity and understanding when she says: "No crime is a small crime for the victim". (Rajendran, 80) Through the novel she aligns herself with the victim who was murdered by her jealous husband, Shivan. Ashwathy also fixes an abusive teacher, Gopalan. She has the courage and conviction to wriggle out of the grass of this abuser. This act also shows her growing sense of identity and agency: "She could feel his hands stroking her back, his nose buried in her neck. The smell of snuff surrounded her like a fog. Ashwathy pushed him with all her strength but he wouldn't budge". (Rajendran 111)

Other children who are involved in the investigation such as Radhakrishnan and Malavika also show their distinct subjectivity and agency. They pitch in with their intuitive ideas to help Ashwathy. Further, they also join Ashwathy in a disguise to extract truth from Chandrika who acts as an ally to Shivan in tampering the video evidence. Both Radhakrishnan and Malavika tied over their juvenile concerns of attending the classes and appearing for exams to contribute majorly in cracking the murder mystery.

Ashwathy's determination is also self-defining. She decides that she will remain optimistic throughout the investigation. She emerges as a driven individual who has more determination than the policemen involved in the investigation. Rajendran describes this attribute in Ashwathy.

"There was a slight chance that her efforts might pay off but Ashwathy was optimistic. At least, she would know that she'd left no stone unturned in the investigation". (Rajendran 169)

Even after solving the murder mystery Ashwathy decides to use her disguise to fix the abusive master. This shows her social inclination and her effort to stop all abusive practices.

Thus, Sowmya Rajendran's *Ashwathy and the Boot of God* explores the subjectivities of the characters such as Ashwathy, Malavika and Radhakrishnan by documenting their thoughts, opinions, strategies and communication. Their subjectivities help them significantly in entering

the world of crime and in using their intuition to solve the mystery. Rajendran also indicates that these children have their agency in conducting an investigation, going into a disguise and in alerting the police. They refuse to be sidelined as children and make a significant contribution in resolving a complicated murder.

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BODIES BEYOND THE GENDER BINARIES: A TRANS STUDIES PERSPECTIVE ON ARUNDHATI ROY'S *THE MINISTRY OF UTMOST HAPPINESS*

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Abstract:

Recent advances in critical approaches such as Queer Studies and Trans Studies have radically interrogated the boundaries of human bodies in terms of acknowledging the fluidity of bodies, outfits, and accessories. These approaches have also assumed new aesthetic positions in narratives that configure non-normative genders embedded in human bodies. Apart from mobilizing the perspectives of subjects entrapped in certain bodies, some contemporary novels have redefined the novelistic templates such as love, sex, marriage, and relationship from the point of view of individuals who occupy the margins of normative society. These novels invite new approaches to understanding of human bodies and their functions. Trans Studies or Transgender Studies is an interdisciplinary, socially-engaged academic enquiry which explores Trans experiences/issues as well as the systems in place such as binary sex categorisation which cause Trans people to be marked as different or 'the other'.

This paper is an attempt to analyse Arundhati Roy's The Ministry of Utmost Happiness as a document of Trans sensibility and Trans aesthetics with special reference to the depiction of transsexual bodies and emotions. It also explains how Roy creates a discursive space for Trans subjects by inscribing within larger socio-political movements the concerns and contribution of transsexual.

Keywords: Trans Studies, Gender, Corporeal Identity, Aesthetics, Space.

Trans-studies, also known as transgender studies, is an interdisciplinary engagement in academic research that investigates gender identity, gender expression and the embodiment of gender along with the study of themes that are relevant to the trans-gender population. This branch of academic enquiry focuses on gender variant identities and considers trans-gender as a social category. Many academic domains such as history, anthropology, psychology, sociology, and gay and lesbian studies converge to make a methodology for trans-studies. In the context of literature, trans-studies investigate the visibility and visibilization strategies used to construct transsexual identities in cultural texts such as fiction and films. Identity in terms of embodiment in both transsexual men and transsexual women is also a key area of concern here. Susan Stryker in her introduction to the *Transgender Studies Reader* observes that trans theory is an engaging field that celebrates gender diversity. She also explains the scope of trans-studies: "Transgender studies, as we understand it, is the academic field that claims as its purview transsexuality and cross-dressing, some aspects of inter-sexuality and homo-sexuality, cross-cultural and historical

investigation of human gender diversity, Myriad specific sub-cultural expressions of 'gender atypicality' theories of "Sexed embodiment and subjective gender identity development, law and public policy related to the regulation of gender expression, and many other similar issues" (Stryker 3).

Stryker also implicates that gender non-conformity is a feature of trans people and trans studies considers these people as subjects who have embodies an experiential understanding of their own situation. She also maintains that trans gender studies have developed tools of analysis to consider trans as subject and trans as object throughout the course of history. She also links trans gender studies to post-modernism by considering the possibility of challenging the binary sex categories.

Trans studies also challenge the domains of knowledge and social structures which suppress sexual minorities. It also examines language closely as used in cultural text, to show how language inhibits or enables trans identities.

Sally Hines in her introduction to an edited volume of *The Transgender Studies Reader – Transgender Identities* maintains that trans gender identities represent a variety of gender identities and sexed corporeality (Hines 1). She further observes that trans-gender identity is intricately woven to the society:

Transgender raises questions about the formation of all gender identities; particularly concerning the extent to which we can shape and re-shape individual and collective identities. These matters are central to sociological concerns around identity broadly, and, more specifically, key to debates around contemporary gender and sexual identities and the materiality of the body within gender and sexuality studies. Transgender has much, then, to bring to social analysis. Conversely, sociology provides a pertinent site through which to consider key conceptual and substantive issues around transgender. (Hines 12)

Hines further maintains that a sociological analysis can throw light on the experiences of trans people of social institutions. She explains how this kind of analysis can foreground new knowledge systems around trans-identities:

Such epistemological and ontological considerations provide productive theoretical tools through which to examine transgender. Linking 'experience' to social and cultural formations enables a material and corporeal real analysis of transgender that avoids indiscriminate projections of fluidity or autonomy. An emphasis upon gender as socially relational, as well as performatively constructed, is particularly important in accounting for gender identities that are subjectively positioned as neither fluctuating nor unstable, but, rather, as corporeally experienced. Moreover, an analysis of 'lived experience' not only brings richer possibilities for theory-building, it also enables a political project that works to shed light on systems of oppression within dominant frameworks of social organisation. (Hines 12)

Trans Studies also implicates that it is possible to construct meanings, aesthetics, narratives, sexuality, and themes based on trans identities and trans experiences. It also points to

a socio-political turn in the knowledge system by considering trans-sexuality as an identity marker.

Suzanne Kessler and Wendy Mckenna talk about the ethnomethodology studies in their article in the edited volume, *The Transgender Identities.* They propose a method of sociological analysis of how individuals use everyday conversation to construct a common-sense view of world:

What we did not consider 25 years ago was the possibility that someone might not want to make a credible gender presentation-might not want to be seen as clearly either male or female. In other words, we did not address what has come to be called 'transgender.' Transgender was neither a concept nor a term 25 years ago. Transsexual was radical enough. (Kessler and Mckenna 3)

Arundhati Roy's *The Ministry of Utmost Happiness* constructs trans identities, trans experiences, and trans spaces. It focalises Anjum, who is born as an intersex subject and who lives in the alternate space of Khwabgah for many years. Anjum's eventual effort in founding the Zannat guest house is also an indication of the political act of constructing trans phase. Her identity is complex as it is an intersection of Muslim minority and trans sexual minority. Her evolution from Aftab to Anjum is documented in the novel as a negotiation of her gender identity in a normative society.

Roy generates a typical gender ambiguity that of a trans narrative. While describing the transsexual identity of Aftab, she emphasises the corporeal indeterminacy that marks the body beyond the binaries of male and female: "She explored his tiny body – eyes nose head neck armpits fingers toes – with sated, unhurried delight. That was when she discovered, nestling underneath his boy-parts, a small, unformed, but undoubtedly girl-part" (Roy 7).

This indeterminacy continues further to consolidate the idea of a trans gender physical identity: "It wasn't a real vagina after all, she told herself. Its passages were not open (she checked). It was just an appendage, a baby-thing. Perhaps it would close, or heal, or go away somehow" (Roy 8).

Roy further takes this gender indeterminacy to the core of language. Children at the school refer to Aftab, with a series of pronouns which indicates their difficulty in identifying a trans gender subject: "He's a She. He's not a He or a She. He's a He and a She. She-He, He-She Hee! Hee! Hee! (Roy 12).

The society's problem in identifying and accepting trans gender identity is implicated in the reaction of Dr. Nabi, who examines Aftab. The doctor is short of words to define the trans gender identity. Yet, again Roy indicates that in a hetero normative society, language has a limitation in explaining alternate sexual identity. Roy describes: After examining Aftab he said he was not, medically speaking, a Hijra – a female trapped in a male body – although for practical purposes that word could be used. Aftab, he said, was a rare example of a Hermaphrodite, with both male and female characteristics, though outwardly, the male characteristics appeared to be more dominant" (Roy 16-17).

Aftab's parents also believe that their child has a peculiar illness rather than a trans sexual identity. Roy describes how Mulaqat Ali prepares himself for a treatment to correct the gender of his son:

Even though the visit to Dr Nabi did not provide an immediate solution to what Mulaqat Ali saw as Aftab's affliction, it benefited Mulaqat Ali a great deal. It gave him coordinates to position himself, to steady his ship that was pitching perilously on an ocean of couplet-less incomprehension. He was now able to convert his anguish into a practical problem and to turn his attention and his energies to something he understood well: How to raise enough money for the surgery? (MUH 17)

Meanwhile, Aftab reveals his liking for cross-dressing. He perceives his body as that of a female and he longs for the outfits and accessories used by women. Roy reveals the desire of a trans gender subject which perfectly defines his/her identity: "He wanted to put out a hand with painted nails and a wrist full of bangles and delicately lift the gill of a fish to see how fresh it was before bargaining down the price. He wanted to lift his salwar just a little as he stepped over a puddle – just enough to show off his silver anklets" (Roy 19).

Roy also reveals, the societies parochial attitude in classifying bodies as pure and impure: "They visited the Jama Masjid and those dargahs that allowed them into the inner chambers (because unlike biological women Hijras were not considered unclean since they did not menstruate)" (Roy 21).

Aftab gradually assumes the name of a female and becomes Anjum. Roy describes this transformation: "Aftab became Anjum, disciple of Ustad Kulsoom Bi of the Delhi Gharana, one of the seven regional Hijra Gharanas in the country, each headed by a Nayak, a Chief, all of them headed by a Supreme Chief" (Roy 25).

Subsequently, Anjum tries to virilise her trans gender body with the help of feminine outfits and make-up. This transformation also indicates, how she perceives her body and identity: "She had her nose pierced and wore an elaborate, stone-studded nose-pin, outlined her eyes with kohl and blue eye shadow and gave herself a luscious, bow-shaped Madhubala mouth of glossy-red lipstick. Her hair would not grow very long, but it was long enough to pull back and weave into a plait of false hair" (Roy 26).

Roy also makes her characters such as Anjum, Zainab and Saeeda participate in Gender Rights movements. This strategy also helps her in historicising the transgender movement in Delhi. It further locates trans gender spaces in Delhi and by extension in the national space. Also, implicated in the narrative, is the presence of discursive space for trans subjects by creating many narratives of the above-mentioned characters. These narratives are different from the grand narratives of hetero normative societies.

Further, Roy talks about the sign language and biological femininity used by trans genders which can be decoded only by the members of their community. Transgender people have their own lexicons and body language, as documented in Roy's narrative: "She learned to exaggerate

the swing in her hips when she walked and to communicate with the signature spread-fingered Hijra clap that went off like a gunshot and could mean anything…" (Roy 27).

Roy describes the femininity enjoyed by Anjum, on her birthday. Here she talks about her real happiness, joy, feelings that outburst after wearing a red sari:

On Anjum's eighteenth birthday Kulsoom Bi threw a party for her in the Khwabgah. Hijras gathered from all over the city, some came from out of town. For the first time in her life Anjum wore a sari, a red 'disco' sari, with a backless choli. That night she dreamed she was a new bride on her wedding night. She awoke distressed to find that her sexual pleasure had expressed itself into her beautiful new garment like a man's. It wasn't the first time this had happened, but for some reason, perhaps because of the sari, the humiliation she felt had never been so intense. (Roy 27).

Roy's novel is most immediately connected with the transgender identities of Anjum and her friends. It has abundant instances of cross-dressing as Anjum performs to mark her gender as a performative identity. This novel is also concerned with the materiality of transgender body as that of Anjum, which carries outfits and accessories that indicate a transgender self. Further, Roy also negotiates a rightful socio-cultural space for the transgender subjects through constructing a discursive space for them.

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TECHNOLOGY-DRIVEN SOCIETY AND THE NEW GENRE OF BANGALORE FICTION: ANALYSIS OF BRINDA NARAYAN'S *BANGALORE CALLING*

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Abstract:

Technology- driven world and society have impacted cultural documents including film and fiction. One of the recent developments in the job sector, the call center, is an outcome of Information Technology (IT) and the economy of outsourcing. Bangalore as a city has been impacted immensely by this development in technology and job sector. The new era employees, working as per international timings as employed by multinational companies are part of Bangalore's socio-cultural map. Younger employees, imitating American culture and mode of speaking are seen commonly in Bangalore's IT hubs. Their workplace, life-style and socialization are drastically different from the cultural realities of the traditional city.

This paper is an attempt to examine how Brinda Narayan's novel, *Bangalore Calling,* reveals the new cultural realities of the technology-enabled Call Centre jobs, which is captured in a recently developed fictional genre called Bangalore fiction. It also scrutinizes Narayan's novel to show how the new age economy has provided fresh themes, plots, characters, settings and language for Indian English fiction. This paper uses the tools of cultural criticism and genre studies to establish the argument.

Keywords: Technology, Call Centre, Bangalore Genre, Cultural Criticism

Cultural criticism also known as Cultural Studies is an interdisciplinary engagement that examines the political and economic dimensions of contemporary culture. It scrutinizes many aspects such as ideology, gender, ethnicity, class structures and cultural practices particular to a community. It also takes into account many other approaches such as Marxism, Feminism, Social Theory, Post-colonialism, Communication Studies and ethnography. Further, it also analyses the impact of cultural forces related to the process of globalization.

Genre Studies is an academic endeavor linked with critical theory which is connected to the study of various genres such as literature and film and about characteristic features of these genres. It also provides a context in which the structures of various genres are analyzed. Further, Genre Studies accounts for the emergence of new genres in fiction and storytelling. It also identifies some specific features of a genre in terms of fictional strategies and techniques used in it.

Bangalore Genre is a fictional sub-genre that is connected with the geo-cultural landscape of Bangalore of the contemporary time. It refers to films, fiction and short stories that are set in and impacted by the socio-economic realities of contemporary Bangalore. Novels such as Aravind Adiga's *White Tiger*, Usha K R's *Monkey Man*, Anita Nair's *Cut Like Wound*, Anjum Hasan's *Neti Neti* and Brinda Naryan's *Bangalore Calling* are the classic examples of Bangalore

genre. These narratives reflect the socio- economic impulses that have impacted the city and its lives. They reveal the rapid growth of Bangalore's suburbs and the IT-enabled employment sector that has boomed in the last few decades. Novels of this genre also document the cultural map of Bangalore, in the wake of globalization and the resultant reality of the new-era job opportunities. IT parks, new residential complexes, traffic snarls, shopping malls, cafés and the plush office buildings are the regular features of Bangalore genre.

Bangalore's cosmopolitanism, with the advent of IT-enabled jobs, is another theme that gets focalized in Bangalore genre. Employees, trainers and trainee along with the cab drivers, restaurant workers and shopping mall employees, who come from the various part of country and even from other countries make the rich cosmopolitan mosaic of the city. This cosmopolitanism has also impacted the life-style in terms of culinary and sartorial preferences, making the city's cultural landscape look vibrant and modernized. Apart from the primary job sector in the IT related opportunities, the secondary job sector of transportation and retail business get documented in novels such as Arvind Adiga's *White Tiger* and Anita Nair's *Cut Like Wound.*

Brinda Narayan's novel, *Bangalore Calling* depicts the true picture of 21st century metropolitan city, Bangalore. It documents how city has been coloured in the shades of globalized and technological world. The plot of the novel is influenced by new economy and outsourcing. Contemporary Bangalore city has become a site for various job opportunities due to the development in Information Technology. This availability and many opportunities of jobs have brought changes in socio- cultural context. Brinda Narayan describes all these recent developments which occur in Bangalore's landscape on account of Technology.

Bangalore Calling provides a complete picture of youth's lifestyle, their attempt of imitating American mode of speaking, American culture, designating foreign names and so on. It also documents the struggle of young employees to survive in this newly developed city. This narrative primarily focuses on the work culture of call centre particularly the company named 'Callus' and how trainees' and trainers' lives are influenced in this work environment. This novel also highlights how Bangalore city has become a melting pot, with both local and global cultures and languages intermingled, leading to mixed or double cultural identities. The novel can also be considered as a document of call centre industry and its mode and nature of working, which get influenced by technology-driven jobs.

The first chapter of the novel "Over Curry Dinner" marks the prodigiousness of American culture in Bangalore call centers, which is to be adopted by the employees to save their jobs. It can be sensed through the instruction given by Anglo Indian trainer Yvette: "Class, I have told you this earlier. You guys have to be on time, always. Remember, for Americans time is money. This afternoon we'll work with American idioms" (Narayan 2).

The only medium to learn through and acquaint oneself to American culture is American dialect. Banglorean youth have to learn and develop all these language skills. To learn new idioms, slang, phrases and expressions to handle and deal with American customer is the main criterion of this technology-driven call centre industry and also to give training to these youth is

not the cup of tea of the trainers. To adopt, to learn and to maintain the flair of American language like native speakers is not an easy task. For this, trainers have to go through a lengthy process: "Yvette sighed. She had miles to cross with groups. But syntax could be taught. She was more worried about the Bengali-English and Tamil-English. Accents were harder to reform. She knew: this was her twelfth training batch and it hadn't become any easier" (Narayan 3).

The boom of IT hubs is seen in contemporary Bangalore City. Bangalorean youths get a chance to earn money to cater to their basic needs and lead a stylish comfortable life. And, call centre job is the only way through which they can fulfill their urges and get some amount of financial security in the very early stage of life. So Call Centre industry is seen as the catalyst for the abundance of new jobs. Narayan describes:

Recruits, recruits, recruits thronged the center. It was a busy training season. Large numbers of young men and women, propelled into sudden and awkward adulthood, moved in and out of four Callus training rooms. And the trainers, all four submerged in session after session – accent modulations, linguistic switches, cultural briefs, condensed histories – were wizards who transformed raw material from Indian metropolises and small towns into a savvy global workforce (Narayan 3-4).

