केल्यानें होत आहे रे I आधीं केलेंची पाहिजे II

Bhartiya Shikshan Prasarak Sanstha Amabajogai's

Shri Siddheshwar Mahavidhalaya, Majalgaon

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Criterion 3: Research,Innovations and Extension

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

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3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Sr.No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the		
							Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
1	Samruddh Maharastrache shilpkar:yesheantrao Chavan	Dr.G.P. Phasale	History	B.Aadhar,Issue no.289 March2021 Peer Reviewed 7.675	2020-21	ISSN: 2278-9308	www.aadharsocial.com		
2	Navin ucch shikshanachya Dhornachi Disha-Aitihasik Abhyas	Dr.G.P. Phasale	History	B.Aadhar,Issue no.289 March2021 Peer Reviewed 7.675	2020-21	ISSN: 2278-9308	www.aadharsocial.com		
3	MGNREGA:- A Milestone for Women Empowerment	Dr.T.P. Sondage	Sociology	Current Global Reviewer page No. 74 to 77 Issue 10 vol. 1 Aug. 2020	2020-21	2319-8648	www.rjournels.co.in		
4	Female feticide:- A Social Problems in India	Dr.T.P. Sondage	Sociology	Current Global Reviewer page No. 107 to 112Issue 9 vol. 2 Jan.2021	2020-21	2319-8648	www.rjournels.co.in		
5	महिलांचे आर्थिक सबलीकरणआणिनिरंतर विकास :एक चिकीत्सक अभ्यास	Dr. M. P. Deshmukh	Economics	World wide international Inter Disciplinary Research Journal6.91	2020-21	2454-7905	www.rjournels.co.in		
6	Socil Supports for Individual-Development Games	Dr. U. R. Sadegaonkar	Sports	Cronical of Humanity and Cultural Studies IF-4.197	2020-21	2454-5503	www.mgsociety.in		
7	Modeling the Impact of Vaccination, Screening, Treatment on the Dynamics of Pneumonia	Dr.S.R.Mitkar	Physics	JOURNAL OF SCIENTIFIC RESEARCH J. Sci. Res. 12 (4), 525-536 01-06-2020	2020-21	ISSN- 2070-0245	www.banglajol.info		
8	On Validation of Pneumonia Model with Infected population and Vaccination	Dr.S.R.Mitkar	Physics	International Journal of Future Generation Communication and Networking Vol. 13, No. 4, (2020)	2020-21	ISSN: 2233-7857			
9	A tuberculosis model : Validating to study transmission dynamics with vaccination and treatment	Dr.S.R.Mitkar	Physics	The Aligarh Bulletin of Mathematics Volume 39, Number 2 (2020), 35-45	2020-21	ISSN: 0304-9787			
10	Approximate Series Solution of Malaria Model using HAM	Dr.S.R.Mitkar	Physics	Solid State Technology Volume: 63 Issue: 6 Publication Year: 2020,	2020-21	ISSN-0038-111X			

11	Variational Iteration Method for Solving Tuberculosis Model	Dr.S.R.Mitkar	Physics	Solid State Technology Volume: 63 Issue: 6 Publication Year: 2020,	2020-21	ISSN-0038-111X			
12	Analysis Numerical Solution of VSCIR Pneumonia Model by using Laplace Decomposition Method	Dr.S.R.Mitkar	Physics	International Journal of Future Generation Communication and Network Vol. 14, No. 1, (2021),	2020-21	ISSN: 22337857IJFGNC Copyright 2021SERSC			
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14	Theoretical Investigation of Non-Linear Optical (NLO) Properties of Benzene	Dr.V.P.Deshmukh	Physics	Excel Journal of Engineering Technology and Management Science [EJMETS]	2020-21	ISSN 2249-9032			
15	Nonlinear Optical (NLO) Properties of Borazine using Density Functional Theory method	Dr.V.P.Deshmukh	Physics	Power Of Knowledge (An International Multilingual Quarterly Peer Review Refereed Research Journal) Volume I, Issue:IV, Jan to March 2021 Impact	2020-21	ISSN 2320-4494	www.powerofknowledge.co.in		
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आधुनिक महाराष्ट्राच्या निर्मितीत यशवंतराव चव्हाण यांचे योगदान

Shri.Siddheshwar Mahavidyalaya Majalgaon Dist.Beed-431131(MH)



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समृद्ध महाराष्ट्राचे शिल्पकार यशवंतराव चव्हाण

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प्रस्तावना

महाराष्ट्राचे पहिले मुख्यमंत्री यशवंतराव चव्हाण यांनी राज्याच्या सर्वांगिण विकासाला गती आणि दिशा देण्याचे महत्त्वपूर्ण कार्य केले म्हणूनच त्यांना आपण सर्वजण महाराष्ट्राचे शिल्पकार असे म्हणतो. शेती, सहकार, उद्योग, बीजनिर्मिती आणि शिक्षण आदी क्षेत्रांचा विकास त्यांनी नियोजनबद्ध पद्धतीने घडवून आणला. यशवंतराव चव्हाण यांचे नेतृत्व सुसंस्कृत आणि दूरदृष्टीचे होते. त्यांच्या कृतीशिल विचारातून आजचा महाराष्ट्र घडल्याचे आपणास दिसून येते. आधुनिक महाराष्ट्राच्या सांस्कृतिक जडणघडणीत थोर नेते यशवंतराव चव्हाण यांचा सिंहाचा वाटा आहे. यशवंतरावांचे जीवन म्हणजे साक्षात एक इतिहास आहे. तो सत्यशोधक समाजाचा, स्वातंत्र्य चळवळीचा, संयुक्त महाराष्ट्र आंदोलनाचा आणि नव महाराष्ट्राच्या जडणघडणीचा एक इतिहास आहे. यशवंतरावांचे राजकीय, सामाजिक, सांस्कृतिक आणि शैक्षणिक कार्य अफाट होते. त्यांचे जीवन हेच एखाद्या महासागरासारखे होते. त्याचा तळ कुणालाही शोधणे सहजी सहजी शक्यच नाही.सबंध देशात एक प्रगतिशिल आणि चांगले राज्य म्हणून महाराष्ट्राला जो नावलौकिक प्राप्त झाला त्यामध्ये यशवंतराव चव्हाणांचा सिंहाचा वाटा आहे.

एखाद्या मोठ्या व्यक्तीबद्दल बोलताना त्या व्यक्तीचे व्यक्तिमत्त्व अष्टपैलू आहे किंवा होते असे म्हणण्याची रीत आहे. मात्र महाराष्ट्राचे शिल्पकार यशवंतराव चव्हाण यांच्याबाबतीत मात्र ही औपचारिकता केवळ औपचारिकता राहात नाही. जसे एका हि-याला हिरकणी करताना किती पैलू दिले हे सहजी मोजता येत नाही, त्याप्रमाणे यशवंतरावांचे व्यक्तिमत्त्व होते. थोर देशभक्त, रसिक साहित्यिक, धुरंधर मुत्सद्दी राजकारणी, विचारवंत, गुणग्राहक, सौजन्ययुक्त, जनतेच्या प्रेमाने गुरफटलेला निष्ठावंत नेता, एक जाणकार समाजवादी, लोकशाहीवर नितांत श्रद्धा ठेवणारा, चारित्र्य संपन्न सुसंस्कृत नागरिक, ओजस्वी वक्ता, समृद्ध महाराष्ट्राचा शिल्पकार आदी पैलूंनी बद्ध असे व्यक्तिमत्त्व अभ्यासताना त्यांचे शैक्षणिक विचार आजच्या युगातही युगप्रवर्तक असल्याचे जाणवतात. टिळक हायस्कूलमध्ये शिक्षण घेताना झालेल्या संस्कारामुळे यशवंतरावांच्या मनात टिळकांप्रमाणेच प्रखर ध्येयवाद, देशप्रेम, स्वार्थत्याग व जिद्द या भावना पेरल्या गेल्या होत्या. त्यांच्या सर्व विचारांचा केंद्रबिंदू ग्रामीण भागात राहणारा माणूस हाच होता. त्यांनी राबविलेल्या शेती, उद्योगधंदे, शिक्षण व मनुष्यबळ या चारसूत्री कार्यक्रमांतूनही हेच स्पष्ट होते.

पहिले मुख्यमंत्री म्हणून यशवंतराव चव्हाण यांनी १ मे १९६० पासून १९ नोव्हेंबर १९६२ पर्यंत धुरा सांभाळली. यशवंतराव चव्हाण यांचे 'आधुनिक महाराष्ट्राचे शिल्पकार' असेही वर्णन केले जाते. नावातच "यश" आणि "यशवंत" असल्यामुळे त्यांना प्रारब्ध भाग्य आणि नशीब दोन्ही गोष्टी प्राप्त झाल्या होत्या. महाराष्ट्रातील राजकारणाला सुयोग्य दिशा देण्याचे आणि समतोल व जातिभेदरहीत राजकारणाचा वारसा देण्याचे कार्य केले. ज्ञानोपासक व अभिरुचीसंपन्न व्यक्तिमत्त्व, सुसंस्कृत व वैचारिक अधिष्ठान असलेले नेतृत्व आणि मुत्सद्दी व विरोधकांचाही मान राखणारे संयमी राजकारणी असेही त्यांना म्हणता येईल. गरीब कुटुंबातील असल्यामुळे त्यांना समाजातील तळागाळाच्या घटकांच्या समस्या ज्ञात होत्या, त्या दृष्टीने देखील त्यांनी योजना आखल्या. राज्यात सहकार चळवळीपासून अनेक साखर कारखान्यांच्या स्थापनेसह कृषि, सांस्कृतिक, आर्थिक आणि शैक्षणिक

क्षेत्रातदेखील त्यांचे योगदान आहे. यशवंतरावांनी मुख्यमंत्री पदानंतर उपपतंप्रधान, संरक्षणमंत्री, परराष्ट्र मंत्री अशी महत्वाची पदे देखील सांभाळली. यशवंतराव यांची दुसरी ओळख म्हणजे त्यांचा साहित्यातही नावलौकिक असून ऋणानुबंध आणि कृष्णाकाठ या लिखित पुस्तकांमध्ये त्यांच्यातला चांगला लेखक दिसतो. याचबरोबर त्यांची पत्रं, त्यांना आलेली महनीयांची पत्रं देखील अजूनही जतन केलेली असून या पत्रांमुळे त्यांचा जनसंपर्क दिसून येतो. कराड येथे त्यांच्या निवासस्थानीच त्यांच्या विविध वस्तूंचे जतन करण्यात आले आहे. यशवंतरावांना चीन युद्धाच्या वेळी संरक्षणमंत्री पदावर नियुक्त करण्यात येऊन यावेळी त्यांनी त्यांचे कर्तृत्वाचे आणि निर्णयक्षमतेचा आदर्श जगासमोर उभा केला.

शैक्षणिक धोरणासाठी यशवंतरावांचा आदर्श :

आजच्या जागतिकीकरणाच्या काळात महागडे होत जाणारे शिक्षण. शिक्षणातून आपली जबाबदारी झटकणारे शासनाचे धोरण आणि वंचितांच्या शिक्षणाचा निर्माण झालेला प्रश्न भविष्यात गंभीर स्वरूप धारण करेल. या पार्श्वभूमीवर, यशवंतरावांच्या शैक्षणिक भूमिकेची राज्याला आणि देशाला नितांत गरज आहे असे मला वाटते. शिक्षणाच्या अनुषंगाने अनेकांनी वेगवेगळ्या व्याख्या केल्या आहेत, आपले विचार मांडले आहेत. या पार्श्वभूमीवर शिक्षणाच्या व्याख्येपासूनच आपण यशवंतराव चव्हाण यांचा शैक्षणिक दृष्टिकोन, भूमिका आणि धोरण समजावून घेण्याचा या ठिकाणी अल्पसा प्रयत्न करू या. शिक्षणाची व्याख्या करताना यशवंतराव म्हणतात, 'शिक्षित व्यक्तीला स्वतःच्या भोवती घडणाऱ्या गोष्टी आणि जागामध्ये घडणाऱ्या इतर गोष्टी यांची ज्यामुळे काही संगती लावता येते, त्यांचा योग्य अर्थ समजावून घेता येतो. त्यांचा परिणाम आपल्या जीवनावर काय घडतो, आपल्या व्यक्तिमत्त्वावर काय घडतो हे समजावून घेता येते आणि समजावून देता येते त्याला मी शिक्षण मानत आलो आहे.' (सह्याद्रीचे वारे, पान १४०) शिक्षणाची अत्यंत साधी-सरळ आणि सोपी व्याख्या करणारे यशवंतराव चव्हाण यांनी राज्याचे शैक्षणिक धोरण निश्चित करताना देशातील शिक्षणाचा इतिहास आणि परंपरा लक्षात घेतल्या होत्या, हे त्यांच्या शैक्षणिक विषयांवरील प्रतिपादनावरून लक्षात येते.

शिक्षणाचे माध्यम कोणते असावे आणि का? याबाबतही त्यांनी आपली भूमिका मांडताना स्पष्ट केले आहे की, 'आमच्या येथील बहुसंख्य समाज हजारों वर्षांपासून शिक्षणापासून दूर आहे. लोकशाहीचा खरा अर्थ त्यांना समजावून सांगावयाचा असेल आणि लोकशाही मजबूत करावयाची असेल, तर शिक्षण हे त्यांच्या मातृभाषेतूनच दिले पाहिजे. त्यातूनच आमची जनता शहाणी होईल आणि खऱ्या अर्थाने ती लोकशाहीचे रक्षण करेल. कारण परकीय भाषेत शिक्षण घेण्याने माणसाची बौद्धिक वाढ खुंटते आणि मौलिकता हिरावते. व्यक्ती स्वदेशापासून दूर जातो आणि म्हणूनच शिक्षणाकरिता प्रांतिक भाषांना प्राधान्य द्यावे, याकरिता ते आग्रही होते. ज्ञानभाषा एक आणि लोकभाषा दुसरी अशी हिंदुस्थानच्या जीवनाची परंपरागत कहाणी आहे. ऋषीमुनींची आणि पंडितांची ज्ञानभाषा होती संस्कृत. कारण ती देवभाषा होती आणि जनसामान्यांची भाषा होती प्राकृत, हे फार पूर्वी पण नंतर ही तेच झाले. इंग्रज आले आणि या देशातील ज्ञानभाषा इंग्रजी बनली' (युगांतर पान १७३)

स्वातंत्र्यपूर्व काळात महात्मा जोतीराव फुले यांनी शिक्षणाबाबत अतिशय गांभीर्याने मत व्यक्त करताना म्हटले होते, 'तुम्हाला जर झाड मोठे आणि मजबूत करावयाचे असेल तर त्याच्या बुंध्याला पाणी घातले पाहिजे.' १९८३ च्या कालावधीमध्ये आजच्या प्रगत अमेरिका राष्ट्राने सार्वजनिक शाळांतील गुणवत्तेतील उत्कृष्टतेचा शोध घेण्यासाठी आयोग नेमला होता. प्रारंभिक चौकशीमध्येच शालेय शिक्षणाची गुणवत्ता अतिशय निकृष्ट असल्याचे लक्षात येताच आयोगाचे नाव 'राष्ट्र धोक्यात '(Nation at Risk) असे करावे, अशी विनंती नियुक्त आयोगाच्या अध्यक्षांनी अमेरिकेच्या राष्ट्राध्यक्षांना केली होती आणि त्या आयोगाचा अहवाल Nation at Risk या नावानेच प्रसिद्ध आहे. यावरून प्राथमिक शिक्षणाचे महत्त्व किती आहे हे अधोरेखित होते. शिक्षणाचे माध्यम, प्राथमिक शिक्षण,

माध्यमिक शिक्षण व उच्च शिक्षण यातील परस्पर संबंध एवढाच विचार करून यशवंतरावजी थांबत नाहीत, आपणास आपल्या राज्याचा सर्वांगिण विकास खऱ्या अर्थाने साधवयाचे असेल तर विज्ञान आणि तंत्रज्ञानाची कास धरल्याशिवाय राज्याचा औद्योकि विकास घडू शकणार नाही, त्याच बरोबर भारत हा कृषीप्रधान देश असल्यामुळे शेतीच्या विकासावर त्याचे भवितव्य अवलंबून आहे, आणि म्हणून अंधश्रद्धेला मूठमाती देत विज्ञानाची आणि तंत्रज्ञानाची आपण कास धरली पाहिजे, त्यासाठी नियोजनबद्ध पद्धतीने पावले टाकली पाहिजे, हा विचार घेऊनच ते सतत आग्रही राहिले.

शिक्षण हे सामाजिक, राजकीय आणि आर्थिक विकासाचे महत्त्वाचे साधन आहे. ते सर्वांना मिळाले पाहिजे, म्हणून आरक्षणाच्या परिघाबाहेर असणाऱ्या आर्थिकदृष्ट्या मागास घटकांतील विद्यार्थांना शिक्षणापासून वंचित राहावे लागत आहे, हे त्यांच्या १९६० च्या दरम्यान लक्षात आले आणि देशात प्रथमच महाराष्ट्रात त्यांनी आपलं मुख्यमंत्रीपद पणाला लावून प्रचंड विरोधाला सामोरे जात आर्थिकदृष्ट्या मागास विद्यार्थांना विनाशुल्क शिक्षण देणारी **'ईबीसी'**ची योजना आणली. हा खऱ्या अर्थाने क्रांतीकारक निर्णय होता. परिणामी महाराष्ट्रातील अनेक पिढ्या या सवलतीचा लाभ घेत शिकल्या आणि समृद्ध झाल्या. याचे संपूर्ण श्रेय यशवंतरावांच्या दूरदृष्टी निर्णयाला जाते. याबरोबरच मराठवाड्यात पुरेशी महाविद्यालये नसतानाही त्यांनी औरंगाबाद येथे आताचे डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ आणि कोल्हापूर येथे शिवाजी विद्यापीठ स्थापन करण्याचा महत्त्वाकांक्षी निर्णय घेऊन या परिसरातील लक्षावधी विद्यार्थ्यांना आपल्याच परिसरात उच्च शिक्षण घेण्याचा मार्ग खुला करून दिला. एकीकडे शिक्षणाचा आग्रह दुसरीकडे शिक्षणाचा मार्ग आणि तिसरीकडे त्यातून निर्माण होणाऱ्या समस्यांची चिंता वाहणारा सखोल ज्ञानी शिक्षणतज्ज्ञ यशवंतरावजी म्हणतात. आज ज्या तऱ्हेचे शिक्षण आपल्या अवतीभोवती दिले जाते त्याचा ग्रामीण जीवनावर काय परिणम होतो? 'खेडूत बाप आणि आई यांनी कष्ट करून शिक्षणासाठी बाहेर पाठविलेला मुलगा पदवी घेऊन जेव्हा शहाणा होतो, तेव्हा ते त्याचे शहाणपण खेड्यामध्ये राहून शेती करणाऱ्या किंवा दुसरा काही उद्योग करणाऱ्या त्याच्या मातापित्याचे आर्थिक जीवन सुधारण्यास उपयोगी पडत नाही ' (महादीचे बारे पान १४१) तो शहरात एखादी सोयीची, सुखाची नोकरी मिळवून आपले आई-बाप आणि त्याच्या मातृभूमीला मुकतो. हे फार मोठे करुण चित्र आहे. शिक्षणाच्या वाढीबरोबर अशा तऱ्हेचे प्रश्न जर घरोघरी निर्माण होणार असतील, तर आपणास या शिक्षणासंबंधाने विचार करावा लागेल.

शिक्षणक्षेत्रातले अमूलाग्र निर्णय:

नव्या राज्याचे मुख्यमंत्री म्हणून शिक्षणक्षेत्रात यशवंतराव चव्हाण यांनी घेतलेले काही निर्णयही दूरगामी परिणाम करणारे ठरले. ते कसे, याचा अंदाज या निर्णयांकडे बघितल्यावरच आपल्याला येईल. सगळ्यात महत्वाचा म्हणजे नवी विद्यापीठं स्थापन करायचा निर्णय. तेव्हा मुंबई-पुण्यासारखी मोजकी विद्यापीठं महाराष्ट्रात होती. शिक्षण सर्वदूर न्यायचं असेल, नवी पिढी घडवायची असेल तर नवी विद्यापीठं हवीत. पण तेव्हा विद्यापीठ एखाद्या भागाला मिळण्यासाठी अनेक अटी होत्या. मुख्य म्हणजे त्या भागात काही संख्येनं महाविद्यालयं असणं आवश्यक होतं. पण मराठवाड्यासारख्या भागात तेव्हा मोजण्याइतपतच महाविद्यालयं होती आणि परिणामी विद्यापीठ नव्हते. पण यशवंतरावांनी तो निर्णय बदलला आणि मराठवाड्यात औरंगाबादमध्ये विद्यापीठ स्थापन केलं. ते आज डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ म्हणून ओळखलं जातं. असंच विद्यापीठ त्यांनी कोल्हापूरातही छत्रपती शिवाजी महाराजांच्या नावानं स्थापन केलं. या दोन्ही विद्यापीठांमुळं या विभागांमध्ये शिक्षणक्षेत्रात कसे बदल झाले हे आज डोळयांना स्पष्ट दिसतं. आजही महाराष्ट्रात आर्थिकदृष्ट्या मागास असलेल्यांना शैक्षणिक शुल्कात सवलत मिळते.'EBC ' साठी ही सवलत यशवंतरावांनी सुरु केली. तेव्हा 1200 रुपये आर्थिक उत्पन्न वा त्यापेक्षा

कमी असलेल्या पालकांच्या पाल्यांना शैक्षणिक शुल्क माफ करण्यात आलं होतं. कालानुरुप ही रक्कम बदलत गेली. पण त्यामुळे अनेकजण मुख्य शैक्षणिक प्रवाहात आले. आपल्या 'यशवंतराव चव्हाण यांचे शैक्षणिक विचार व कार्य' या लेखात डॉ. ज. रा. दाभोळे लिहितात, "यशवंतराव चव्हाण यांनी शिक्षणाच्या क्षेत्रात दूरगामी पावलं टाकली. याचे एक उदाहरण म्हणजे सातारा इथे सैनिक स्कूलची केलेली स्थापना हे होय. सातारा जिल्ह्यातील काही गावांमधून सैन्यात भरती होण्याचे प्रमाण आजही मोठे असल्याचे दिसून येईल. त्याऐवजी सैनिक स्कूलमध्येच प्राथमिक स्वरुपाचे शिक्षण उपलब्ध झाल्यास सैन्यामध्ये अधिकारी पदावर पोहोचणे शक्य होईल. म्हणून सातारा येथील सैनिक स्कूलमध्ये नैशनल डिफेन्स अकदमीसाठी शिक्षण मिळण्याची सोय त्यांनी उपलब्ध करुन दिली." त्यांच्या अजून एक महत्वाचा निर्णय मानला जातो तो म्हणजे कायद्यानं नवबौद्धांना सवलती मिळवून देणं. डॉ आंबेडकरांसोबत धर्मांतर केलेल्या अनेकांना पूर्वी मिळत असलेल्या सवलती सरकारनं बंद केल्या होत्या. पण त्यानं शैक्षणिक वा सामाजिक मागासलेपण कमी होणार नव्हतं. म्हणून यशवंतरावांनी निर्णय घेऊन नवबौद्धांनाही सवलती मिळतील हे पाहिलं.

साहित्य, संस्कृती आणि भाषावृद्धी :

यशवंतरावांचे साहित्य आणि सांस्कृतिक वर्तुळाशी असलेले घनिष्ठ संबंध सवर्श्रुत आहेत. ते स्वत: राजकारणाच्या व्यस्ततेतून लेखन करत. त्यामुळे याच तळमळीतून त्यांनी घेतलेले काही निर्णय महत्वाची नोंद ठरावेत. त्यांनी 'महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळा'ची स्थापना केली. या मंडळानं केलेली प्रकाशनं, राबवलेले उपक्रम बहुविध आहेत. सर्वात महत्वाचं म्हणजे त्यांनी 'मराठी विश्वकोष मंडळा'ची निर्मिती केली आणि त्याचे मुख्य तर्कतीर्थ लक्ष्मणशास्त्री जोशी होते. मराठी विश्वकोषाचं खूप मोठं काम इथं झालं. यशवंतरावांनी भाषा संचालनालयाचीही स्थापना केली. नाट्य चित्रपट कलाकारांसाठी योजना सुरु केल्या.