Bangalore as a techno city encourages the youth to see big dreams in their life. To work in a big international call center is the aspiration of these youngsters. For that, they always roll up their sleeves to look for a big chance, where all their desires would be fulfilled. However, in doing this, somewhere, their loyalty and commitments are sacrificed:

There was no loyalty or commitment. Agents at Callus yearned for one thing only: to springboard from the smaller company into Bodmas, the largest Indian call centre, with a dazzling city campus and offices in twenty countries. Each week, talk about the other centre grew more fanciful: Bodmas is the ultimate, twenty percent hikes, guru. Year on Year.' 'Massage parlour, dude. At any time for free,' Everyone agreed getting in was tough. (Narayan 6)

Call centre employees get handsome salary and perks which are adequate enough to boost their living standard. The nature of this job makes them work in day and night shifts by following the overseas timeline. After giving their hundred percent in job they are also appreciated by the company in the form of various rewards: "This was the trainer's reward for so many tedious nights: a 1500- square feet penthouse in a red brick seven- story complex with basement parking and gleaming steel lifts" (Narayan 21).

The craze for speaking like native American is not merely confined to call centre industry but it seems it percolates to all types of work industry in modern Bangalore. Other cognitive workers too have acquired this skill of using language. One can see how in this high tech Bangalore city knowledge of foreign language is significant for personal growth. In Narayan's novel, the American guests are impressed, listening to the English spoken by an Indian:

The five guests arrived together, directly from work. They'd heard on the way, at traffic lights, Bangalore's popular radio channel, goofy RJ talk punctuated by peppy Bollywood songs.

The Americans were impressed by Bangalore radio jockeys: 'Such refined accents, can't believe they've grown up here,' said Natalie, who wore a sanity purple salwar acquired from the shop inside her hotel (Narayan 22).

Narayan highlights, in the novel, the cultural differences and their interdependence in the wake of globalization. This heterogeneous culture established on the Bangalore's landscape has been focalized in the novel. In one incident Yvette, an Anglo-Indian trainer, invites American guests, to her new home, signifying the best instance of acculturation, which impacts both social and psychological well-being of the characters:

For the first half-hour, everyone was carefully polite, but after the soup and authentic Anglo-Indian meal, they turned truly gabby. The Americans had brought a bottle of wine that Michael, with easy grace, handed over to Yvette's mother. 'Thank you so much for having over. Eating an Indian home gives us so much insights into your beautiful culture,' he said (Narayan 22).

And after the meal, two different cultures occupying the same space at the same time can be noticed. Food also represents the culture of the place: "…And later, Michael's wine served with dessert, in paper glasses, continued to boost spirits and diffuse cultural divides" (Narayan 23).

The changes that occur on Bangalore's cultural map, due to the advancement of technology, is captured through the eyes of cab driver, Panduranga. All the recent changes in the city are the result of the boom in IT industry. When Panduranga joins this new call centre as a driver, for some days it is a cultural shock for him: "First few weeks in his cab he'd been astonished by lesser things: young women venturing out at night, unescorted. Surely those houses, much bigger and sturdier than his, weren't desperate for any kind of income?" (Narayan 32).

Pandurang, further, performs pujas in his van to purify it of the sins and impurities of the call centre employees through his prayer. The call centre employees are in favour of sexual liberation, which is not acceptable in conventional Indian society. Such free and open behavior challenges traditional codes of behavior. Pandurang, as a driver, witnesses the obscene behavior of call centre employees every day at the rear seats of van. As common Indian belief, he is of the opinion that van should be purified every weekend: "He performed pujas on special weekends to wash out residues. Not just roaming hands, he'd seen more fantastic spectacles: lips smacking lips, sucking" (Narayan 32).

Pandurang is a religious person. When Bangalore city goes through the process of development in every form, he is still stuck to old Indian belief 'that to have a son is the god's consent'. To have a son after three girls is his desire and to fulfill it he has to go through all the ordeals. Narayan has presented paradoxical image of the technology-driven Bangalore city through Pandurang's example:

Two months into his new job, he wore a garland of tulasi leaves. 'Sabarimala pilgrimage a must,' said Chilakamma. At the Jayanagar Siva temple, in front of two priests and his mother, he

committed to ninety-nine days of purity in thought, word and deed: abstinence from meat and fish, from cutting or shaving his hair, and from lusty actions, licentious dreams. And vowed to wear for the next three and a half months. Only black, a black lungi on a shirtless body. No beedies, no alcohol, no sex. Small sacrifices for a large payoff (Narayan 34-35).

Drivers like Panduranga also have to work overtime like the call centre employees. But they don't get overtime pay for the unexpected halt. And call centre officers do not even bother to inform them about the delay. Varghese, the manager converses with the waiting drivers:

'Shit, you know, in all this confusion, I completely forgot you guys. Everyone's on an extra eight-hour shift so they'll be down only later this morning. You guys go ahead and have lunch,' he said, forking out a generous 500-rupee note. Drivers downstairs grumbled about the unexpected halt (Narayan 43).

The recent metamorphosis of Bangalore is noticed by even the foreigners. Narayan describes this change through the observation of Natalie, when she gets transferred from Springfield, America to Bangalore-based call centre, 'Callus'. She is surprised to see this world of call-centre industry and its posh campuses, transforming Bangalore: "So far, Bangalore had been everything she expected, overflowing, unclean, an emerging metropolis not possessed of First World standards. But this campus, this wretched Callus campus bettered her notion of Bob's world" (59-60).

Further, Narayan describes the spectacular world of IT valley. When Natalie enters the IT park campus, she is overwhelmed in witnessing a beautiful plush tower and buildings:

Suspended inside an astonishing silence was a sweeping driveway, flanked by bird-shaped hedges and dewy grass. Broad trees, flaming red-orange, carpeted brick-lined pathways with their pulpy blossoms. Four tall glass towers, flat-paneled and burnished like her plasma TV, reflected milk-white clouds. Further down, there was a courtyard, and a row of shops and eateries and outdoor café's. Aa self-contained world, a city inside a city. The Lord's artwork could hardly out- dazzle this (Narayan 60).

Later, Natalie visits another centre. The grandeur of IT park is eye-catching, here too. She is captivated by the architectural splendor of the IT park:

If she thought the IT valley was spectacular, the Bodmas campus exhibited a many-times greater splendor – an ethereal otherworld with buildings of all shapes, trapezoids, hexahedrons, octahedrons erupting among lakes, golf courses, swimming pools and shopping centres. A steel-glass grandeur that mocked Natalie's idea of American dominance. (Narayan 63)

The youth of Bangalore city are well qualified. To meet the demands of the new jobs, they are willing to update their qualification. Natalie compares these youths with an American one. In America, she never thought about their background or qualification, but in India she has different experience:

She was stung as well that everyone she met had a college degree. So far in Beam America, she hadn't been conscious of anyone's learning. She thought of college kids as somehow spoiled, kids who never had to work for their living. Now in this country, her

experience seemed diminished, as if her years at Beam America were propped up on specious grounds. (Narayan 64)

All the call centre employees are trained to be cosmopolitan. Celebration of all the festivals have become the part of their work culture. This celebration is an attempt of call centre industry to provide an international cultural exposure and to make them feel a part of the same. Natalie is awestruck to see the Valentine's Day celebration at the call floor:

Natalie swallowed air to ward off the choking. Everywhere she turned there were hearts, cardboard hearts, balloon hearts and heart-shaped cupids all in ghastly pinks and reds. Like oversweet candy, the hard kind with too much sugar. The CEO gushed: 'We really try to make them feel a part of the culture. Look at this place today! I'm sure Sears or Wal-Mart doesn't look better. And when customers greet them with a "Happy Valentine's Day" they'll share the feeling, not respond with an "Ah? I don't know what you mean." (Narayan 65)

The sartorial taste of the employee is also transformed in the wake of globalization. For them, the prize of clothes doesn't matter. New jobs give them that much economic freedom that they spend money freely on various clothing brands. To look fashionable and to lift their living-standard seems to be their affair. One of the characters, Bitty, daughter of Dr. Menon Kutty, as a new world youth dislikes conventional family beliefs, values and assumptions. She is so affected by this new call centre culture that she doesn't even bother about prizes and rather splurges on stylish outfits and accessories. When shopping with Amma the budget was fixed low-price but now she independently does shopping:

Bitty swivelled around in the changing room. The jeans did look good. Her svelte figure accented at the waist, felt leaner than ever. But it was something else entirely, above the low-waist jeans, above the small black T- shirt that held her attention; under the white changing room light, her large eyes and sloped cheeks glowed orange. The jeans did something to her, something new and terrible and heat-producing. But 4,200? The price of ten Diwali outfits for a pair of trousers? Outside the changing room, she paused. (Narayan 72)

For Bitty's parents, all this shopping culture is a new experience: "They wouldn't realize a job like this required a certain appearance" (79).

In one of the incidents, Narayan describes the difference between two cultures. American people are very reserved and rigid, when it comes to the matter of money. In one of the calls, Bitty is surprised to see that Americans are very particular to make even small decision on behalf of a parent. Kate Anderson, an American caller, wants to check up the phone's line for her mother, but not ready to pay on behalf of her mother. Bitty realizes that Americans are very different from Indians:

'You can pay for her with your credit card'.

'Uh, no, no, I don't wanna do that and I'm not sure if my mom would want this. You know somethin', jus' hold on to this, okay? I'll call you back later.' Yes, there were several calls like that. Nothing dramatic, but astonishing to Callus agents that Americans were unwilling to make

trivial decision on behalf of mothers. Fathers, brothers, sisters. Indians wouldn't hesitate to pay for technicians or sign up on behalf of a parent. (Narayan 81).

The work schedule of the call centre employees is very hectic. The employees do get incentives and perks when there is a lot of work. If any agent is ready to do double shifts, he/she gets incentives. Even the winning team is sometimes sent to foreign countries as an appreciation. For this, the team has to attend and handle maximum calls:

But the night was worse than other nights, almost as bad as her first month. The blitz of irate customers, screaming into clogged lines, spoiled her satisfaction scores. Enraged by long wait times, customers were unwilling to simmer down. There were moments when Bitty wanted to pour *Chandanadi Thailam* with its temper-cooling properties over the lines. (Narayan 89)

Sashwath's (another character) point of view of Bangalore city is mentioned in the novel. The sudden change in Bangalore's business is observed. Narayan notices the changing picture of 21st century Bangalore. For Sashwath today's Bangalore is totally different:

For a while there had been a curious buzz about India – the country suddenly pitched from third-world squalor into a knowledge hothouse. TCS, Infosys, Wipro all jostling with Global Greats, snaring fortune covers. And Sashwath's consulting bosses, suddenly fired up by his Indian origins, prodding him to partner with 'enterprising Bangalore businesses'. (Narayan 100)

Thus, one can state that Brinda Narayan graphically depicts the technology-driven society of Bangalore in her narrative. Her novel also confirms the features of the new genre of Bangalore fiction by recreating the human geography and cultural cartography of the city.

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FELINE NARRATIVES AND THE NEW AESTHETIC EXPERIENCE:
A STUDY OF DAVID MICHIE'S *THE DALAI LAMA'S CAT*

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Abstract:

Animals and birds have been important stakeholders in fictional narratives. Apart from Anthropomorphism and Zoomorphism, these non-human characters often attain personhood in such narratives. One of the subgenres of animal narratives is feline fiction which depicts the lives and concerns of cats. These narratives, in recent years, have compelled critical attention in the light of Animal Studies and Critical Animal Studies. Further, such narratives abound in literary and linguistic devices that are different from Anthropocentric narratives. Plot, characterisation, style and narrative technique in such works provide a new aesthetic experience apart from creating a feline-centric sensibility.

This paper is an attempt to analyse *The Dalai Lama's Cat* by David Michie to show how this narrative provides feline-centric experiences of the world, fictional art form and literary devices. It is based on the conceptual framework drawn from theories on Speciesism, Misothery, Zoophilism and so on. The paper also explains the impact of feline perspectives on the themes, the human world and the human-animal interface.

Keywords: Feline fiction, Anthropocentrism, Zoophilism, Zoomorphism, Cats and literature

Animals, birds, and reptiles have been narrators of novels, short stories, and films that provide a perspective different from that of human beings. Having an animal or a bird as a narrator is also an important innovation in the world as represented in the fictional narrators. Such a situation also leads to the study of narrative under animal narratology. In an edited volume of essays. Joella Jacobs maintains that in the world of literature, animals are the storytellers in many works, not merely in fables and fairy tales, but also in novels with intellectual and philosophical content. Jacobs underlines the role of animal narrators in fiction:

Across genres and time, both wild and domesticated animals give accounts of their lives and their worlds, which usually contain human beings. Animal narrators negotiate their relationship with humans, while defamiliarizing the human way of perceiving the world. And yet, these texts are written by human authors who chose an animal voice, a specific species, and a literary genre for a particular purpose—one that tends to be as much, if not more about the human than it is about the animal. In fact, analyses have predominantly focused on the human side of these texts until the recent "animal turn" in literary studies. This focus on the animal in literature vows to take the animal seriously, which has been generating new readings and discoveries regarding texts from the canon and beyond. Literary animal studies have the potential to reveal the history of animal narration, such as clusters of animal species, type, or even breed at certain times; to interrogate animal narrators' appeals to particular audiences, from children's

books to political satire; and to uncover writers' ways of avoiding censorship and persecution by channeling an animal voice in their works. (Jacobs xi)

Aesthetic empathy calls for a change in perspective towards viewing both human and non-human entities as psychosocial beings whose lives are interconnected with each other and the environment. Animal narratology allows for texts to be read, understood and analysed, not as allegories for human behaviour, but from an animal's point of view alone, as well: "…animals are allowed to speak for themselves, demonstrating a new awareness of animal subjectivity, and a desire on the part of many animal lovers to give that subjectivity a voice" (Jacobs 4).

Anna Barcz, in her book *Animal Narratives and Culture*, reiterates the significance of being empathetic towards a non-human narrator through zoocriticism – a "method of analysing narratives from the perspective of a construed protagonist or animal agents and their behavioural and emotional repertoire" (Barcz 92). She contends that narrating cultural texts from an animal perspective help remind humans that the natural environment belongs to all living beings, is greater than any human understanding of the world, and, cannot be controlled. She argues that zoocentric narrations provide a platform for real animals to be projected, albeit as fictional animals, thus allowing us to "lose ourselves and make space for nonhuman others" (Barcz 165).

Dominic O'Key, in his article titled "Animal Collectives", states that the nonhuman narrative may be told by a single narrator, but such a narrator is, what is better known as, its homodiegetic narrator who stands for not just individual subjectivity but for the collective of the nonhuman species in focus. Therefore, according to O'Key, even as a novel may contain one animal narrator-protagonist, it becomes an intergenerational narrative of the animal collective. He raises the unmistakable question of the 'I' as a voice for the 'we' with an example: "…when reading Memoirs of a Polar Bear, which in spite of its English-language title is in fact not a biography of a single polar bear, but an intergenerational narration, a collective memoir that focuses on three generations of polar bears…" (O'Key 3).

David Michie aligns these ideologies together in his first feline-centric novel *The Dalai Lama's Cat*. Although a work of fiction, the novel presents a narrative of Buddhist teachings and the wide-ranging philosophies of life told from the perspective of a once-captive kitten, rescued and adopted by the Dalai Lama to become his companion. It is, therefore, a memoir of a cat who thinks very highly of herself and whose journey of self-discovery through Buddhist teachings leads her to become, what we would call, a rounded and grounded personality.

The cat protagonist, better known as His Holiness's Cat (HHC) goes through a series of behavioural and emotional ups and downs, but her keen sense of observation and her unrealised readiness to learn – about herself and her surroundings – grants her opportunities to grow, both, as an individual feline and as a conscious being in the natural order of things. Be it any human – for example, Dalai Lama's executive assistants Chogyal and Tenzin, or another animal – the Lhasa Apso dog Kyi Kyi; be it the novice monks competing for acceptance to the Geshe degree course, or the numerous celebrities, philanthropists and the others she encounters on a regular basis, His Holiness's Cat provides detailed descriptions of their looks, appearance, demeanour, and overall personalities, as seen through the feline lens.

In the initial pages of the novel, the feline protagonist recalls certain events of her life when she was a kitten. These details are mixed with a cat's perspective on human behaviour. The description also manages to draw empathy towards the animal narrator:

The boys had much more trouble selling us two smaller, scrawnier kittens. For several hours they trudged the streets, shoving us vigorously at the windows of passing cars. I was much too young to be taken from our mother, and my tiny body was unable to cope. Failing fast for lack of milk and still in pain from my fall, I was barely conscious when the boys sparked the interest of an elderly passerby, who had been thinking about a kitten for his granddaughter. (Michie 2)

The feline narrator also reveals that, as a cat, she has the instinct to understand which human being is a cat lover. The following extract testifies how cats also choose their masters as much as the masters choose their pets: "In my own case, swaddled in a piece of maroon-colored fleece on a chair in His Holiness's office, I was also aware of another fact—one of the greatest importance to all cats: I was in the home of a cat lover" (Michie 4).

The idea that animals are not mere representations of human personae, but have a style, personality, nature, behaviour and, most of all, a life of their own is evident from the feline sensory-focussed narrations of self-realisation and feelings. Michie employs the use of anthropomorphism to signify the voice and agency of the animal collective – in this case, the feline collective. For example, when His Holiness's Cat shares her first furball experience to be "as unexpected as it was unpleasant" (Michie 84). Or, when Chogyal pampers the dog Kyi Kyi right in front of her, hitting her with sharp pangs of jealousy:

Moments later, Chogyal returned. Leaning down, he patted the small dog and talked to him in the familiar and endearing tone of voice I'd always thought he reserved for me. As my hackles rose, the betrayal only deepened. Oblivious to my presence, Chogyal spent quite some time stroking and caressing the beast—which looked a very scrawny specimen—reassuring it of its good looks, its delightful temperament, and the special care he was going to give it. The very same sentiments he usually whispered in my ear—and which I'd always imagined were sincere and heartfelt. Listening to him repeat those words to this dull-eyed, lank-haired interloper made me realize that far from being exclusive, they were just stock phrases he repeated to any creature with four legs and a furry face.

So much for our special relationship! (Michie 54)

Margo Demello reiterates this idea of the animal collective in his introduction to *Speaking for Animals: Animal Autobiographical Writing* which creates the aesthetic of the nonhuman collective consciousness – "Increasingly today, animals are allowed to speak for themselves, demonstrating a new awareness of animal subjectivity, and a desire on the part of many animal lovers to give that subjectivity a voice" (DeMello 4).

Michie's novel attests O'Keys' and DeMello's observations regarding the animal collective, in this case, the feline collective, when His Holiness' Cat makes innumerable such statements using the phrase "We cats…" thus – "We cats are the most habitual of creatures" (Michie 101), or "We cats have no access to everyday mood-enhancing substances" (Michie

120), or "We cats are not prudish. But nor do we like to make an exhibition of ourselves…" (Michie 75) and so on.

Empathetic characterisation is also rendered by the fact that the Dalai Lama's cat in the novel – the narrator-protagonist, has many names, apart from Her Holiness's Cat, a name she takes most liking to, – Snow Lion, Bodhicatva, Rinpoche (meaning 'precious jewel'), Mousie-Tung and The Most Beautiful Creature That Ever Lived. It gives a sense of elation to the feline narrator whereby she even goes to the extent of self-proclamation of being a bearer of many names. She not only reiterates it often but also narrates this situation, on one such occasion, by addressing herself as the important one and The Dalai Lama as her human buddy: "…the Range Rover eventually made its slow way through the gates toward the home of Rinpoche, the Bodhicatva, the Snow Lion of Jokhang, The Most Beautiful Creature That Ever Lived—and her human companion" (Michie 57).

His Holiness's Cat experiences a bag of mixed emotions as she sifts through her individual learnings and begins to discover the true meaning of simple words, through the Buddhist teachings of the Dalai Lama, like – life: "…life is very precious. Therefore, we need to protect all sentient beings very much. Also, we must recognize that we share the same two basic wishes: the wish to enjoy happiness and the wish to avoid suffering" (Michie 6), consciousness and equality: "… the way we all want very much to stay alive, the way we cling to our particular experience of consciousness—in this way human and animal are equal" (Michie 5), love: "the wish to give happiness to others" (Michie 62), enlightenment: "This mind of enlightenment is based on pure, great compassion, which in turn is founded on pure, great love. In each case pure means impartial. Without conditions." (Michie 197), generosity: ""If hard work is only a condition, then what is the karmic cause for success?" she asked. His Holiness gave her a look of immense benevolence. "Generosity," he answered."" (Michie 73), happiness: ""It is the wonderful paradox," he continued, "that the best way to achieve happiness for oneself is to give happiness to others"" (Michie 32), and anger: "When one is angry, the first person to suffer is oneself. No one who is angry has a happy, peaceful mind" (Michie 131), among others.

The feline subject in the novel also reveals an inclination for spirituality and a tendency to evolve emotionally: "I also discovered that I felt a lot happier not being jealous. Envy and resentment were demanding emotions that had disturbed my own peace of mind. For my sake, too, there was little point in being consumed by unhappy and irrational feelings" (Michie 66).

His Holiness's Cat provides the readers with an animal perspective on nature and its beauty, which otherwise seems to be told by human beings as if they know the better of it all: "…we were walking along a path in the forest. On either side of us, the ground was carpeted in primrose and mistletoe. Large rhododendron bushes blossomed in extravagant displays of pink and red" (Michie 72).

Michie also creates a feline-centric language in the novel. There are many words like 'purr', 'climb', 'lick', 'hopped', 'fur ball', 'territory', 'litter' etc. throughout the novel, and even phrases such as "claw-curling, whisker-quivering ecstasy" (Michie 44), "licking, scratching, and grooming" (Michie 84), "thick, white pelt" (Michie 109), "glowing, amber eyes" (Michie 110),

"my mackerel-striped admirer" (Michie 166), "wet-nose greetings" (Michie 174), among others. These words create a semantic world that is specific to the interaction of human beings and cats. Though these words are inventions in human vocabulary, they indicate feline activities and behaviour. One might also notice that the Dalai Lama's cat is self-reflexive in looking at herself alternatively from the perspective of an animal and that of a human being. This shift in perspective is integral in defining her feline subjectivity which manifests itself as an interface between the human perspective and the animal perspective. Even as she reads and analyses the vanity and errors in human beings, she exposes the same in herself, thereby making herself, simultaneously, an object of human gaze at the self-reflexive animal subject. The protagonist also explores and occupies, what could be called, the animal spaces which Chris Wilbert and Chris Philo discuss. Animal spaces or beastly places are often non-places or located within human spaces. For instance, in Michie's novel, the protagonist occupies the windowsills, baskets, laps of people, cushions, the desk, and even the top of the wooden filing cabinet:

Dozing in its basket as I entered the room, the dog raised its nose and sniffed the air before deciding to play it safe and bury its furry head back in its basket. For my part, I walked past without so much as acknowledging its existence, hopping up onto Chogyal's desk and from there to my favourite viewing platform on top of the wooden filing cabinet. (Michie 54)

The feline narrator, in this case, provides a range of emotions, perspectives, images, literary devices, narrative techniques and approaches to human concerns. It is not merely anthropomorphism that makes the feline narrator different. It is also the presence of a human mind that becomes a hand-holder for the cat. Beyond the credibility of the animal standpoint in a narrative, the novel narrativises a healthy human-animal companionship and the possibility of reciprocal learning.

To conclude, one could quote Lobsang, Dalai Lama's translator in the book, where he cites the Buddha's words to his disciples: "…anyone who believed a word he had taught them was a fool—unless they had tested it against their own experience" (Michie 156). The novel, similarly, challenges the reader to scrutinize for an experience of the feline interiority, feline subjectivity and feline personhood that this narrative mobilises to create a new aesthetic experience.

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NEW AESTHETICS OF PERFORMANCE POETRY:
ANALYSIS OF OPEN-MIC POETICS

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Abstract:

Performance poetry, largely with the help of open-mic sessions, has reconfigured how a poem is rendered and experienced. It also makes a departure from page poetry with its performance-oriented elements such as tone, recitation, drama, modulation, and the direct contact with the audience. Further, this mode of poetic expression is based on a different aesthetic sensibility conditioned by new poetic expression is based on a different aesthetic sensibility conditioned by new poetic elements such as orality, performance, and proximity. Contrary to the text-based aesthetics of page poetry, open-mic performances generate a new inclusive sensibility that does away with the boundaries of prose and poetry by accentuating narration and drama within the poetic art.

This paper analyses the features and possibilities of open-mic poetic performances to benchmark the popularity of a new genre. This paper also explores the interactive proxemics of this new genre apart from highlighting its immersive and cathartic effects. Also, within the purview of this paper is a quick survey on the younger generations' interest in open-mic and performance poetry.

Keywords: Open-mic, Aesthetics, Poetics, New Genre, Performance Poetry

Towards the end of the 20th century and in the early decades of the 21st century, the world of literature witnessed the emergence of a new poetic form called The Spoken Word Poetry. This mode of poetic articulation started emphasizing upon performance of poetry over the conventional page poetry. Variously known as open-mic, poetry slam and performance verse, this poetic mode became popular in bookstores, cafes and similar small places open to solo performances. Open-Mic poetry sessions have been conducted by various associations such as The Social House in Delhi, Kommunes Open-Mic in Mumbai, Open-Mic Bhopal, Music Open-Mic in Kolkata and so on.

Spoken word poetry, through the medium of open mic, makes it possible for the poets and word artists to reach out to the audience members through the auditory mode. Each poet performer is given a specific time slot by a PA system so that he/she can be heard by the audience.

Maintaining eye contact with the audience, energising the performance, emoting the words and bringing the element of drama are some of the features of Open-Mic poetry. Poems composed as monologues and as dialogues usually predominate spoken-word poetry. This genre also connects more directly to the younger age group who find connection between Open-Mic Poetry and Rap Music.

Discussing the significance of spoken word poetry, Wendy Williams observes that this mode of poetry finds meaning in everyday moments, apart from giving the poet "a force for speaking truth to power" (Williams 77). Williams further maintains that international poetry slams have become popular world across, encouraging adolescents to write and perform spoken word poetry. She also indicates that spoken word poetry is activism, art, resistance, protest, therapy and an important tool for teaching and learning. She also underlines the voice and agency of open mic poetry slams: "Spoken word poetry workshops and slams can encourage young people to share their stories and develop their voice" (Williams 82).

Susan B.A. Somers-Willett, commenting on the cultural politics of performing identity in a slam poetry and open mic, observes that these modes of poetic rendering connect more directly to the audience with a series of literary, linguistic and dramatic devices. She explains the entire aesthetic range and the devices deployed in the slam poetry:

Devices such as homophonic word play, repetition, singing, call and response, and rhyme are frequently used on the slam stage. A wealth of different performative modes of address are embraced by slam poets, but most of the work performed at slams falls under the categories of comedy, parody, or drama. In terms of tone, protestive and passionate pieces are frequent at a slam, and many poets treat the slam stage as a political soapbox. Some poets do so almost exclusively. (Somers-Willett 52)

Somers-Willett also explains the constructions of self and resultant identity politics in Slam Poetry. She maintains that open mic poems are identity poems which announces the performer's self and subjectivity in a lyrical or a dramatic art. She states: "Because most slam poems engage a first-person, narrative mode which encourages a live audience to perceive the performance as a confessional moment, one of the most defining characteristics of slam poetry is a poet's performance of identity and identity politics" (Somers-Willett 52).

Somers-Willett further explicates the concept of identity in performance which is central to the craft and aesthetics of open mic poetry. She elaborates:

Performance, as one should expect in a genre such as slam, is the instrument that makes the poem ring true or false with any given audience. In this respect, slam poetry has much in common with its theatrical cousins, performance art and dramatic/comedic monologue, because it engages the very same politics of identity that can govern and arise from those expressions. (Somers-Willett 52)

Ron Silliman also takes a similar stand to that of Somers-Willett when he maintains that open-mic poetry's success depends on its authenticity and the listener's sense of realisation about its realness:

… through the poem as confession of lived experience, the (mostly) free verse presentation of sincerity and authenticity that for several decades has been a staple of most of the creative writing programs in the United States. Nowhere is this more evident than when this mask appears not in print but in person, at dozens of open-mike or poetry slam events that occur around the United States every day of the week. . . . In such circumstances, a text as text is

reduced to its most basic features: perceptible surface characteristics, narrative or expository thread[s] and a sense of 'personality' that is inseparable from the presentation of the reader him or herself. (Silliman 362)

In order to find out the attitude of college students to Open-Mic and performance poetry, a survey was conducted by the researchers using Google form and covering a sample size of 50 participants from Arts and Humanities stream. The questionnaire had mostly open ended queries that elicited answers and opinions in mostly personal response mode. The following were the queries in the questionnaire:

1) How according to you, slam poetry and open mic poetry are relevant in today's times?
2) Give two reasons why you attend an open mic.
3) Do you think the audience is more involved in an open mic gathering? If so, why?
4) What are the poetic forms popular in open-mic events?
5) Do you think that spoken word poetry has more aesthetic appeal? If so, why?

Analysis:

1) Responding to the query if slam poetry and open mic poetry are related today, the participants opined that the slam and open mic are good support systems for poets. They also stated that open mic poetry provides freedom of expression and is more democratic. Some participants maintained that slam poetry and open mic provide outlets to feelings. Further they stated that in their forms, the poets don't have to worry about forms and rhyme scheme.

2) When asked for plausible reasons for attending an open mic session, the hands down response was that they wanted to get to know new ideas being discussed by these oral poetry performers, and of course to get to know others who belong to a similar school of thought. Other responses included exposure to showcase one's own creative streak, as well as to engage in and encourage a community environment. While a few see this as a leisure activity, a few others attend it for the 'directness of expression.'

3) A majority of the people feel that the audience is much more closely involved in an open mic gathering than individuals in a quiet reading room. Since the primary purpose of the audience is that of getting entertained rather than of hunting for the meaning of complex vocabulary as in the case of page poetry. The responses underline the point that open mic aesthetics depends on simple vocabulary, connection with the poet and the interactive and intimate poet-audience context.

4) The survey reveals a general understanding of poetic forms popularized by open mic/slam poetry events. Personal poetry, sonnets, free-verse, rap, songs, haiku, two-liners, confessional verse, monologues and so on are identified as these forms. The responses indicate on awareness of open mic aesthetics based on simple, direct, and candid poems.

5) Responding on the question of an aesthetic appeal of spoken word poetry, the participants variously argued on the topic. She considered critical thinking, engagement and empowerment through verses as the main appeals of this poetic form. Experiential writing is highlighted by a few others while one respondent considers open mic verse to be more

aesthetically appealing on account of its alliance with theatre and performance. Another respondent emphasized upon the auditory impact of rhythm, tone, and voice modulation as the aesthetic devices. Only one respondent maintained that performance poetry may or may not bring out the full potential of poetic art.

Based on the analysis of the survey conducted on the aesthetic merit of open mic and slam poetry, the researchers have drawn the following inferences:

1) Open mic poetry has a wide appeal as compared to page poetry due to its simplicity and directness.

2) These forms could be considered more relevant in the contemporary times as they appeal to a wider audience with their crowd spoken word forms.

3) Lyrics and confessional verses along with the body language and voice modulation plays these poetic forms between lyricism and drama.

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BIZARRO FICTION AND THE NEW AESTHETICS: AN INTERDISCIPLINARY READING OF DANGER SLATER'S *PUPPET SKIN*

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Abstract:

Bizarro fiction is a contemporary fictional genre that employs elements of Absurdism, grotesque, horror, pop-surrealism, weird episodes and characters and the features of cult fiction. This sub-genre of fiction, which became popular in the 21st century, tries not only to be strange but also startlingly thought provoking. It also adds a new aesthetic standard to fiction with its surreal images and extremely outlandish themes and characters. Bizarro fiction also underlines the significance of weird experiences in the fictional world and also for the readers. Often combining with fantasy or science fiction, a bizarro narrative incorporates strange and shocking elements to entertain the readers.

This paper analyses Danger Slater's novel *Puppet Skin* to show how this narrative depicts a series of strange transformations. This paper also examines the thematic significance of a girl transformed into a living puppet. It also identifies the distinct features of bizarro fiction, underlining the new aesthetics created by style, theme, narrative technique, plot and characterization. Also within the focus of the paper is the analysis of the dystopian plot in this narrative.

Keywords: Bizarro Fiction, Surrealism, Aesthetics, Dystopia.

Methodology:

A subgenre of science fiction known as "bizarro fiction" is distinguished by its themes and visuals that are ludicrous, surreal, and frequently repulsive. It is a genre that has flatter its wings among the young since 2005. This wing became more popular through writers like Carlton Mellick III, Brian Allen Carr, and Cameron Pierce who are frequently linked to bizarro fiction. This fiction deviates from normal narrative forms and genres which include unusual, marginalized people with other staples incorporated into it like Body horror, absurdism, satire, and the investigation of non-conventional sexualities and gender identities in bizarro literature.

One of the aims of bizarro 's authors is that they need to accomplish their readers with different norms of ordinary fiction to keep the highlight of its elements. To encompass bizarro with the new intersection of the 21st Century will lead to shaping the different perceptions of our world. The art forms have emphasized digital technology as a unique visual quality of culture and society with what is called a New Aesthetic. "The New Aesthetic is a term referring to the increasing appearance of the visual language of digital technology and the Internet in the physical world, and the blending of virtual and physical" (hisour.com/new-aesthetic).

The investigation of issues pertaining to technology and digital culture can also help to generate a new aesthetic. Authors may investigate the effects of technology on society and

people, the fuzziness of the lines between the actual and digital worlds, or the interaction between people and machines. The trend has spurred discussions on the interplay between technology and creativity as well as the potential for new aesthetic experiences and forms of beauty to emerge from digital media.

Danger Slater, one of the prominent writers, has analysed the intersection of technology and humans. The appearance of one is justified by their presence which the author state:

She was made of meat. Her body was full of muscles and bones. She had brown hair like a coconut and brown eyes that seemed to glow orange when the sun hit them in just the right way. Her skin was not a thin layer of acrylic paint slathered on top of hard cedar flesh. Her skin was warm and soft to the touch, and although blood flowed through her veins the same way tree sap flowed through pinewood, she knew she hasn't a puppet because she had a heart that beat in her chest like every breath, she exhaled was a rock n' roll concert. (Slater, 28)

Many bizarro writers show different elements of digital visuals in their works. Gaston Criel engages in a theoretical concept involving Surrealism. He maintains that the distinction between the mind and reality works in a style as desired. He argues:

…news items, unusual combinations of circumstances that escape logic but reveal the key to intimate problems, objectifying conscious and unconscious desires, so that desire and reality are "communicating vessels." According to Breton there is "a common denominator situated in the mind of man and which is nothing but his desire," in other words, "chance is the meeting of an external causality and an internal finality, a form of manifestation of exterior necessity which forces its way into the human subconscious. "Daily -wonderful:" (Criel, 136)

Criel further maintains the Jean Cocteau to the Americans, quoted by Peter Broich in Die Deutsche Rundschau: "Neither weapons nor wealth will save you. You will be saved by your minority of thinkers." (Criel, 136). Taking this quote on the land of Puppet Skin Slater has shown the clear conflict between mind and heart of the young girl who in every path of her life tries to fight with her conscious and subconscious mind to live as a human and not as a puppet in a versatile world:

Despite everything, there was still this compulsion insider of her. A need. An urgency. Undefined as it was, it felt to her as real as her arms. And it wasn't self-destruction. She was not trying to disappear. It was something else. Something more liberating than just anger. Something more profound than boilerplate sadness. She knew that once she became a puppet never see these streets again. Not in the same way. Not for what they really were. (Slater, 49)

In *Puppet skin* the world is full of suffering and oppression. It's a fight among the two worlds, one with unacceptance of freedom, technology and other the land of beauty (City). The girl Hannah in the novel drags us to the dystopia. Marriam – Webster Online Dictionary defines Dystopia as an imagined world or society in which people lead wretched, dehumanized, fearful lives (www.marriamwebster.com) further the same dictionary provides various synonym for the word such as anti- utopia, hell, fool-paradise.

Hannah, one of the characters in the novel has shown the oppression of enforcement that all characters are dealing with, that is, turning into a marionette from a humanoid. They are forced to face the world of techno advancement where their body parts are turned to wood. In an incident Hannah is standing in the queue with no hope to face the unaccepted world:

The final testing room was a box, and it contained two things and two things only: One was a machine that looked like something you might find in a hospital, a slow- beeping life support system that was peppered by a few dozen levers, monitors and knobs. Immediately the electrocardiography started beeping fast. Dozens of strings, bundled up like spaghetti. (Puppet Skin, 101)

Furthermore, John J. Joughin and Simon Malpas in theoretical debate engages the analysis of the new aesthetic elements with different merges of the metropolitan modernity as an allegory of the new digital world that is breaking the beans of the human emotion into machines. They state, "The equivocal tension between aisthesis and ascesis – the diasporic – has largely been sacrificed to the desire to resolve the multiple movements into a disciplined progression from the confusion of the senses to the discipline of reason" (Malpas, 108).

The above words enhance the unexpected connection of how the world of land is not sustainable for all and even it's a fight between the typoscripts own wishes and the world in built for the characters as youngsters and their ambition. Thus, the Bizarro scene of weirdness playing with nature and its sustainability leads a different way through characters and plots among the grief from strange and dreadful.

Conclusion:

Thus, the novel embodies a new phase of futurism where people are indulged in the upgradation and degradation of individuals in terms of dystopia. The new world of digital lands exemplifies breakdowns of positive land of acceptance as a whole. "New Aesthetic is an ongoing eruption of the digital into the physical, driven by a desire to find new ways of seeing, experiencing, and understanding the world around us." (James Bridle, creator of the New Aesthetic Tumblr blog)

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A STUDY ON THE SUSTAINABILITY OF MENSTRUAL CUPS OVER SANITARY PADS FOR MENSTRUAL HEALTH IN MUMBAI

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Abstract:

Sanitary pad users all over the world experience discomfort during menstruation due to the materials and chemicals used. Menstrual Cups comparatively seem like a better option in terms of less discomfort. Sanitary pads were promoted and aggressively marketed even to the rural users of cloth pads since the beginning. This led female population making use of sanitary pads during menstruation. However, menstrual cups are a much better option in terms of disposal (since menstrual cup lasts up to 7 – 10 years). Sanitary pads on the other hand cause a lot of harm to the environment since its inception to the disposal. Sanitary napkins that get dumped in acres of landfills get picked up by birds and animals, which in turn lead to the pollution of land and water.