राहुरी कृषी विद्यापीठासारख्या तंत्रशुद्ध शेतीविषयक प्रशिक्षण देणा-या शिक्षणसंस्था उभ्या राहिल्या. ग्रामीण भागातील प्रत्येक विद्यार्थ्याला उच्चशिक्षणाचा अधिकार आहे आणि असे शिक्षण त्याला त्याच्या गावात, तालुक्याच्या ठिकाणी मिळाले पाहिजे, या जाणिवेतून यशवंतरावांनी आग्रहाने शिवाजी विद्यापीठ आणि मराठवाडा विद्यापीठाची स्थापना आपल्या कार्यकाळात केली. शेतक-यांच्या आणि विशेषत: ग्रामीण भागातल्या विद्यार्थ्यांना सैन्यात येण्याचा मार्ग दाखवतानाच त्यांनी भारतातले पहिले सैनिक स्कूल साता-यात सुरू केले. आज या सैनिक स्कूलमधून बाहेर पडलेल्या अनेक कर्तबगार विद्यार्थ्यांनी आपल्या तिन्ही सरंक्षण दलांचे प्रभावी नेतृत्व केले आहे. यशवंतराव चव्हाण असे म्हणत की, आजपर्यंत आम्ही घेतलेल्या शिक्षणाने आमच्यात नोकरपेशाची मनोवृत्ती निर्माण झाली आहे. आमची बुद्धी व आमचा पिंडच नोकरीपेशाचा आहे, असे आमच्यावर रुजविण्यात आले, पण मला ही गोष्ट मंजूर नाही. भारतात असणा-या त्रिस्तरीय शिक्षण पद्धतीचा सांगोपांग विचार यशवंतरावांनी केला होता. शासनाने सक्तीचे शिक्षण द्यावे, याकरिता त्यांनी आग्रही भूमिका मांडली होती. ई. बी. सी सवलत, मागासवर्गीय विद्यार्थ्यांना शुल्क माफी, शिष्यवृत्ती, ग्रामीण भागात शाळा, कॉलेज काढण्याकरिता प्रोत्साहन अशा अनेकविध कार्यक्रमांतून त्यांनी आपला सर्वदूर शिक्षण प्रसाराचा कार्यक्रम प्रत्यक्षात राबविला. त्यांच्या मते राज्याची औद्योगिक प्रगती जितकी महत्त्वाची, तितकीच शैक्षणिक प्रगतीही महत्त्वाची आहे. शिक्षण हे केवळ सामाजिक गरजेकरिता नाही, तर ते आर्थिक विकासाचे आणि पर्यायाने देशविकासाचे साधन आहे, यावर त्यांचा विश्वास होता. त्याकरिताच उच्च शिक्षण हे कोणाची मक्तेदारी न राहता ते सर्वाकरिताच खुले झाले पाहिजे, याकरिता त्यांनी कृतीशीलपणे प्रयत्न केले.

शिक्षण ही सतत चालणारी प्रक्रिया आहे. त्यातूनच व्यक्ती विकास, समाज विकास व पर्यायाने समाजीकरण प्रक्रिया सुलभ होते, ज्ञानाची गंगा समाजाच्या खोलापर्यंत पोहोचली तरच ख-या अर्थाने कल्याणकारक ठरेल, असा त्यांचा विश्वास होता. आजच्या अस्वस्थ वातावरणात महाराष्ट्राच्या या द्रष्ट्या नेत्याचे विचार म्हणूनच तर अर्थपूर्ण अनुकरणीय वाटते. एखाद्या नेत्याचं मोठेपण हे त्यानं घेतलेल्या निर्णयांसोबत त्या निर्णयचं काळाच्या

कसोटीवर लकाकून उठणं यावरही ठरतं. जर ते निर्णय कालौघात फिके पडत जाणार असतील तर नेतृत्वही विस्मृतीत जातं. यशवंतरावां उल्लेखाशिवाय न होणारं महाराष्ट्राचे आजचे राजकीय-आर्थिक-सामाजिक-सांस्कृतिक व्यवहार, त्यांच्या निर्णयांचं मोठेपण दर्शवितात. समृद्ध महाराष्ट्राचे द्रष्टे शिल्पकार म्हणून यशवंतराव चव्हाण यांचे व्यक्तिमत्त्व अभ्यासताना त्यांचे शिक्षणविषयक विचार आजच्या स्पर्धात्मक युगातही किती परिणामकारक ठरतात आणि त्यांच्या विचारांची आजही किती गरज आहे, हे लक्षात येते. महात्मा जोतिबा फुले आणि थोरले बंधू गणपतराव यांच्या सामाजिक व आर्थिक विषमता दूर करण्याच्या कार्यामुळे त्यांना एक नवी दृष्टी प्राप्त झाली होती. देवराष्ट्रे गावात राहून त्यांनी विषमतेबरोबरच शेतक-यांची दु:खे जाणली होती. त्यातूनच शिक्षणाची गरज आणि महत्त्वही लक्षात घेतले होते. शेतक-याची पुढची पिढी ही शिकती पिढीच असली पाहिजे आणि शिक्षण हे तळागाळातल्या प्रत्येकाला मिळाले पाहिजे, याकरिता ते आग्रही होते. त्यांच्या दूरदृष्टिकोनातूनच सैनिक स्कूल, शिवाजी विद्यापीठ आणि मराठवाडा विद्यापीठाची निर्मिती झालेली आहे.

आज कोणत्याही क्षेत्रात, राष्ट्रीय महत्त्वाच्या घडामोडींत महाराष्ट्राचे वेगळेपण देशात उठून दिसते. हे वेगळेपण विकसित होण्यामध्ये आणि हिमालयाच्या मदतीला सह्याद्री धावून जाण्याचे चित्र निर्माण होण्यामध्ये यशवंतराव चव्हाण यांचे अमूल्य योगदान आहे हे निश्चित!

विद्यापीठाच्या नावाबाबत मतभेद :

डॉ. बाळकृष्ण यांच्या इच्छेनुसार छत्रपती शिवरायांचे नाव विद्यापीठाला द्यायचे याबाबत कोणाचेही हरकत नव्हती, विद्यापीठाच्या कायद्यासंबधीही मतभेद नव्हते. पण नाव कोणत्या पद्धतीने द्यायचे याबाबत चिकित्सा समिती मध्ये मतभेद होते,समिती मधील काही सदस्यांनी विद्यापीठाचे नाव 'श्री छत्रपती शिवाजी विद्यापीठ' ठेवावे असे वाटत होते,या आग्रहमध्ये कोल्हापूरचे पाहिले आमदार बलवंतराव बराले हे पण होते, त्यांनी सतत दोन तीन दिवस हा आग्रह धरून ठेवला त्यांच्या या भूमिकेला समर्पक असे कोणी उत्तर दिले नव्हते, शेवटी मुख्यमंत्री यशवंतराव चव्हाण यांनी त्यांना चेंबर मध्ये बोलावले आणि सांगितले की " तुम्ही असा आग्रह धरू नका कारण बडोद्याचे महाराजा सयाजीराव युनिव्हर्सिटीचा उल्लेख लोकांच्या तोंडी नेहमी एम एस युनिव्हर्सिटी असाच असतो, तसेच आपल्या श्रीमती गोपीबाई दामोदर ठकरासी विद्यापीठाचा उल्लेख ही लोक नेहमीच एस एन डी टी विद्यापीठ असाच करतात 'तसे आपल्या विद्यापीठाचे होऊ नये.' **शिवाजी विद्यापीठ** ' या नावानेच सतत उल्लेख झाला तर शिवाजी हे नाव लोकांच्या सतत डोळ्यासमोर राहील. शिवाय एवढ्याच नावामुळे आपण दुसऱ्या कोणाच्या नावाने हे विद्यापीठ सुरू करत असे मानण्याचे कारण नाही. या नावामध्ये सुद्धा श्री छत्रपती शिवाजी विद्यापीठ असे सूचित होते "

खंबीरनेतृत्व:

संयुक्त महाराष्ट्राचा उदय झाल्यावर नव्या महाराष्ट्राची जडणघडण त्यांनी केली हे त्यांचे महान कार्य आहे. कृषी-औद्योगिक समाजरचना, सहकारातून समाजप्रगती, विविध औद्योगिक वसाहती, सहकारी बँका, पतसंस्था, पूरक संस्था यांची उभारणी कोयनानगर सारखी मोठी धरणे व छोटी गाव-शेततळी योजना, जलसंधारण कामे, विभागीय विद्यापीठांची उभारणी लेखकांना उत्तेजन आणि पुरस्कार योजना, साहित्य संस्कृती मंडळ निर्मिती, विश्वकोष निर्मिती मंडळ, अशी चौफेर दृष्टी ठेवून केलेली रचनात्मक कामे हे स्व. यशवंतरावजींचे कार्य कर्तृत्व आहे. निर्मितीक्षम प्रतिभा आहे. सामान्य लोकांचा समाजकारणात, राजकारणात सहभाग असावा म्हणून पंचायतराज, जिल्हा परिषद निर्मिती, स्थानिक नेतृत्वाला संधी व कार्यकर्तृत्वाचे डोंगर उभा करण्याचे आव्हान हे सारे यशवंतरावांनी आपल्या कार्यकाळात करून घडवून दाखविले. ही त्यांची महाराष्ट्राला मोठी देणगी आहे. त्यामुळे जिल्ह्या-जिल्ह्यातून कर्तबगार नेतृत्वाचा उदय झाला आणि पुढे तेच महाराष्ट्राचे राज्यकर्ते बनण्याची एक अखंड साखळी तयार झाली, होत आहे.

याचे सारे श्रेय स्व. चव्हाणसाहेबांनाच आहे. जीवनाच्या विविध क्षेत्रातील कर्तबगार माणसे हाताशी धरून त्यांनी महाराष्ट्राची जडण-घडण केली. देशात महाराष्ट्र विकासाच्याबाबतीत सर्वप्रथम राहील याची दक्षता त्यांनी घेतली. म्हणूनच आधुनिक महाराष्ट्राचे शिल्पकार यशवंतराव चव्हाण हे आहेत. त्यांनी दाखवून दिलेल्या मार्गाने आज महाराष्ट्र विकासाची घोडदौड करीत आहे हे त्यांचे द्रष्टेपण आहे.

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नवीन उच्च शिक्षणाच्या धोरणाचीदिशा-ऐतिहासिक अभ्यास

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प्रस्तावना:

३४ वर्षांनंतर नव्या राष्ट्रीय शैक्षणिक धोरणाला(National Education Policy 2020) केंद्रीय मंत्रिमंडळाच्या बैठकीत मंजुरी देण्यात आली.बदल शालेय व उच्च शिक्षणाच्या रचनेत आमूलाग्रकरण्यात आले आहेत.शिक्षण प्रकारांना शाखांच्याचौकटीतून बाहेर काढून आंतरशाखीय आणि समन्वयी करण्यात आले आहे.एकाचवेळी अभियांत्रिकी व संगीत हे दोन्ही विषय घेवुनही उच्च शिक्षण पूर्ण करता येईल.शालेय विध्यार्थ्यामध्येवैदज्ञानिक शतकासाठी आवश्यक कौशल्ये प्रदान व्या२१दृष्टिकोन विकसित केला जाणार असून करण्याला महत्त्व देण्यात आले आहे,1986 रोजी पहिलं शैक्षणिक धोरण देशात लागू झालं.त्यानंतर1992 मध्ये या शैक्षणिक धोरणात बदल करण्यात आले .2009 मध्ये शिक्षण हक्क कायदा आणला गेला ज्याचीअंमलबजावणी 2013 पासून करण्यातआली.शैक्षणिक धोरणात अखेरची मोठी सुधारणा झाली तेव्हा परिस्थिती पूर्णपणे साली १९९२ वेगळी होती.तेव्हा देशात एकूण विद्यापीठे अथवा तत्सम संस्था १९० होत्या; एकूण उच्च शिक्षण घेणारे विद्यार्थी सुमारे चाळीस लाख एवढे होते तर एकूण नोंदणीचे प्रमाण८%इतके कमी होतेविकास च्या मनुष्यबळ२०१८)मंत्रालयाच्याMHRD) च्या अहवालानुसार, देशभरात आत्ता एकूण ७९० विद्यापीठे आहेत; एकूण उच्च शिक्षण घेणारे विद्यार्थी ३ कोटी ४५ लाख ८४ हजार ७८१ इतके आहेत आणि एकूण नोंदणीचे प्रमाण२६.३इतके % आहे.पूर्वानुभव, वर्तमान आव्हाने आणि भविष्यातील गरजा लक्षात घेऊन हे धोरण आखले आहे. धोरण कितीही पक्कं, भक्कम आणि मजबूत असलं तरी जोपर्यंत क्रियान्वयन प्रामाणिकपणे होत नाही तोपर्यंत परिणाम दिसणार नाहीत. नोकरशाहीच्या लालफितीत हे राष्ट्रीय शिक्षण धोरण अडकलं नाही तरच आशादायक चित्र साकारलं जाईल.
जुन्या ५+२+3आराखडा लागू करणे ज्यात हा ४+३+३+५ऐवजी नवीन
१ .पहिला टप्पा: पूर्व प्राथमिक ते दुसरी-पाच वर्षे
२. दुसरा टप्पा: -तिसरी ते पाचवी-तीन वर्ष
३. तिसरा टप्पा:-सहावी ते आठवी तीन वर्ष
४. चौथा टप्पा: नववी ते बारावी -चार वर्ष

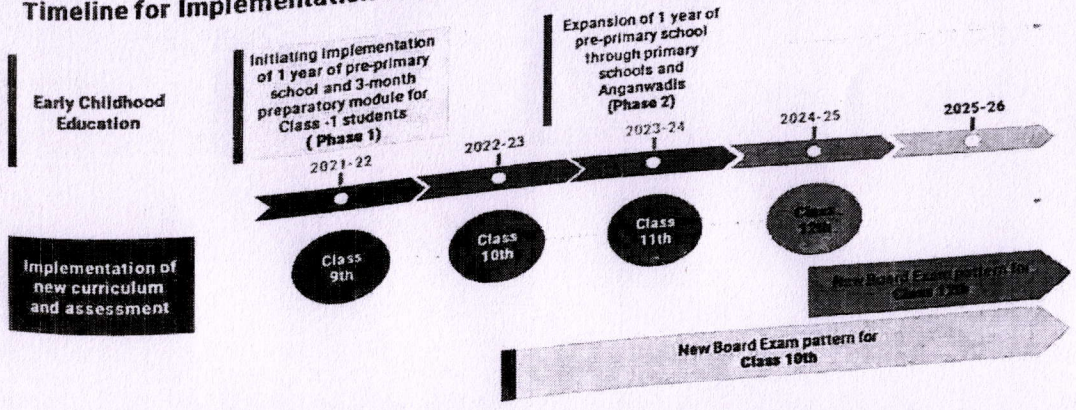
शालेय शिक्षणासाठी 5+3+3+4 हे सूत्र आले आहे महाविद्यालयीन शिक्षणासाठी .3+2 आणि 4+1 अशी दोन सूत्रे येत आहेतया दोन्हीत काय फरक आहे .? 3+2 म्हणजे 3 वर्षांचे पदवीचे शिक्षण आणि दोन वर्षांचे पदव्युत्तर शिक्षण (म्हणजे आज आहे ते), 4+1 म्हणजे 4 वर्षांचे पदवीचे शिक्षण आणि 1 वर्षाचे पदव्युत्तर शिक्षणयात एक . पदवीचा अभ्यासक्रम पूर्ण करताना ,नवीन संकल्पना आणण्यात आली आहे'आगमन' व 'बहिर्गमन'कोणत्याही टप्प्यावर करता येईलतसेच . कोणताही अभ्यासक्रम सोडून वेगळा अभ्यासक्रम घेता येईलयासाठी पहिल्या वर्षानंतर प्रमाणपत्र, दुसऱ्या वर्षानंतर पदविका व तिसऱ्या वर्षानंतर पदवी प्रदान करण्यात येईल.
ही लवचिकता विद्यार्थ्यांच्या दृष्टीने स्वागतार्ह आहे.बदलामुळे शिक्षकांच्या कार्यभारात सतत बदल होत राहतील व याला कसे सामोरे जायचे हा प्रश्न प्रशासनापुढे पडेल.भारतात १८ ते २३ या वयोगटातील तरुणांची संख्या २०१६ पर्यंत १४ कोटी १५ लक्ष इतकी असेल असा भारत सरकारच्या मानव संसाधन मंत्रालयाचा अंदाज आहे.लोकसंख्येतील हाच वर्ग उच्च शिक्षण घेणारा असतो.उच्चशिक्षणाच्या क्वॉलिटीचा विचार आपण नंतर करू पण आधी उच्चशिक्षण हे तरुणांना उपलब्ध तरी आहे काय आणि उच्च शिक्षणाच्या संख्यात्मक वाढीचे आणि त्यातून निर्माण

होणाऱ्या प्रश्नांचे स्वरूप केवढे आव्हानात्मक आहे हे लक्षात घेणे आवश्यक आहे.वरीलवयोगटातीलकिती टक्के तरुण उच्चशिक्षणासाठी नावे नोंदवितात किंवा प्रत्यक्ष प्रवेश घेतात. ग्रॉस एनरोलमेंट रेशो)यावरून स्थूल नाव नोंदणी दर किंवा प्रवेशाचा दर लक्षात येतो(.टक्के इतका होता२०१२१७ प्रवेशाचा हा दरमध्ये .जगात हाच दर २७ टक्के, तर चीनमध्ये ३० टक्के इतका आहे.दर वर्षी साधारणदोन ते अडीच विध्यार्थी उच्च शिक्षणासाठी प्रवेश घेतात.२०३० पर्यंत किमान ५ कोटी विद्यार्थ्यांनशिक्षणाची दारे उघडी करून द्यावी लागतील.यासाठी किमान १२ लाख कोटी रुपयांची गुंतवणूक करावी लागेल. देशाच्या वाढत्या गरजा व युवकांच्यावाढत्या आकांक्षा आणि उपलब्ध साधने यांचा मेळगुणवत्ता पूर्ण शिक्षणाशी कसा जोडता येईल हा उच्चशिक्षणातील आजचा यक्षप्रश्न आहे.

१९६८ मध्ये कोठारी कमिशनने शिक्षणावर राष्ट्रीय उत्पन्नाच्या किमान ६ टक्के इतकी रक्कम शिक्षणावर खर्च व्हावी असे सुचविले होते.पावेतो कुठल्याही सरकारला एवढी रक्कमअद्याप शिक्षणावर खर्च करणे साध्य झालेले नाही.एच .आर. मिनिस्ट्रीच्या माहितीनुसार २००१ तेया काळात २००९ ३चा वाटवाढलेला असला तरी राज्यां टक्क्याने१केंद्राचा खर्चातील वाटा.७६ टक्क्यावरून ३ टक्क्यांपर्यंत घसरलेला आहे . २०११-१२ या वर्षांत एकूण राष्ट्रीयउत्पन्नाच्या १.६२ प्राथमिक शिक्षणावर तर माध्यमिक शिक्षणावर%0. ९९आणि उच्च%शिक्षणावर 0.७६तर तंत्रशिक्षणावर%0.५७% एवढी तरतूद करण्यात आलेली होती.उच्च शिक्षणातील अनेक दुष्प्रवातिनी उच्चशिक्षणाच्या मागणी व पुरवठा यातील प्रचंड तफावतीतून निर्माण झालेल्या आहेत. याचा अर्थ सरळ आहे.ल्यांमुळे व नाही अशा भ्रामक संक शिक्षणातून त्वरित व तात्कालिक फायदा काहीच देण्याच्या शिक्षणाला दुय्यम महत्त्व (पाहिल् कॅगचे रिपोर्ट)जनातील त्रुटीमुळे वित्तीयनियो परिणामातूनच्याशिक्षणाखासगीकरणाचे पेव फुटलेले आहे.खाजगीकरणाची मदत घेण्यास हरकत नाही . परंतु शिक्षणाचे 'कार्पोरटायझेशन'करण्याचे सामाजिक व आर्थिक दुष्परिणाम हिंदुस्थानात अत्यंतव्यापक व खोलवर झाल्याशिवाय राहणार नाहीत. र करणारे म्हणतातशिक्षणाच्या खाजगीकरणाचा पुरस्का'शिक्षणाला सेवाधर्माच्या पावित्र्याचा जो टॅग लावलेला आहे तो दूर करा. शिक्षण ही कमोडीटी आहे.)शिक्षणाची ज्याला आवशकता आहे तो (सर्विस प्रोवायडर)हा ग्राहक आहे व शिक्षणाची सेवा देणारा हा या सेवेचा पुरवठा करणारा पुरवठादार (विद्यार्थी आहे. विकपणे नफा हीस्वाभा प्रेरणा शिक्षणात गुंतवणूक आकर्षित करू शकेल.

विनानुदानित खाजगी शिक्षण संस्थांमध्ये आज ८०विद्यार्थी शिक्षण घेतात%. मध्ये हे प्रमाण२००६ ५२होते%.प्र।मुख्याने अभियांत्रिकी, वैद्यकीय, औषधनिर्माण, आतिथ्य व व्यावसायिक व्यवस्थापन आदि शाखांमध्ये खाजगी संस्थानी गुंतवणूक केलेली दिसते . ज्यांचा शिक्षणाशी दुरान्वयानेही संबंध नाही,शिक्षणासंबंधी कोणताही सामाजिक विचार नाही आणि केवळ पैसा मिळविण्याचा उद्योग एवढीच धारणा असलेला वर्ग खाजगी व विनानुदानितच्या नावाखाली शिक्षणक्षेत्रात घुसखोरी करताना दिसून येत आहे.चीननेही खाजगीकरणकेले.तिथे विद्यापीठ आहेत२४००.(आपल्या इथे ७००आहेत).जगातील पहिल्या शंभर विद्यापीठात भारतातील एकही विद्यापीठ नाही. पण चीनमधील दोन विद्यापीठांचा त्यात समावेश आहे.%१०चीनमध्ये फक्त विद्यार्थी खाजगी शिक्षण संस्थांमध्ये प्रवेश घेतात.आपल्या इथे हे प्रमाण ८० टक्क्यांवर पोहचले आहे.संख्यात्मक बाढीबरोबर गुणवत्तेशी चीनने तडजोड केली नाही म्हणून सर्व आर्थिक व तंत्रज्ञानक्षेत्रात चीन आज आघाडीवर आहे.

Timeline for Implementation of ECE and new Assessment pattern



उच्च शिक्षणाकडे देशाला विकासाकडे नेण्याचा मार्ग या ऐवजी मार्केट म्हणूनबघण्याची वृत्ती असल्यास संख्यात्मक वाढ शैक्षणिक सूज असेल.शैक्षणिक आरोग्य नसेल हे भान शिक्षणाच्या विस्तारीकरणात आपण लक्ष्यात ठेवल पाहिजे.शिक्षण हे मूल्यवर्धनराष्ट्रसंवर्धन व सामाजिक अभिसरणाचे साधनआहे.सामान्यातील सामान्य माणूस हा शिक्षणाच्या सतत वाढत्या खर्चाने रंजीस आला आहे.१८ते२३ यां वयोगटातील १४ कोटी पैकी जर दोन कोटींना उच्च शिक्षण घेता येणे शक्य होत असेल तर उरलेले१२ कोटी युवक जातात कुठे? शिक्षण हा बाजारू धंदा नव्हे . त्यामुळे खाजगीकरणाचे नियमन व नियंत्रण आवश्यक आह

चीनने विद्यापीठांच्या सार्वत्रिकरण करून विकासाचा मार्ग प्रशस्त केलाहेही नमूद केले पहिजे. आयआयटी व इंडियन इन्स्टिट्यूट ऑफ मॅनेजमेंट यासारख्यासंस्थांमधे लाख विद्यार्थ्यांमधे एका विद्यार्थ्याला प्रवेशाची संधी असते.आमचा तरुणांचा देश म्हणून फुशारकी मारण्यात अर्थ नाही.तरुणांच्या आशा आकांक्षांना व कर्तृत्वाला संधी मिळेल अशी व्यवस्था निर्माण करण्याचे आव्हान आपण स्वीकारणार आहोत की नाही हा खरा सवाल आहे.आपला संरक्षण खर्च२लाख कोटी रुपयांपेक्षा अधिक आहे.या खालोलाल खरे तर शिक्षणाचा अग्रक्रम यायला हवा.या देशात जन्माला येणाऱ्या प्रत्येकाला जसा प्राथमिक शिक्षणाचा हक्कआहे तसाच तो उच्च शिक्षणाबद्दलही मिळायला हवा.उच्चशिक्षण ही श्रीमंताची मक्तेदारी वा मिरासदारी होता कामा नये. आधीच आपल्या देशात वर्गीय संघर्ष भाषा,प्रदेश, सत्ता, पैसा यांच्या रूपाने भरपूर आहे. देशाच्या अस्तित्वासाठी ज्या प्रमाणे संरक्षण आवश्यक हेशांततेच्या आहेयाचप्रमाणे शिक्षण काळातील संरक्षण आहे.हे आपल्याला उमगल्यास शिक्षणाची दुकानदारी बंद होऊन खऱ्या अर्थाने शिक्षणातून समर्थ भारत निर्माण होईल.

भारतातील उच्चशिक्षणासमोरची आव्हाने:

1.विखंडित उच्चशिक्षण: उच्चशिक्षण संस्था विभिन्न छत्राखाली विखुरलेल्या असणे.

2. संज्ञानात्मक कौशल्य विकास व अध्ययन फलित यावरील अपुरे लक्ष.

3. ज्ञानशाखांचे काटेकोर विलगीकरण बहुशाखीय उच्चशिक्षण संस्थांची उणीव : .

4. स्थानिक भाषेतून अध्यापन करणाऱ्या उच्चशिक्षण संस्थांची वानवा.

5. शिक्षक व शिक्षणसंस्थांची मर्यादित स्वायत्तता.

6. गुणवत्तेवर आधारीत बढती.प्रगती नसणे

7. संशोधनातरील अपुरा भर.

8. उच्चशिक्षण संस्थांचा ढिसाळ कारभार व नेतृत्वाचा अभाव.

9. अपरिणामकारकनिरूपयोगी नियामक व्यवस्था / .

10. अवाढव्य मोठी विद्यापीठे.महाविद्यालये व शिक्षणाचा घसरता दर्जा /

आव्हानांवर मात करण्यासाठी उच्च शिक्षण व्यवस्थेची संपूर्ण झाडाझडती घेऊन या व्यवस्थेला नवऊर्जा देण्याचा संकल्प करण्यात आला आहे.यासाठी पुढील गोष्टी प्रस्तावित आहेत:

1. मोठी, बहुशाखीय विद्यापीठे व महाविद्यालये असलेल्या उच्च शिक्षण व्यवस्थेकडे वाटचाल.

2. अधिक संख्येने बहुशाखीय पदवीस्तरावरील महाविद्यालये .

3. अध्यापक आणि शिक्षणसंस्थांना स्वायत्तता.

4. अभ्यासक्रम, अध्यापन पध्दती, मूल्यमापन इत्यादींमध्ये आमूलाग्र बदल.

5. गुणवत्तेवर आधारित नेमणुका करून अध्यापकांची बांधिलकी पुनर्स्थापित करणे .

6. राष्ट्रीय संशोधन संस्थेची स्थापना.

7. उच्च शिक्षणसंस्थांच्या सुशासनासाठी उच्च विद्याभूषित स्वतंत्र मंडळांची स्थापना.

8. उच्च शिक्षणाच्या नियंत्रणासाठी 'सौम्य पण सख्त' नियामकाची नियुक्ती.

9. ऑनलाईन व दूरस्थ शिक्षण प्रणालीचे उपयोजन.

जागतिक पातळीवरील विद्यापीठांच्या क्रमवारीत भारतातील विद्यापीठे झळकावीत या दृष्टीने यात थेटपणे काही नाही.तसेच उद्योग जगताच्या उच्च शिक्षण क्षेत्रातील प्रत्यक्ष सहभागाबद्दलही काही नाही. उच्च शिक्षण

अधिकाधिक परिणामकारक, उपयोजित, अर्थपूर्ण व समर्पक होण्यासाठी हा मसुदा खूप महत्त्वाचा आहे. तक्षशीला, नालंदा, वल्लभी, विक्रमशीला आदी प्राचीन भारतीय विद्यापीठांत अध्ययन करणाऱ्या हजारो भारतीय व अभारतीय विद्यार्थ्यांचा आदर्श आपल्यापुढे आहे असे सांगून पुढे असे म्हटले आहे 'India urgently needs to bring back this great Indian tradition to create well-rounded and innovative individuals.'भारत पुन्हा एकदा 'विश्वगुरू'बनेल व वैश्विक अध्ययन केंद्र बनेल असा विश्वास व्यक्त करण्यात आला आहे :"India has a long tradition of holistic and multidisciplinary learning, from universities such as Takshshila and Nalanda, to the extensive literatures of India combining subjects across fields. ancient literary works such as Banabhatta'sKadambari described good education as knowledge of the 64 Kalaas or arts; and among 64 arts were not only subjects, such as singing and painting, but also "scientific' fields, such as chemistry and mathematics, "vocational' fields, such as carpentry and clothes making, "professional' fields, such as medicine and engineering, as well as "soft skills', such as communication, discussion and debate. The very idea that all branches of creative human endeavor, including mathematics, science, and soft skills should be considered "arts' has distinctly Indian origins. This notion of a "knowledge of many arts' or what in modern times is often called the "liberal arts' (I.e. a liberal notion of the arts) must be brought back to Indian education that will be required for the 21st century."

उच्च शिक्षण:

1.उच्च शिक्षणासाठी असलेल्या विध्यापीठ अनुदान आयोगाच्या जागा आता राष्ट्रीय उच्च शिक्षण नियंत्रण मंडळ" (NHERA) ही नवी यंत्रणा घेईल.

2. उच्च शिक्षण संस्थांच्या स्वायतत्तेला आणि गुणवत्तेला प्राधान्य देणे.

3.गुणवत्तापूर्ण संशोधनाला चालना देण्यासाठी .स्थापना करणे "संस्थेची/राष्ट्रीय संशोधन मंडळ"

4. २०३० पर्यत उच्च शिक्षणासाठी प्रवेश घेण्याऱ्याची संख्या दर्शविणारा %५०निर्देशांक "डोबळ नोंदणी प्रमाण" पर्यंत वाडेल यासाठी प्रयत्न करणे. सद्या हे प्रमाण फक्त २७.इतके आहे %

5.प्रत्येक उच्च शिक्षण ही स्वायत्त आणि स्वतंत्र अस्तित्व असलेली संस्था म्हणून काम करेल आणि स्वत:चे शैक्षणिक निर्णय स्वत. घेईल.

उच्च शिक्षण संस्थाचे वर्गीकरण:

१. **संशोधन संस्था:** यात सर्व केंद्रीय विद्यापीठे, केंद्रसरकारच्या मालकीच्या आणि अनुदानित संस्था यांचा समावेश होईलपूर्ण संशोधनासाठी आणि त्याचा दर्जा कायम राखण्यासाठी पायाभूत सुविधा आणि या संस्था देशातील गुणवत्ता इतर सोयी पुरवतील .

२. **शैक्षणिक संस्था/ विद्यापीठ:** या संस्था ,विद्यापीठे गुणवत्तापूर्ण पदवी आणि पदुत्तरशिक्षण देण्यासाठी काम करतील.

३ .**महाविद्यालये:** यात उच्च दर्जाचे पदविका आणि पदवी शिक्षण दिले जाईल.

प्रशासकीय बदल:

सध्या उच्चशिक्षणाचे नियमन विद्यापीठ अनुदान आयोग, त्यात तंत्रशिक्षणाचे नियमन अखिल भारतीय तंत्रशिक्षण परिषद करतात. प्रत्येक व्यावसायिक विद्याशाखांचे अभ्यासक्रम, परीक्षा, दर्जा, मान्यता या पातळीवरील नियमन त्या विद्याशाखांच्या शिखर संस्था किंवा परिषदा करतात. नव्या धोरणात या रचनेत बदल करण्यात येणार आहे. भारतीय उच्चशिक्षण आयोग (एच. ई .सी .आय.) स्थापन करण्यात येईल. वैद्यकीय शिक्षण आणि विधि शिक्षण वगळता सर्व उच्चशिक्षण अभ्यासक्रमांचे नियमन ही एकच संस्था करेल. या आयोगाचे चार घटक असतील. शिक्षणसंस्थांचे नियमन राष्ट्रीय उच्च शिक्षण नियामक परिषद (एन.एच.ई.आर.सी) करेल. दर्जा राखण्याची जबाबदारी जनरल एज्युकेशन काऊन्सिल (जी.ई.सी.) या संस्थेची असेल. निधीचे नियोजन करण्यासाठी उच्च शिक्षण अनुदान परिषद (एच.ई.जी.सी.) स्थापन करण्यात येईल. संस्थांचे मूल्यांकन सध्या कार्यरत असलेली राष्ट्रीय मूल्यांकन आणि श्रेयांकन परिषद (नॅक) करेल.

फक्त विद्यापीठे चार वर्षाचा शिक्षक शिक्षण(इंटिग्रेटेड बी.एड.)तसेच दोन वर्षांचा बी एड अभ्यासक्रम पुन्हा एक वर्षाचा करून ज्या संस्था चार वर्षांचा इंटिग्रेटेड कोर्स चालवितात त्यांचेकडेच तो दिला जाईल .उच्च शिक्षणाच्या

विस्तार करण्यासाठी आणि अपेक्षित गणवत्ता राखण्यासाठी आवश्यक असलेला निधी विद्यापीठे सार्वजनिक रित्या उभा करू शकतील आणि त्याची प्रक्रिया अत्यंत पारदर्शी आणि खुली असेल.येत्या पाच वर्षात देशातील मागास जिल्ह्यात वरील तीनपैकी एकातरी प्रकारची शिक्षण संस्था उभारली जाईलस्वायत्त महा.विद्यालयांची विद्यापीठासोबतची संलग्नता संपुष्टात येऊन ते आपली स्वतःची पदवी प्रमाणपत्रे स्वतः देऊ शकतीलकोणतेही . धोडक्यात सर्व महाविद्यालये .महाविद्यालय विद्यापीठाशी संलग्न असणार नाही

पदवी आणि पदुउत्तर अभ्यासक्रम पूर्ण केल्या नंतर संबंधित संस्था /विद्यापीठ स्नातकांना नोकरी /व्यवसायासाठी आवश्यक ते सहकार्य करेल.आर्थिक कारणामुळे कोणत्याही विद्यार्थ्यांचे उच्चशिक्षण अर्धवट राहू नये यासाठी संस्था/विद्यापीठ आवश्यक ती मदत करेल.५०टक्के GER चे ध्येय गाठण्यासाठी गुणवत्तापूर्ण मुक्त आणि दूरस्थ शिक्षणाला चालना देऊन त्याचा प्रसारवाढविणे.

मुक्त आणि दूरस्थ शिक्षणामध्ये दर्जेदार आणि समकक्षMassive Open Online Courses (MOOC) अर्थातसमग्र " मुक्त निरंतर अभ्यासक्रम सुरू करणे.पदवी आणि पदुउत्तर अभ्यासक्रम तयार करत असताना ते आंतरराष्ट्रीय शिक्षणाचा दर्जा आणिगुणवत्ता लक्षात घेऊनत्या समकक्ष राहतील यासाठीप्रयत्न करणे. िक्षण संस्था यांच्या संयुक्तआंतरराष्ट्रीय आणि भारतीय विद्यमाने

आंतरराष्ट्रीय पातळीवर आवश्यक त्या पात्रतेचे आणि क्षमतेचे मनुष्यबळ निर्माण करणे .

परदेसी मुलांसाठी शिक्षण संस्थामध्ये १५% जागा राखीव ठेवने. दर्जा आणि गुणवत्ता यात वाढ करण्यासाठी विद्यार्थी आणि शिक्षक यांची आंतरराष्ट्रीय पातळीवर देवाणघेवाण(Student & faculty exchange) करणे.विद्यापीठांना भारतात शिक्षणासाठी परवानगी देणे२००जगातील निवडक.शिक्षकांचा दर्जाआणि गुणवत्ता टिकवूनत्यात वाढ करण्यासाठी त्यांना प्रेरणा

आणि प्रोत्साहन देणे.विद्यार्थी शिक्षक प्रमाण ३०:१ राखणे. त्यासाठी आवश्यक त्या शिक्षकांची भारती करणे .शिक्षक भरती करत असताना शिक्षकांचे ज्ञानगुणवत्ता आणि शिकविण्याची क्षमता यांना प्राधान्य देणे. शिक्षण भरतीचे सर्व अधिकार संबधित संस्थांना देणे. सर्व संस्था आणि विध्यापिठे यांमध्ये शिक्षकांची नियुक्ती करताना कालावधी आधारितनियुक्त्या दिल्या जातील.

ज्यात नियुक्त शिक्षकाचा कालावधी पाच वर्षांचा असेल. पाच वर्षे पूर्ण झाल्यानंतर वरिष्ठ, देखरेख समिती आणिविध्यार्थी यांचा प्रतिसादआणि मते लक्षात घेऊन नियुक्ती कायम केली जाईल.किंवा परिविक्षा कालावधीत वाढ केली जाईल.प्रत्येक संस्था शिक्षकाला नोकरीत कायम करत असतानाची नियमअटी आणि प्रक्रिया स्वतः उदाहरण.शिक्षकांना प्रशिक्षण देणाऱ्यासंस्थागुणवत्ता निकाष वेगवेगळे असतील.विद्यापीठाला शिक्षकांचे नोंदणीकरण करण्यास सांगितले.

सारांश:

कोणत्याही देशाची प्रगती, भविष्य, वैभव हे त्या देशाच्या शिक्षणप्रणालीवर अवलंबून आहे. शिक्षणव्यवस्था जितकी सुदृढ तेवढं राष्ट्र मजबूत. आणि कालमानपरिस्थितीनुसार शिक्षण बदललं नाही तर राष्ट्रही पुढे जाणार नाही. दुर्दैवाने तीन दशकांहून अधिक काळ आपल्या देशातील शिक्षणव्यवस्थेत आवश्यक तो बदल झाला नाही. प्रवाह थांबला. सुदैवाने इतक्या प्रदीर्घ काळानंतर राष्ट्रीय शिक्षणनीती नव्याने समोर आली आहे. या सरकारनेही भरपूर वेळ घेतला. आज जाहीर होईल, उद्या घोषणा होईल असे करता करता सहा वर्षांनंतर नवीन धोरण जाहीर झाले आहे. वेळ खूप घेतला तरी बऱ्याच आशा पल्लवित झाल्या आहेत ही या शिक्षणनीतीची जमेची बाजू.'भारतात शिक्षण आहे, शिक्षणात भारत नाही'असं आपल्या शिक्षणाचं वर्णन केलं जातं. कोणत्याही देशाच्या शिक्षणाची पाळंमुळं त्या देशाच्या संस्कृतीमध्ये घट्ट रोवलेली असायला हवीत हा जागतिक सिद्धांत आहे. 'माझ्या देशातील परंपरांचा मला अभिमान आहे' असं वाक्य पूर्वी प्रतिज्ञेत होतं. हा देशाच्या संस्कृतीचा, इतिहासाचा, राष्ट्रपुरुषांचा अभिमान जोपर्यंत जागत नाही तोपर्यंत देशासाठी काहीतरी करण्याची भावनाही जागी होणार नाही. दुर्दैवाने ही राष्ट्रीय भावना जागी करण्यात आपण खूपच कमी पडलो.

Something Old, Something New
Something Borrowed, Something Blue

पुढील दहा वर्षांत उच्च शिक्षण घेणाऱ्यांचे प्रमाण (जीईआर) पन्नास टक्के म्हणजे सध्याच्या दुप्पट करण्याचे उद्दिष्ट या धोरणात आहे. त्यासाठी केवळ उच्च शिक्षणाच्या नव्हे, तर प्राथमिक शिक्षणाच्या सुविधाही वाढवाव्या लागणार आहेत. सध्या आपण जीडीपीच्या तीन टक्क्यांपेक्षा कमी खर्च शिक्षणावर करतो. तेव्हा योजना कितीही चांगली असली तरी तिची अंमलबजावणी नीट होणार नसेल आणि त्यासाठी आवश्यक आर्थिक तरतूद नसेल तर यश

मिळण्याची शक्यता नसते. त्यामुळेच जीडीपीच्या सहा टक्के शिक्षणावर खर्च करण्याची सूचना अमलात आणली तरच उद्दिष्टांची पूर्तता होऊ शकेल. जग हे जागतिक खेडे होत असताना समजाच्या उन्नतीसाठी डॉ. बाबसाहेब आंबेडकरांचे विचार घेऊन राष्ट्रीय शैक्षणिक धोरणाचे आम्ही स्वागत करीत आहोत. पुढची पिढी आत्मनिर्भर भारतासाठी, नवनिर्माणासाठी सज्ज होण्याच्या दिशेने टाकलेले एक पाऊल म्हणजे राष्ट्रीय शैक्षणिक धोरण २०२० होय.

संदर्भ:

१) http://niepid.nic.in/nep_2020.pdf
२)https://www.mhrd.gov.in/sites/upload_files/mhrd/files/Draft_NEP_2019_EN_Revised.pdf
३) http://aishe.nic.in/aishe/viewDocument.action?documentId=262
४)https://www.mhrd.gov.in/sites/upload_files/mhrd/files/document-reports/NPE86-mod92.pdf



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MGNREGA: A Milestone for Women Empowerment

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Abstract-

MGNREGA has widely improved the socio-economic condition of women which could be seen through different eyes such as; Literatures, print and electronic media as well as through public opinion. The democratic government of India has been trying to provide holistic development including all the sects of Indian society. Time to time special focus was given on different needy groups such as; physically disabled, women, SC, ST and other underprivileged people. This paper tried to reveal the increasing importance of women empowerment in the Indian society and role of MGNREGA in recent past. It also has provided some of the exemplary states which have shown role model for women empowerment through MGNREGA in India.

Background on Women Empowerment-

In developing societies, participation by all is the most fundamental requirement of growth and development. Largely, the privileged men have superseded women in various affairs including socio-economic, political as well as physical power since beginning. Recent development in global world has given special and equal importance to women in order to make them significant human resource. Women empowerment is not only a burning issue for India but for entire world because it affects freedom, equality, strength and increasing importance of women. Generally, the meaning of women empowerment is making them powerful and prosperous in all the affairs of life whereas the broad meaning of women empowerment is much deeper and intense. Empowerment connotes sharing of power by women in socio-political agencies. And power of decision making can be considered as measuring standard of women empowerment. Women empowerment also denote equal legal, political, physical, intellectual, social and economic power as men enjoys in order to make decision in social cultural and national perspective. In the contemporary changing worldview, developing society needs compulsory inclusion of women empowerment where an educated and healthy woman indeed is a national resource. The global movement of women empowerment was initiated on 8th march 1975 by beginning celebration of "international women day". After this event, United Nations continuously organized world women summit throughout the countries. United Nation Women Development Fund has been created as separate fund under United Nation Development Programme in 1984. Objective of women empowerment in India is to improve their socio-economic status in order to bring them in mainstream of the society and nation at large and provide equal status to women as compared to men. In order to rationalize this, Integrated Child Development Scheme under MHRD in 1985 and constitution of National

Women Commission in 1992 were established. National Policy on Women was formulated in 2001 and declared it as women empowerment year. Many laws were formulated to eradicate women harassment and

exploitation such as; Protection against domestic violence Act 2005, Protection against Sexual exploitation Act 2005 and Anti Dowry Act 1961. Programs of government of India for women empowerment were largely divided into three parts; Health, Education and Welfare. In order to achieve its objective, gender budgeting or women sensitive budget process has been quickly adopted in India in last few years. Ten important grants were included for the first time by the central budget in the year 2005-06 related to women empowerment. Next to this, Bihar government also included 13 departments under the gender budgeting system. Planning commission also included women empowerment as primary target for the first time under ninth five year plan (1997-2002) in India. Tenth five year plan (2002-07) also emphasized on triple strategy; social empowerment, economic empowerment and equitable justice for women. Eleventh five year plan (2007-12) again focused on women empowerment through inclusive growth along with socio-economic empowerment and equitable justice for women. One third reservation for women in triple layer Panchayati Raj institution and Local Corporation provided by 73rd and 74th constitutional amendment in April 1993 in order to make political empowerment of women. In this system, thousands of women could come into political power for developing capacity of decision making and leadership among them. More than 1.2 million women representatives have been elected till now in India which is the highest in the world. Among these elected representatives, Dalits, Tribes, Backwards and Muslim women are included. Here, most of the electives members are from Below Poverty Line (BPL). It is important to note here that Bihar has become the first Stateto implement 50% reservation to women candidates for women empowerment and showed a role model before the country.

MGNREGA and women empowerment-

Government has been launching several programs and schemes in recent past for the rise and entitlement of women in Indian society. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA) is one of the largest governmental schemes launched in 2006 for social development in general and women empowerment in particular in India. This scheme did not only make women economically powerful but also improved family and social dignity which led to social empowerment of women. MGNREGA could intervene for the empowerment of rural women and bring women nearer to equality, discrimination free environment and provided opportunity for self-employment. This scheme has also recognized the importance of gender equality and empowerment. This scheme includes several provisions and directions for women empowerment such as; equal labour and wages, accessibility to work, friendly work place, equal decision making power with salary and their equal representation in construction body were ensured. Making women sensitive towards their rights and including them in the mainstream of the national development are some of the main objectives of MGNREGA. One of the provisions in this scheme is to provide 1/3 work employment to women by the village panchayat some others

are:

- Adequate provisions and facilities for women at workplace and for their children's care,
- Provision of one woman with equal wages to take care of minimum six children of women workers at workplace

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- Provision of drinking water at workplace
- Register maintenance of women workers
- Open inspection of workplace
- Maximum distance of workplace is five kilometers from the house of workers.

Providing employment opportunity keeping in mind the roles and responsibilities of women could also be assured which proved the increasing importance of this positive scheme for women empowerment. Participation of women in MGNREGA is highest among all programs and schemes in India with 47% contribution of labour by women alone in this scheme. It also provides an important opportunity for wage based work to those unemployed or less employed in the society.

Statistics related to Women Participation-

As far as participation/ empowerment of women through MGNREGA is concerned, Kerala has been in top position with 93% whereas on the other hand states like Uttar Pradesh and Jammu Kashmir contributed as low as 18% and 17% respectively. Bihar has done considerably well with women participation of 29% in MGNREGA program. MGNREGA has affected entire affairs of life of women in terms of social, economic, political and family level which can be proved by the participation of women in different states in India. This scheme has left behind the national minimum requirement of women participation of 33% in the recent years and has reached at the level of 46-47% as revealed by the document on Review of MGNREGA (2006-12): Ministary of Rural Development GOI.

In the financial year 2011-12 alone, women employment and labour-day in MGNREGA could reach about 50% against which in the financial year 2006-07, it was merely 40%. Incidentally the labour-day by women kept increasing every year as 43% in the financial year 2007-08, 48% in the year 2008-2011 and right now it is at the state of 47% in the year 2011-12. Under this scheme, women participation recorded maximum in the state of Kerala which is 93% in the year 2011-12 but it is important to note that Kerala already began with 66% women participation in MGNREGA in the beginning year of 2006-07 as well. Kerala too kept growing in labour day contribution by women every year respectively 71% in 2007-08, 85% in 2008-09, 88% in 2009-10, 90% in 2010-11 and in the last year 2011-12 it reached at the level of 93%. Kerala has proven the model before the entire Indian community about the women participation and empowerment through MGNREGA. But, situations quite differing in different states regarding women participation i.e. Tamilnadu stands second position in term of women participation of about 74% in the last financial year 2011-12 whereas Rajasthan stands third with 69% women participation in MGNREGA program. This programme could not attract women in Jammu and Kashmir states which stands last in term of women participation even in last financial year 2011-12 with merely18%. Most surprisingly in the beginning year of 2006-07, this state had merely 4% women participation in this scheme. Bihar has also shown little improvement in women empowerment and improvement in women condition which strengthened socio-economic status of women in the state. By starting with merely 17% women participation in MGNREGA in the beginning year

2006-07 Bihar could reach 29% in the year 2001-12. Here all the status of different states shows differing participation of women in this scheme. Some of the states which could not touch the women participation level of expected 33%, these sates are: Uttar Pradesh, Jammu Kashmir, Bihar, Jharkhand, West Bengal and most of the north-eastern states. Different states have shown varying status of women participation in MGNREGA in India. But, some of the states given in the table show significant improvement such as; Bihar, Himachal Pradesh, Uttarakhand, West Bengal and Kerala. Bihar began with merely 17% women participation in the year 2006-07 and could reach upto 29% in last financial year 2011-12 with about 70% growth in just five year. Most surprisingly Himachal Pradesh could increase women participation in MGNREGA about 400% in just five financial years which can be the role model for the states in India followed by West Bengal, Uttarakhand and Kerala respectively about 77%, 50% and 40% in just five financial years.

Conclusion- MGNREGA has widely improved the socio-economic condition of women which could be seen through different eyes such as: Literatures, print and electronic media as well as through public opinion. The democratic government of India has been trying to provide holistic development including all the sects of Indian society. Time to time special focus was given on different needy groups such as; physically disabled, women, SC, ST and other underprivileged people. This paper tried to reveal the increasing importance of women empowerment in the Indian society and role of MGNREGA in recent past. It also has provided some of the exemplary states which have shown role model for women empowerment through MGNREGA in India.

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Shri. Siddheshwar Mahavidyalaya Majalgaon Dist. Beed

Female Feticide: A Social problem in India

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Introduction

Female feticide is one of the extreme manifestations of violence against women a social problem that is now spreading unchecked across the country. Female foetuses are selectively being aborted after pre-natal sex determination, thus denying a girl s **'RIGHT TO LIFE'**. They are a peerless pair being complementary to one another; each helps the other, not that without the one, the existence of the other cannot be conceived; and, therefore, it follows as a necessary result from these facts that anything that will impair the status of either of them will involve the equal ruin of both. According to (Manu), a woman has to be reborn as a man to attain moksha (redemption). A man cannot attain moksha unless he has a son to light his funeral pyre. Also, it says a woman who gives birth to only daughters may be left in the eleventh year of marriage. The neglect of and discriminatory behavior against girls leading to excess female mortality has been widely documented by several studies, but the recent increase in the juvenile sex ratio discussed above has very likely resulted from rapid spread of ultrasound and amniocentesis tests for sex determination in many parts of the country, following by sex-selective abortions. Because of simplicity of the tests and their easy availability on the other hand there is a strong son preference on female-specific abortions appear to have become popular and widely used people generally thought that the cost of the test and related abortion is much lower than the cost of providing dowry and other life-long presentations to a daughter after marriage. According to (Chaudhury 2003), the alarm bells ringing in the corridors of power about the missing girls do not find an echo in the dusty by-lanes of the villages in India. It is important to understand the emergence of this phenomenon in a wider perspective. India pioneered in legalizing induced abortion under the medical termination of pregnancy (MTP) Act, 1971 that specifies the reasons for which an abortion can legally perform the abortions and kind of facilities in which they can be carried out. The stipulated conditions are such that abortion performed by trained doctors who are not registered in facilities not specifically approved for abortion services are termed illegal. According to (Chhabra and Nuna 1993), in India illegal abortions may be 8 to 11 times as. While the intention is to provide women with safe, legal, timely abortion services, given the stringent nature of the Medical Termination of Pregnancy act, many safe abortions may be classified as not legal. Abortion can be legally availed if a pregnancy carries the risk of grave physical injury to a women, or endangers her mental health or when pregnancy result from a contraceptive failure or from rape or is likely to result in the birth of a child with physical or mental abnormalities. Methods to detect deformities in the foetus such as amniocentesis and sonography that use ultrasound technology providing valuable and early information on a range of physical problem.