This study emphasizes on the benefits of menstrual cups over sanitary pad users. The study aims to cover the research gap in terms of menstrual cups. It aims to do a SWOC Analysis of Menstrual Cups, measure its sustainability and its environmental cost benefit analysis. Statistical tools and techniques like Cronbach Alpha, Chi-Square and so on will be used to achieve the objectives of the study.

Keywords: Menstrual cups, Menstruation, Sustainability.

Introduction:

Menstruation is a normal female body function during which blood and tissue from the inner lining of the uterus is discharged through the vagina every monthly interval. It is also a sign of reproductive health for women. This function has been perceived as a taboo subject over the years by keeping this subject out of public interest as a result creating a lack of knowledge among females themselves.

"Our aim is to make the sustainability aspects of menstruation a reality," says the green warrior of a different kind" says Shradha Shreejaya, Climate Justice Programme Officer at Asia Pacific Forum for Women, Law and Development.

There is a need to shed light on variety of menstruation products and their availability in the market. These products allegedly help females to deal with their menstrual period without affecting their capabilities to do activities. Menstruation product varies from most famously known sanitary pads to lesser-known products such as menstrual cups and menstrual discs. In India, menstrual cup is relatively not in spotlight even today when it's existence can be traced back to as early as 1920s.

This research focuses on the why there is less awareness and users of menstrual cups which not only proves to be a more environmentally sustainable option which is also cost effective and beneficial for the women's health.

Objectives:

- To create awareness about Menstrual cups
- To do an environmental cost benefit analysis
- To promote the usage of menstrual cups as a sustainable option during menstruation
- To study the impact of sanitary pads on the environment

Hypothesis:

- Hypothesis 1:

H0: Awareness about Menstrual Cups will not lead to increased usage

H1: Awareness about Menstrual Cups will lead to increased usage

H0: Menstrual cup is an improved option compared to other disposable menstrual products

H0: The use of menstrual cup does not enable the achievement of capabilities by removing obstacles to what women are able to do and be

H1: The use of menstrual cup enables the achievement of capabilities by removing obstacles to what women are able to do and be

H0: Menstrual cup does not enable the elimination of discomfort, concerns and obstacles caused by other disposable menstrual products.

H1: Menstrual cup enables the elimination of discomfort, concerns and obstacles caused by other disposable menstrual products.

H0: Menstrual cups are not an improved option for eco-friendly, cost effective and environmentally sustainable as compared to other disposable products.

H1: Menstrual cups are an improved option for eco-friendly, cost effective and environmentally sustainable as compared to other disposable products.

Expected Outcome:

- This paper shall create awareness about the availability of various innovative menstrual products in the market.

- This paper shall also shed light on menstrual cups for it being more environmentally sustainable and beneficial for female health and comfort.

- This research paper aims to identify whether potential females are willing to switch to menstrual cup for their betterment, once given the knowledge.

- This research paper shall also identify if switching to menstrual cup increases or maintains their productivity, performance and efficiency.

- This research also aims to identify through survey, the causes or barriers that are stopping females to switch to menstrual cups.

Research Methodology:

- Data Collection Methods:

- Primary – Survey; Sampling – Non- Probability – Convenience Sampling and Snowball/Referral Sampling (in case of Menstrual Cup users)

- Sample Size: 200

- Secondary – Research Papers, e-newspapers, e-magazines, journals and so on

- Statistical Tools and Techniques:

- Cronbach Alpha ($\propto$): To verify the internal reliability and validity of the Likert Scale Questions (Strongly Agree to Strongly Disagree)

- Chi Square(X^2): The Chi Square was conducted for test of association between the variables. An Attempt to develop an Environmental Profitability Index/ Sustainability Index which will help in understanding

Rationale and Research Gap:

This study focuses on finding an environmentally sustainable option which also proves to be beneficial for women's menstrual health and hence highlights the need to switch to other menstrual cup as an alternative. This paper tries to cover the Research Gap which exists related to Menstrual Cups and its users.

Benefits to the Society:

Although we have many alternative sustainable menstrual product options to choose from now. This research aims to shed light on the sustainability that could be obtained by switching to the usage of menstrual cups. In an article and many e of Forbes health, Dr. Robles says that menstrual cups help decrease landfill waste from pads and tampons, which is absolutely true, in today's world where waste management is extremely important for the sustainable future. Commonly used period products like sanitary pads, tampons are not environmentally friendly i.e. they take about 500 to 700 years to decompose leading to health and environmental hazards.

As said by OB-GYN, Apurva Shah 'over its lifetime, it returns several times its initial investment as compared to traditional alternatives'. Menstrual cups are proven to be cost effective as compared to pads, tampons etc.

These are extremely safe, very well tested. I don't see any reason to not use the cup'- Dr. Tanaya Narendra also widely known as Dr. Cuterus

Menstrual cups are also said to be a better alternative to the current methods of menstrual sanitation as it is durable-lasts for over 7 years, ecofriendly- as it doesn't have any disposal issues, can be worn for about 8 hours. Hence enabling achievements of capabilities by removing obstacles to what women are able to do and much more.

SWOC Analysis:

STRENGTHS	WEAKNESSES
• Can hold up to 1 to 2 ounces of blood flow • Eco friendly Biodegradable material • Reusable period option • Sustainable period option • Long term usage (7 – 10 years)	• Can cause irritation (if not used properly) • Bacteria transfer from hands • Silicon material can cause allergic reaction in some women. • Insertion may take a while • Emptying the cup could be messy
OPPORTUNITIES	CHALLENGES
• Rising number of government opportunities e.g. The government of Karnataka has launched 'maitri menstrual cup' scheme. • Global Scope through innovation and creativity to create better product	• Switching to menstrual cup is a challenge, as some often stick to their current products just because they are familiar with it • Fear of inserting a foreign object • Debunking myths related to virginity

Summary of Findings:

Over 60% of the respondents have been introduced to menstrual cups through online platforms and friends equally

● Around 90% of our respondents were sanitary pad users initially with another 4% users of cloth pads and tampons.

● 75% of our respondents have not experienced any discomfort or side effects pertaining to the use of menstrual cups

● Majority of our respondents strongly agree that menstrual cup is a comparatively more comfortable, leakage free, eco-friendly, reusable, contain no disposable issues and are a good investment i.e. are cost effective as compared to traditional period products.

● 100% of our respondents believe that menstrual cups lack awareness and should be promoted more.

● 73% of respondents are willing to switch to menstrual cups if provided with right information and awareness.

Cronbach Alpha was performed for the 15 Likert Scale Responses (Strongly Agree -5 and Strongly Disagree 1) Based on respondents' opinions about Menstrual Cups:

No of items	15
Sum of the Items variance (Vi)	18.26105
Variance for total score of all respondents (Vt)	70.87189
Cronbach's Alpha (∝)	0.795361

Cronchbach's Alpha (∝) Interpretation:

Cronbach's Alpha	Internal Consistency
∝ ≥ 0.9	Excellent
0.9 > ∝ ≥ 0.8	Good
0.8 > ∝ ≥ 0.7	Acceptable
0.7 > ∝ ≥ 0.6	Questionable
0.6 > ∝ ≥ 0.5	Poor
0.5 > ∝	Unacceptable

The Cronbach's Alpha (∝) is 0.795361 i.e. 0.80. This means that the internal reliability of the data is good.

B. Chi Square(X^2):

The Chi Square was conducted for test of association between the variables.

- Hypothesis 1:
- H0: Awareness about Menstrual Cups will not lead to increased usage
- H1: Awareness about Menstrual Cups will lead to increased usage

Responses were:

Responses	Yes	No	Total
Observed	138	49	187
Expected	94*	93	187
O – E	44	(44)	
(O-E)2	1,936	1,936	3,872
(O-E)2/E	1,936/94= 20.59	20.82	41.41

Degree of Freedom = (C-1) = (2-1) = 1

Df 1, 0.05 (At level of significance 5%) = 3.841 (Critical Value)

CV= 3.841

X^2 = 41.41

Conclusion – We will reject H0 as X^2 > CV

This means that H1 is true i.e. Awareness about Menstrual Cups will lead to increased usage.

Environmental Cost Benefit Analysis:

Menstrual Cups over Sanitary pads

Environmental Costs:	Amount Rs.	Environmental Benefits	Amount Rs.
Monetary:		Monetary:	
1. Capital Cost: Cost of the Menstrual Cups (lasts for 7 – 10 years) Cost of the Sterilizer	500/- 1,000/-	1. Savings in disposal cost for 7 years / (E.g. Burning using kerosene based on 10% P.V. Factor) 2. Savings in menstrual waste generated – Plastic and other napkin/sanitary pad material (non-recyclable) a pack of sanitary pad is equal to 4 plastic bags	2,921* 467*
Total Capital Cost	1,500/-	Total Benefits	3,388/-

- Cost of Petrol / kerosene = Rs.50 per month i.e. Rs.600 p.a.

600 x Rs.4.8684 = Rs.2,921

- Savings in Menstrual Waste:

12 per year (12 x 4 x Rs.2* x Rs.4.8684) = Rs.467

Sustainability Index/Environmental Profitability Index of Menstrual Cups over Sanitary Pads = 3,388/1,500 = 2.26

Total cost of using a Menstrual Cup = Rs.3,800 + Rs.1,850/- (opportunity cost) + Maintenance Cost / Sterilization Cost p.a. Rs.1,543 = Rs.7,193/- for 7 years.

Conclusion:

On the basis of primary and secondary data collection and analysis, it can be concluded that menstrual cups are a better option for environmental sustainability and menstrual health of women while also being cost effective. In India, Health and Medical Education Minister Dr K Sudhakar announced the launch of "Maitri Menstrual Cup Scheme" in the state of Karnataka. This is a major step towards sustainability.

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A PERSPECTIVE ON POSTHUMAN DISABILITY STUDIES IN KATHRYN KUITENBROUWER'S *ALL THE BROKEN THINGS*

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Abstract:

Posthumanism and Critical Disability Studies both criticize the humanist bias of associating the category of human with being able-bodied. Post humanism also advocates the idea of a human enmeshed in his/her environment, whose identity is in a state of becoming rather than being. Disabled people's experience of their bodies being entangled in a series of relations with other people and their environment lends readily to this.

The following paper seeks to find intersections between Critical Disability Studies and Posthumanism in the context of the novel All the Broken Things by Kathryn Kuitenbrouwer. It examines the nexus between animality and disability, linking both with posthumanism. It uses the ideas of the post humanist theorist Rosi Braidotti centering around the rethinking of self, death and species in the context of the disabled experience. It also explores the posthuman and disability studies idea of inclusion, ethics of care and relationality. It explores the impact of disability on non-disabled characters and its posthumanist significance. It also tries to understand the interplay of humanism and posthumanism in understanding disability.

Keywords: Humanism; Post humanism; Disability; Animality; Ableism.

Posthumanism and the Critique of Humanism

Posthumanism arose as a reaction to humanism in the late twentieth century. It has gained prominence in the twenty-first century across disciplines like politics, law, ecology and cultural studies. It is defined as the deconstructionist redefinition of the human in all its diversity. Post Humanism, or its critical strand, that is critical posthumanism shares similarities with Michel Foucault's anti humanism. This paper throws light on critical posthumanism and the way it intersects with disability studies. This intersection draws from Foucault's idea of biopolitics. It refers to the normalizing society and power, which either fosters or disallows life to the point of death. Such classification is based on conformation or deviance from the norm. Posthumanism may also imply technological augmentation of bodies and a need to transcend human condition. This idea diverges to Transhumanism. Donna Haraway's *Cyborg Manifesto* was interpreted in this light, particularly conducive to an analysis of science fiction novels. However, Haraway has accepted that rather than just a need to transcend human, it is equally significant to rethink the category of human. This idea is explored in critical posthumanism.

According to humanism, which was a Renaissance movement influenced by the classical Greek thought, man is the pinnacle of God's creations. He was the epitome of perfection among living creatures. Leonardo da Vinci's image of the Vitruvian man exemplifies this ideal. The Vitruvian man is male, white, aesthetically pleasing and able bodied. This is the classical

conception of the humanist human. Along with the body, humanism ascribed qualities of the mind like capacity to reason and use language as characteristic of the human. In fact, the body was considered a mere shell by humanism. It was occupied by and reigned over by the mind. This mind/body dualism is characteristic of Cartesian rationalism. This dualism further paved the way for many other binaries, wherein the one was defined against the lack of the other. Humanism vouched for equality and freedom to man. However, the status of humanity was denied to women, natives, the people of colour, homosexuals and many others under this movement. Consequently, they were also denied rights and freedoms which were said to be deserved by humans. Even today, some humans are considered more human than others. As Pramod K Nayar notes, humanism and its conception of what it meant to be a human was based on the exclusion of certain identities. Rosi Braidotti similarly posits that we were not fully human at all points of history. Both these posthumanist thinkers historicize and conceptualize the category of human, as well as the meaning of agency. They propose posthumanism in two main senses; a rethinking of what it means to be human, and decentering the place of human in the world we live in by identifying interdependence among human and non-human animals. Many posthuman artists have subverted the artistic conception of the Vitruvian man. This symbolically rethinks the conception of humanist human, by depicting either a woman or a disabled man. Able bodiedness or maleness is debunked as the normative and hence dominant mode of human identity through such artworks. This is the stance taken by critical posthumanism. In its second sense, transspecies solidarity is also a part of posthumanism. The Cartesian divisiveness has been replaced in posthumanism by Braidotti's idea of nature/culture continuum. It brings man and other species as well as his environment close together. The earlier divisiveness paved the way for asserting power and dismissing as disposable some species. But a posthuman a continuum calls forth a relationality and ethics of care. Man is no longer the measure of all things. This is owing to a number of technological advancements, climate changes and other aspects of globalization.

Intersections between Posthumanism and Disability studies

There are definite intersections between Disability Studies and Posthumanism. They have been identified by thinkers like Goodley, Flynn, Reeve, Vandekinderen and Roets. As Stuart Murray notes, 'Disability Studies and critical posthumanism have much in common; a critique of humanist norms; a recognition of complex embodiment; a commitment to intersectionality and inclusive practice among them.' Rosi Braidotti has acknowledged that 'disability studies are almost emblematic of the posthuman predicament' combining 'the critique of normative bodily models with the advocacy of new, creative models of embodiment.' Humanism is a part of ableism. Disability studies, like posthumanism, question what it means to be human. It also enhances the meaning of our idea of human. It enables an exploration of the entangled ways of nature, society, medicine, biopower and culture. Disability, Stan Goodley defines, is a political category, identity and a mode of relational ethics. The field also explores the idea of disability as a cultural construct. It uncovers our prejudices towards a section of humanity. It criticizes the

tendency of humans to dismiss some of themselves as less than human, and hence exempt from moral and political considerations. Disabled people have been considered as the absolute others, according to Leslie Fiedler. They do not feature often in transformative writings.

Interplay of Humanism and Posthumanism in Understanding Disability

Humanism is not altogether dispensable when it comes to Disability studies. The rights espoused by the movement, a need for the disabled to be recognized as humans, is where the relevance of humanism in disability study comes in. Humanity is a useful concept to understand disability. Humanism is an important philosophy for understanding one's position in the world (Goodley) Many disabled people use the terms of humanism to express their sense of self. Especially disabled women, whose humanity has not been acknowledged historically, reclaim their individual worth through the template offered by humanism. But there is a need to go beyond humanism to better understand disabled ontologies, particularly when it comes to destabilizing the humanist man. Disabled people also speak of their relationship and becoming through connections with animals like service dogs, or other human helpers and even machines in moments of posthuman reckoning. Cary Wolfe espouses for a need of disability studies to move beyond familiar models and orthodoxies of its past. He states that we need to find a new way of talking about disability in the universe and finding the place of disability in some universal sense. Hence the need for posthuman disability studies. Humanism considers disability, just like medical discourse does, as a condition to be overcome, through traits like agency, autonomy and responsibility. Humanism vouches for individualism and atomistic identity, isolated from others. The experience of a disabled person cannot be such. Besides, humanism places emphasis on the mind, the ability to reflect, interrogate, and come at our own truth. This expressive individualism (Robert Bellah's term) overlooks the embodied experience- our vulnerability and mutual dependence. In that sense, it overlooks the moral and ethical considerations of the disabled. On the other hand, posthumanism understands human body as enmeshed in its environment in a series of relations. Just as posthumanism displaces the humanist atomization of individuals, disability studies explore ways in which the disabled come to exist in a network of relations with other people and environment. Posthumanism and disability studies, thus, both espouse the entangled nature of embodiment. Posthumanism offers an affirmative view of disability. This is because it celebrates difference and a multiplicity of perspectives. The disabled people's identities are unstable, in a state of becoming rather than being. They constantly grapple with new ways of improving their lives. Such ontology of becoming is distinctly posthuman. The deviation from ideal or norm is not looked down upon in posthumanism and thus is conducive to the positive appraisal of disabled bodies and minds. Posthumanism asks us to embrace what is different and what we fear. Disabled people have been historically marginalized, pathologized and demonized. Disability studies states that it is not possible to overcome ableism. That is why it uses the term temporarily abled bodies to refer to certain individuals. Experiences like ageing or pandemics have made us aware of this idea. If it is not possible for anyone to entirely overcome ableism, it follows that we learn from it, accept it

and look for new ways of living with it. Disability studies identifies disability as a cultural construct rather than a medical, pathological condition to overcome and be ashamed of. It ascribes the origin of term freak not to deviant bodies, but in their perceivers. Posthumanism also criticizes the tendency to ascribe inferiority to what is simply difference. It urges us to leave behind all dominant modes of thought and prejudices. The western Eurocentric conception of self and other, and the need to make 'them' like 'us' is criticized by the posthumanist advocacy for heterogeneity of identity. Disability studies resists the boxing of people as disabled. It instead looks for ways in which they are differently abled. One of the interpretations of posthuman condition is a deep reflection of humanity rather than a state beyond humanity. In that sense, the idea of dis/human can be used to dismantle the human. According to Goodley and Runswick Cole, 'disability has the radical potential to trouble the normative, rational, autonomous, independent subject that is so often imagined when the human is evoked, but also assert the human, because people with disabilities seek to be recognized as human.' Some theorists along with Stan Goodley and Cole vouch for a DisHuman approach to theory- blending the pragmatics of humanism with posthuman offering of possibilities. Being Human and Becoming Posthuman, both positions are considered when dealing with disability from a DisHuman perspective.

All the Broken Things and Posthuman Disability

Literature is an important avenue to study attitudes towards the disabled as well as probe into questions of self and belonging, what it means to be a human. Bildungsroman adds to this exploration. *All the Broken Things* is also a disability bildungsroman. Bo, the protagonist's growth as a person occurs through his experiences with Orange, his four years old disabled sister. His understanding of difference deepens with his encounter with freak shows, a popular form of entertainment in Canada till the late twentieth century. The book is set in 1980s Canada, and focuses on a Vietnamese migrant family displaced by the US-Vietnam war. Orange is a victim of Agent Orange, a chemical used by the US to destroy Vietnamese forests. The traces of toxins were ingested by people in the surrounding areas, causing many severe health issues. His mother, pregnant at that time, gives birth to a severely deformed baby. The ways in which our environment is treated directly affects humans living in it, just as vice versa is true. This pushes one to think in the direction of post anthropocentrism and towards the Holocene, or the age of human-ecology mutuality. Rose, Bo's mother, is an instance of body being chemically and biologically enmeshed in its environment. Her ingestion of toxins not only causes her to have a skin disease, but also affects the baby in her womb. Bo has ambivalent attitudes towards his sister. He simultaneously loves and is repulsed by her. He describes her body in terms of monstrosity and animality. Her deformity is associated with physical ugliness. In the nineteenth century, through discourses of law and medicine, disability came to be associated with the dualism between normal and abnormal. Disability and the disabled came to occupy the end of continuum of humanity, the inferior and the abject. People with intellectual disabilities were considered as slow or retarded. All these terms are still prevalent in residues in the contemporary society. Orange crawls across the floor, she does not speak, and her eyelids are forever open. She

also has learning disabilities, autistic traits. For Bo, all this means she is not fully human. He thinks of her as hideous, ugly, object of pity, a mistake, unlovable. This recalls Rosi Braidotti's contention about how the status of humanity of certain people was questioned under the banner of humanism. This attitude is mainly a result of his mother's approach. She favors him over Orange, loving him as her son, while dismissing Orange as a mistake. She hides Orange in a room, not letting her see the light of the day. She is confined, a family secret and tragedy. Her role as a parent is severely impaired. She has succumbed to alcoholism to deal with the trauma of her husband's death on sea. She suffers from depression, an invisible kind of disability. Bo, who witnessed on the boat to Canada the drowning of his dead father, also suffers from post-traumatic stress disorder. He gets flashbacks of the incident, avoids water bodies and fights to cope up with the desperation he feels. He describes his fear as a monster, except an invisible one, which cannot be fought. Neither of them is fully abled. The title, *All the Broken Things*, points out to this idea, that none of us are perfect. None of us are whole as humanism once proclaimed, and do not deserve the position of superiority from where we can look down upon others. The family's treatment of Orange is based on ableism. It reflects the ill effects of incapacity to understand and accept difference. The greatest form of disability, it is said, is the inability to empathize with someone. Posthumanism vouches precisely for this moral imagination. In that sense, disability becomes a norm reinforced by the society as much as a bodily and mental condition. As the novel progresses, instead of despising Orange for her disability, Bo learns to embrace her difference, appreciate her ability to swim, and use sign language rapidly. This transformation is fueled by Bo's encounter with Max Jennings, an owner of a carnival. He stages freak shows in his carnival. It is also through Orange's interactions with Emily, his school friend that Bo learns to look at Orange in a different light.

Max Jennings, the carnival owner, asks Bo for a price on Orange to be displayed in the Freak Show. Freakery connects disability with spectacle. The freak is put to display by able bodied people to reinforce their own sense of worth and belonging. Bo realizes how the deformed and the disabled inspires awe, disgust and fascination in people. 'It couldn't be normal that people like to look at these things', Bo thinks as Max shows him a preserved fetus with abnormalities. The book questions the 'normalcy' of people who enjoy objectifying disability and deformity. Bo further realizes that they laugh at what makes them uncomfortable. This is reminiscent of Ato Quayson's idea of the aesthetics of nervousness, which speaks about the difficulty in representing the disabled in literature. It can be extended to encountering such people. Just as representing disability is a problematic endeavor, so is encountering it and acknowledging it. It leaves people disturbed, uncomfortable. So, people either ignore it, act like it does not exist or ridicule it, treat it as a source of entertainment. The freak shows further widen the divide between the able bodied and the disabled or deformed. At the freak show, Bo sees people who deviate from the norm- which destabilize the fixed categorization of identity. The freaks are objects of abled people's gaze. Rather, the gaze is what appropriates their identity as freaks. He speaks to Morgana, a dwarf woman who is made to masquerade as a doll in the show.

She tells him that the freak show has offered people like her a sanctuary, a place to belong in the world which otherwise shuns them. It is not something she has chosen to do, but it is also what keeps her going. This implicitly calls for a need to create inclusive spaces for the disabled and deformed in the world at large. Another possible attitude towards freak shows is also suggested in the book, which distinguishes between looking and staring. It is treating the differently abled as curiosities rather than monsters. Looking has an implication of observing, exploring with a motive to understand better through curiosity. Staring on the other hand is meant not to understand, but to appropriate and objectify. Contact with freak shows may offer a nuanced perspective towards better understanding different forms of humans, if taken in the right vein. They can also be interpreted as spaces where difference is asserted. Although not without its ambivalences, freak shows denote the extraordinariness of deformed and disabled bodies. It gives such identities a chance to assert their identity in limelight, instead of being hidden and locked away as anomalies and shames.

Animality, Disability and the Posthuman

Animals and the disabled form overlapping categories of oppression in the novel under question. As Stephanie Jenkins and Kelly Struthers states in their "Introduction to Disability and Animality", 'Stigmatizing attitudes towards dependence have been used to justify the oppression of physically disabled humans who are considered 'dependent' and to justify the oppression and slaughter of more-than-human animals. Figures at the intersection of critical disability studies and critical animality studies include the service dog, the pathologized animal activist, the disabled more than human animal, and the animalized disabled human.' Taylor's book *Beasts of Burden: Animal and Disability Liberation* notes the ways in which disabled were animalized throughout history. In both these biases, ethical and political considerations of certain identities are questioned and dismissed. Some humans consider themselves more human than others, and this justifies their cruel treatment. Similarly, animals are subhuman, less than humans, and hence can be treated as objects rather than subjects. Critics like Cary Wolfe and Sunaura Taylor have drawn parallels between speciecism and ableism. Wolfe states, 'And as long as it is institutionally taken for granted that it is all right to systematically exploit and kill nonhuman animals simply because of their species, then the humanist discourse of species will always be available for use by some humans against other humans as well, to countenance violence against the social other of whatever species- or gender, or race, or class, or sexual difference.' This may be extended to include bodily difference. In the novel, an instance arises where Bo thinks Orange bit him like a dog, but then he shakes his head, not liking the comparison he makes. The novel deals with the animalized disabled human as well as the animal trained for entertainment. Circuses, where bears are kept in captivity and forced to fight with humans for amusement, parallel the disabled and deformed who are made to perform in freak shows in the novel. Sammy Jo Johnson argues that such institutions of display must be understood as interconnected. Whereas institutions of display are oppressive and violent mechanisms enforcing speciecism and ableism, they are also exhibitions which go beyond victimhood. Animals' lack of physical

resistance and freaks' inability to take rational decisions are instances of their non-agency. However, there is a need to look beyond this non-agency, and at ways in which freak show performers, though disabled, are active participants in their own lives, of how they live beyond victimhood. They offer networks of care to Orange while Bo is working at the carnival. They resist the monopoly of Max Jennings, making him realize that it is their existence which offers him a major part of his livelihood. Michel Foucault has talked about the ways in which the disabled among others are pathologized and subjected to medical scrutiny. They are products rather producers of knowledge. The same extends to animals. Posthumanism looks for more nuanced ways of connecting animality and disability. It exposes our unconscious desire to view humans as less than animals, and treat some humans as if they weren't human. Thinkers like Temple Grandin have connected their own disabled experiences to animality. Grandin's autism enables her, because of her visual thinking, to gain an insight into the world of animals who also show non-verbal perception patterns. In the novel, Bo gains a richer perspective on life through his non-verbal communication with Bear, the bear he is supposed to train. He learns to understand cues and body language. Orange's disability is depicted in non-anthropomorphic terms in the novel, it can be argued that she becomes posthuman through this. By depicting Orange as inferior, subhuman in Bo's eyes at first and then challenging this vision, the novel dismantles the divide between human and nonhuman based on western enlightenment idea of self. This can be viewed through a posthumanist lens. The description of Orange's disability disables the normative conceptions of a neurotypical subject in the novel. Also, Bo's suffering from PTSD, a mental disability, and training Bear, the cub, offering him a sense of purpose and reason to move away from the past, can be read as an affirmative human-animal relationship which reinforces posthuman interdependence. As Braidotti states, posthuman state implies a 'displacement of anthropocentrism and the recognition of transspecies solidarity'. Bo's fruitful coexistence with Bear posits a 'qualitative shift of relationship away from speciecism and towards an ethical appreciation of what bodies (human, animal, others) can do'. The disabled's relationship with animals, as well as the way animal is evoked to describe certain disabilities, might be a way of thinking of a life beyond species, something Braidotti posits as a posthuman endeavor. Cary Wolfe states with respect to animal studies and disability, 'Both call us to rethink questions of ethical and political responsibilities, fundamentally posthuman coordinates. They offer new lines of empathy, affinity and respect not given by liberal humanism.' Animal is evoked in representations and discussions of disability. Stan Goodley claims that through disability, we might become human and animal together.

Disabled Embodiments

Both, Bear and Orange are denied agency, and yet they derive power, assert their existence through the expression of their bodies. Bodily violence has been conceived of as an alternate means of expression and power in feminist discourse, so is hysteria. It can be extended to the disabled as well. Orange's thrashing around, biting her brother, crawling on the ground, her violent movements in general can be considered as her means of resistance to her incarceration

and denied opportunities. Her love of water, her swimming movements, with which she can move with an ease even the able-bodied Bo cannot manage, forces the reader as well as Bo to acknowledge her instead of look through her. In recent times, disability has sought to think of body beyond merely describing the cruelty against the disabled. It focuses, instead, on disabled bodies' lived experience- their joys and suffering, their sensory engagements with the world, their limitations as well as capacities. The novel explores this aspect of disability in depth, fleshing out Orange's character rather than reducing it to a mere prop in the backdrop of Bo's journey.

Posthuman Relationality and Ethics of Care

The renaissance idea of there being a subject where there is reason, Wolfe argues, has been replaced with where there is subject, there is a language in the twentieth century. People unable to use language the way others do, those with speech disabilities, are marginalized. Voicelessness or inability to speak human language, is not a condition of weakness under the posthuman banner. It is an opportunity for alternate forms of expression. Orange's existence has been shadowed by her incarceration in her room, and her inability to communicate with others. 'Orange was unspeakable and unspeaking. She could not see very well, and was all wrong, every part of her.' Emily, a mature classmate of Bo's, teaches her how to use sign language. Sign language studies as well as Disability Studies explore nontypical communications carried out by differently abled bodies. Sign language goes beyond the basic meaning of communication, which entailed a transmission of information between biologically similar entities. Emily is appointed by Bo's schoolteacher to help Orange. After Bo learns of this, he feels guilty about his prejudice, his assumption that she was stupid, that her 'inside was as awkward, ugly dumb and wrong as her outside'. Disability Studies talks about the ways in which the disabled's existence is enhanced through the presence and help of technologies and other human helpers. This rethinks the idea of self in a way that Rosi Braidotti talks about. Instead of the human existing in isolation, posthumanism claims that he/she exists in a series of relations with others. This encourages a different way of approaching existence which is collective. There is a give and take, a symbiosis so to say, between individuals, and this is highlighted especially in the relationships of the disabled population. We all need to be needed, to be part of networks of care all our lives. How we treat each other at our weakest has an impact on how we treat ourselves and each other the whole time. Even disability studies, in the recent years, has 'contested the normativity of the Western autonomous subject in favor of relational autonomy. Which designates that autonomy is conditioned by the social relations in which individuals are embedded.' This is where posthumanism and disability provide a fertile ground for deliberation. Posthumanism implies that mutual dependence is something which can lead to great gifts. Those with disability, through their embodiment, can help focus on networks of giving and receiving, which are what humans are meant to be. The process of Emily teaching Orange how to sign, belies the humanist idea of expressive individualism. Just as Orange's life is enhanced by Emily's help, so is Emily's, since she learns to communicate without language that she has

always used. It enables her in a way, to understand different ways of asserting herself, without words. Bo also eventually learns sign language, and the process brings the brother-sister duo closer than before. The disability that Orange has rethinks the relationship between an older brother and younger sister in novel ways. Their mother's inability to accept and cope up with Orange's bodily and mental difference, and the ill effects of the same, forces us to rethink the role of parents in understanding disability. It forces Bo to step out of his comfort zone, and think differently to acquire a new skill, leading to his growth and enrichment. Orange's speech impairment and inability to understand language enables other means of communication and a dynamic interaction, not only with people, but also her environment, including water bodies and the wheel chair in which she steps out of the house at the end of the novel. Agency, in this case, is distributed among Bo, Emily, the schoolteacher and Orange, as well as the wheelchair. The ability to bring about change, posthumanism posits, rests in togetherness rather than individualism and autonomy. This implies a move away from liberalism and capitalism, in subtle ways. It subverts the hierarchies of thought, language, power and capability. Posthumanism and Disability studies both mutually inform each other when it comes to discussions of agency. Disability emerges in posthuman times as a moment of relational ethics. It urges us to see how we are made through our connections with others. It encourages us to embrace alternate ways of living, not framed by the myopic perspective of humanism. Orange's presence in Emily and Bo's life teaches them what it means to flourish as a human being and learn how to be humane themselves. Reliance on linkages between humans, Stan Goodley notes, figure not as limitations, but as transformative possibilities of becoming other among multiple lines of flight. Humans are a thoroughly social species and yet they abhor dependence, because it is supposedly linked with disability and inferiority. Orange is four years old. At her birth, the doctors had proclaimed that will not live for more than few days. Her disease is such that she won't be able to live until adulthood in most probability. In such a life limiting and life-threatening impairment, Orange still has an urge to experience life to the fullest, in any way she can. To think positively about death, disability and short lives is a part of the posthuman condition. Human condition is thought of as a shattered entity in need of fixing and healing from a poststructuralist perspective. Such a stance stresses the 'vulnerability and passivity of precarious life forms', for Braidotti. Orange's suffering is no doubt articulated in the novel, for to overlook it would be to ignore a crucial part of her existence. The humanist register is used in such a situation to understand how to live a short or painful life. Critics like Marks, Reeve and Thomas, however, read this as the psyche being shadowed by the pathological readings of disability. Orange's life is depicted as endless misery in the beginning of the novel, doomed to end hidden in her room. However, Emily takes it upon herself to let Orange escape the confines of that room. She takes her to a swimming pool, where orange splashes around for hours, taking to water easily and enjoying in the sun. Bo, who has flashbacks of his father's corpse being left in the sea, is extremely afraid of water. Orange, because of her cognitive impairment, is free from the constraints of her traumatic past. In this way, she can be considered differently abled rather than just disabled. She wears a princess outfit

at the end of the novel and enjoys a public outing. She takes joy in blowing soap bubbles. She refuses to let her situation hamper her little moments of happiness. Bo looks at her with newfound awe and inspiration when she goes out and expresses herself. Her disability makes the reader rethink value, life and quality. The posthuman register asks for 'an affirmative ethics for a non-unitary subject that proposes an enlarged sense of interconnection between self and others, including the non-human or 'earth' others.'

At the end of the novel, Orange moves around freely with Bo in public spaces where people see her. She is freed from the constraints of her room and mostly Bo's prejudices. Bo has finally accepted her for what she is, even learned to see her beauty, her charm. People are taken aback by her physical deformity. But as she waves at them, they wave back, feeling uncomfortable and guilty about their rude staring. The simple act signifies an interactive moment of solidarity despite difference. This can be read in contrast to the abled/disabled divide in freak shows, where there is hardly any interaction per se, as the disabled are objectified, rather than treated as persons deserving of friendliness.

The novel changes the view of disability from a one dimensional to a multi-dimensional one. It is an instance of what Herbrechter calls a literature of the posthuman: a 'literary engagement with all figural aspects of human becoming or unbecoming, demise, renewal or transformation. The novel deliberates on the idea of self as sovereign and assembled selves, and suffering as tragedy and a chance for asserting non victimhood through acceptance. It adds to the DisHuman approach, wherein human condition is explored through the lens of disability. It uses posthumanism in constructive ways to destabilize dominant and discriminatory modes of thought.

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ROBOTIZATION OF THE CULINARY INDUSTRY:
TRENDS AND CHALLENGES

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Abstract:

Advance in science has impacted almost every industry and brought in technological changes that have led to production of more and even better goods and services. Creation of new knowledge and the utilization of the same have boosted prosperity, often providing us with facilities for a luxurious lifestyle. Scientific advances have impacted the food industry as much as any other and new strategies have helped improve food production, processing, distribution and food storage. New ingredients, nutritionally balanced meals, plant based meat substitutes and functional drinks to control chronic diseases are the results of the research and application of research. One such interesting application is the use of robotics in the food industry. The application of Robotic technology for modernising and even revolutionizing the food sector is engaging experts and drawing attention of governments and private players the world over. Robots have the potential to transform the food industry and impact food preparation, processing, packaging, serving and delivery. 'Robo-Chef' or having automated kitchens is a new trend that has caught the imagination of the industry at large and the Indian food industry slowly understands the benefits of the same. Few Indian players have begun to using robotics in their start-ups culinary ventures.

This paper will review the robotization of the Indian food industry to understand the possibilities, benefits, opportunities, challenges and drawbacks of the same. The paper will draw on interviews and case studies as well as on standard secondary sources.

Keywords: Science, Technology, Robotics, Industry, Food.

Introduction:

Technological advancement has transformed various fields during the last decades. Like any other industry, the food industry has been significantly impacted by scientific advancement and new innovative methods that have contributed to enhancing food production, processing, and storage. The application of science and technology to the culinary industry led to the discovery of nutritionally balanced meals, plant-based meat substitutes, and many more. One such interesting application is the use of robotics in the food industry.

Robotics is the branch of mechanical engineering, electrical engineering, and computer science that deals with the design, construction, operation, and application of robots, as well as a computer system for their control, sensory feedback, and information processing.

According to the Merriam-Webster dictionary, a Robot is a machine that resembles a living creature in being capable of moving independently and performing complex actions. The World Robotics 2021 Industrial Robots Report shows a record of 3 million industrial robots operating in factories around the world – an increase in 10% since the pandemic. Difficulties in performing

some tasks manually combined with the need to increase production without compromising quality, has led entrepreneurs to turn to the benefits of robotic engineering.

Robots are slowly and steadily replacing humans at work all around the world, including in India. Robots can perform tasks with more efficiency and effectiveness, without breaks or holidays and this is where they score over the human intervention.

Robotic application to the food industry is not new; and was initially confined to the packaging of food and palletizing in dairy, beverages, chocolates, and food tins and was not popular. In 1998, the launch of the Flex Picker Robot revolutionized the food industry, as it was the world's fastest pick and place robot. Hospitality robots enjoy growing popularity but compared to the market potential, sales figures are still low: More than 20,000 units (+85% from the previous year) were sold in 2021, a huge rise in sales. Robots in this category are either used for food and drink preparation or for mobile guidance, information, and tele-presence. As technology is becoming affordable, it may be feasible to automate the entire culinary industry especially for complex and repetitive tasks. The continuously increasing demand for food supply, contactless dining, and time-based quick delivery of food items; better quality, and lower costs that are the basic reasons for the interest in the robotization of the culinary industry. However, there are challenges.