However, the technologies that help detect physical or mental abnormalities in the unborn child can also identify the sex of the foetus at no extra cost or effort. There was increasing indirect evidence from some parts of India that termination of pregnancies was resorted not for the reasons stated under the MTP act but because there is a strong son preference leading to female- selective abortions. The gender bias was flagrantly aided by a combination of medical technology that helped detect the sex of the foetus on the one hand and the liberal abortion law that helped couples to abort female foetus on the other.

II. Objectives Of The Study:

* To generate awareness/education among women s regarding „Right to Life .
* To analysis the status of women in decision making process.

III. Methodology

A sample of nearly 50 respondents among the married women s belongs to higher educational population was selected from Kolhapur District.. The total universe size is 125 stipulated in the research. The sample for this study will be selected through random sampling method. The study is delimited to married women who are in the age group of 25 – 35 years in the KolhapurDistrict. In whole of the study primary source of data collection has been through structured questionnaire was developed regarding evidence based causes of female foeticide and development of strategies to change the mind set as well awareness regarding human rights for the study. in questionnaire a series of questions collected appropriate data for analysis purpose so that answers to the searching questions raised as well as specific objectives of the research study accomplished. The data will be analyzed on percentile basis.

Data in the above figure revealed that, 40% of engineering graduate faculties preferred first male child. 30% women s completed her post graduation in different subjects like management, social work, and commerce we mainly compare their views found that they do not cleary show their preference but in a hidden way they want male child due to future security.

Whereas and 20% women s completed their Phd in different streams found that they prefer male child but not rigid with their views if they have female child they happily welcomed her and ready to carry their responsibilities and never even think about the violate of human right "Right to Life".

10% of Post Doctorate do not show their specific choice according to data they believe in no matters weather it s a male child or female child the only thing is that the child should be healthy they know the pros and corns of foeticide.

IV. constitutional amendments and other Laws.

In view of this, the Indian government, responding to the petition made by non- governmental organizations and women s groups, passes an act prohibiting the practice of pre-natal diagnosis of sex of the foetus (Pre- Natal Diagnostic Techniques [PNDT] act of 1994). Under the Act, individual practitioners, clinics or centers cannot conduct tests to determine the sex of the foetus or inform the couples about it before the passing of the PNDT

Act in 1994, it was evident that clinics conducting sex determination tests had mushroomed in many towns in the states in the north- western belt. The open advertisements have now disappeared but the lucrative practice seems to flourish unabated by simply going underground as evident from the continued decline in the sex ratio of children 0-6 years of age. Although the release of the 2001 Census, results has sparked serious concern about the widespread use of ultrasound and amniocentesis tests to detect the sex of the foetus, following by sex-selective abortions, our understanding of many issues around this practice, at the level of the household or form the perspective of women who undergo such abortions, is extremely limited. It is also limited about what actually compels couples or their families to resort to such a practice, who the real decision makers in the family are, what impact does aborting female foetus have on the physical or mental health of the women who typically undergoes abortion in the second trimester of her pregnancy. When women were asked about the decision making process if the foetus was found to be that of a female child, the overwhelming response was that after one or two daughters, if the women was found to be pregnant with another girl, the pressure on her to abort was enormous from her extended conjugal family. Women indicated that the decision to abort a female foetus was almost entirely that of their husbands and/or mothers- in-law. By themselves, women could not take the decision to go in for abortion. Women, who had virtually no decision-making power, apparently accepted whatever was desired by her conjugal family, including husbands. They simply accepted and went along with the decision made for them by others. We observed that women belonging to the higher social group sometime they themselves desire to abort a female foetus because they already have had one or two daughters. This feeling was strong among women belonging to highly educated social groups, who valued sons much more than daughters. Although they themselves, without much hesitation, would opt for abortion, they still would have to get the permission of the elders of the family to exercise their wish. According to (Manmohan Sharma 1999), activists in Punjab pointed out: "women are conditioned by social norms and they do not have independent views, they tend to ditto what the husbands say or think and this is considered as proper behavior for ideal wives .

According to (Wertz and Fletcher 1993), Liberty and value for human life are integral principles within the context of human rights. In the domain of female feticide these principles conflict. While pro-life supporters condemn as immoral the practice of female feticide, the parents assert their right to have a family of a particular sex composition. Legal support to discriminatory elimination of life is stated in the PNDT Act. Yet the principal of liberty, voiced as a parental choice to desire a small and sex- defined constituent family, falls in the gambit of a criminal choice. To attribute primacy to right to birth rather than to all-encompassing right to life is a reductionist approach. It is evident that cultural predispositions could not deny the right to birth, but could distort the natural life cycle (e.g. female infanticide). As is evident, legislation banning the use of sex determination tests has thus far not succeeded in deterring couples from seeking these tests or preventing the medical practitioners from performing them. Fundamental Rights, among others, ensure equality before the law and equal protection of law; prohibits discrimination against any citizen on grounds of religion, race, caste, sex or place of birth, and guarantee equality of opportunity to all citizens in matters relating to employment. Articles 14, 15, 15(3), 16, 39(a), 39(b), 39(c) and 42 of

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the Constitution are of specific importance in this regard. To uphold the Constitutional mandate, the State has enacted various legislative measures intended to ensure equal rights, to counter social discrimination and various forms of violence and atrocities and to provide support services especially to working women. But above all supportive measures women s treated as a second citizen in our society she do not even right to take decision for her own after the completion of 66 years of independence, no choice for her carrier, marriage she always saw the face of her man (father/husband/son) for taking a small decision even if now.

The maiden episode Satyamev Jayate is regarded as an eye-opener as it highlighted how unethical medical practitioners are hand in glove with families wanting to kill the female unborn baby and how highly educated women s are also involved in it. "The show is extremely hard hitting. It's strange that the most well educated women s carry out the worst of crimes like female feticide. First, people pay to get the girl child aborted .

V. Networking Of Government Doctors, Private Doctors, Anms And Dais

During our study we found sense a silent conspiracy between the government doctors, medical and paramedical staff and private doctors with regard to the illegal practice of sex determination tests leading to female feticide. The dais and ANMs often as go betweens and collect their honorarium. We also analysis that medical representative are a party to the game of making quick money. A tragic aspect of this is that very often doctors show utter disregard for medical ethics. The doctors know very well that through ultra sonography it is not possible to determine the sex of a foetus within 12 weeks of conception and yet they conduct these tests and indicate the results (invariably „it is a girl). Generally, this test is conducted only during the second and subsequent conceptions. But in few states like Punjab, Haryana, Chandigarh these kinds of test conducted even for the first conception. There were also cases of murder within the family when the young daughter-in-law refused to go for abortion after the very first conception. In rural areas where poorer people who were unable to afford MTPs went to quacks, often with fatal result. One such quack was a lady know as the „Dai , she used to sweep and mop in a doctor s clinic she is very popular among the people in the PHC area. Even in till date there is a huge violation of the act has been carried out due to the lust of the money making, even after the Supreme Court order we need to find out the long lasting solution for the cure of the problem and need to take collaborative step.

Sex ratio refers to ratio of females to males in a given region. Practices like female foeticide and female infanticide (killing a baby girl after she is born) have had an adverse effect on the sex ratio of a nation and gives rise to further social evils. As per the Indian Census 2011 report, the sex ratio of India (females per 1000 males) is as follows:

Average India sex ratio – 933, Rural sex ratio – 946, Urban sex ratio – 900, State with highest female sex ratio – Kerala – 1058, State with lowest female sex ratio – Haryana – 861.

Thus, we arrive to a conclusion that female foeticide is a devil in itself that lives amongst us and torments the lives of people all around it. So let s stand united and fight against this growing parasite.

VI. Conclusion

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The preference for a male child in large sections of our society even in highly educated groups to the root cause of an imbalanced sex ratio "Foeticide was invented, touted and sold by the medical profession, and it operates with the complete consent of all factors of our society.

Hence, above data shows that education plays an important role in women s life higher education extend the dimension of thought process of human being and it is also true that an educated woman can educate her upcoming seven generations. But we cannot deny this reality to that after getting a good education there are many constraints were waiting for women like family pressure, male dominancy, less power on resources etc which has bound the steps of women to take her own decisions and finally she have to do all they (including husband & in-laws) want. "We do not have the time to play around with these chocolates and ice-cream solutions. We have to do something more serious. All agencies must immediately join hands and launch a stricter crackdown so that no medical professional in this murderous practice can escape.

The study made it clear that a woman whether educated or highly educated rich or poor was not conscious of her own identify. It may be concluded that the banning of sex-determination test, though an essential and urgently required step, is not the final solution to the problem. In the long run, social prejudices against women have to be overcome by improving her status in society. So, Jaago India Jaago!!

VII. Suggestions

Apart from constitutional and legal provision we need to do apply few more steps for banning female foeticide in India like, through wide companying, road shows, nukkad natak, spreading education among educated people because they do not have time in their busy cluck so they need to skip time and keep concern towards this dam serious issue otherwise no doubt that the alarming bell is ringing over the head of our society that the society without the female for ex. Haryana, Chandigarh where the boys parent s were bagging for girl for the purpose of marriage from the other states without dowry. The long-term strategies should include education and empowerment of women. Empowerment among women s and education to improve their lot will heighten their status in the society. As the women sangthans and the federation gain in importance and play a greater role in the development of the area, it is hopes that their presence and the politico-economic strength they enable will help curb the practice. Also Media-both print and electronic-plays a very significant role in removing gender bias and developing a positive image of the girl child in the society. It is not easy to change overnight the attitude of even women towards females infanticide. Even if the women are prepared to understand and accept the need to change, the social situation and the family environment prevent them from doing so. Therefore, young married couples and pregnant women were given counseling so that they could cope with the situation, because they are surrounded by in laws and neighbors who are pro-female infanticide.

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स्त्री सबलीकरणाचे उपाय

डॉ.महेश प्रभाकरराव देशमुख
अर्थशास्त्र विभाग प्रमुख, श्री सिद्धेश्वर महविद्यालय, माजलगाव

प्रस्तावना :-

देवाधीकांच्या काळात महिलांकडे प्रमुख खाती होती. जसे अर्थ-लक्ष्मी, शिक्षण-सरस्वती आणि सुरक्षा – महाकाली. मनुस्मृतीत तिसऱ्याआणि नवव्या अध्यायात मनु लिहितात 'यत्र नार्यास्तु पुजन्ते, रमन्ते तत्र देवता' अर्थात जेथे नारीची पूजा केली जाते तेथे देवता वास करतात. वैदिक काळात स्त्री पुरुषांना समान अधिकार होते मुलांप्रमाणे मुलीचे उपनयनसंस्कार होत होते. त्यांना ऋषिका संबोधले जात होते. इ.स.पूर्व पाचव्या सहाव्या शतकात जैन बैध्द धर्माचा उदय झाला. या काळात वैदिक काळा इतकी स्त्रीयांना समानता नसली तरी समतेची व आदराची वागणूक दिली जात असे.पुढे मध्ययुगीन काळात (इ.स.१२००ते १८००) या काळात स्त्रीयांना असमानतेचे स्थान दिले.सध्या तर स्त्री ही उपभोगची वस्तू आहे असेच पहिले जाते. स्त्री आणि पुरुष विषमतेच्या निर्देशांकामध्ये जगामध्ये आपला क्रमांक १४८ पकी १३८ वा आहे. भारत सरकारने २००१ हे वर्ष महिला सबलीकरण वर्ष म्हणुन जाहीर केल. १९७५ ला जगभर आंतरराष्ट्रीय महिला दशक संयुक्त राष्ट्र संघाने जाहीर केले. तर दर वर्षी ८ मार्च हा दिवस जागतिक महिला दिन म्हणून साजरा केला जातो. दिन साजरे करण्यामागे महिलांचे सबलीकरण हा प्रमुख हेतु असल्याचे दिसून येते. समाजात सकारात्मक बदल व्हावा हा त्यामागचा उद्देश असतो.पण तसे होताना फरसे दिसत नाही.स्त्रियानवर होणारे अत्याचार वाढतच चालले आहेत.जणू काही प्रदेशानुसार स्पर्धाच चालू आहे असे दिसते. जसे निर्भया कांड किंवा कोपर्डीसारख्या अमानुष अत्याचाराच्या घटना. सध्या तीन 'प' अर्थात पिता, पती आणि पुत्र यांच्या बंधनात स्त्रीअडकली आहे.

प्रसूत शोध निबंधात स्त्री सबलीकरणासाठी आवश्यक घटकाचा याचा अभ्यास केला आहे.

उद्दिष्टे :- प्रस्तुत शोध निबंधाचे पुढील प्रमाणे.

१. महिला सबलीकरणाची आवशकतेचा अभ्यास करणे.

२. महिला सबलीकरणासाठी उपाय सुचवणे.

संशोधन पद्धती :- प्रस्तुत शोध निबंधासाठी दुय्यम स्वरूपाची माहितीचा आधार घेतला आहे. विविध संकेतस्थळाचा वापर केला आहे. तसेच वर्तमानपत्रे आणि संदर्भ ग्रंथाचा वापर केला आहे.स्थूल पद्धतीने विश्लेषण केलेले आहे.

सबलीकरण :-कायदे व कल्याण कार्यक्रमाच्या माध्यमातून आर्थिक, सामाजिक, शैक्षणिक व राजकीय सर्व क्षेत्रामध्ये महिलांना पुरुषांच्या बरोबरीने हक्क व दर्जा प्रदान करून देणे, विकासाठी संधी उपलब्ध करून देणे, आणि स्त्री-पुरुष असमानता नष्ट करणे या प्रक्रियेला स्त्री सबलीकरण असे म्हणतात.

असमानता :- वास्तविक स्त्री आणि पुरुषांना घटनेने समान अधिकार दिलेले असून अनेक बाबतीत पुरुषांचा अधिकार जास्त आहे.ही बाब स्त्रीयांच्या बाबतीत अन्यायकारक आहे.असे काही घटक पुढीलप्रमाणे.

१.संपत्तीवर हक्क :- विनामोबदला आणि घरगुती कामांमध्येमहिलांपुरुषांपेक्षा सात पटीने जास्त काम करतात,घरातील मौल्यवान संपत्तीवर ६० टक्के महिलांचे नाव नाही,जगभर स्त्री-पुरुष उत्पन्नातील तफावत सरासरी २४ टक्के आहे. अग्रेय आशियायी देशांमध्ये ही तफावत ३३ टक्के आहे.अधिकार पदावर काम करणाऱ्या महिलांचे प्रमाण अवघे ३३ टक्के आहे.जगभरात ५३ कोटी घरगुती काम करणाऱ्यांमध्ये ८३ टक्के प्रमाण महिलांचे आहे.

२.उत्पन्नातील तफावत :- जगभरात महिला आणि पुरुषांच्या उत्पन्नात आजही २४ टक्के तफावत असून भारतात हे प्रमाण ३५ टक्के आहे, मुले असूनही नोकरी करणाऱ्या महिलांचे उत्पन्नाची तफावत ४० टक्क्यांपेक्षा जास्त असल्याचे द प्रोगेस ऑफ ऑफ वर्ल्ड वुमन २०१५-१६- युनायटेड नेशन्सचा अहवालातून स्पष्ट झाले आहे.

३.स्त्रियांची घटणारी संख्या :-भारतात स्त्रियांची घटणारी लोकसंख्या चिंतेची बाब झाली आहे. २०११ सालच्या जनगणना अहवालानुसार भारतात १००० पुरुषांमागे ९४० स्त्रिया आहेत. म्हणजेच लिंग गुणोत्तर ९४० आहे. स्त्री-भ्रूणहत्या हा भारतातील चिंतेचा आणि गंभीर विषय आहे. गर्भामध्येच स्त्री अर्भकाची हत्या केली जाते. स्त्री- भ्रूण हत्या रोखण्यासाठी गावपातळीवरही विशेष प्रयत्न केले जात आहेत. विविध उपाययोजना करण्यात येत आहेत. तसंच हे प्रकार

थांबवण्यासाठी करडी नजर ठेवण्यात येत आहे. सरकारच्या 'बेटी पढाओ, बेटी बढाओ' या मोहिमेचा सकारात्मक परिणाम दिसून येत असला तरी, ही मोहीम सर्वदूर पोहोचलेली नाही

४.रोजगार :-भारतामध्ये आणि जगातील बऱ्याचशा भागामध्ये पुरुषांच्या तुलनेत खूप कमी स्त्रिया रोजगार मिळवतात.उत्पादनातील पितृसत्ताक रिती आणि भांडवलशाही संबंध यामुळे स्त्रियांना रोजगार मिळवताना दडपले जाते.

५.आरोग्य:- आरोग्याच्या बाबतीत सांगायचे झाले तर, पितृसत्ताक पद्धतीचा फटका मोठ्या प्रमाणात महिलांना बसतो. या पितृसत्ताक पद्धतीमुळे पुरुषांच्या तुलनेत महिलांना आरोग्याच्या सुविधा कमी प्रमाणात मिळतात किंवा त्या त्यांच्यापर्यंत पोहोचतच नाहीत. पितृसत्ताक पद्धतीत पुरुषांनाच अधिक प्राधान्य दिले जाते. महिला या आपल्या आरोग्याविषयक समस्यांची तक्रार करत नाहीत. स्वभाव गुणधर्मानुसार त्या आपल्याला झालेल्या आजारासंबंधीच्या तक्रारी सहसा करत नाहीत. अनेकदा त्यांना आरोग्य सेवा मिळालीच तरी, तोपर्यंत त्याला खूपच उशीर

६.घरकाम:-ग्रामीण भागांतील महिला या अधिकतर घरातलीच कामे करतात आणि त्याचा कोणताही मोबदला पैशांच्या स्वरुपात मिळत नाही. त्या विनावेतन काम करत आहेत. तसंच त्यांच्याकडे घराबाहेर पडून नोकरी करण्यासाठी सुद्धा वेळ नाही. याउलट जेव्हा शहरातील महिलांना नोकरी मिळते, तेव्हा त्यांच्या प्रवासाची सुरक्षा, कमी वेतन आणि लैंगिक छळवणुकीची चिंता सतावत असते.

७.शिक्षण:-शिक्षणाच्या बाबतीतही लिंगभाव आधारित विषमता असल्याचे दिसून येते. मुलांच्या तुलनेत मुलींची शाळेतील उपस्थिती खूप कमी आहे. मुलांपेक्षा मुलींच्या शाळेतील उपस्थितीच्या प्रमाणात घट झाली आहे. मुलींच्या शाळेतील उपस्थितीचे प्रमाण हे सरासरी ४.७ वर्षे इतके आहे, त्या तुलनेत मुलांचे शाळेतील उपस्थितीचे प्रमाण हे सरासरी ८.२ वर्षे इतके आहे. मुली या किशोरावस्थेत आल्यानंतर बऱ्याचदा त्यांना शाळेतून काढले जाते. त्यांना पुढचे शिक्षण घेऊ दिले जात नाही. मुलींना अर्धवट शिक्षण सोडून द्यावे लागते. मुलींचे शाळेतील गळतीचे प्रमाण वाढले आहे. त्याला शाळाही तितक्यात कारणीभूत आहेत. अनेक शाळांमध्ये मुलांसाठी आणि मुलींसाठी वेगवेगळे शौचालये उभारली जात नाहीत. या कारणामुळंही अनेक पालक हे आपल्या मुलींना शाळेत पाठवताना टाळाटाळ करताना दिसतात.

८.राजकारण :-गेल्या ५० वर्षांतील २० वर्षे देशाचे नेतृत्व हे महिलेकडे होते. मात्र, संसदेत महिलांचे प्रतिनिधीत्व १४.४ टक्क्यांनी (क्रमवारीत १२२ व्या स्थानी) कमी आहे. मंत्रिमंडळातील हेच प्रमाण २३ टक्के इतके आहे. भारतातील कार्पोरेट कंपन्यांच्या संचालक मंडळांमध्ये महिलांची संख्या नगण्य आहे. संचालक मंडळांवर महिलांची संख्या खूपच कमी आहे. वास्तवात ही शरमेची बाब आहे.

महिला सबलीकरणाची आवशकता

१. देशतील सर्वांगीण साधन संपत्तीच्या विकासासठी गरजेचे आहे.
२. महिला सबलीकरणामुळे सर्वच स्तरावर समता प्रस्थापित होईल.
३. स्त्री घटकांना मानसिक,सामाजिक,आर्थिक विकासाकरिता सबलीकरण आनश्यक आहे.
४. महिलांचे आरोग्य,मानसन्मान वाढवणे,निर्णयगणे जगणे,जीवनमान उंचवने या साठी सबलीकरण आवश्यक आहे.
५. राजकीय क्षेत्रात वाईट गुणांचा नाष करण्यासठी व निकोप राजकीय क्षेत्रात प्रवेश मिळवण्यासठी सबलीकरण आवश्यक आहे.
६. महिलांना आर्थिक समानता,हक्क,कर्तव्य,स्वअतीत्व याची जाणीव करून देण्यासाठी.
७. पुरुषांना स्त्रीच्या त्यागाची कर्तव्याची आणि सहनशीलतेची जाणीव करून देण्यासाठी.
८. महिला सर्वच क्षेत्रात पुरुषांच्या बरोबरीने अनेक जबाबदाऱ्या पेलू शकतील.
९. महिला संघटना मजबूत होण्यासाठी आणि महिलांवरील अन्यान,अत्याचार,गुन्हेगारी,दूर होण्यासाठी सबलीकरण आवश्यक आहे.

सबलीकरणासाठी उपाय

१. हुंडा प्रथा, स्त्री भ्रूणहत्या, निरक्षरता, लैंगिक अत्याचार, असमानता इत्यादींचा नाश करणे गरजेचे आहे

२. लिगि भेदभाव नष्ट करून समानता प्रस्थापित करणे, तसेच सामाजिक, घरगुती अन्याय व अत्याचार यांच्याविरुद्ध कठोर कायदे व उपाययोजना करणे आवश्यक आहे

३. महिलांना शारीरिक, सामाजिक, आर्थिक व मानसिक स्वरूपात सशक्त बनविणे

आवश्यक आहे.

४. महिलांना लघुउद्योग सुरु करण्यासाठी प्रशिक्षण आणि त्याविषयीच्या कायद्यांबद्दल मल्ला देण्यासाठी यंत्रणा असायला हव्यात.

५. महिलांसाठी तंत्रशिक्षण संस्था उभारायला हव्यात.

६. महिलांमध्ये व्यावसायिक दृष्टीकोन वाढवण्यासाठी खास प्रयत्न करायला हवेत.

७. महिलांचे दर्जेदार बचतगटांचे जाळे उभारायला हवे आणि त्याची व्याप्ती त्यांनी उद्योगात आपले योगदान द्यावे इतके वाढवावे.

८. महिलांसाठी कायदेविषयक माहिती केंद्रे असायला हवीत.

समारोप:-

महिला सबलीकरण म्हणजे फक्त कार्यक्रम, व्याख्यान घेऊन चालणार नाही. जोपर्यन्त मानवी मन बदलणार नाही तो पर्यंत स्त्री ही आबलाच राहणार आहे. विघातक प्रवृत्ती अर्थात हुंडा प्रथा, स्त्री भ्रूणहत्या, निरक्षरता, लैंगिक अत्याचार, असमानता इत्यादींचा नाश करणे गरजेचे आहे.

संदर्भ :

१. एम्पॉवरमेंट ऑफ विमेन : रिॲलिटी ॲण्ड - डॉ. ज्योती भाकरे, प्रो. सतीश मुंडे, प्रो. किरण शिंदे, डॉ. शुभदा घोलप, स्नेहवर्धन पब्लिशिंग हाऊस,पुणे.

२. द प्रोगेस ऑफ ऑफ वर्ल्ड वुमन २०१५-१६- युनायटेड नेशन्सचा अहवाल

३. Dr.Borse M.N., 'Research Methodology : Modern Methods and New Techniques

४. पदमिनी स्वामिनाथन, विमेन □न्ड वर्क,ओरिएन्ट ब्लॅकस्वॅन,नवी दिल्ली.

५. योजना सप्टेवर २०१६

६. वर्ल्ड इकॉनॉमिक फोरम' अहवाल २०१५

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Social Support for Individual-Development Game

Dr. Umesh Sadegaonkar,
Shri Siddheshwar Mahavidyalaya, Majalgaon



Preface :- With the exception of the first few months after the birth of a man, the younger siblings, parents, grandparents and close relatives the baby are trying to talk to and play with him. They talk to the baby and words out of him try to get the. Getting a response from the baby to all these efforts is the first socialization of the baby step in the. Man is an animal living in a group. An individual cannot develop himself, he needs a society. Individual development starts from the group. Learning to live in a group is one of the practical rules of that the learning and following the group. He is committed process of rules. He does not follow the rules set by the group . Staying in a group and thinking about co-operation others. Helping others with a sense of and help from others in personal development is socializing that person seeking the process of The work done by the co-workers in the group is organizational work. If manner is the work done in an organized done for a constructive purpose, then that work is also of great use to the society. Organized work is a guideline and a transformer in society. This is the process of socializing human beings. In the case of athletes, sports is a social experience.

According to John Loy,It is of special importance to see any person's sports in a social context.the importance of any individual game or social context is why children leave their own toys for a while. started to play when Ia collective game noblest I began to realize from the competition it games were created group to play than he is playing group game is a learning model that the son of the group's law tradition started to others in the community the game this person vikasasobataca the bringing the game development feel it an honor to care for groups of bhavantu group and team spirit growth is team the development groups behaving tuna Bring to trial and that he is trying to automatically increase the game level honor for themselves and the community others by following the standards the team's tradition of rule to keep team spirit to increase your level takes place others should go to the team's honor through this team to one another dedicated rate to keep the good behavior over another member, before respecting the feelings of others .

Marks Acquire the same sentiments development the overall development process to move . According to the Skinner and Harlman "The playground is the most suitable place for the personality and character building of the children and all provide appropriate opportunities for the development of social qualities. The sports group

provides such important training to the social behavior of the child which forms the basis of success of his future social life."

Sports group social development:- The process of socialization from the group comes in motion. The social development of the sports community is also driven by team spirit . LOY calledMan is social because he can be educated and he is educated because he is social social enhancements under the man's development of social maturity, social adjustment of the inclusion groups of interaction and behavior through this common Key development was the herd of children in social relations, social satisfied and more inside children Group Social is becoming the security experience like to play the things its purpose the process of development chelate social teaching happiness to them come together, two games group through is to accelerate Games and that their culture and tribe traditions ideal outfit language They are exchanged It was through this the game community's social development happens in process.

Sporting socialbase of Manes classical traditions:-

1 Group members is increased confidence in the
2 Group members is to trust your leadership on the
3 Groups were prepared Concord
4 All group members live in constant per one man and group
5 All members of the winning milavanya the they will play
6 Individual efforts along samurai I'm confident all on trying to
7 Is the same level of speed efforts of all members of the players in the group
8 Players who are motivated to take another example
9 Games are against the government through the application group
10 Winning credit and loss defects is similar for all

The closing net develop animated by the group at the end of man from birth herd animals is revenue modelsocial not tradition of motivation Yum then action to the social is not acquiring experience of early the becomes a social base game this dynamic becomes the herd individual development through the game faith willpower music work to win team spirit of faith mutual group members try to deal with the intended struggling community to get inspired by the example from another and earth application Governance Preparation of this The development of these socially minded elements along with personal development shapes the sports group and becomes the social basis.

Reference –

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JOURNAL OF SCIENTIFIC RESEARCH

J. Sci. Res. 12 (4), 525-536 (2020) www.banglajol.info/index.php/JSR

Modeling the Impact of Vaccination, Screening, Treatment on the Dynamics of Pneumonia

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Abstract

In this paper we have presented a deterministic model for pneumonia transmission and we have used the model to avail the potential impact of therapy. The model is based on the vaccinated-susceptible-carrier-infected-recovered-susceptible compartmental structure and their possible interventions with the possibility of infected individual recovery from natural immunity. Here, we have modeled Pneumonia considering vaccination, screening and treatment with a system of nonlinear ordinary differential equation. The model reproduction number R_0 is derived and the stability of the equilibria are derived. The stability of equilibrium points is analyzed. The results shows that there exists a locally stable disease free equilibrium points, E_0 when $R_0<1$ and a unique endemic equilibrium E_1, when $R_0>1$. Infection free point was found to be locally stable and if reproduction number is greater than unity, then there is unique endemic equilibrium point and if it is less than unity, the endemic equilibrium point is globally asymptotically stable and pneumonia will be eliminated.

Keywords: Mathematical modelling; Pneumonia; Reproduction number; Endemic equilibrium.

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doi: http://dx.doi.org/10.3329/jsr.v12i4.45815 J. Sci. Res. 12 (4), 525-536 (2020)

1. Introduction

Pneumonia is an infection of the lungs that is caused by bacteria, viruses, fungi, or parasites which is characterized primarily by inflammation in the lungs or by alveoli that are filled with fluid. Bacteria and viruses are the primary causes of pneumonia. When a person breath pneumonia causing pathogens into his lungs, and the body's immune system cannot prevent entry, the organisms settle in the small air sacs called alveoli and continue to multiply. The host body sends white blood cells to attack the infection causing the sacs to be filled with fluid and pus causing pneumonia. The people most susceptible to pneumonia are the old, infant, the sick and those with impaired immune systems [1].

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On Validation of Pneumonia Model with Infected population and Vaccination

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Abstract :

In this paper, we present the pneumonia model on the basis of its validation with infected population & vaccination. We have formulated and described the pneumonia model. To validate this model we have studied the following properties existence and uniqueness of solution invariant region and the positivity of solution and the results are established.

Keywords : *Mathematics modeling, pneumonia, reproduction number, endemic equilibrium*

1. Introduction :

In the report of WHO 2013, "Infectious diseases are the leading cause of death in human beings." According to the fact sheet of WHO, 2013 sixteen percent of all deaths each year are from infectious diseases that means over 9.5 million deaths annually attribute to infectious diseases, with most of them in developing countries from 9.5 million annual death, "Pneumonia and other respiratory infectious cause about 2 million child deaths yearly in developing countries." (WHO 2015)

Pneumonia is an inflammatory condition of the lungs affecting the microscopic air sacs (alveoli) and is usually associated with fever, chest symptoms and lack of air space (cosmolidation) on a chest (MC Lucke and Leach 2009). It is typically caused by infection. Infectious agents include; bacteria, viruses, fungi and parasites (Luckie, 20090). Classic pneumonia is normally caused by streptococuss pneumoniae (Pnemococcocus) (Dum, 2005). Pneumocystosis is commonly found in the lungs of healthy people with a weak immune system. here we have studied and developed a pneumonia model with infected population and vaccination.

2. Model Formulation and Description :

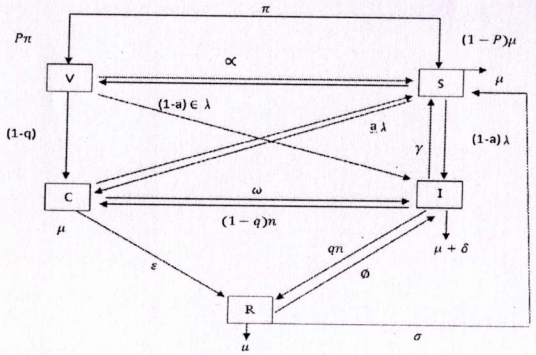

Fig. : A Compartmental Diagram for the Pneumonia Transmission dynamics

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A tuberculosis model : Validating to study transmission dynamics with vaccination and treatment

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(Received August 15, 2020)

Abstract

In this paper, we have analyzed the validation of the tuberculosis model for its transmission dynamics. Here, we have seen the existence and uniqueness of solution, invariant region, positivity of solution, equilibrium points and basic reproduction number. We have calculated disease free equilibrium points and R.

1 Introduction

Tuberculosis (TB) is one of the top 10 causes of death worldwide. It is caused by bacteria (Mycobacterium tuberculosis) that most often affects the lungs. TB is curable and preventable. TB is spread from person to person through the air. When people with lungs TB cough, sneeze or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected. About one-third of the world population has latent TB, which means people have been

Keywords and phrases : Tuberculosis, existence and uniqueness, invariant, positivity, DFE
2010 AMS Subject Classification : 92B05, 92C60, 34D20, 92D30
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Shri. Siddheshwar Mahavidyalaya Majalgaon Dist.Beed 431131(MH)

Solid State Technology
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Approximate Series Solution of Malaria Model using HAM

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Abstract— In this paper , we employed a non-perturbation method known as the homotopy analysis method to get the near to exact series solutions of nonlinear equations describing the transmissions dynamics of malaria disease. The series solution is compared with Euler's method and resulted in complete agreement with it.

Keywords- *Malaria, Homotopy analysis method (HAM), series solution, nonlinear equations, Euler's method*

I. INTRODUCTION

Malaria transmission is studied for about 100 years to find a measure for its cure. Malaria is probably a cause od death in certain parts [1]. The factors which affects the spread of malaria are poverty, climate, etc. The initiation of disease malaria comes from the parasite plasmodium falciparum. The infected female mosquitoes, infect humans through biting. If the susceptible mosquito bites infected humans then it too gets infected.[9]

In this paper, we describe a non-perturbation technique called the (HAM) is used to provide series solutions of nonlinear equations of malaria disease model. HAM is used widely to solve different types of nonlinear problems in science and engineering.

Awawdeh etal [6] studied the proficiency of HAM for solving a system of 1st order nonlinear differential equations for the dynamics of disease. The HAM approximations to the solution of the model are reliable and confirm its validity for nonlinear problems. Vahdati etal [7] applied HAM to SIR epidemic model of nonlinear differential equations. The authors obtained fast convergence series solutions which further confirm the potential of HAM in handling nonlinear problems.

II. FORMULATION AND DESCRIPTION OF THE MODEL

Table 1. Description of Model Variable

Variable	Description
S_h	Susceptible no. of humans
I_h	Infected no. of humans
R_h	Recovered no. of humans
S_v	Susceptible no. of mosquitoes
I_v	Infected no. of mosquitoes.
N_h	Total human population

(11)

20-21

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Variational Iteration Method for Solving Tuberculosis Model

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***Abstract*—**This study investigates the application of variational iteration method to find the approximate solution of Tuberculosis model. It uses the method of general Lagrange multiplier for constructing the correctional function for the problem. Euler's method is used to compare the results obtained by variational iteration method and both are in complete agreement with each other

Keywords- *Tuberculosis model, variational iteration method, solution, Euler's method.*

I. INTRODUCTION

Tuberculosis (TB) is a bacteria caused disease by Mycobacterium tuberculosis which mainly affects the lungs [1]. It is usually transmitted if the air particles produced by infected persons are inhaled when they laugh, sing, sneeze or cough. Nearly 20 years after the World Health Organization declaration of TB as a global emergency, it remains a problem as the decline is slow and the mortality rate is high worldwide, the delay in diagnosis that perpetuate transmission in the communities and the 90% multi-drug resistant TB cases that are not on proper treatment [2].

In 1999, the variational iteration method (VIM) was introduced by He in [3].The interpretations of the real-life situations have lead mathematicians to the formulation of nonlinear differential equations. Real life situation are communicated when the equations in which they are transformed into are solved. Variational iteration method (VIM) is the promising method for solving nonlinear differential equations [4] demonstrated the applicability of the VIM for solving a nonlinear system of second order boundary values problems [5] applied the VIM to solve general Riccati differential equations in a direct without restrictive assumptions or transformations.

II. FORMULATION AND DESCRIPTION OF THE MODEL.

The human population is divided into six classes namely V, S, E, I, Res, R described as vaccinated humans, susceptible humans, exposed humans, infected humans, resistant to first line of treatment, recovered humans. Thus total human population is given as

$N=V+S+E+I+Res+R$.

In the given model, the recruitment of the susceptible human population is given by birth λ. Let σ be the loss of immunity after recovered and returns to susceptible. Let (μ) be the natural death rate at each class and β be the force of infection. Let deaths due to disease be (φ), recovery rate be (α) and resistant to the first line of treatment be (θ). H (α) and (γ) be the partial amount of immunity develop by classes (I) and (Res) respectively. Deaths at resistant class be (φ_1) whereas the R class losing their partial immunity be σ. Let δ be the waning rate of vaccines.

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Analysis Numerical Solution of VSCIR Pneumonia Model by using Laplace Decomposition Method

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Abstract

In this paper, model analysis is presented using analytic and numerical methods and the analytic series solution of the pneumonia model is approximated. Laplace – Adomian Decomposition method (LADM) is applied to pneumonia model. It is analysed with Euler's method and is found to be in agreement with it.

Keywords: *Differential equation, Laplace – Adomian Decomposition method (LADM),Pneumonia model, Euler's method, solution.*

1. Introduction

Pneumonia is a high – incidence respiratory disease known by an inflammatory condition of the lungs. The micro organismswhich caused it namely: bacteria, viruses, and parasites and fungi. The susceptible causing pneumonia bacteria is said to be the leading cause [1], [2] especially Streptococcus Pneumoniae [3], [4], [5]. The bacteria mutiply in numbers after going into the lungs where they settle down inside the alveoli and passages. The region is surrounded with fluid and pus [6]. This inhibit the supply of oxygen and creates problematic condition in breathing.

Despite the increasing focus on the Millennium Development Goal 4 of United Nation – MDG [7] " to reduce child mortality" almost 1.9 million children still die from pneumonia each year in the developing countries, accounting for 20% deaths globally [8]. Within three days death can occur if untreated [9].

The notion of the present theme is to find a simple series solution of the VSCIR pneumonia model. to acquire this goal we deduce the basic equation of the VSCIR

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Shri Siddheshwar Mahavidyalaya Majalgaon Dist.Beed-431131(MH)

Effect of substituent and nonlinear optical properties of borazine using quantum chemical methods

* *V. P. Deshmukh*

Introduction

A cation –π interaction is a non-covalent interaction involvingaromatic systems. It results from the electrostatic force of attraction between a negative potential generated at the face of the π-system which attracts the cation to its surface.[1–4] This isconsidered to be one of the weakest forces that occur between alkali metal cations and π-electrons of arene rings.[5] Such weak electrostatic forces of attraction were not well recognized until the pioneering work of Dougherty.[6–8] Later on, execution ofimportant theoretical gas phase studies and the electrostatic model, proposed by Kebarle, established the fundamental features of the cation –π interaction.[9] The strength of the cation–π interaction (similar to Li+ binding to benzene with 38 kcalmol"1 of binding energy and NH4+ with 19 kcal mol"1) is alsopredicted via experimental as well as theoretical calculations.[10–12] In recent years, this non-covalent interactionhas been recognized as a major force for molecular recognition,[13,14] bringing together the hydrophobic effects, hydrogenbonds, and the ion pairs in determining macromolecular structures and drug–receptor interactions.[15] Many studies have established the importance of the cation–π

interaction on numerous biological processes.[16-19] The role of the cation–π interactio in understanding the stereochemistry of chiralmolecules has also been well explored i various asymmetric synthesis.[20-22]

It is important to mention herein that to date, many theoreticalstudies have been perform to understand the fundamental aspects of the cation–π interaction and the streng ofsuch interactions.[23] And in many cases, it is the organic aromaticsystems which a of importance as they also play apivotal role in biological systems.[24] However, le attention hasbeen paid to understanding the nature of such interactions within borazin the so called "Inorganic Benzene".[25,26] Borazine and benzene are misnomers with simil physical properties and varied chemical properties.[27] The lower aromaticity of borazi and the involvement of electropositive (B)and electronegative (N) atoms make th molecule an attractive target for π-interaction by cations.

Borazine, the inorganic analogue of benzene, is obtained by replacing the carbon atom with alternating boron and nitrogen atoms and shares many similarities with the benze both in structures and characteristics.[28-35] Planar structure, equal bond lengths and t similarity in physical properties to benzene entitle borazine to be named as 'inorgan benzene'.[36] However, the chemical properties of borazine are entirely different fro those of benzene.[37-42] Borazine readily undergo several polar addition reactions that a difficult with benzene. Theoretical studies have shown that six p electrons are significant localized on nitrogen atoms due to the large electronegativity difference between bor and nitrogen.[43-45] Although borazine is aromatic it remains still in controversy[46], but i the fact that borazine is considerably less aromatic as compared to benzene. In th work, we have studied the change in nonlinear properties in terms of a, b, and c valu of borazine upon derivatisation with electron donating and withdrawing groups in t form of D-p-A system. Many studies have reported that organic NLO chromophor especially those demonstrating high b values, typically have large dipole moments.[

The aim of this work is to study nonlinear optical properties (NLO) using quant chemical method alongwith density functional theory method. We compare t geometrical properties and nonlinear optical properties of borazine with availa experimental values.

Computational details

We first optimized the geometries of borazie with the density functional theory (DFT) method with different exchange and correlation functional. We compared the geometrical parameters with the experimental values and found that the geometries of borazine at B3LYP/6-311++G** level of theory. The geometrical parameters of borazine at this level are compared with the available experimental determinations.[48]The vibrational frequencies are also obtained at the same level of theory. To obtain the first and second hyperpolariz abilities of these molecules the Finite-Field approach has been used.[49-50]The hyperpolariz abilities viz. β and γ can be calculated using the total energy E of a molecule in presence of an applied field. The field is applied either in X, Y or Z direction. The stable hyperpolariz abilities are obtained using different field strengths to avoid numerical instability. The static hyperpolariz abilities β and γ are also obtained for various methods and basis sets for the fixed field strength. All the calculations are carried out using Gaussian 03 suit of programme.[51]

Result and Discussion

Figure 1 shows the optimized structures of borazine at B3LYP/6-311++G** level of theory. The bond lengths, angles and dipole moment for these molecules are reported in Table 1 along with the available experimental values.[48]It can be seen that the geometrical parameters for borazine are in good agreement with the experimental determinations at this level of theory.

Figure 1. Optimized structures of borazine at B3LYP/6-311++G** level of theory.

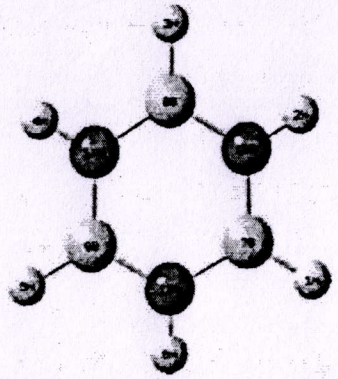

Table 1. Optimized geometries for borazine molecule at B3LYP/6-311++G** level along with experimental values. Bond lengths in Å, angle in degrees and dipole moment in debye.

Parameters	Expt.*	Borazine(B3N3H6)
B-N	1.436 ±0.004	1.431
B-H	1.258 ±0.020	1.191
N-H	1.050 ±0.020	1.008
<N-B-N	117.7 ±2.0	117.0
<B-N-B	121.1 ±2.0	122.9
<H-B-N	——	121.4
<H-N-B	——	118.5
Dipole moment	——	0.01D

Abbreviation: B- $B_3N_3H_6$, * Experimental values from ref [22].

Nonlinear Optical Properties

There are several techniques to calculate the hyperpolarizabilities. The dipole momen or total energy based equation of a molecule can be used to calculate th hyperpolarizabilities. The hyperpolarizabilities by the energy and dipole moment base equations do not give the same result. The energy based equations give more stabl result with respect to the field strength than the dipole moment based equation. W have obtained the NLO properties of borazine using the Finite-Field approach. W confine our attention to β and γ of borazine. The Finite–Field method is a derivativ method, so numerical problem can't be avoided. For the calculation of NLO propertie one can prevent numerical instability by choosing the value of appropriate field strengt by obtaining β and γ at various field strengths.

We have used B3LYP/6-311++G** level to obtain NLO properties of borazine. We firs applied Finite–Field of different field strength either in X, Y or Z direction to decide th suitable field strength in order to obtain the numerical stable hyperpolarizabilities. W then obtained the hyperpolarizabilities of borazine using different methods for the five field strength.

The variation of β and γ of borazine with field strength applied either in X, Y or Z direction is shown in Fig.2. As can be seen from Fig.2, borazine show numerically stable hyperpolarizabilities at a certain range of field strength applied along Y direction. From Fig.2, we choose the field strength of 0.008a.u. to calculate the hyperpolarizabilities of borazine using different methods with 6-311++G** basis set to see the effect of level of theory on hyperpolarizabilities.

Figure 3. Effect of field strength of β and γ values of borazine.

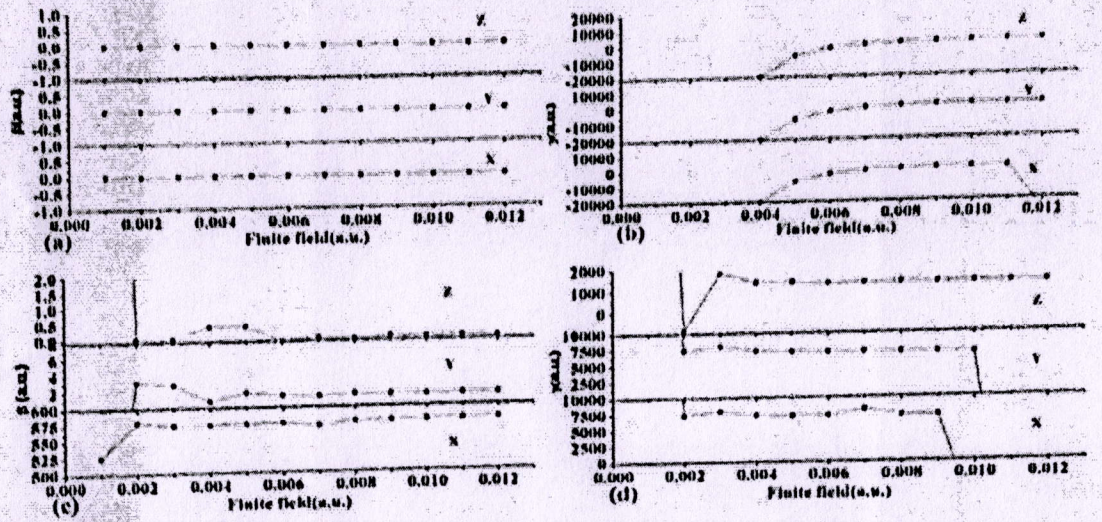

Fig. 3.

The variation of β and γ of borazine obtained using different methods and 6-311++G** basis set with field strength of 0.008a.u. applied in Y direction is shown in Fig. 4. It appears clearly from Fig. 4 that the magnitude of calculated β values for borazine is around 1 a.u. for all the methods used here. The calculated γ values for borazineis in a range of 300-400 a.u. using different methods used here. The magnitude of β is higher where there is no inclusion of diffuse function in the basis set. The values of β obtained using MP2 are slightly higher than the DFT method. The correlation effect by the MP2 method increases the β at the HF level. The β values using DFT with different exchange and correlation functional viz. PBE1PBE, PBEPBE, B3PW91 and BLYP are nearly equal for all the basis sets with the same method. As seen in Fig. 4(b) when diffuse functions are added to the split valence triple zeta basis set (6-311G), the magnitude of γ obtained using different methods changes significantly.

Figure 4. Method and basis set dependence of β and γ for borazine.

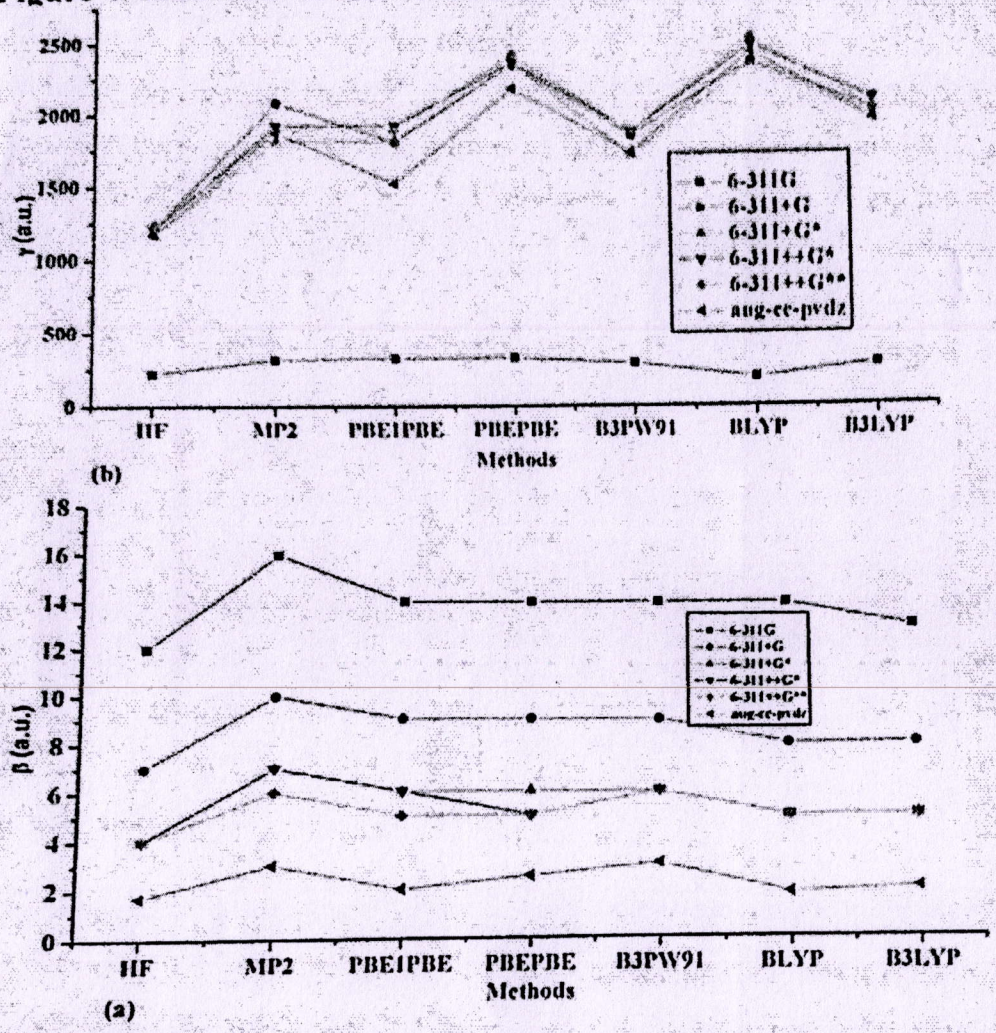

Figure 4.