This paper is interested in tracing the growth and development of the robotization of the culinary industry and the types of Robots and the tasks that they perform in the kitchen space. The study will describe the requirements of the current food industry and will try to identify the reasons that led to the robotization of the same. The paper also aims to analyse the innovation that the advent of robotization has brought to the hospitality sector, its advantages, drawbacks, and potential opportunities.

The study will help us to understand the sustainability of the use of robotics in the food industry. This study is based on Internet sources. Newspapers, magazines, and journals have also been consulted. The paper has also drawn on interviews with robotic engineers and experts from the hospitality industry and case studies.

Robotization of the Culinary Industry

In the culinary industry there are a series of activities that go on from farm to restaurant. Transportation of food from the farm to the kitchen, washing of vegetables, chopping, sorting, greeting and taking orders from customers, cooking, and serving food on time are other activities that are an integral part of the culinary industry. Washing and drying utensils and cleaning the cooking area are the other monotonous jobs involved. Repetitive work, long working hours and retaining the taste of served food demands hiring a skilled labour force. This is where robotization fits.

Robotization of the culinary industry means automating all the tasks that are traditionally performed by humans. That can be varied in nature and can be done at various levels in any restaurant. Automated activities are often too repetitive or unsafe for human staff which may be performed by robots more quickly, efficiently and accurately.

Robotization is not only transforming the culinary industry but also bringing positive, visible changes. Robots can perform assigned tasks with speed and accuracy; whether cutting or cleaning or reproducing the taste, robots can do it all. And, they provide quick and timely services to customers. Robotization of the culinary industry will also help in the reduction of the transfer of contagious diseases and reduce wastage. Robots, unlike human beings, work around the clock without salary or food. These multitaskers, ask for no weekly breaks, holidays, or vacations. Robotization has the potential to make the culinary industry smarter and more affordable.

Robots in the Culinary Industry

Processors, Sensors, Software, Rover or Manipulators, Actuators, End Effecter, and controllers are the main components of Robots. Four types of robots are generally used in the food industry.

Robots used in the culinary industries are divided into multiple categories based on the nature of the work, responsibilities, and demand. Pick and Place Robots, are installed robots for transforming the traditional processes of food handling wherein their designs assist in high–capacity collating, picking, and placing of products onto trays, and cartons. Packaging and Palletizing Robots, on the other hand, assist in neatly palletizing and stacking of cookies, beverages, pasta, sweets, and other items especially those that have to be transported. Service Robots, a more recent development, considered the most innovative and interesting area is yet to be fully explored. Service Robots include Robotic waiters, Robot cooks, and Delivery Robot; Robotic waiters perform the task of greeting customers and serving meals to picking up finished dishes eliminating fully the human intervention. Robotic cooks are automated cooks that can efficiently cut vegetables, mix and stir, prepare meals and clean the cooking station while Delivery Robots assist in meeting the increasing demand for take-away and time-based delivery services.

Robotization of the Culinary Industry: A Global Perspective

Companies across the world are trying hard to robotize the culinary sector on an everyday basis. Low population figures are the main reason for the robotization of culinary industry in countries like the US, UK, China, Japan and Germany. Lack of manpower accompanied with an increase in the demand for food has necessitated robotization.

Moley Robots introduced the world's first fully robotic kitchen. The Moley Robotic Kitchen allows to save cooking time, and also adapts menus according to different diets and lifestyles. Moley Robots helps keep check on calorie intake and replacement of ingredients towards nutrition. Telpo is more into creating robotic waiters. Food-serving Robots designed by Telpo, deliver efficient, accurate, and contactless food delivery service, allowing customers to eat at ease. Similarly, Bear Robotics, a pioneer in automated robot waiters has robots who work alongside food service staff, freeing them to focus on elevating guest experiences and other more important tasks. Foodservice chains like Chili's, and hospitality chains like the Marriott have been integrating mobile waiters to help improve efficiency.

As against this, Miso Robotics provides Robots-as-a-Service and intelligent automation solutions catered toward restaurants. Their products include a range of AI-powered sensor systems and food service robots. The current focus of the Company has been on re-introducing their iconic product, the Flippy 2, an automated robot that can fry high volumes of food with maximum precision. Another flagship technology from Miso Robotics that has been gaining attention is the Cook Right Coffee system. It is designed to monitor the coffee brewing process and provide key insights on volume, temperature, and time metrics. This helps restaurants improve the efficiency of their coffee brewing programs and maximize productivity.

Nala Robotics, an AI technology company known for its ground breaking robotics products catering to the food service industry introduced Nala Chef 1.1, an AI and ML-powered multi-cuisine chef that allows users to deliver an infinite number of precision-cooked recipes. The second product from Nala Robotics is Pizzaiola 1.0, a fully robotic pizza maker that can create fully customized dishes in various styles.

The pioneer in bartending robots and robotic bar solutions is Makr Shakr. Their robotic bartenders can assemble and serve various cocktail recipes to customers. With the capacity to serve 120 drinks per hour, their technology has been adopted in bars worldwide.

Robotization of the Indian Culinary Industry

In India, robotization of the culinary sector is a relatively untouched process. Robotic technology is used mainly in the milking, meat processing and poultry industries. Using robots for cooking, cleaning or even for waiter service is not much experimented upon. While there is abundant knowledge about robotic-culinary technology, there is a hesitation to take the risk of substituting the robot for the human. At an experimental level, few Indian players have established Sci-Fi automated robotic restaurants in different parts of the country. These restaurants are undoubtedly attracting customers, but technical experts are in doubt on the continued use of robots in Indian restaurants. There is also a cloud on their contribution to the economy.

Navigating through the few restaurants in the country, we found that, Robot Restaurant, operational since 2017, at Indira Nagar, Bengaluru is having capacity to accommodate 50 dinners at a time. With the team of six robots (1 usher and 5 bearers), the restaurant been designed in such a manner that there is extra space between the aisles so as to provide enough space for the robots to navigate. Ramya, Zoey, Alice and Sansa welcome guests and serve a variety of Indo-Asian dishes.

Robot Theme Restaurant in Chennai, founded by Karthik Kannan, and Venkatesh Rajendran, the first-of-its-kind restaurant in India, offers a dining experience can be redefined in the forthcoming days. A welcome by the bots, a tab to select from the menu and a bot who serves at their tables, this Robotic restaurant serves mouth-watering Chinese and Thai food too. There are two outlets of this restaurant in Chennai; perfect for those who wish to avoid any sort of contact with the humans.

The novelty of being served by Palki, a robot wearing traditional Assamese sartorials is what the Urukua Restaurant in Assam's Guwahati is all about. Karishma Begum, the owner of

the Restaurant mentions that Palki attracts diners and this has motivated her husband SN Farid, who designed Palki, to planning three more similar robots for the restaurant.

At Yellow House Robot Restaurant, founded by Jishu Bansalin sector 104 Noida, Robots named Ruby and Diva appear in desi avatars in a Rajasthani themed restaurant. The Yellow House Robot Restaurant is the first robot-assisted restaurant in Delhi NCR which was started on April 16, 2022. The ambience is a mix of modern and traditional. One section is painted with Rajasthani motifs, while the other has a modern bar setting. The menu here is extensive. They have everything from street treats, and Rajasthani cuisine, to Italian and Mexican. The speciality of this restaurant is its tandoor dishes and Rajasthani Thali. A dish called Ruby's Favourite is a favourite of all.

Interestingly, Cooking Chef, developed by a computer science engineer, Cohan Sujay Carlos, and an aerospace engineer Arpit Sharma, is a prototype Robot that successfully mimics the operations of a human cook, right from releasing the ingredients in a phased manner to stirring the dish as it cooks. The Robot looks like a top-heavy bundle of bottles whirling, spinning, and measuring ingredients to create the perfect recipe.

Opportunities:

Robotization of Indian Culinary Industry.

India has a huge potential to robotize its culinary industry. Across the world, Indian software and hardware engineers are working on this project. They are into designing, assembling and writing programmes for different types of robots.

Experts in the AI industry, inform that with robotization, the culinary industry can establish food supply chains. Packed food, ready to cook and processed meat with 'Made in India' labels are often rejected for export, due to packaging errors. This can be avoided with the robotized processes of packaging and palletization.

Sanjay Kulkarni, who is an expert is of the view that robotization of the culinary sector in India can first focus on the meat, dairy, fruit and vegetable processing sectors before entering into the restaurants. 100% immediate robotization should not be the immediate goal. According to him, alongside robotization, what is important is the establishment of 'Special Economic Zones for the Culinary Industry' in prominent states of India. Training in robot management will generate opportunities for expanding India's food industry, thus generating economic growth and sustainability.

Perhaps academia must seriously look into designing courses specific to the use of robots in the culinary sector for fine dining. Indian expertise may be combined with expertise from the West where the robot is already in charge. Teaching and training may help in the advancement of knowledge to bring the robots into the Indian culinary sector.

Challenges and Benefits of the Robotization of the Indian Culinary Industry

Robotization is an expensive process. Making robotic components, assembling them, setting specific programs is a niche art and extremely time-consuming. Affordability and specificity of the demand are barriers to the robotization of hospitality kitchens. Lack of skilled labour is yet another challenge and replacing the human hand with robots will hit hard on

employment. The loss of the human touch, laying off workers, or unpleasant experiences with AI-powered devices can result in resistance toward restaurant robotics. All of these concerns will have to be addressed by restaurant owners who plan to introduce robot cooks.

Another important hurdle is regular electric supply. Metropolitan cities, including the two-tier ones are faced with problems of regular power supply and power cuts are a feature in many cities. Since charging robots for 5-6 hours a day is a requirement for regular use, a good supply of electricity is a prerequisite for robotization. This may pose a challenge.

Again, it is important to note that Robotic Restaurants too require some degree of human supervision. Robots are not yet capable of adapting to changing situations or reading human emotions. These are key factors that affect the overall experience at restaurants; the welcome smile, understanding the menu, taking care of food allergies to name a few. Robotization may not help in enhancing customer satisfaction and guest loyalty once the initial novelty dies down. Humans may have to continue to supervise these machines to ensure proper service and customer delivery. So the question, is duplication necessary? Will concerns of cost effectiveness not creep in?

Also, Robots can replicate certain actions with precision, but teaching robots to learn new recipes is an incredibly complex task that not all restaurant owners—or even machines—will be up for it. Robots may not be able to respond to customer demands of reducing or increasing salt and spice since they are already programmed. Additional cheese, less butter, no mushrooms are some demands that may be challenging to robots. Decisions in critical situations or problem shooting may not be possible unless there is advanced programming.

Culturally, Indians prefer handmade food and accepting a robot as the chef may not be as easy.

As the Culinary industry moves forward with automation, the real challenge for restaurateurs will be balancing their automated and human teams. This complex balancing act will determine how well the restaurant fares.

Robotization of Culinary Industry will undoubtedly reduce labour requirement and waiting time and will be a boon especially on weekends with robots carrying out multiple tasks with accuracy and speed. With robotization, consumers can easily access menus and place orders at their own pace and expect quick delivery from eateries. The fact that Robots will not complain about longer working hours and this may be a boon to restaurant owners.

Conclusion:

The scope and application of science and technology is increasing by the day. There is no doubt that robotization of the culinary industry will be beneficial to the economy at large.

Food exports and the dining experience will surely be at a different level with robotization.

The Government, AI experts as well as restaurateurs have an important role here to help create sustainability in the culinary industry.

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POSTHUMAN IDENTITIES IN COVID-19 INSTAGRAM POEMS

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Abstract:

The leap from humanism to post humanism is not about rejecting the former for the latter, but a thought process that goes beyond the conventional and envisages the human body outside the realm of the current perception. Posthumanism is often defined as an evolution of thoughts beyond the contemporary social boundaries whilst rejecting previous attempts to establish anthropological universals that are imbued with anthropocentric assumptions. This definition seemed to come alive during the Covid19 pandemic which saw the complete disintegration of the preconceived notions and brought about total mayhem, forcing people to rethink every aspect of their identity.

The recent pandemic divided the world into carriers and infected versus the possibly or potentially infected. The randomness of the disease meant that anyone and everyone could succumb to the virus. The new epistemology of knowing one's identity by measuring one's distance to or from the possibility of infection was glaringly obvious during this pandemic. Amidst this backdrop, impromptu expressions on social media became the order of the day as people tried to unravel the chaotic scheme of life during the multiple waves of the pandemic.

This paper is an attempt to analyze the instagram poetry written about Covid 19 during the pandemic through the posthuman lens. Instagram was the platform freely available to everyone from within the confines of their home – allowing more people to express their anguish and fears during the bizarre lockdown years. Documenting how illness has caused strange symptoms and spread at such a furious speed, vaccinated bodies and PPE wrapped corporeality, the poems written during the pandemic lend themselves naturally to a posthuman study.

Keywords: Humanism, Posthumanism, Anthropological universals, Epistemology, Instagram poetry

The leap from humanism to posthumanism is not about rejecting the former for the latter, but a thought process that goes beyond the conventional and envisages the human body outside the realm of the current perception. Posthumanism is often defined as an evolution of thoughts beyond the contemporary social boundaries whilst rejecting previous attempts to establish anthropological universals that are imbued with anthropocentric assumptions. This definition seemed to come alive during the Covid19 pandemic which saw the complete disintegration of the preconceived notions and brought about total mayhem, forcing people to rethink on every aspect of their identity.

The lockdown and quarantine enforced by governments forced people into a life hitherto unknown – one devoid of the usual social interaction and human touch. Two years of the

pandemic bought a paradigm shift from man being a social being, to a new normal which regulated the distance –both physical and emotional between people. This bizarre and traumatic situation forced people to resort to social media to connect with others – instagram started buzzing with activity providing the much needed outlet for expression. Instagram poetry became extremely popular during the pandemic even though this subgenre of poetry barely managed to make its mark in the literary circles. Simple expressions by amateurs with scant regard for meter or verse forms, these poems were devoid of any editor or publisher diktat. As raw cries for help during the Covid pandemic the selected poems make for an interesting study from the posthuman point of view. The symptoms of the ailment combined with the fear psychosis that set in during those terrifying two years, completely transformed preconceived notions about many aspects of life. Social niceties flew out of the window and distrust emerged as the new normal!

The pandemic divided the world into carriers and infected versus the possibly or potentially infected. The randomness of the disease meant that anyone and everyone could succumb to the virus. The new epistemology of knowing one's identity by measuring one's distance to or from the possibility of infection was glaringly obvious during this pandemic. Amidst this backdrop, impromptu expressions on social media became the order of the day as people tried to unravel the chaotic scheme of life during the multiple waves of the pandemic.

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In the past too, ailments and diseases had created dubious corporeal identities, implicating a posthuman intervention with the physical self. 'The body affected by aids, for example not only crumbles and disintegrates, but also produces fear in those who do not have Aids – causing disintegration at large'. (Halberstan 15). This disintegration attacks the imaginary gulf between the eternalized, safe body and the body at risk; it is this differential that causes the person afflicted with aids to be construed as dead and beyond the human loop. During the Covid 19 pandemic, this disintegration happened not due to any imaginary virus but an actual one which spread fear with its multifaceted attack. Entire communities and nations seemed to be divided into those affected by the virus and those affected by the fear of the virus. There were cases reported about people who got admitted to a hospital at the mere hint of a cough or a sniffle – such was the extent of disintegration. A cough assumed dreadful connotations and turned into a precursor for the dreadful virus and managed to spread widespread fear by itself. The pandemic also saw the burgeoning relevance of online consultation; devoid the traditional human touch involved in a medical checkup. Such online advice became very popular with both the medical fraternity as well as the patients.

The pandemic was an attack on everything that was conventionally human and in fact stretched the human limits, creating a corporeal identity which lends itself ideally to the current analysis. The posthuman theory assumes enormous importance in this study and becomes an important tool of analysis. This paper attempts to elucidate three main tenets of posthumanism in the selected instagram poems. Firstly, the digital presence itself is an important aspect of posthumanism which the selected poems are representative of. These poems are created in some part through digital technology and their digital presence and impact is significant. Poets whether established or amateur, can post their thoughts sans the strictures of conventional poetic expressions. These poems can be viewed as a form of digital graffiti which appeals instantly to the millennial who is constantly on the lookout for instant gratification. Secondly, recognizable identities are not part of these instagram poems. Most poets have pseudo names or catchy phrases as their identity to attract viewership and stand out in this vast digital space. Very few poets write under their own names, which again aligns well with the posthuman theory. Lastly, these poems are cybernetic and create a kind of digital fingerprint. They elicit instant responses from the readers thereby stretching the sensibilities and aesthetics beyond the poems into the chat boxes. There is invariably a virtual dialogue between the poet and the reader lending itself to an interesting aspect of posthumanism. The poems moreover are multi-sensory as they often include visuals as well as written texts – making it more impactful and meaningful to the reader who registers his/her response immediately. Where some poems and poets garner many likes and comments, others are unable to make the mark and elicit very few likes! Understanding viewer patterns will make for an independent and interesting study in itself.

This paper is an analysis of poems written by five different poets. A total of 8 poems have been selected to elucidate the posthuman identities within.

The first poem analyzed is an untitled poem by a poet who goes by the name Thelauraregan displaying a key aspect of post humanism where the conventional norms of identity are defied and remains a mystery to the reader. The desocialisation that happened during quarantine is effectively conveyed with the following lines;

"Should I reach out, offer some help

But When was the last time we spoke

Were we two meters apart"

(Thelauraregan,https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY=   July 2022).

The quandary between wanting to help and being afraid to has been aptly conveyed by the poet. The breaking down of traditional human social values is indicative of post human thinking. Moreover, the use of parenthesis in two strategic sentences to highlight the importance of the time frame in "fortnight" and distance in "thin walls" (Thelauraregan,https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY=   July 2022), are also indicative of self-reflexivity within the postmodern framework – a metaphor for the anxiety which plagued each and every person during the pandemic has been effectively

captured with these two terms. The corporeal element is brought to the fore with the potential vulnerability of the human body in the last few lines. Rather than a unified body, the poet seems to have dismembered the body parts, more typical of a medical narrative. This again alludes to a posthuman aspect where the body is envisaged as the sum of its parts.

The next poem taken for analysis is by a poet who identifies as nick_charles_creative. Again the poem is untitled, but the background visual for the poem is a bright red screaming for attention as is the adjective "creative" as part of the name. (Nick_charles_creative, https://www.instagram.com/p/Ca8EC9TM75W/?igshid=MDJmNzVkMjY= August 2022).Very typical of posthumanism, the catchy pen name aligns well and truly with the current study. The short poem to fit the space is also an aspect which responds to the current generation with limited attention spans. Simple words strung together with no regard for meter or rhyme or verse form, appeals to the readership. The poet has posted a background to explain the context of the poem – a type of virtual conversation starter which is indicative of a posthuman tenet. The poet leaves a digital footprint in the virtual space for the readers to follow and comment on. The dismembering of body parts is a visible in this poem too where the chest and knees are isolated and shown as bearing the brunt of the deadly disease.