Conclusions

We have performed DFT calculations for the study of first and second hyperpolariz abilities (β and γ) of borazine. The optimized geometries and vibrational frequencies for borazine are in excellent agreement with the available experimental determinations. The substituent effect on NLO properties of borazine has been investigated by using finite field method. The β and γ values are calculated at field strength of 0.008a.u. for borazine and substituted borazines using different methods and different basis sets. A large change in dipole moment is observed in borazine.

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Theoretical Investigation of Non-Linear Optical (NLO) Properties of Benzene

* *V. P. Deshmukh*

Introduction

Searching for new materials with non-linear optical (NLO) response is an important research area. Nonlinear optical materials with large NLO responses have been a challenge for materials scientists and chemists. Recently, organic polymers have received attention regarding their NLO properties. Organic NLO materials have potential applications in areas such as electrooptics and photonics.There is a continuing interest in development of optical materials which would be suitable for manufacturing of photonic switches and other devices. The molecular materials with quadratic nonlinear optical (NLO)response to electromagnetic field have been studied over the lasttwo decades [1–16].

NLO properties of ð-conjugated molecules such as benzene and substituted benzene are of great interest to understand the phenomenon associated with the designing and construction of photonic devices. The molecular structure of benzene has been determined by electron diffraction [17-19].Soscún et. al. have calculated linear dipole polarizability and nonlinear second dipole hyperpolarizability of benzene using ab-initio

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SCF-MO restricted Hartree-Fock (HF) method [20]. Zhu et. al. have studied the effect of the field, basis set, functionals and cavity size on molecular polarizabilities and hyperpolarizabilities of substituted benzene in different solvents [21]. We report here on a systematic computational investigation of the NLO properties of benzene using density functional theory (DFT).

Computational details

Geometry optimizations were carried out using *Gaussian* suit of program [22]. The geometries of benzene molecule have optimized using DFT method with different basis set. DFT with B3LYP, B3PW91 and PBEPBE exchange and correlation functionals have been used for the geometry optimization of benzene molecule. Using these calculations we decided the level of theory at which benzene molecule show the lowest energy and the minimum energy structure. These minimum energy structures are then used to calculate NLO properties of benzene at various levels of theory.

Results and Discussion

We first optimized the geometries of benzene molecule at different levels to obtain the lowest energy structure. We have used DFT method with different exchange and correlation functionals. It is found that the benzene molecule shows the lowest energy at B3LYP/6-311++G** level among different levels of theories used here. Table I represents bond lengths and angles for benzene at different levels used here alongwith the experimental determinations [17].

TABLE 1. Geometrical parameters for benzene obtained using different methods with 6-311++G** basis set alongwith experimental values. Bond lengths in Å and angles in degree.

Bond length/ angle	B3LYP	B3PW91	PBEPBE	HF	Expt.*
C-C	1.395	1.392	1.400	1.386	1.397a
C-H	1.084	1.085	1.092	1.075	1.102a
<C-C-C	120	120	120	120	---
<C-C-H	120	120	120	120	---

[a] Experimental values from ref. [13].

We have also used here various basis sets viz. 6-311G, 6-311+G, 6-311+G*, 6-311++G*, 6-311++G** with different methods to obtain NLO properties of benzene. We have applied Finite-Field of different strength either in X, Y or Z direction for the benzene molecule to decide the suitable field strength in order to obtain the numerical stable hyperporizabilities. The geometries of benzeneoptimized at B3LYP/6-311++G** level have been used here since at this level of theory benzenemolecule shows the lowest energy among different levels used here. Once the suitable field strength is decided to prevent the numerical instability, we then obtained hyperporizabilities of benzeneusing different methods and basis sets. Figure 1(a) and 1(b) shows the variation of â and ã respectively of benzene with field strengths applied either in X, Y or Z direction using the Finite-Field method.In Fig. 1, the hyperpolarizability values after certain field strength are the large negative values which are not shown in Fig. 1. We have shown only positive values in Fig. 1. Figure 1 shows that the necessity of applying different field strengths in order to avoid the numerical instability. From Figure 1, it can be said that benzene molecule shows numerical stable hyperporizabilities at a certain range of field strength applied either in X, Y or Z direction. Therefore we have chosen field strength of 0.006 a.u. to calculate the hyperporizabilities of benzene using different methods and basis sets. We have obtained hyperporizabilities using different levels of theory in addition to B3LYP/6-311++G** level with field strength of 0.006 a.u. applied either in X, Y or Z direction. We can consider hyperporizabilities obtained at B3LYP/6-311++G** level as the reference since at this level of theory the benzene molecule show the lowest energy, geometrical parameters and vibrational frequencies are in excellent agreement with the experimental determinations.

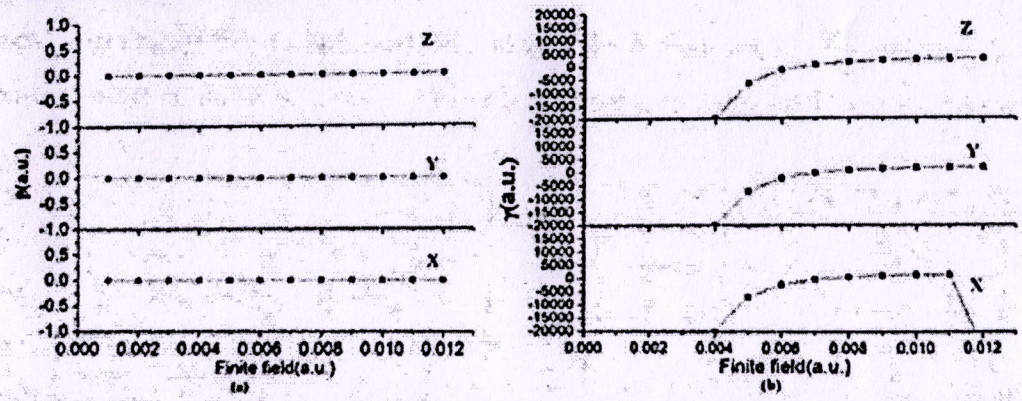

FIGURE 1. Variation of β and γ for benzene with field strength at B3LYP/6-311++G** level.

The β values are zero irrespective of the level of theory and direction in the applied field. However γ values are nonzero for benzene as can be seen from Fig. 2. Figure 2 shows the variation of γ of benzene obtained using different methods and basis sets with field strength of 0.006 a.u. applied either in X, Y or Z direction.

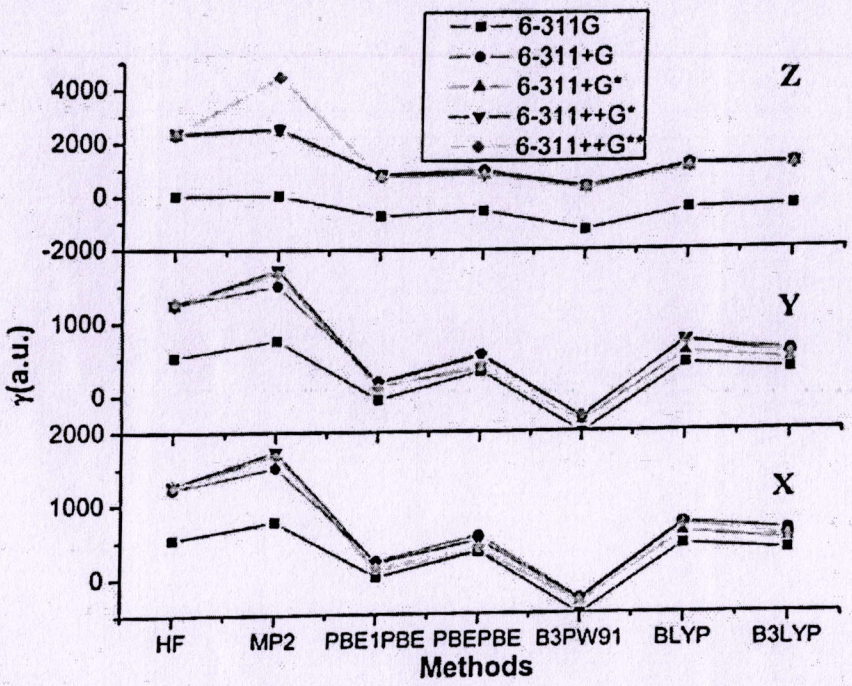

FIGURE 2. Variation in γ for benzene obtained using various methods and basis sets using field strength of 0.006 a.u..

Conclusions

We studied NLO properties of benzene molecule. The field is applied either in X, Y or Z direction. Benzene shows zero β values irrespective of the applied field direction. There is no large change in β values of benzene. However a significant increase in β values is obtained for the field applied in X direction. Large γ values are also obtained for the benzene. Among different levels of theory used here for obtaining the hyperpolarizabilities, MP2 level shows higher β and γ values than the DFT method with different exchange and correlation functionals. The optimized geometries obtained at B3LYP/6-311++G** level of theory are in excellent agreement with the experimental determinations.

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Shri Siddheshwar Mahavidyalaya Majalgaon Dist. Beed-431131(MH)

Nonlinear Optical (NLO) Properties of Borazine using Density Functional Theory method

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Shri Siddheshwar Mahavidyalaya, Majalgaon Dist. Beed (MS)

Abstract:

In this work, density functional theory (DFT) and finite field (FF) approach has been adopted to study nonlinear optical (NLO) properties of borazine. The geometrical parameters and NLO properties obtained at B3LYP/6-311++G** level of theory. For the calculations of first (β) and second (γ) hyperpolarizabilities, the finite field approach has been used. The geometrical parameters and vibrational frequencies for borazine at this level of theory are in excellent agreement with the available experimental determinations. Systematic changes in the β and γ values are obtained.

Keywords: Borazine, DFT, Finite field approach, NLO properties.

*Corresponding author: Vinayak Deshmukh (Email id:dvinayaka@gmail.com)

Introduction:

Nonlinear optics refers to any light-induced change in the optical properties of a material. Its domain encompasses those phenomena for which electric and magnetic intensities of higher powers than the first play a dominant role? Nonlinear optics is the basis of all the fledging photonic technologies, where light works with or even replaces electrons in applications traditionally carried out by microelectronics. Nonlinear optics has applications in the domain of optoelectronics and photonics, and materials with high nonlinear optical properties are used in high performance electro optic switching elements for telecommunication and optical information processing. There is growing attention in materials with high non-linear optical (NLO) properties due to their potential application in technologies such as lasers, telecommunications, photovoltaic cells, organic light emitting diodes, and semiconductor layers in field-effect transistors [1] information processing and holography. Nonlinear optical (NLO) phenomena have been extensively studied over the last decades; molecules exhibiting large hyperpolarizabilities have a strong NLO potential and could be used, under conditions, for optoelectronics and a variety of optical devices [2-5].

Borazine, the inorganic analogue of benzene, is obtained by replacing the carbon atoms with alternating boron and nitrogen atoms and shares many similarities with the benzene both in structures and characteristics [6–8]. Planar structure, equal bond lengths and the similarity in physical properties to benzene entitle borazine to be named as 'inorganic benzene' [9]. However,

the chemical properties of borazine are entirely different from those of benzene [10–13]. Borazine readily undergo several polar addition reactions that are difficult with benzene. Theoretical studies have shown that six p electrons are significantly localized on nitrogen atoms due to the large electronegativity difference between boron and nitrogen [14–16]. Although borazine is aromatic it remains still in controversy [17–19], but it is the fact that borazine is considerably less aromatic as compared to benzene. In this work, we have studied the change in nonlinear properties in terms of a, b, and c values of borazine upon derivatisation with electron donating and withdrawing groups in the form of D-p-A system. Many studies have reported that organic NLO chromophores, especially those demonstrating high b values, typically have large dipole moments [20-21].

The aim of this work is to study nonlinear optical properties (NLO) using density functional theory method. We compare the geometrical properties and nonlinear optical properties of borazine with available experimental values.

Computational details

We first optimized the geometries of borazie with the density functional theory (DFT) method with different exchange and correlation functional. We compared the geometrical parameters with the experimental values and found that the geometries of borazine at B3LYP/6-311++G** level of theory. The geometrical parameters of borazine at this level are compared with the available experimental determinations [22]. The vibrational frequencies are also obtained at the same level of theory. To obtain the first and second hyperpolarizabilities of these molecules the Finite-Field approach has been used [23]. The hyperpolarizabilities viz. β and γ can be calculated using the total energy E of a molecule in presence of an applied field. The field is applied either in X, Y or Z direction. The stable hyperpolarizabilities are obtained using different field strengths to avoid numerical instability. The static hyperpolarizabilities β and γ are also obtained for various methods and basis sets for the fixed field strength. All the calculations are carried out using Gaussian 03 suit of programme [24].

Result and Discussion

Figure 1 shows the optimized structures of borazine at B3LYP/6-311++G** level of theory. The bond lengths, angles and dipole moment for these molecules are reported in Table 1 alongwith the available experimental values [22]. It can be seen that the geometrical parameters for borazine are in good agreement with the experimental determinations at this level of theory.

Figure 1. Optimized structures of borazine at B3LYP/6-311++G** level of theory.

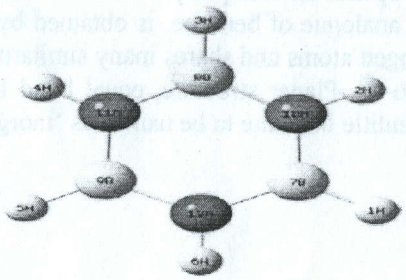

Figure 3. Effect of field strength of β and γ values of borazine.

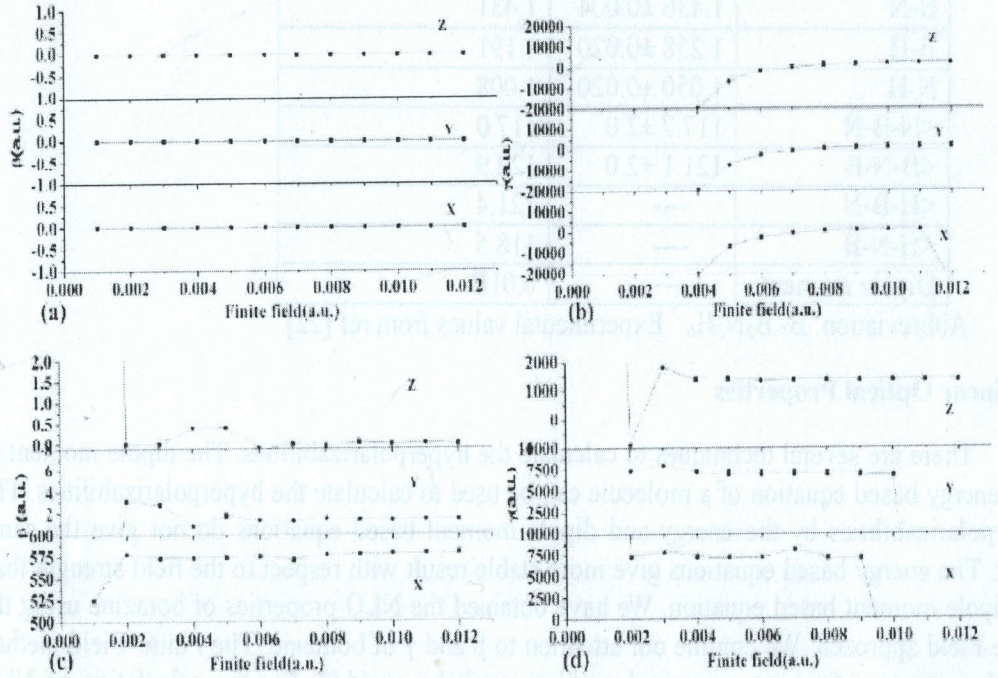

Fig. 3.

The variation of β and γ of borazine obtained using different methods and 6-311++G** basis set with field strength of 0.006 a.u. applied in Y direction is shown in Fig. 4. It appears clearly from Fig. 4 that the magnitude of calculated β values for borazine is around 1 a.u. for all the methods used here. The calculated γ values for borazine is in a range of 300-400 a.u. using different methods used here. The magnitude of β is higher where there is no inclusion of diffuse function in the basis set. The values of β obtained using MP2 are slightly higher than the DFT method. The correlation effect by the MP2 method increases the β at the HF level. The β values using DFT with different exchange and correlation functional viz. PBE1PBE, PBEPBE, B3PW91 and BLYP are nearly equal for all the basis sets with the same method. As seen in Fig. 4(b) when diffuse functions are added to the split valence triple zeta basis set (6-311G), the magnitude of γ obtained using different methods changes significantly.

Table 1. Optimized geometries for borazine molecule at B3LYP/6-311++G** level alongwith experimental values. Bond lengths in Å, angle in degrees and dipole moment in debye.

Parameters	Expt.*	Borazine(B3N3H6)
B-N	1.436 ±0.004	1.431
B-H	1.258 ±0.020	1.191
N-H	1.050 ±0.020	1.008
<N-B-N	117.7 ±2.0	117.0
<B-N-B	121.1 +2.0	122.9
<H-B-N	----	121.4
<H-N-B	----	118.5
Dipole moment	----	0.01D

Abbreviation: B- $B_3N_3H_6$ * Experimental values from ref [22].

Nonlinear Optical Properties

There are several techniques to calculate the hyperpolarizabilities. The dipole moment or total energy based equation of a molecule can be used to calculate the hyperpolarizabilities. The hyperpolarizabilities by the energy and dipole moment based equations do not give the same result. The energy based equations give more stable result with respect to the field strength than the dipole moment based equation. We have obtained the NLO properties of borazine using the Finite-Field approach. We confine our attention to β and γ of borazine. The Finite–Field method is a derivative method, so numerical problem can't be avoided. For the calculation of NLO properties one can prevent numerical instability by choosing the value of appropriate field strength by obtaining β and γ at various field strengths.

We have used B3LYP/6-311++G** level to obtain NLO properties of borazine. We first applied Finite–Field of different field strength either in X, Y or Z direction to decide the suitable field strength in order to obtain the numerical stable hyperpolarizabilities. We then obtained the hyperpolarizabilities of borazine using different methods for the fixed field strength.

The variation of β and γ of borazine with field strength applied either in X, Y or Z direction is shown in Fig. 2. As can be seen from Fig. 2, borazine show numerically stable hyperpolarizabilities at a certain range of field strength applied along Y direction. From Fig. 2, we choose the field strength of 0.006 a.u. to calculate the hyperpolarizabilities of borazine using different methods with 6-311++G** basis set to see the effect of level of theory on hyperpolarizabilities.

Figure 3. Effect of field strength of β and γ values of borazine.

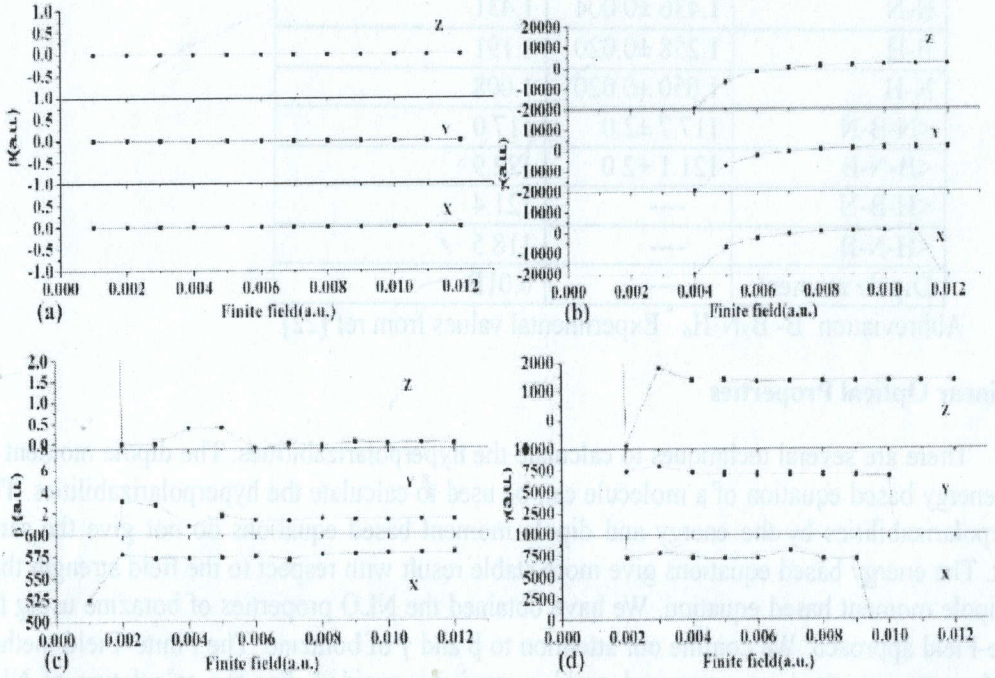

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Figure 4. Method and basis set dependence of β and γ for borazine.

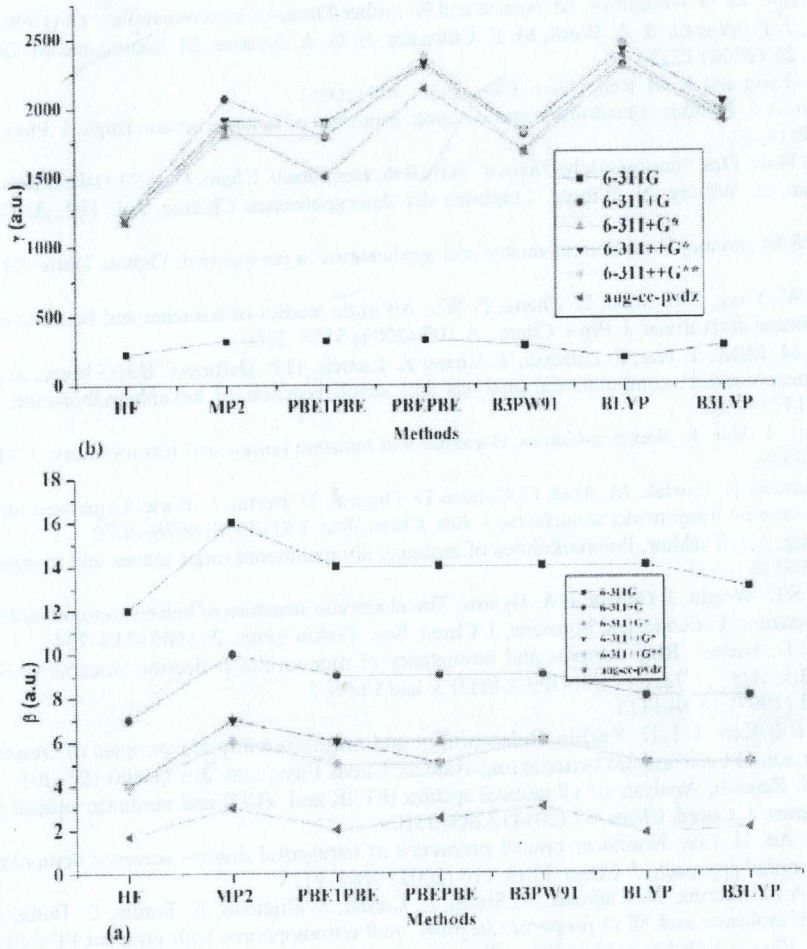

Figure 4.

Conclusions

We have performed DFT calculations for the study of first and second hyperpolarizabilities (β and γ) of borazine. The optimized geometries and vibrational frequencies for borazine are in excellent agreement with the available experimental determinations. The substituent effect on NLO properties of borazine has been investigated by using finite field method. The β and γ values are calculated at field strength of 0.006 a.u. for borazine and substituted borazines using different methods and different basis sets. A large change in dipole moment is observed in borazine.

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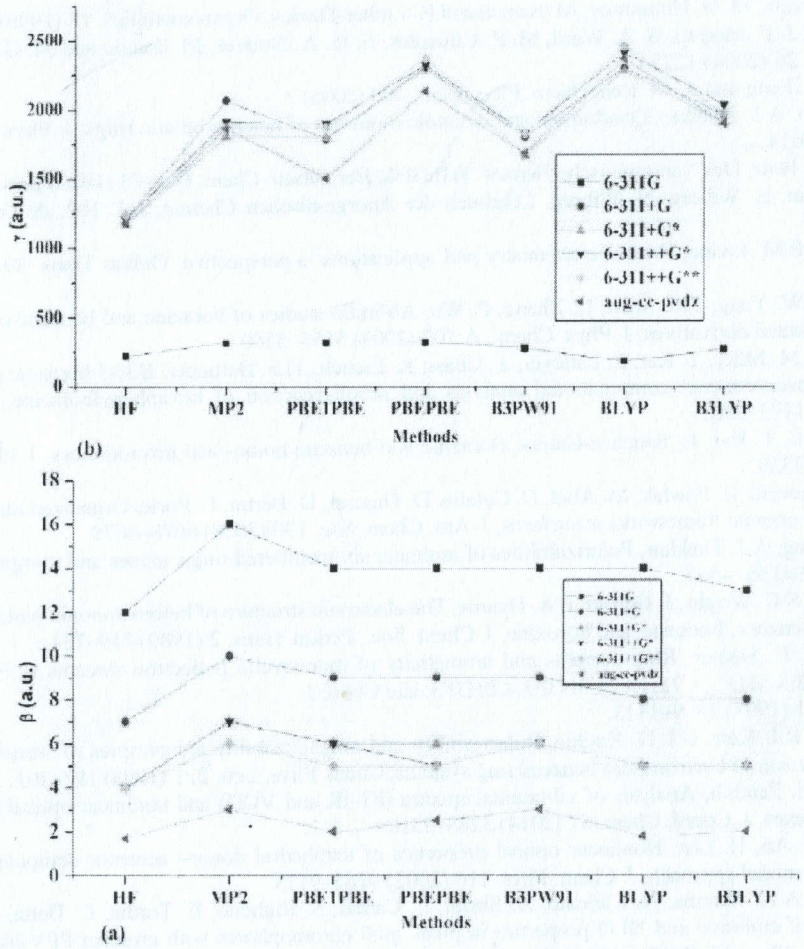

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Graph theoretic models: for social networks using graph theory brief survey

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Abstract:-

Graph theory serves of the efficient model of social network analysis and provides the vocabulary which consist several primitive concept. Several properties of social network can be representing of social network as a model. Which often to helpful to researchers.