In the next poem, "Pandemonium" by Rani Ghazzaoui, one finds extreme brevity with each sentence having just 2 or 3 words. There is disregard for punctuation marks and the poem begins with the words "question marks" and ends with a "?"(Pandemonium https://www.instagram.com/p/CI1cezJnWPu/?igshid=MDJmNzVkMjY= July 2022), indicative of the tone .The staccato sentences in the poem appeals to the readership as is seen in the heart emoticons in the chat box. This poem too is indicative of the interactive nature of the digital space where the aesthetics of the poem doesn't cease once the poem is posted. In fact, it is only subsequently that a virtual conversation begins.

The word "fear" in bold reiterates that feeling, while "our future where is it" (Pandemonium https://www.instagram.com/p/CI1cezJnWPu/?igshid=MDJmNzVkMjY= July 2022), conveys the despondency and despair effectively. The formatting of the poem is visually in line with a post human perspective.

The poem by triboetry is untitled but has the picture of a "mask" in place of title. (Triboetry.https://www.instagram.com/p/CE2db_JFgpm/?igshid=MDJmNzVkMjY= July 2022). The virtual graffiti is evident in this picture of the mask amidst the background which has a grainy texture and resembles the floor where perhaps the mask has been discarded. The visual impact is tremendous and immediately conjures up the image of used and discarded masks. The poet's name is triboetry and is open to the interpretation by the reader as to its meaning. A gender neutral pen name has its roots firmly in a postmodern and post human study. The brevity of the poem and the conscious use of visuals can be seen as an intention to appeal to the readers and elicit responses. As seen in the chat box, the responses are quite elaborate and astute, giving us a glimpse of the interactive nature of these instapoems. This poem like the others leaves a

virtual fingerprint through the numerous likes and responses that are seen in the chat box, thereby extending the aesthetics of the poem beyond the framework of the text.

The next set of 3 poems is by the same poet who goes by the name covidpoetry. All the three poems are untitled. They are extremely short poems with graphics and visual effects which convey much more than the words. Even the placing of the words within the poems is awry and an attempt to convey a story. All these poetic tools are steeped in posthumanism and fall truly within the arena of our current study. The first poem has a prominent question mark as the main feature. The few words of the poem seem to be fitted within the framework of the question mark. This symbol conveys the doubts and fears that plagued people during the pandemic. The expression of fear and loneliness comes through effectively with the words "how would anyone know"(Covidpoetry,https://www.instagram.com/p/CAu0vqRDu1y/?igshid=MDJmNzVkMjY= July 2022). These simple words are brimming with meaning and sum up the general wave of fear that engulfed most people. Despite the obvious lack of the poet's identity, the emotions conveyed through the poem are universal in nature and is a form of virtual graffiti.

The second poem in the set has the numerical "2" as the focal point (Covidpoetry, https://www.instagram.com/p/CAuq8Hkj_ku/?igshid=MDJmNzVkMjY= July 2022). The words are deliberately arranged in a lopsided manner to suggest an uneasy state of the body and mind. The visual is more impactful than the words which seem extremely simple and juvenile. Some words are placed vertically while some are slanting. The dismembering of body parts is evident in this poem too where the chest and breast are highlighted to convey specific discomfort. These devices are typical of the digital media which allows such playing around of the text and visual and are classic examples of verse forms which go beyond the traditional and leave the footprint of the poet on a social media platform such as instagram.

The third poem by the same poet covidpoetry is again untitled.The visual sketch of a sore throat with the words"sand paper throat" (Covidpoetry,https://www.instagram.com/p/CAu1OzuDyVm/?igshid=MDJmNzVkMjY= July 2022), is highlighted with a grainy texture and conjures up a distinct image of throat which is indeed sore and irritated. The deliberate use of fonts and writing styles which are not uniform are typical of a posthuman tenet and display defiance to the traditional. By personifying the throat and comparing it to squatters who refuse to move, the poet has again successfully isolated the body part and placed his poetic style within the posthuman arena.

The last poem to be analyzed is titled "I want a Party" written by Emma Mason but posted on instagram by a poet who goes by the name 8thsign. The poster clearly mentions that this poem is written by someone else and is being reposted. This poem highlights the utter disintegration of the social order during the pandemic and the accompanying lockdown, where people were unable to do the everyday activities, one had taken for granted. The poem is a long list of things that the poet wishes to be able to do and moans this delineation and inability to continue with the routine. This plea seems to appeal so strongly with the readers that there are instant responses from people who feel the same and are grateful to the poet for putting up the

post which resounds well with their feelings. Typical of a post human tenet this poem stands out for being reposted by another person and we find quite a few comments in the chat box which reiterates that there are others too who would like to repost it. The poem seems to be an utterly simple one which just lists out the things the poet is yearning for and would like an opportunity to do. All the sentences begin with "I want' with the final question 'is this too much to ask?" (Emma Mason, https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY=July 2022).This simple plea seems to have struck a universal chord with the readers. Moreover, the blurring of the gender of the poet falls well within the tenets of posthumanism. The poem seems to have a universal appeal and conveys the thoughts of the collective psyche. The poem is full of clichés which indicate the yearning for the pre Covid routine. Hugging, kissing, sharing a glass of wine and sitting in close proximity, highlight the distance brought about by the quarantine during the pandemic and the extreme sense of loneliness that gripped almost each and every one.

To conclude this discourse, it would be apt to say that the selected instagram poems reflect the three major tenets of posthumanism very vividly while reflecting the psyche of the people during the stressful years of the pandemic. The digital nature of the poems and digital identity of the poets which have been created within the virtual space is in accordance with the posthuman theory. Moreover, the blurring of the identities of most of the poets whose very unique pen names or insta names go beyond the conventional perception of identity and has its roots firmly in posthuman concepts. Finally these poems are cybernetic in nature, eliciting comments and responses of the readers in the chat-box and stretching the aesthetics of the poems beyond the posting on the virtual wall. These comments in the chat boxes are also the immediate responses to poem's impact. The dialogue and emoticons are the marked footprints that these poems leave behind. With the combination of words, visuals and unique digital names, these instagram poems can be viewed as digital graffiti where raw emotions are expressed by the poet and perceived by the reader. These poems are also indicative of the posthuman ethics which stretch one's imagination to include a variety of new interpretations and representations of the human identity during the traumatic period of the pandemic.

The leap from humanism to posthumanism is not about rejecting the former for the latter, but a thought process that goes beyond the conventional and envisages the human body outside the realm of the current perception. Posthumanism is often defined as an evolution of thoughts beyond the contemporary social boundaries whilst rejecting previous attempts to establish anthropological universals that are imbued with anthropocentric assumptions. This definition seemed to come alive during the Covid19 pandemic which saw the complete disintegration of the preconceived notions and brought about total mayhem, forcing people to rethink on every aspect of their identity.

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Were we two meters apart"

(Thelauraregan,https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY= July 2022).

The quandary between wanting to help and being afraid to has been aptly conveyed by the poet. The breaking down of traditional human social values is indicative of post human thinking. Moreover, the use of parenthesis in two strategic sentences to highlight the importance of the time frame in "fortnight" and distance in "thin walls" (Thelauraregan,https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY= July 2022), are also indicative of self-reflexivity within the postmodern framework – a metaphor for the anxiety which plagued each and every person during the pandemic has been effectively captured with these two terms. The corporeal element is brought to the fore with the potential vulnerability of the human body in the last few lines. Rather than a unified body, the poet seems

to have dismembered the body parts, more typical of a medical narrative. This again alludes to a posthuman aspect where the body is envisaged as the sum of its parts.

The next poem taken for analysis is by a poet who identifies as nick_charles_creative. Again the poem is untitled, but the background visual for the poem is a bright red screaming for attention as is the adjective "creative" as part of the name. (Nick_charles_creative, https://www.instagram.com/p/Ca8EC9TM75W/?igshid=MDJmNzVkMjY= August 2022).Very typical of posthumanism, the catchy pen name aligns well and truly with the current study. The short poem to fit the space is also an aspect which responds to the current generation with limited attention spans. Simple words strung together with no regard for meter or rhyme or verse form, appeals to the readership. The poet has posted a background to explain the context of the poem – a type of virtual conversation starter which is indicative of a posthuman tenet. The poet leaves a digital footprint in the virtual space for the readers to follow and comment on. The dismembering of body parts is a visible in this poem too where the chest and knees are isolated and shown as bearing the brunt of the deadly disease.

In the next poem, "Pandemonium" by Rani Ghazzaoui, one finds extreme brevity with each sentence having just 2 or 3 words. There is disregard for punctuation marks and the poem begins with the words "question marks" and ends with a "?"(Pandemonium https://www.instagram.com/p/CI1cezJnWPu/?igshid=MDJmNzVkMjY= July 2022), indicative of the tone .The staccato sentences in the poem appeals to the readership as is seen in the heart emoticons in the chat box. This poem too is indicative of the interactive nature of the digital space where the aesthetics of the poem doesn't cease once the poem is posted. In fact, it is only subsequently that a virtual conversation begins.

The word "fear" in bold reiterates that feeling, while "our future where is it" (Pandemonium   https://www.instagram.com/p/CI1cezJnWPu/?igshid=MDJmNzVkMjY= July 2022), conveys the despondency and despair effectively. The formatting of the poem is visually in line with a post human perspective.

The poem by triboetry is untitled but has the picture of a "mask" in place of title. (Triboetry.https://www.instagram.com/p/CE2db_JFgpm/?igshid=MDJmNzVkMjY= July 2022). The virtual graffiti is evident in this picture of the mask amidst the background which has a grainy texture and resembles the floor where perhaps the mask has been discarded. The visual impact is tremendous and immediately conjures up the image of used and discarded masks. The poet's name is triboetry and is open to the interpretation by the reader as to its meaning. A gender neutral pen name has its roots firmly in a postmodern and post human study. The brevity of the poem and the conscious use of visuals can be seen as an intention to appeal to the readers and elicit responses. As seen in the chat box, the responses are quite elaborate and astute, giving us a glimpse of the interactive nature of these instapoems. This poem like the others leaves a virtual fingerprint through the numerous likes and responses that are seen in the chat box, thereby extending the aesthetics of the poem beyond the framework of the text.

The next set of 3 poems is by the same poet who goes by the name covidpoetry. All the three poems are untitled. They are extremely short poems with graphics and visual effects which convey much more than the words. Even the placing of the words within the poems is awry and an attempt to convey a story. All these poetic tools are steeped in posthumanism and fall truly within the arena of our current study. The first poem has a prominent question mark as the main feature. The few words of the poem seem to be fitted within the framework of the question mark. This symbol conveys the doubts and fears that plagued people during the pandemic. The expression of fear and loneliness comes through effectively with the words "how would anyone know"(Covidpoetry,https://www.instagram.com/p/CAu0vqRDu1y/?igshid=MDJmNzVkMjY= July 2022). These simple words are brimming with meaning and sum up the general wave of fear that engulfed most people. Despite the obvious lack of the poet's identity, the emotions conveyed through the poem are universal in nature and is a form of virtual graffiti.

The second poem in the set has the numerical "2" as the focal point (Covidpoetry, https://www.instagram.com/p/CAuq8Hkj_ku/?igshid=MDJmNzVkMjY= July 2022). The words are deliberately arranged in a lopsided manner to suggest an uneasy state of the body and mind. The visual is more impactful than the words which seem extremely simple and juvenile. Some words are placed vertically while some are slanting. The dismembering of body parts is evident in this poem too where the chest and breast are highlighted to convey specific discomfort. These devices are typical of the digital media which allows such playing around of the text and visual and are classic examples of verse forms which go beyond the traditional and leave the footprint of the poet on a social media platform such as instagram.

The third poem by the same poet covidpoetry is again untitled.The visual sketch of a sore throat with the words "sand paper throat" (Covid poetry, https://www.instagram.com/p/CAu1OzuDyVm/?igshid=MDJmNzVkMjY= July 2022), is highlighted with a grainy texture and conjures up a distinct image of throat which is indeed sore and irritated. The deliberate use of fonts and writing styles which are not uniform are typical of a posthuman tenet and display defiance to the traditional. By personifying the throat and comparing it to squatters who refuse to move, the poet has again successfully isolated the body part and placed his poetic style within the posthuman arena.

The last poem to be analyzed is titled "I want a Party" written by Emma Mason but posted on instagram by a poet who goes by the name 8thsign. The poster clearly mentions that this poem is written by someone else and is being reposted. This poem highlights the utter disintegration of the social order during the pandemic and the accompanying lockdown, where people were unable to do the everyday activities, one had taken for granted. The poem is a long list of things that the poet wishes to be able to do and moans this delineation and inability to continue with the routine. This plea seems to appeal so strongly with the readers that there are instant responses from people who feel the same and are grateful to the poet for putting up the post which resounds well with their feelings. Typical of a post human tenet this poem stands out for being reposted by another person and we find quite a few comments in the chat box which

reiterates that there are others too who would like to repost it. The poem seems to be an utterly simple one which just lists out the things the poet is yearning for and would like an opportunity to do. All the sentences begin with "I want' with the final question 'is this too much to ask?" (Emma Mason, https://www.instagram.com/p/CLhsuoHAkS0/?igshid=MDJmNzVkMjY=July 2022). This simple plea seems to have struck a universal chord with the readers. Moreover, the blurring of the gender of the poet falls well within the tenets of posthumanism. The poem seems to have a universal appeal and conveys the thoughts of the collective psyche. The poem is full of clichés which indicate the yearning for the pre Covid routine. Hugging, kissing, sharing a glass of wine and sitting in close proximity, highlight the distance brought about by the quarantine during the pandemic and the extreme sense of loneliness that gripped almost each and every one.

To conclude this discourse, it would be apt to say that the selected instagram poems reflect the three major tenets of posthumanism very vividly while reflecting the psyche of the people during the stressful years of the pandemic. The digital nature of the poems and digital identity of the poets which have been created within the virtual space is in accordance with the posthuman theory. Moreover, the blurring of the identities of most of the poets whose very unique pen names or insta names go beyond the conventional perception of identity and has its roots firmly in posthuman concepts. Finally these poems are cybernetic in nature, eliciting comments and responses of the readers in the chat-box and stretching the aesthetics of the poems beyond the posting on the virtual wall. These comments in the chat boxes are also the immediate responses to poem's impact. The dialogue and emoticons are the marked footprints that these poems leave behind. With the combination of words, visuals and unique digital names, these instagram poems can be viewed as digital graffiti where raw emotions are expressed by the poet and perceived by the reader. These poems are also indicative of the posthuman ethics which stretch one's imagination to include a variety of new interpretations and representations of the human identity during the traumatic period of the pandemic.

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UNDERSTANDING THE CSR PRACTICE IN INDIA (AMONG TOP 5 COMPANIES)

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Abstract:

The biggest corporations in the country are obligated to spend 2 per cent of their net profits under Corporate Social Responsibility. The purpose of this study is to explore various definitions of CSR and description of Corporate Social Responsibility; elaborate upon the development of CSR concept practiced in India. This paper examines how top 5 Indian companies (Reliance Industries Limited, Tata Consultancy Services Limited, HDFC Bank Limited, ICICI Bank Limited, Infosys Limited) view identify and conduct their CSR practices. This study is based on secondary data. The company's financial statements are used to understand the CSR practices. Several companies spread their CSR funds very thinly across many activities. Every company defines their CSR in their own ways as per their needs. CSR is on an upward learning curve; it also gives a perspective on how top companies in India view and conduct CSR. This paper will be useful to any Indian Company in understanding more about its shortcoming and opportunities.

Keywords: CSR, Companies, Corporate Social Responsibility.

Corporate Social Responsibility:

Corporate social responsibility (CSR) is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public. By practicing corporate social responsibility, also called corporate citizenship, companies can be conscious of the kind of impact they are having on all aspects of society, including economic, social, and environmental.

To engage in CSR means that, in the ordinary course of business, a company is operating in ways that enhance society and the environment instead of contributing negatively to them.

- Corporate social responsibility is a business model by which companies make a concerted effort to operate in ways that enhance rather than degrade society and the environment.
- CSR helps both improve various aspects of society as well as promote a positive brand image of companies.
- Corporate responsibility programs are also a great way to raise morale in the workplace.
- CSRs are often broken into four categories: environmental impacts, ethical responsibility, philanthropic endeavors, and financial responsibilities.
- Some examples of companies that strive to be leaders in CSR include Starbucks and Ben and Jerry's.

- Corporate social responsibility is a broad concept that can take many forms depending on the company and industry. Through CSR programs, philanthropy, and volunteer efforts, businesses can benefit society while boosting their brands.

- For a company to be socially responsible, it first needs to be accountable to itself and its shareholders. Companies that adopt CSR programs have often grown their business to the point where they can give back to society. Thus, CSR is typically a strategy that's implemented by large corporations. After all, the more visible and successful a corporation is, the more responsibility it has to set standards of ethical behavior for its peers, competition, and industry.

Types of Corporate Social Responsibility:

In general, there are four main types of corporate social responsibility. A company may choose to engage in any of these separately, and lack of involvement in one area does not necessarily exclude a company from being socially responsible.

Environmental Responsibility:

Environmental responsibility is the pillar of corporate social responsibility rooted in preserving mother nature. Through optimal operations and support of related causes, a company can ensure it leaves natural resources better than before its operations. Companies often pursue environmental stewardship through:

- Reducing pollution, waste, natural resource consumption, and emissions through its manufacturing process.

- Recycling goods and materials throughout its processes including promoting re-use practices with its customers.

- Offsetting negative impacts by replenishing natural resources or supporting causes that can help neutralize the company's impact. For example, a manufacturer that deforests trees may commit to planting the same amount or more.

- Distributing goods consciously by choosing methods that have the least impact on emissions and pollution.

- Creating product lines that enhance these values. For example, a company that offers a gas lawnmower may design an electric lawnmower.

Ethical Responsibility

- Ethical responsibility is the pillar of corporate social responsibility rooted in acting in a fair, ethical manner. Companies often set their own standards, though external forces or demands by clients may shape ethical goals. Instances of ethical responsibility include:

- Fair treatment across all types of customers regardless of age, race, culture, or sexual orientation.

- Positive treatment of all employees including favorable pay and benefits in excess of mandated minimums. This includes fair employment consideration for all individuals regardless of personal differences.

- Expansion of vendor use to utilize different suppliers of different races, genders, Veteran statuses, or economic statuses.
- Honest disclosure of operating concerns to investors in a timely and respectful manner.
- Though not always mandated, a company may choose to manage its relationship with external stakeholders beyond what is legally required.

Philanthropic Responsibility

Philanthropic responsibility is the pillar of corporate social responsibility that challenges how a company acts and how it contributes to society. In its simplest form, philanthropic responsibility refers to how a company spends its resources to make the world a better place. This includes:

- Whether a company donates profit to charities or causes it believes in.
- Whether a company only enters into transactions with suppliers or vendors that align with the company philanthropically.
- Whether a company supports employee philanthropic endeavors through time off or matching contributions.
- Whether a company sponsors fundraising events or has a presence in the community for related events.