Introduction:-

Social network is multidisciplinary research area they are involving mathematical, statistical,political science, sociology,and computer science and commerce management. Graph theory forms a basis for functional interdisciplinary approach and linguistic. Coherence in the area of social network analysis. In social networking we consists the set of elements such as individuals, families, household etc. with relationship that exists between the social networks.

1. Relationship friendship network.
2. Networks of analysis between them
3. Collaboration with all relationship social relations.

In this paper we provide a brief survey of graphtheoretic models for representing social network, graph theoretic measure required to analyzing the network along with specific applications of case study. The growth of social network analysis during the past two decade is so rapid, i.e. is it almost impossible to curve of the important concept in such a small survey. Many researchers are studied the area of graph model in social network by Hararyetal[9]&Wasserman Focusts[3]Arungman& B.Vasdnthi[3] Scott[6]. The book by cross and parker[4] is about the network of organization. They are development of network science along the application of various disciplines ranging from the computer science, business public health, internet, virus, counters measures, social network behavior biology and physics. In this paper we present the some of basic definition of graph theory are essential, for formatting basic network properties. For details study of basic graph theory we refer to books study of basic graph theory we refer to books Parker,[5]Easely and Kelihberg[6], Chartrand and Lesiniak[7] West[8]. The recent book by lewis[9] it gives the excellent account to development of network science along with applications of network to barrios disciplines ranging from computer science, business public health internet, social network behavior biology and physics.

2.Graph and Directed graphs:-In this section we present some of the basic destinations in graph theory which are essential for formulating basic network properties for detail study of basic graph theory we refer to NarsinghDeo[10] and Chart rand &Lesniak [7] &West [8] Any relationship between the element of social network is said to be symmetric of two element x,y in network. S,x related to y then y related to$x$.

A social network can be modeled as graph directed graph, depending on weather relationships [3].

2.1Definitions: -A graph is pair of set (V,[E]) where V is the vertices and E is the set of edge Formed by pairs of vertices E is multistep in other word. Its elements can occurs more than once so that every element has multiplicity often we label to the vertices lathers for example a,b,c, or $v_1,v_2,$ ..... of the element in V .

2.2Definition sub graph : - Let H be a graph with vertex set V(H) a the edge set E(H), and similarly let G be the graph with vertex (V(G)) and edge set E(G) then H is sub graph of G. If $v(H) \subset V(G)$ and $E(H) \subset E(G)$ in such case we also say that G is super graph of H.

2.3Definition proper sub graph :-If H is sub graph of G then we write HCG when HCG but H+G or V(H) =V(G) or E(H)=E(G) then H is called proper subgraph of G.

2.4Spanning sub graph :- A spanning sub graph on n vertices is sub graph of G is sub graph H with V(H)=V(G) i.e. H & G have exactly the same vertex set.

2.5 Directed graph: -D is pair (V, A) V is finite nonempty set and the element A are ordered pair of distinct vertices of V. The elements of A re called arcs If(u,V)EA then u is called the initial vertex and v is called terminal vertex of arc(u,V);

2.6Simple / multi graph: - If a graph doesn't have parallel edges (multiple)occurrences of an edge and self loops then it is said to simple graph. The self loop is an edge whose end vertices are the same. A graph which is not simple is called multiple graphs. The number of distinct unordered pair (V_1,V_2) with v_i, v_j in graph vertices is n(n-1)/2 the maximum number of edge in any vertex undirected graphs. A vertex undirected graph with exactly $n(n-1)/edges$ is said to be complete graph.

2.7Bipartite graph - A graph G is said to be the bipartite if the vertex set V(G) can be the partitioned into two disjoint nonempty parts x,y such that every edge has one end – vertex in x then y such partition $[x,y]$ is called bipartition of G & bipartite graph is denoted by $G[x,y]$

A bipartite graph $G[x,y]$ is called complete bipartite graph if every vertex in x is joined to every vertex in y we abherivate $G[xy]$ to K_{mn} if $|x|=m$ $|y|=n$.

2.6 Node :- A single linked consists of a series of items is called node. In graph theory various tree models are respectively the various applications of networks. In this paper we studied only various types of graph theoretical models in social networks.

3.1 Affiliationnetwork:-Bipartite graph occurs natural way of social network they consist of two types nodes, a set of actors and a set of events if the actor has participate in the event & members of different professional societies & node representing an individual is a member of society. Research on affiliation network has two major activates namely understanding of the relationalstructures of eventattractly common participants.

3.2 Data Collection Graph theoretic models in social network arise from the data collected from the network a rising the set data. Data has been collected the set of 30 woman's of student of kalasalingam university in post graduate class who have already spent one year together. Each student was asked to provided the list of students of his class with whom he/she shares his/her personal problems clearly the relation is not symmetric & hence the collected data gives a directed graphs on 30 nodes when gives fig1[12].

Data has been collected from the set 30 spent one year together. Each student we asked to provide the list of student of his class with whom he/she share his/her personal problems. Clearly the relation is not the symmetric hence the collected data gives a directed graphs on 30 nodes

The analysis of this directed graph in context or reciprocity in social networks. Each student was asked to provide the list of students in class with whom he/she shares his/her personal problems & hen the same were cross checked for validation. Since the sharing of personal problem is not a symmetric relation the above data gives a directed graph D=(V, A). Where the vertex set v is the set of 30 student & (U,v) is an arein A. if U shares hispersonal problems with V. The results directed graphs is and the number of reciprocal pain of are directed graph on 30 vertices is (30,29) =870. The density of the directed graph is 71/870 =0.0815 among the 30 vertices is the directed graph 13 vertices represent male students and 17 vertices represent female students.

The set of male student and the set of female student are respectively M={1,3,4,5,10,11,15,17,21,24,28,29} & F=V-M out of the total of 22 receproject pair of arc's 7 pairs more between males and 15 pairs of females was quite rare. Taking into account the fact Kalaslingam University is located the remote rural area. In the country the cultural background is such that boys and girls don not move freely. It is not surprising to note the presence of very few arc joining two nodes one representing a male and other representing a female. Also the presence of higher number of reciprocal pair in the subnetwork of female student shows that the mutual personal sharing the ore frequent among female students. There are the several fundamental theorems in graph theory which are useful and relevant for social network analysis. We mention a few such results.

Acollection $s_1,s_2,\ldots\ldots s_k$ $k \geq 1$ or finite nonempty sets is said to have a system of distinct representative(SDR) if there exists a set $\{ s_1,s_2,\ldots\ldots s_k\}$ of the distinct elements such that $s_i \in S_i$ Hall[11] proved the following theorem. Distinctrepresentative if only if the union of any j of these set contains at least j elements for each j such that $1 \leq j \leq k$.

The above theorem is directly related to the following well known marriage problem Givens the set of boys and the set of girls where each girl known some of the boys under what the condition can all girls get married each to boy she known? It follows from the above theorem that if there are K girls then the marriage problem has solution if and only if subset i of j girls ($i \leq j \leq k$) collectively known at least j.

3.4 Theorem :A signed graph is widely balanced if and only if the vertex set can be portioned into two or more subsets such that every positive edge join two vertices of the same subset of every negative edge join two vertices of two different subsets.

4.1Dominating sets & structural Equivalence:- The concept of domination has the important applications in the context of social network. For example in a network where the actors are people in an organization x if we wish to form a committee consisting of a few members than it is desirable that every member not in the committee known at least one member of the committee. This ensures that members not in the committee can easily pass on information to the member of the committee is dominating set in the networks. If a member in committee does not know any other member in the committee. They gives concept of total domination which was introduced by cock et al[13].

4.2Definition: - A set $S \subset V$ is said to be a dominating set of G if every vertex in $V - S$ is adjacent to some vertex in S. A dominating set S of G is called a total dominating set if no vertex in S is an isolated vertex in S.the minimum no of vertices in dominating set of G is called domination number of vertices in a dominating set G is called domination number of F it is denoted by V(G) & the minimum number of vertices in total dominating set of G is called total domination number of G is denoted by V(G).

4.3 A minimal dominating set from which no vertex can be removed without destroying its dominance property. A minimal dominating set { a,c,d,f} are observations that follows from the definitions are :

1) Any one vertex in complete graph constituter's a minimal dominating set.

2) Every dominating set contains at least one minimal dominating set.

The vertex V_i we must be either include V_i of any of the vertices adjacent V_i A minimal set satisfy is the conditions for every vartex$_{V_i}$ is the directed sets.

In global social network they may be dense of subgroups which might be perhaps a group of friend or group of people living the locality. Dense subgraphs often represent the network structure dynamic and evolution. There are several terminologies that describe such

cohesive subgroups in a network. Researcher in social network introduced the problem of identifying such subsets & the computation of most these parameters are notoriously hard combinations problems. Since this is the multidisciplinary research area involving the social science & graph theory,as shown in fig.

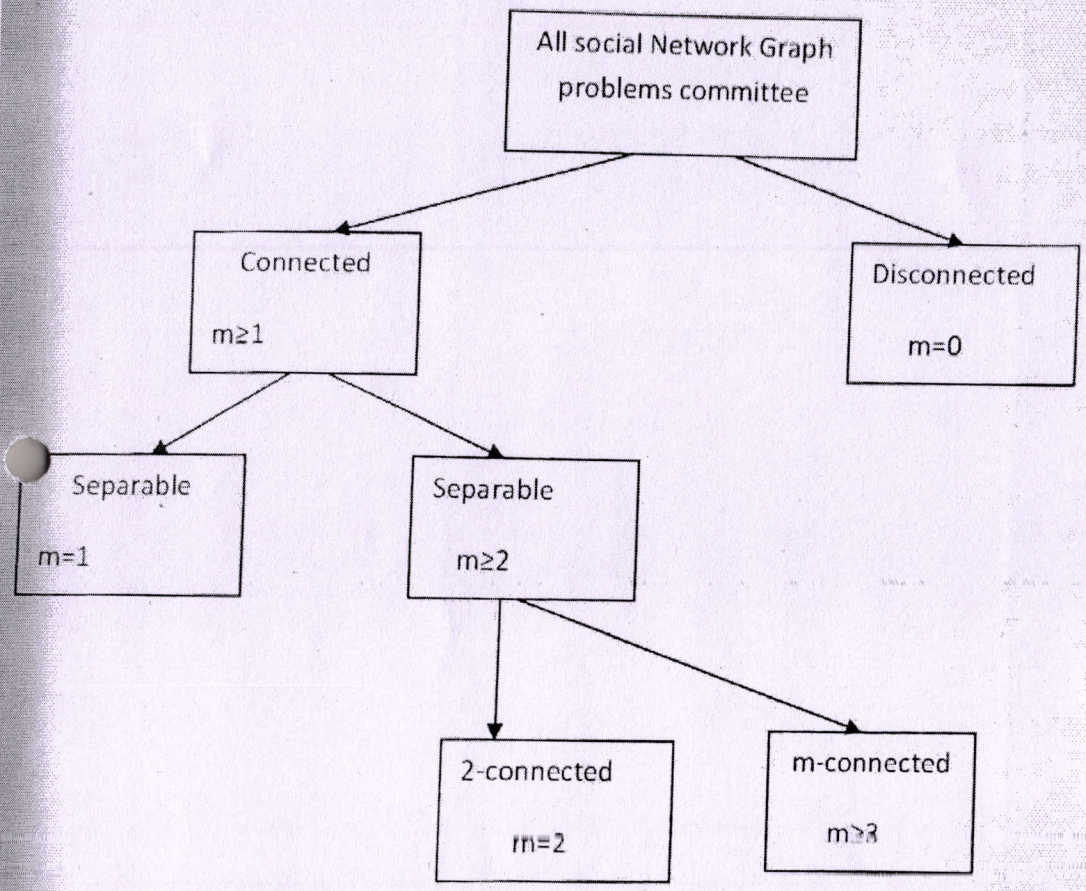

Fig 1

Conclusion: Brief survey mean's is exhaustive on graph theoretic models or study social network along with a few research directions and a case study have been presented. They construct social network based on small data collected leady to better understanding of the system.

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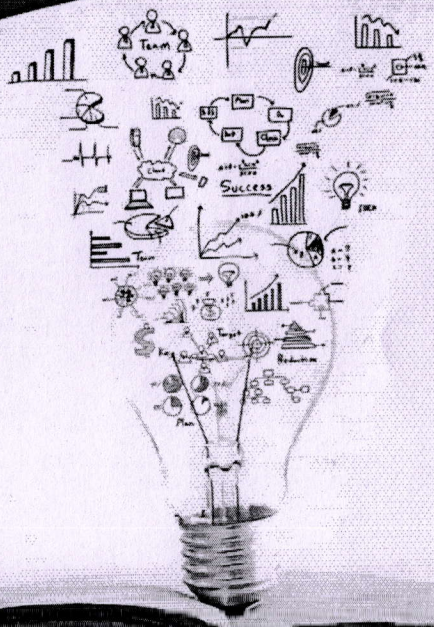

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Existence and Extremal Solution for Fractional Order Differential Equation in Partial Ordered Normed Linear Space

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Abstract: In this paper, we study the existence and extremal solutions for fractional order differential equation in Partial ordered normed linear space under mixed Lipchitz and carathcodory conditions by using hybrid fixed point theorem. The results are illustrated by a concrete example.

Keywords: Existence and Extremal solutions, Fractional order Differential Equation, Partial Ordered Normed Linear Space, Hybrid Fixed Point Theorem.

1. Introduction:

Fractional differential equations has been subjected to an intensive development of theory and applications[1].it is useful in various field of applied science andengineering. The class of the fractional operator equations of various type play very important role of physics, chemistry biology, economics, control theory, feedback amplifier and electrical circuits.[2-4]. Recently differential equations are involved the fractional derivatives for solving the existence and uniqueness solutions of nonlinear problems by using the hybrid fixed point. The quadratic perturbations equation are also called as hybrid fractional differential equations. First time they studied Dhage and Lakshmikantham [5].

It well known that hybrid fixed point theorem are using the mixed arguments of the differential equations. They are combine to the topological arguments with some order related to hybrid fixed point theorem for mapping of ordered space under some mixed compactness and monotonic conditions [6].The Kuratowaskii[8],and housedroft[7].The measure compactness tool for discussing various aspect of the theory of nonlinear equations in the literature they have approaches to new partial ordered norm linear space and subsequently exploited to drive some consequence.. referApel [9] Banas[10], Dhage[11], Nieto and Lopez[12].A partially ordered normed linear space are interesting consequence study of the nonlinear hybrid functional differential and integral equations for proving the existence ,extremely ,locallyattractivity results on unbounded intervals of real line[13].The useful to develop and the algorithms of solutions for some nonlinear functional equations .

In this chapter we have study the existence result is obtained for hybrid functional differential equations of fractional order in partially normed linear space by using hybrid fixed point theorem due to B. C. Dhage.

$$\left.\begin{aligned} x^{\alpha}(t) &= f\left(t, x(t), x(\gamma(t))\right) + g\left(t, x(t)x(\beta(t))\right) \\ x(0) &= 0 \end{aligned}\right\} \quad (1.1)$$

Where α denote the order of the fractional of derivatives.

$f: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$, $g: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ and $\alpha, \beta: \mathbb{R}_+ \to \mathbb{R}_+ t \in \mathbb{R}_+$ is continuous, non-decreasing with respect to both variables t and $x$separately. In next section we give the some preliminaries and fixed point theorem that will be used in subsequent part of the chapter. In section 3 and 4 we established the main result and we provided an example to illustrate our result.

2.Preliminaries

In this section we give definitions, notations,and preliminary tools are which be used sequel.

Partially Ordered Linear Space:

Definitation2.1[14]: A relation defined on a non-empty set X is said to be a partial ord denoted by $\preccurlyeq x$, on X if it is reflexive, antisymmetric and transitive. The ordered pa $(X, \preccurlyeq)$ is called a partial ordered set. The elements$x, y \epsilon X$ are said to be comparable either to $x \preccurlyeq y$ or $y \preccurlyeq x$.In case every pair of element in X are comparable with respe to $\preccurlyeq$ then $\preccurlyeq$ is said to be total order relation and $(X, \preccurlyeq)$is called totally ordered set (chain or linear ordered set).

Definition2.2[14]: Let $(X, \preccurlyeq)$ be a partially ordered set and $A \subset X$ then

a) An element $a \epsilon X$ is said to be a least upper bound for A if $x \preccurlyeq a \ \forall \ x \epsilon A$ an upper boun $a^*$of A is said to be upper bound (superemum) of A if $a^* \preccurlyeq a$ for every upper bound A

b) Lower bound and greatest lower bound (infimum) for A can be defined similarly.

c) An element $M \epsilon A$ is said to be a maximal element of A if $M \preccurlyeq x \Rightarrow M = x, \ \forall \ x \epsilon A$ an similarly, an element of A if $x \preccurlyeq m \Rightarrow m = x, \forall x \epsilon A$.for all n

Defintion2.3[16]: Let E be the real vector space or linear space we introduced the partia ordered $\preccurlyeq$ in E as follows it is known that E is regular if $\{x_n\}$ is non-decreasing sequenc in E such that $x_n \rightarrow x^*$ as $n \rightarrow \infty$ then $x_n \preccurlyeq x^*$(resp $x_n \succcurlyeq x^*$) for all $n \epsilon N$.The details o ordered Banach space and operator theoretic technique are given in Heikkila an Lakshmikantham[15] and dhage[16].

Definition 2.4[16]: A mapping $T: X \rightarrow X$ is called monotone non-decreasing if preserves the order relation $\preccurlyeq$ that is if $x \preccurlyeq y$ implies $Tx \preccurlyeq Ty$for all $x, y \in X$.Similarly is called monotone non-increasing if $x \preccurlyeq y$ implies $Tx \succcurlyeq Ty$ for all $x, y \epsilon X$. A monotone mapping T is one which is either monotone non decreasing or monotone non- increasing on X.

Definition 2.5[16,17]: A mapping $T: E \rightarrow E$ is called the continuous partially continuous at a point $a \epsilon E$ if for $\epsilon > 0$ there exists a $\delta > 0$such that $\|Tx - Ta\| < \epsilon$whenever x is comparable to a and $\|x - a\| \leq \delta$.$T$is called partially continuous on E if it is Paratially continuous at every point of it .It is clearly T is partially continuous on E, then it is continuous on Every chain C contained E.

Definition2.6[16,17]: A mapping $T: E \rightarrow E$ is called the partially bounded if $T(C)$is bounded for every chain C in TIs called uniformly partially bounded if all chain $T(C)$ in E are bounded by a unique constant. $T$is called bounded if $T(E)$ is a bounded subset of E

Definition 2.7[16, 17]: A mapping $T: E \rightarrow E$ is called partially compact if $T(C)$ is a relatively compact subset if E for all totally ordered sets or chain Con E. $T$is called uniformly Partially compact if $T(C)$ is uniformly bounded and partially compact on E.$T$is called partially totally bounded if for any totally ordered and bounded subset C of E $T(C)$is relatively compact subset of E If T is Partially continuous and partially totally bounded then it is called partially completely continuous on E.

Remark 2.1 Note that every compact mapping on partially normed linear space is partially compact and every partially compact mapping is partially totally bounded. Again every completely continuous mapping is partially continuous and every partially

completely continuous mapping is partially continuous and partially totally bounded, but the converse may not be true.

Definition2.8 [16]: the order relation $\preccurlyeq$ and the matric D on an non empty set E are said to be Compatible if $\{x_n\}$ is monotone, that is monotone non-decreasing sequence in E and if $\{x_{n_k}\}$ or $\{x_n\}$ converges to x^* implies that the whole sequence $\{x_{n_k}\}$ or $\{x_n\}$ converges to x^*.Similarly, given partially ordered normed linear space $(E, \preccurlyeq, \|.\|)$, the order relation $\preccurlyeq$ and the norm $\|.\|$are said to be compatible if $\preccurlyeq$ and the metric d defined through the norm$\|.\|$ is compatible.

Clearly the set of $\mathbb{R}$ of real numbers with usual order relation $\preccurlyeq$ and the norm defined by the absolute value function has this properties are similarly, every compact subset of the space $(\mathbb{R}_+, \mathbb{R})$ with usual order relation defined by $x \preccurlyeq y$ if and only if $x(t) \leq y(t)$ for all $t \in \mathbb{R}_+$and usual standard superemum norm $\|.\|$ defined by $\|x\| = \underbrace{sup}_{t\in\mathbb{R}_+} |x(t)|$.

Theorem2.1 [16]:let $(E, \preccurlyeq, \|.\|)$be a partially ordered linear space and suppose that the norm in E is such that E is complete normed linear space .Let $T: E \to E$be non-decreasing, partially compact and continuous mapping. Further if the order relation $\preccurlyeq$ and the norm $\|.\|$ in E are compatible and if there is an element $x_0 \in E$ satisfying $x_0 \preccurlyeq Tx_0$ or $Tx_0 \succcurlyeq Tx_0$ then T has a fixed point x^* and the sequence $\{T^n x_0\}$ of successive iterations converges to x^*

Remark 2.2[18]. The theorem 2.1 is true if we replace the compatibility of the order relation $\preccurlyeq$and norm $\|.\|$ in every compact chain C of E whenever if every partially compact subset of E possess the compatibility property with respect to $\preccurlyeq$and$\|.\|$.

We note the theorem 2.1 is very much useful to proving the existence theorem of several dynamical systems in nonlinear analysis modeled on nonlinear differential and integral equation (Dhage and Dhage[17]).

Definition 2.9[6]: A mapping $\psi: \mathbb{R}_+ \to \mathbb{R}_+$ is called dominating functions or in short D-function if it is an ψn upper semi-continuous and monotonic non-decreasing functions satisfying $\psi(0) = 0$ be satisfying $\psi(r) < r \; for \; r > 0$ then $\lim_{n\to\infty} \psi^n(t) = 0$ for each

Definition2.10 [18]: If $\emptyset, \psi: \mathbb{R}_+ \to \mathbb{R}_+$be two D-functions then i) $\emptyset + \psi$,ii)$\lambda\emptyset > 0$, iii) $\emptyset \circ \psi$ are also D-functions on $\mathbb{R}_+$.the setoff all D-functions is defined and denoted by $\mathcal{D}$.

Definiation2.11 [18]: Let$(E, \preccurlyeq, \|.\|)$be a partially ordered normed linear space A mapping $T: E \to E$ is called partially nonlinear $\mathcal{D}-$ Lipschitz if there exists a $\mathcal{D}$ −function $\psi: \mathbb{R}_+ \to \mathbb{R}_+$ such that

$$\|Tx - Ty\| \leq \psi(\|x - y\|) \qquad (2.1)$$

For all comparable elements $x, y \in E$ if$\psi(r) = kr, k > 0$, Then T is called a partially Lipschtiz with Lpischtiz constant k,if $k < 1, T$ is called partially contraction with contraction constant k. Finally T is called partially nonlinear $\mathcal{D}-$ Lipschtiz with $\psi(r) < r \; for \; r > 0$.

Definition2.11[1]: The Riemann-Liouville fractional integral of order $q$with lower limit zero for a function f is defined as

$$I^q f(t) = \frac{1}{\Gamma(q)} \int_0^t \frac{f(s)}{(t-s)^{1-q}} ds \quad t > 0. q > 0$$

Which provided the right hand –side is point wise defined on $[0, \infty)$ whre $\Gamma(.)$ is gamma function.

Defintion2.12 [1]: The R-L Fractional derivative of order, $q > 0$,

$n-1 < q < n$, $n \epsilon N$defined as

$$D_{0^+}^q f(t) = \frac{1}{\Gamma(n-q)} \left(\frac{d}{dt}\right)^n \int_0^t (t-s)^{n-q-1} f(s)\, ds$$

Where f(t) has absolutely continuous derivatives up to order $(n-1)$

3. Existence Theory:

Defintion3.1[19]: Let$(E, \preccurlyeq, \|.\|)$ Be a partially ordered normed linear algebra. Denote

$$E^+ = \{x \epsilon E \mid x \succcurlyeq \theta\} \text{and} K = \{E^+ \subset E | uv \epsilon E^+\} \qquad (3.1)$$

Where θzero element of E .The members of K is are called positive vectors in E.

Lemma 3.1(Dhage[18]): If $p_1, p_2, q_1, q_2 \epsilon K$ are such that $p_1 \leq q_1$ and $p_2 \leq q_2$then $p_1, p_2 \leq q_1, q_2$.