Financial Responsibility:

Financial responsibility is the pillar of corporate social responsibility that ties together the three areas above. A company make plans to be more environmentally, ethically, and philanthropically focused; however, the company must back these plans through financial investments of programs, donations, or product research. This includes spending on:

- Research and development for new products that encourage sustainability.
- Recruiting different types of talent to ensure a diverse workforce.
- Initiatives that train employees, social awareness, or environmental concerns.
- Processes that might be more expensive but yield greater CSR results.
- Ensuring transparent and timely financial reporting including external audits.

Some corporate social responsibility models replace financial responsibility with a sense of volunteerism. Otherwise, most models still include environmental, ethical, and philanthropic as types of CSR.

Benefits of Corporate Social Responsibility:

As important as CSR is for the community, it is equally valuable for a company. CSR activities can help forge a stronger bond between employees and corporations, boost morale, and aid both employees and employers in feeling more connected to the world around them. Aside from the positive impacts to the planet, here are some additional reasons businesses pursue corporate social responsibility.

Brand Recognition:

According to a study published in the Journal of Consumer Psychology, consumers are more likely to act favorably towards a company that has acted to benefit its customers as opposed to companies that have demonstrated an ability to deliver the quality products. Customers are increasingly becoming more aware of the impacts companies can have on their community, and many now base purchasing decisions on the CSR aspect of a business.

Investor Relations:

In a study it is found that Companies that are considered leaders in environmental, social, or governance matters had an approximate 11% valuation premium over their competitors. For companies looking to get an edge and outperform the market, enacting CSR strategies tends to positively impact how investors feel about an organization and how they view the worth of the company.

Employee Engagement:

CSR-related values that align firms and employees serve as nonfinancial job benefits that strengthen employee retention. Works are more likely to stick around a company that they believe in. This, in turn, reduces employee turnover, disgruntled workers, and the total cost of the new employee.

Risk Mitigation:

Consider adverse activities such as discrimination against employee groups, disregard for natural resources, or unethical use of company funds. This type of activity is more likely to lead to lawsuits, litigation, or legal proceeds where the company may be negatively impacted financially and be captured in headline news. By adhering to CSR practices, companies can mitigate risk by avoiding troubling situations and complying with favorable activities.

Why Is CSR Important?

The movement toward CSR has had an impact in several domains. For example, many companies have taken steps to improve the environmental sustainability of their operations, through measures such as installing renewable energy sources or purchasing carbon offsets. In managing supply chains, efforts have also been taken to eliminate reliance on unethical labor practices, such as child labor and slavery.

Although CSR programs have generally been most common among large corporations, small businesses also participate in CSR through smaller-scale programs, such as donating to local charities and sponsoring local events.

What Are the Benefits of CSR?

CRS initiatives strive to have a positive impact on the world through direct benefits to society, nature and the community in which a business operation. In addition, a company may experience internal benefits through the initiatives. Knowing their company is promoting good causes, employee satisfaction may increase and retention of staff may be strengthened. In addition, members of society may be more likely to choose to transact with companies that are attempting to make a more conscious positive impact beyond the scope of its business.

Limit for CSR or SHARE:

Under the Companies Act, 2013, certain classes of profitable companies are required to spend at least 2 per cent of their average net profit of the preceding three financial years on CSR activities in a particular financial year.

Prior to the amendment, CSR rules capped the expenditure of impact assessment that could be counted towards CSR obligations of a company to 5 per cent of its CSR expenditure or Rs 50 lakh, whichever is lower.

This limit has now been increased to the higher of 2 per cent or Rs 50 lakh, which will enable companies to undertake comprehensive impact assessment for large scale CSR projects and account for the same towards their CSR obligation, Sharma said.

Companies having a net worth of at least Rs 500 crore or a minimum turnover of Rs 1,000 crore or net profit of Rs 5 crore or more during the immediately preceding financial year have to spend on CSR activities.

Jorge A. Arevalo, Deepa Aravind (2011) the authors of the paper title "Corporate Governance", the aim of this paper is to examine how corporations in India interpret corporate social responsibility (CSR). Focusing on four commonly known approaches; the ethical, the statist, the liberal, and the stakeholder approach, the paper seeks to investigate the reported drivers and barriers to implementing CSR practices. This paper surveyed top level managers of a sample of companies currently engaging in a CSR initiative, representing a variety of industry sectors. The study finds that CSR approach that is most favoured by Indian firms is the stakeholder approach and that the caring or the moral motive, followed by the strategic or profit motive, are significant obstacle to CSR implementation are those related to lack of resources, followed by those related to the complexity and difficulty in implementing CSR.

This study will help in finding new areas and aspects of CSR on which less or no work has been done. It will also put light on new aspects for further research. The main objectives of this study were to study the prevailing status of corporate social responsibility practices by Indian companies, to review the existing literature of corporate social responsibility and to suggest some less focused areas of corporate social responsibility for further research.

This study will help in finding new areas and aspects of CSR on which less or no work has been done. It will also put light on new aspects for further research. The present study is descriptive in nature which reviews the work of different researchers in the context of corporate social responsibility with reference to the Indian companies. This paper uses secondary data. The period of study is eight years i.e., from 2008 to 2015. Purposive sampling techniques has been used to select the companies and related literatures i.e., three years after and five years before enactment of the Companies Act, 2013. This paper is a collection of research on corporate social responsibility with reference to Indian companies. It is observed that CSR has great importance for an entity but it is highly significant for Indian companies as they are the backbone of our economy. Most of the studies reviewed in this paper are focused on the conceptual framework. But it has been observed that none of the studies have taken into consideration all facets of

corporate social responsibility to study their impact on financial performance and on stakeholders. Further research can be done by taking all aspects of corporate social responsibility practices.

Laura (2014) studied the CSR practices of two Maharatna companies, viz. Steel Authority of India Limited (SAIL) and National Thermal Power Corporation (NTPC) and one Miniratna company, viz. Airport Authority of India (AAI) on socio economic development of rural people and concluded that those CSR activities done for rural development had a positive impact on overall development of society and business.

1. Reliance Industries Limited

Reliance is India's largest company by market capitalisation. It is a significant global player in the integrated energy value chain and has established a leadership position in the Retail and Digital Services business in India.

Reliance Industries Limited has been the top CSR spender in the country for the last several years. The Company spent Rs. 1186 crores on its CSR initiatives in FY2021-22, higher than what it was obligated to spend as per the Company's Act (Rs. 1112 crores).

Reliance conducts most of its community outreach programs through Reliance Foundation, the CSR arm of the Reliance Group. Since the inception of its philanthropic activities, the company has touched the lives of over 5.75 crore individuals. The main areas of focus of CSR of Reliance Industries include Rural Transformation, Education, Disaster Response, Health, Sports for Development, and Arts, Culture and Heritage. The company also extended its aid to the nation to combat the spread of the COVID-19 pandemic.

Reliance Foundation was accorded for its Corporate Leadership in ESG at The CSR Journal Excellence Awards 2021.

2. Tata Consultancy Services Limited

Tata Consultancy Services (TCS), an IT services, consulting, and business solutions company that is part of the Tata Group, has been assisting many of the biggest companies in the world with their transformational journeys for more than 50 years. In FY2021-22, the company spent more on CSR than was required (Rs. 716 crores), spending a total of Rs. 727 crores.

The Company believes that all are born with equal potential but not equal opportunity. TCS' vision is to empower people and communities, building self-reliance through purpose and technology while ensuring the values of fairness, equity and respect for human rights. The Company remains steadfast in its mission to connect people to opportunities in the digital economy while building equitable, inclusive pathways for all – especially women, youth and marginalised groups.

TCS, through various CSR initiatives and programs across the globe, continues to invest in addressing the most pressing needs of the community. The primary focus areas are education, skilling, employment and entrepreneurship, with a focus on bridging the opportunity gap for people and communities.

In FY 2022, TCS estimates that its global community initiatives reached more than 1.7 million beneficiaries, made possible by over 58,900 employees contributing over 700,000 hours of their volunteering time to support local community initiatives.

3. HDFC Bank Limited

HDFC Bank is India's largest private sector bank by assets and the world's 10th largest bank by market capitalisation as of April 2021. In FY2021-22, although the bank was obligated to spend Rs. 733.86 crores, it spent Rs. 736.01 crores on its CSR initiatives.

HDFC Bank conducts its community development initiatives under the umbrella CSR brand HDFC Parivartan. Parivartan aims to bring about a transformation in the communities in which the bank operates through multiple initiatives in the areas of Education, Skill training and livelihood enhancement, Health Care, Sports, Environmental Sustainability and Rural Development. Parivartan is also at the forefront of natural disaster response, successfully restoring infrastructure and rehabilitating communities. The Bank has touched the lives of over 9.6 crore people through its CSR initiatives under Parivartan.

4. ICICI Bank Limited

ICICI Bank is a leading private-sector bank in India. It is the fourth largest company in the country as per market capitalisation. In FY2021-22, the bank spent Rs. 266.62 crores for its CSR initiatives, more than it was obligated to spend (Rs. 259.61 crores).

ICICI Bank's objective is to proactively support meaningful socio-economic development in India and enable a larger number of people to participate in and benefit from India's economic progress. With an aim to work towards this through CSR, the Bank established ICICI Foundation for Inclusive Growth in 2008.

The ICICI Foundation concentrates a significant portion of its efforts in rural areas. Over time, the ICICI Foundation has come to understand the importance of identifying local needs at the grassroots level and developing initiatives or programmes for optimum impact. These initiatives could include tackling resource scarcity problems, developing the value chain for agricultural products, providing skill development in smart agricultural practices, and more.

5. Infosys Limited

In India, Infosys Limited was a pioneer in the CSR movement. The majority of its CSR projects have been carried out through the Infosys Foundation, which was founded in 1996—long before CSR was legislated in the country. In FY 2021-22, the company spent Rs. 344.91 crores for its CSR programmes. It was, however, obligated to spend Rs. 396.70 crores as per the company's latest annual report.

The Infosys Foundation works to create a deep societal impact in India. Infosys CSR initiatives, delivered through the Foundation, focus on assistance with education, improving healthcare, addressing malnutrition and hunger, destitute care and rehabilitation, rural development, environmental sustainability and protection of national and historical heritage and promotion of art and culture.

Climate action has been a key ESG focus area for Infosys since 2008. In fiscal 2020, the company turned carbon neutral and has continued to be carbon neutral for three years in a row. Infosys has pledged to net-zero emissions by 2040.

Name of the Company	CSR Amount Spent in (2020-21) (Rs. in Crores)	Budgeted Amount	Difference (Excess Amount Spent)
Reliance Industries Ltd.	1186	1112	74
Tata Consultancy Services Ltd.	727	716	11
HDFC Bank Ltd	733.86	736.01	2.15
ICICI Bank Ltd.	266.62	259.61	7.01
Infosys Limited	344.91	396.70	(51.79)

Findings of the study:

- The main areas of focus of CSR of Reliance Industries include Rural Transformation, Education, Disaster Response, Health, Sports for Development, and Arts, Culture and Heritage. The company also extended its aid to the nation to combat the spread of the COVID-19 pandemic. Reliance Industries spent on 74 crores more than the budgeted limit of CSR Activities.

- Through various CSR initiatives and Programmes across the globe TCSL, ontinues to invest in addressing the most pressing needs of the community. The main focus of areas are education, skilling, employment and entrepreneurship, with a focus on bridging the opportunity gap for people and communities. TCSL spent on 11 crores more than the budgeted CSR.

- HDFC Parivartan aims to bring about a transformation in the communities in which the bank operates through multiple initiatives in the areas of Education, Skill training and livelihood enhancement, Health Care, Sports, Environmental Sustainability and Rural Development. Parivartan is also at the forefront of natural disaster response, successfully restoring infrastructure and rehabilitating communities. HDFC Bank Ltd spent 2.11 Crores excess amount of CSR than the budgeted limit.

- The ICICI Foundation concentrates a significant portion of its efforts in rural areas. Over time, the ICICI Foundation has come to understand the importance of identifying local needs at the grassroots level and developing initiatives or programmes for optimum impact. These initiatives could include tackling resource scarcity problems, developing the value chain for agricultural products, providing skill development in smart agricultural practices, and more. ICICI spent Rs. 7.01 crores more than the budgeted limit for CSR.

- The Infosys Foundation works to create a deep societal impact in India. Infosys CSR initiatives, delivered through the Foundation, focus on assistance with education,

improving healthcare, addressing malnutrition and hunger, destitute care and rehabilitation, rural development, environmental sustainability and protection of national and historical heritage and promotion of art and culture.

Conclusion:

As per Companies Act 2013, it is compulsory for each and every company to spend the specific amount of profit to CSR Activities for the Societies. Thus, it is mandatory for the companies covered under section 135 comply with CSR provisions in India. The company can spend on CSR Activities in different forms like rural development, environmental sustainability, protection of national and historical heritage, development of smart agricultural practices, health care, sports, disaster management, education and so on. Mostly the big companies spending more amount of CSR in different activities compare to budgeted limit. Even educational institutions are also spending some amount of profit on CSR in different forms.

Considering the limitations of the corporate in their CSR activities, some recommendations which can be used towards satisfaction like companies should extend their CSR activities in less privileged states rather than concentrate in resource rich states. It is essential that companies develop an effective value chain system of their products through their CSR activities, which is essential for competing in the global market. It will give better results if activities are based on a more practical and participatory approach and touch the grassroots level. Voluntarism among employees should be encouraged and institutionalized through recognition and incentives. There is also need for public-private partnership with well-defined controls and process for the best use of resources for social change.

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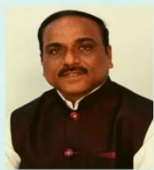
Dr. Suresh Namdevrao Kadam is presently working as Assistant Professor and Head, Department of Physics, K.E.T.'s V.G. Vaze College of Arts, Science & Commerce (Autonomous), Mulund (E), Mumbai. He has been teaching Physics to undergraduate students since 26 years. He completed his M.Sc. (Physics) from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. He did his M.Phil. in Physics from Department of Physics, University of Mumbai. He completed Ph.D. from University of Mumbai. He has been recognized as Ph.D. Guide and P.G. recognized Teacher by Mumbai University. He has worked as squad member (chairman) for Mumbai University examinations. He has published 15 research papers in reputed international journals and also co-authored 8 textbooks. He has completed minor research projects and organized seminars, conferences and workshops for teachers. He is a life member of Indian Association of Physics Teachers (IAPT).

Dr. Paresh Suryakant More is presently working as an Associate Professor of Chemistry at K.E.T.'s V. G. Vaze College of Arts, Science & Commerce (Autonomous), Mulund (E), Mumbai. He has been teaching Chemistry to undergraduate and post graduate students for the last 24 years. He completed his M.Sc. in Inorganic Chemistry from Institute of Science, Fort Mumbai He completed Ph.D. from Department of chemistry University of Mumbai. Kalina Campus Satacruz. He has been recognized as Ph.D. Supervisor and P.G. recognized Teacher by Mumbai University since 2014. He is Deputy Director of Research & Development Cell of college. He has published 40 research papers in reputed international journals such as Elsevier's, RSC, Springer, Wiley etc. One student has completed MSC by research and one has been awarded with Ph.D. degree. At present eight students are pursuing their PhD under him. He has hosted four National and International conferences in the college. He is a life member of Indian Science Congress.

Dr. Dinesh Kumar has a Doctoral degree in African American Literature, from the University of Mumbai and he heads the English Research Centre at K.E.T.'s V. G. Vaze College of Arts, Science and Commerce (Autonomous). His areas of Specialization are Literary Theory and African American Literature. His research interests and research supervision include Critical Race Theory, Mexican Fiction, Mash- up Fiction, Chinese-American Fiction, Trauma Studies, Pain Studies, Masculinity Studies, Culinary Cultural Politics, Cultural Citizenship, Indo-Caribbean Writers, Migration Studies, Memory Studies, Media Memory, Pakistani Women Writers, Eco-criticism, Ecofeminism, Spatial Criticism, Geo- poetics, Green Cinema, Textual Democracy, Chaos Theory, Neo Diasporas, Cyber Criticism and Cultural Diplomacy. He has presented more than 35research papers and published more than 30 articles in international peer reviewed Journals such as Atlantic Quarterly, University News, Research Spectrum, Research Drops, European Academic Research, Virtuoso and in Critical Anthologies on Alice Walker, Amitav Ghosh, G.V. Desani, Kamala Das and South Asian Literature. World War I: Centenary Hindsights is his recent book. He has also co-authored and edited three books for the University of Mumbai – Linguistic and Stylistic Analysisof Texts, Translation Studies and Literary Theory. He has been teaching at the Undergraduate and Postgraduate levels for 30 years and has guided 23 students for their M.Phil. Degrees. 7 scholars have been awarded Ph.D under his supervision. He has also been the resource person and keynote speaker in various national and international conferences.

Ms. Radhika Gangadhar (M.A. English Literature, SET) is an Assistant Professor in the Department of English at K.E.T.'s V. G. Vaze College of Arts, Science and Commerce (Autonomous). She has a total experience of 13 years (over 5 years in journalism and 8 years in teaching) and counting. She has taught UG and PG students at various esteemed institutions including B.K. Birla Autonomous College (Kalyan), RKT College (Ulhasnagar), and St. Xaviers College (Mapusa, Goa); and is currently pursuing her Ph.D. from the English Research Centre at Vaze College. She has published (2 nos.) and presented (5 nos.) papers in both international and national conferences. Apart from being an engaging public speaker, Ms. Gangadhar is also experienced in grassroots group organisation, coordination, communications and leadership. Special areas of focus include English Literature and language, communication skills, soft skills, personality development, proofreading and editing. A nature lover, she enjoys going on trails and treks, and is also fond of playing sudoku and photography.

Dr. Shweta Namdeo Jamble is currently working as an Assistant Professor at the Department of Physics of K.E.T.s V. G. Vaze College of Arts, Science and Commerce College (Autonomous), Mulund since 2021. She completed Ph.D. in Physics from The Institute of Science in 2020. She has completed M.Sc. in Physics from the University of Mumbai. Dr. Shweta Jamble has research interests in Photocatalysis, Dye-synthesized Solar cell, Thin Film Deposition and Energy Storage Materials. She has published 13 research papers in reputed International Journals with high-impact factors. She also published two chapters in a Book. Her h-index is 9. She has organized various conferences, seminars, guest lectures and workshops for students and faculties.

Ms. Mudita S. Sonawane is presently working as Assistant Professor at Department of Physics, K.E.T.'s V. G. Vaze College of Arts, Science & Commerce (Autonomous), Mulund (E), Mumbai. She graduated in Physics from K. J. Somaiya College of Science and Commerce (Autonomous), Vidyavihar, Mumbai. She completed her Master's degree in Physics at University Department of Physics, Mumbai University. She has qualified MH-SET examination in 2022. Theoretical aspects of atomic, nuclear and particle physics is her main area of interest. She has worked on short research projects and is currently working on technology-based visual arts and music. She has also written for online magazines on a variety of topics such as Gender, Education and Culture.