Definition 3.2[18]: An operator $T: E \to E$is said to be positive if the range of $R(T)$ o such that $R(T) \subset K$ be any two chain $c_1$and $c_2$in E, denote

$$C_1 C_2 = \{x \epsilon E |\ x = c_1 c_2, c_1 \epsilon C_1 \text{ and } c_2 \epsilon C_2\} \qquad (3.2)$$

Theorem3.1 [18]: Let $\mathbb{S}$ be nonempty, partially bounded and closed subset of a regu partially ordered complete normed linear space $\mathbb{E}$ such that the order relation $\preccurlyeq$ and norm $\|.\|$ are compatible in every compact chain $\mathbb{C}$ of $\mathbb{E}$ Let $\mathbb{A}: \mathbb{E} \to \mathbb{E}$ and $\mathbb{B}: \mathbb{S} \to$ be two nondecreasing operators such that,

a) $\mathbb{A}$ is a partially nonlinear $\mathcal{D}$-contraction.

b) $\mathbb{B}$ is partially Completely Continuous

c) $\mathbb{A}x + \mathbb{B}x \in \mathbb{S}$ for all $x \in \mathbb{S}$, and

d) there exists an element $\alpha_o \in \mathbb{S}$ such that $\alpha_o \preccurlyeq \mathbb{A}\alpha_o + \mathbb{B}\alpha_o$

Then the operator equation $\mathbb{A}x + \mathbb{B}x = x$ has a solution x^* in $\mathbb{S}$ and the sequence $\{x_n\}$ successive iterations defined by $x_{n+1} = Ax_n + Bx_n$ for $n = 0,1,23 \ldots \ldots$ converg monotonically to x^*.

Now Fractional differential equations NFDE (1.1) will be investigated underd following assumptions;

H_1) The function$\gamma, \beta: \mathbb{R}_+ \to \mathbb{R}_+$ are continuous.

H_2) There the exists function $f: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ such that

$$\left|f\left(t, x(t), x(\gamma(t))\right) - f\left(t, y(t), y(\gamma(t))\right)\right|$$

$$\leq k(t) max|x(t) - y(t)|\left|x(\gamma(t)) - y(\gamma(t))\right| \; a.e t \epsilon \mathbb{R}_+ \; \forall x, y \epsilon \mathbb{R}$$

H_3)The function $f\left(t, x, x(\gamma(t))\right) = f: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ is satisfying carathedory condition with continuous function $h(t): \mathbb{R}_+ \to \mathbb{R}$ such that $|f(t,x)| \leq h(t)$,$\forall\, t \epsilon \mathbb{R}_+$ and $x, y \epsilon \mathbb{R}$.

H_4) The function $g\left(t, x, x(\beta(t))\right) = g: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ is satisfying carathedory condition with continuous function $h(t): \mathbb{R}_+ \to \mathbb{R}$ such that $|t, x| \leq h(t)$,$\forall\, t \epsilon \mathbb{R}_+$ and $x, \epsilon \mathbb{R}$.

H_5) The function $v: \mathbb{R}_+ \to \mathbb{R}$ defined by formula $v(t) = \int_0^t \frac{h(t)}{(t-s)^{1-\beta}} ds$ is bounded on $\mathbb{R}_+$and vanish at infinity, that is $\lim_{t \to \infty} v(t) = 0$

)there exists are an element $x_0 \epsilon BC(R_+, R)$such that

$$x_0(t) \leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t, x_0(t), x_0(\gamma(t))]}{(t-s)^{1-\alpha}} ds + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g[t, x_0(t), x_0(\gamma(t))]}{(t-s)^{1-\alpha}}$$

Or$x_0(t) \geq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f|t, x_0(t), x_0(\gamma(t))|}{(t-s)^{1-\alpha}} ds + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g|t, x_0(t), x_0(\gamma(t))|}{(t-s)^{1-\alpha}} \forall t \epsilon R_+$ and $f, g: \mathbb{R}_+ \times \mathbb{R} \times \mathbb{R} \to \mathbb{R}$ are continuous.

Remark3.1: If the hypothesis $H_3 - H_5$ hold then there exist a constant$K_1, K_2 > 0$ such that $K_1 = \sup_{t \geq 0} \frac{v(t)}{\Gamma(\alpha)} = \sup_{t \geq 0} \frac{1}{\Gamma(\alpha)} \int_0^t \frac{h(t)}{(t-s)^{1-\alpha}} ds$.

4.Main result:

Theorem4.1: Suppose that $(H_1 - H_6)$ hold.Further if $LK_1 < r$ where r is a positive real number. Then NFHDE(1.1) has at least one solution $x = x(t)$which ids belong to partially ordered normed linear space and is nonnegative non-decreasing on $\mathbb{R}_+$.

Proof: Let $(E, \preccurlyeq, \|.\|)$ be a regular partially ordered complete normed linear space and define subset of S of $(E, \preccurlyeq, \|.\|)$ as $S = \{x \epsilon (E, \preccurlyeq, \|.\|) \|x\| \leq r\}$ where r satisfies the inequality $LK_1 < 1$ clearly S be nonempty, partially bounded and closed subset of a regular partially ordered complete algebra $(E, \preccurlyeq, \|.\|)$

$$x^{\alpha}(t) = f\left(t, x(t), x(\gamma(t))\right) + g\left(t, x(t) x(\beta(t))\right) ds \qquad (3.1)$$

Integrating equation on both side NFDE (1.1) for the α order

$$I^{\alpha} x^{\alpha}(t) = I^{\alpha}\left[f\left(t, x(t), x(\gamma(t))\right) + g\left(t, x(t) x(\beta(t))\right)\right]$$

$$x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t, x(t), x(\gamma(t))]}{(t-s)^{1-\alpha}} ds + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g[t, x(t), x(\beta(t))]}{(t-s)^{1-\alpha}} ds$$

$$\mathbb{A}x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}\, ds \qquad (3.2)$$

$$\mathbb{B}x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g[t,x(t),x(\beta(t))]}{(t-s)^{1-\alpha}}\, ds \qquad (3.3)$$

Thus the NFDE(1.1) we obtain the operator equation as follows

$$x(t) = \mathbb{A}x(t) + \mathbb{B}x(t)$$

If the operator $\mathbb{A}$ and $\mathbb{B}$ satisfy all hypothesis of theorem (3.1) then the operator equat

Step I: Firstly we show that $\mathbb{A}$, *and* $\mathbb{B}$ are non-decreasing on E.

Let $x, y \epsilon S$ be such that $x \preccurlyeq y$ then by the hypothesis (H_6) we obtain

$$\mathbb{A}x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}\, ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t,y(t),y(\gamma(t))]}{(t-s)^{1-\alpha}}$$

$$\leq \mathbb{A}y(t)$$

For all $t \epsilon R_+$, This shows that $\mathbb{A}$ is a non-decreasing operator on $\mathbb{S}$.

Similarly,

$$\mathbb{B}x(t) \quad \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t,x(t),x(\beta(t))]}{(t-s)^{1-\alpha}}\, ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t,y(t),y(\beta(t))]}{(t-s)^{1-\alpha}}$$

$$\leq \mathbb{B}y(t)$$

For all $t \epsilon R_+$ This shows that $\mathbb{B}$ is non-decreasing operator on $\mathbb{S}$.

Step II Now to show that $\mathbb{A}$ is partially bounded on $\mathbb{S}$

Let $\mathbb{C}$ be an arbitrary chain in E then we show that $\mathbb{A}(\mathbb{C})$ is uniformly bounded in $\mathbb{S}$

Let $x \epsilon \mathbb{C}$ be arbitrary

$$|\mathbb{A}x(t)| = \left| \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f\left(t,x(t),x(\gamma(t))\right)}{(t-s)^{1-\alpha}} \right| ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{\left|f\left(t,x(t),x(\gamma(t))\right)\right|}{(t-s)^{1-\alpha}}\, ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{h(t)}{(t-s)^{1-\alpha}} ds$$

$$\leq \frac{\gamma(t)}{\Gamma(\alpha)} = k_1$$

Taking over t we obtain $\|Ax\| \leq K_1$

This shows that $\mathbb{A}(\mathbb{C})$ is uniformy bounded set in S and C arbitrary chain

$\therefore \mathbb{A}(\mathbb{C})$is uniformly bounded on every chain . $\therefore \mathbb{A}(\mathbb{C})$is partially bounded

Step II: To show that $\mathbb{A}x(t)$ is a nonlinear partial $\mathcal{D}$-contraction

Let $x, y \epsilon E$ be any two element such that $x \geq y$ then the hypothesis (H_2)

$$|\mathbb{A}x(t) - \mathbb{A}y(t)| \leq \int_0^t \left| f\left(t, x(t), x(\gamma(t))\right) - f\left(t, y(t), y(\gamma(t))\right)\right| ds$$

$$\leq \int_0^t \emptyset(max\{x - y, \|x - y\|\})\, ds \leq T\emptyset(\|x - y\|)$$

$\forall t \in R_+$ Taking the superemum over t we obtain $\|\mathbb{A}x - \mathbb{A}y\| \leq \Psi(\|x - y\|)$

$\forall\, x, y \in E$, where $\Psi(r) = T\emptyset(r) \leq r$ for $r > 0$

As $\mathbb{A}$ is nonlinear partial $\mathcal{D}$-contraction on E.

Step III: To show $\mathbb{B}$ is partially continuous and partially compact on $\mathbb{S}$.

Firstly to show $\mathbb{B}$ is partially continuous operator on $\mathbb{S}$

Let $\{x_n\}$be a sequence in chain $\mathbb{C}$ in $\mathbb{S} \subset E$ converging to point x. then by dominated convergence theorem $\forall t \epsilon \mathbb{R}_+$ we obtain

$$\text{Then } \lim_{n\to\infty} Bx_n(t) = \lim_{n\to\infty} \left\{ \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g\left(t, x_n(t), x_n(\beta(t))\right)}{(t-s)^{1-\alpha}}\, ds \right\}$$

$$= \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g\left(t, x_n(t), x_n(\beta(t))\right)}{(t-s)^{1-\alpha}}\, ds$$

$$= \mathbb{B}x(t) \quad \forall t \epsilon \mathbb{R}_+$$

To show that $\mathbb{B}x_n$ converges to $\mathbb{B}x$ point wise on $\mathbb{S}$,

Next to show that sequence $\{\mathbb{B}x_n\}$ is equicontinuous sequence in $\mathbb{S}$.

$t_1, t_2 \epsilon R_+$ be arbitrary with $t_1 \leq t_2$ then

$$|\mathbb{B}x_n(t_2) - \mathbb{B}x_n(t_1)| = \left| \begin{array}{l} \frac{1}{\Gamma(\alpha)} \int_0^{t_2} \frac{g\left(t_2, x_n(t_2), x_n(\beta(t_2))\right)}{(t_2 - s)^{1-\alpha}}\, ds \\ - \frac{1}{\Gamma(\alpha)} \int_0^{t_1} \frac{g\left(t_1, x_n(t_1), x_n(\beta(t_1))\right)}{(t_1 - s)^{1-\alpha}}\, ds \end{array} \right|$$

$$\leq \frac{1}{\Gamma(\alpha)} \left| \int_0^{t_2} \frac{g\left(t_2, x_n(t_2), x_n(\beta(t_2))\right)}{(t_2 - s)^{1-\alpha}}\, ds - \int_0^{t_1} \frac{g\left(t_1, x_n(t_1), x_n(\beta(t_1))\right)}{(t_1 - s)^{1-\alpha}}\, ds \right|$$

$$\leq \frac{1}{\Gamma(\alpha)} \left| \begin{array}{l} \int_0^{t_2} (t_2 - s)^{\alpha-1} g\left(t_2, x_n(t_2), x_n(\beta(t_2))\right) ds \\ - \int_0^{t_1} (t_1 - s)^{\alpha-1} g\left(t_1, x_n(t_1), x_n(\beta(t_1))\right) ds \end{array} \right|$$

$$\leq \frac{1}{\Gamma(\alpha)}\left|\int_0^{t_2}(t_2-s)^{\alpha-1}h(t)ds-\int_0^{t_1}(t_1-s)^{\alpha-1}h(t)ds\right|$$

$$\leq \frac{|h(s)|}{\Gamma(\alpha)}\left|\int_0^{t_2}(t_2-s)^{\alpha-1}ds-\int_0^{t_1}(t_1-s)^{\alpha-1}ds\right|$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)}\left\{\left|\int_0^{t_1}[(t_2-s)^{\alpha-1}-(t_1-s)^{\alpha-1}]ds\right|+\int_{t_1}^{t_2}(t_1-s)^{\alpha-1}ds\right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)}\left\{\left[\frac{(t_2-s)^{\alpha}}{-\alpha}-\frac{(t_1-s)^{\alpha}}{-\alpha}\right]_0^{t_1}+\left|\left[\frac{(t_2-s)^{\alpha}}{-\alpha}\right]_{t_1}^{t_2}\right|\right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)}\left\{\frac{(t_2-s)^{\alpha}}{-\alpha}-\frac{(t_1-s)^{\alpha}}{-\alpha}-\left(\frac{t_2^{\alpha}}{-\alpha}-\frac{t_1^{\alpha}}{-\alpha}\right)\right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)}\left\{\frac{(t_2-t_1)^{\alpha}}{-\alpha}-\frac{(t_2-t_1)^{\alpha}}{-\alpha}-\left(\frac{t_2^{\alpha}}{-\alpha}-\frac{t_1^{\alpha}}{-\alpha}\right)+\left[\frac{(t_2-t_1)^{\alpha}}{-\alpha}-\frac{(t_2-t_1)^{\alpha}}{-\alpha}\right]\right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)}\left\{\frac{t_2^{\alpha}-t_1^{\alpha}}{-\alpha}\right\}$$

$$\leq \frac{\|h\|_L}{\alpha\Gamma(\alpha)}(t_2^{\alpha}-t_1^{\alpha})\text{as}t_1\to t_2\ \ \forall\, n\epsilon N$$

This shows that the sequence$\{\mathbb{B}x_n\}$ is uniformly convergence.By using proper uniform convergence imply continuity

Hence $\mathbb{B}$ is partially continuous on $\mathbb{S}$

Step IV: To show $\mathbb{S}$ is partially compact operator on $\mathbb{S}$ for this shows that $\mathbb{S}$ is unifo bounded and equicontinuous on $\mathbb{S}$.

Let $\mathbb{C}$ be an arbitrary chain F then we show that $\mathbb{B}(\mathbb{C})$ is uniformly bounded equicontinuous

Firstly we show that $\mathbb{B}(\mathbb{C})$ is uniformly bounded set in $\mathbb{S}$ .Let $x\epsilon\mathbb{C}$ be arbitrary then

$$|\mathbb{B}x(t)|=\left|\frac{1}{\Gamma(\alpha)}\int_0^t\frac{g\left(t,x(t),x(\beta(t))\right)}{(t-s)^{1-\alpha}}\right|ds$$

$$\leq \frac{1}{\Gamma(\alpha)}\int_0^t\frac{\left|g\left(t,x(t),x(\beta(t))\right)\right|}{(t-s)^{1-\alpha}}ds$$

$$\leq \frac{1}{\Gamma(\alpha)}\int_0^t\frac{h(t)}{(t-s)^{1-\alpha}}\text{ds}$$

$$\leq \frac{\nu(t)}{\Gamma(\alpha)}=k_1$$

Taking suprmum over t we obtain $\|\mathbb{B}x\|\leq K\ \forall x\epsilon C$

This shows that $(\mathbb{C})$ is uniformly bounded set in $\mathbb{S}$,Now we will show that $\mathbb{B}(\mathbb{C})$ equicontinuous set in $\mathbb{S}$.

$$|\mathbb{B}x(t_2) - \mathbb{B}x(t_1)| = \left| \frac{1}{\Gamma(\alpha)} \int_0^{t_2} \frac{g\left(t_2, x(t_2), x(\beta(t_2))\right)}{(t_2 - s)^{1-\alpha}}\, ds - \frac{1}{\Gamma(\alpha)} \int_0^{t_1} \frac{g\left(t_1, x(t_1), x(\beta(t_1))\right)}{(t_1 - s)^{1-\alpha}}\, ds \right|$$

$$\leq \frac{1}{\Gamma(\alpha)} \left| \int_0^{t_2} \frac{g\left(t_2, x(t_2),\ x(\gamma(t_2))\right)}{(t_2 - s)^{1-\alpha}}\, ds - \int_0^{t_1} \frac{g\left(t_1, x(t_1), x(\beta(t_1))\right)}{(t_1 - s)^{1-\alpha}}\, ds \right|$$

$$\leq \frac{1}{\Gamma(\alpha)} \left| \int_0^{t_2} (t_2 - s)^{\alpha-1} g\left(t_2, x(t_2), x(\beta(t_2))\right) ds - \int_0^{t_1} (t_1 - s)^{\alpha-1} g\left(t_1, x(t_1), x(\beta(t_1))\right) ds \right|$$

$$\leq \frac{1}{\Gamma(\alpha)} \left| \int_0^{t_2} (t_2 - s)^{\alpha-1} h(t) ds - \int_0^{t_1} (t_1 - s)^{\alpha-1} h(t) ds \right|$$

$$\leq \frac{|h(s)|}{\Gamma(\alpha)} \left| \int_0^{t_2} (t_2 - s)^{\alpha-1} ds - \int_0^{t_1} (t_1 - s)^{\alpha-1} ds \right|$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)} \left\{ \left| \int_0^{t_1} [(t_2 - s)^{\alpha-1} - (t_1 - s)^{\alpha-1}] ds \right| + \int_{t_1}^{t_2} (t_1 - s)^{\alpha-1} ds \right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)} \left\{ \left[\frac{(t_2 - s)^{\alpha}}{-\alpha} - \frac{(t_1 - s)^{\alpha}}{-\alpha} \right]_0^{t_1} + \left| \left[\frac{(t_2 - s)^{\alpha}}{-\alpha} \right]_{t_1}^{t_2} \right| \right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)} \left\{ \frac{(t_2 - s)^{\alpha}}{-\alpha} - \frac{(t_1 - s)^{\alpha}}{-\alpha} - \left(\frac{t_2^{\alpha}}{-\alpha} - \frac{t_1^{\alpha}}{-\alpha} \right) \right\}$$

$$\leq \frac{\|h\|_L}{\Gamma(\alpha)} \left\{ \frac{(t_2 - t_1)^{\alpha}}{-\alpha} - \frac{(t_2 - t_1)^{\alpha}}{-\alpha} - \left(\frac{t_2^{\alpha}}{-\alpha} - \frac{t_1^{\alpha}}{-\alpha} \right) + \left[\frac{(t_2 - t_1)^{\alpha}}{-\alpha} - \frac{(t_2 - t_1)^{\alpha}}{-\alpha} \right] \right\}$$

$$\leq \frac{\|h\|_I}{\Gamma(\alpha)} \left\{ \frac{t_2^{\alpha} - t_1^{\alpha}}{-\alpha} \right\}$$

$$\leq \frac{\|h\|_L}{\alpha\Gamma(\alpha)} (t_2^{\alpha} - t_1^{\alpha}) \text{as} t_1 \to t_2 \quad \forall\, n \epsilon N$$

This shows that $\mathbb{B}(C)$ is equicontinuous set in $\mathbb{S}$and so$\mathbb{B}(\mathbb{C})$ is realtviely compact by Arzela Ascoli theorem.

Hence $(\mathbb{C})$ is compact subset of $\mathbb{S}$ and consequently $\mathbb{B}$ is partially compact operator on $\mathbb{S}$

Step V: Now to show that the operator inequality $x_0 \leq \mathbb{A}x_0(t) + \mathbb{B}x_0(t)$,

By the hypothesis (H_6)i.e

$$x_0(t) \leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f\left(t, x_0(t), x_0(\gamma(t))\right)}{(t - s)^{1-\alpha}} + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g\left(t, x_0(t), x_0(\beta(t))\right)}{(t - s)^{1-\alpha}}$$

$\therefore x_0$is satisfies the operator inequality $u \leq Au + Bu$

There exists an element $x_0 = u \epsilon S$ suchthat $x_0 \leq Ax_0 + Bx_0$

Then the operator A , B satisfies all the conditions of the theorem (3.1) on S. hence the operator equation $x(t) = Ax(t) + Bx(t)$ has a solution in S. Moreover, we have the approximation of solution x_n as n=1,2,3.... For equation (1.1).

Step VI: Now to show that the solution is locally attractive on $\mathbb{R}_+$.

Then we have,

$$|x(t) - y(t)| = \left|\frac{1}{\Gamma(\alpha)}\int_0^t \frac{f[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{g[t,x(t),\beta(\gamma(t))]}{(t-s)^{1-\alpha}}ds\right|$$

$$-\left|\frac{1}{\Gamma(\alpha)}\int_0^t \frac{f[t,y(t),y(\gamma(t))]}{(t-s)^{1-\alpha}}ds - \frac{1}{\Gamma(\alpha)}\int_0^t \frac{g[t,y(t),\beta(\gamma(t))]}{(t-s)^{1-\alpha}}ds\right|$$

$$\leq \frac{1}{\Gamma(\alpha)}\int_0^t \frac{f[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{g[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}ds$$

$$+\frac{1}{\Gamma(\alpha)}\int_0^t \frac{f[t,y(t),y(\gamma(t))]}{(t-s)^{1-\alpha}}ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{g[t,x(t),x(\gamma(t))]}{(t-s)^{1-\alpha}}ds$$

$$\leq \frac{1}{\Gamma(\alpha)}\int_0^t \frac{h(s)}{(t-s)^{1-\alpha}}ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{h(s)}{(t-s)^{1-\alpha}}ds$$

$$+\frac{1}{\Gamma(\alpha)}\int_0^t \frac{h(t)}{(t-s)^{1-\alpha}}ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{h(t)}{(t-s)^{1-\alpha}}ds$$

$$\leq \frac{v(t)}{\Gamma(\alpha)} + \frac{v(t)}{\Gamma(\alpha)} + \frac{v(t)}{\Gamma(\alpha)} + \frac{v(t)}{\Gamma(\alpha)} = 4\frac{v(t)}{\Gamma(\alpha)} = 4k_1$$

Since $\lim_{t\to\infty} v(t) = 0$ for $\epsilon > 0$, there is real number $T > 0$ such that $\frac{\Gamma(\alpha)\epsilon}{4}$ $\forall t \geq T$ then from the above inequality it follows that $|x(t) - y(t)| < \epsilon, \forall t \geq T$

This is the complete proof

5. Extremal solution:

Definition 5.1: A nonempty closed set Kin banach Algebra X is called a cone with vertex 0 if

$i) K + K \subseteq K, ii) \lambda K \text{ for } \lambda \in \mathbb{R}_+, \lambda \geq 0 iii)(-K) \cap K = 0$, Where 0 is the element of X

A cone K is said to be positive of $K \circ K \subseteq K$, where $\circ$ is a multiplication composition on X

We introduce as order relation $\leq$ in X as follows

Let $x, y \epsilon X$ then $x \leq y$ if and only if $y - x \in K$. A cone K is said to be normal if the norm $\|.\|$ is semi-monotone increasing on K, that is there is a constant $N > 0$ such that

$\|x\| \leq N\|y\|, \forall x, y \in K \text{ with } x \leq y.$

It is know that if the cone K is normal in X, then every order bounded set in X is norm bounded. Theseconcepts appear in the works of Heikkila and Lakshmikantham(see15])

We equip the space $C(\mathbb{R}_+, \mathbb{R})$ of the continuous real valued function on $\mathbb{R}_+$ with the oder relation $\leq$ with the help of cone defined by

$$K = \{x \epsilon (\mathbb{R}_+, \mathbb{R}) : x(t) \; \forall \; t \epsilon \mathbb{R}_+\} \tag{5.1}$$

Lemma 5.1: Let K be a positive cone in a real BanachAlgebra X and let $p_1, p_2, q_1, q_2 \in K$ be such that $p_1 \leq q_1, p_2 \leq q_2$ *then* $p_1 p_2 \leq q_1 q_2$.

We use the following fixed point theorem due to Dhage [5]for providing the existence of extremal solution for NFDE(1.1)under certain monotonically conditions

Theorem 5.2: Let K be he cone in Banach algebra Xand let $[p, q] \epsilon X$.Suppose that$[A, B] \to X$ be two non-decreasing operators such that

a) $\mathbb{A}$is a partially bounded and partially nonlinear $\mathcal{D}$ − contraction.

b) $\mathbb{B}$is partially contraction and partially compact

c) There exists an element $[p, q] \epsilon E$ such that $p \preccurlyeq \mathbb{A}p + \mathbb{B}q$ or

$p \succcurlyeq \mathbb{A}p + \mathbb{B}q$then the operator equation $\mathbb{A}p + \mathbb{B}q = q$

Further the cone K is normal and positive then the operator equation

$x = Ax + Bx$has at least and greatest positive solution in $[p, q]$.

Definition5.2: A function $p \epsilon \mathbb{BC}(\mathbb{R}_+, \mathbb{R})$ is called a lower solution of NFDE(1.1) on $\mathbb{R}_+$, if the function,

$t \to p(t) - f\left(t, p(t), p(\gamma(t))\right) + g\left(t, p(t)p(\beta(t))\right)$iscontinuous and

$$p(t) \leq f\left(t, p(t), p(\gamma(t))\right) + g\left(t, p(t)p(\beta(t))\right) \tag{5.2}$$

Again a function $q \epsilon \mathbb{BC}(\mathbb{R}_+, \mathbb{R})$ is called a lower solution of NFDE (1.1) on $\mathbb{R}_+$, if the function $t \to q(t) - f\left(t, p(t), p(\gamma(t))\right) + g\left(t, p(t)p(\beta(t))\right)$ is continuous and

$$q(t) \geq f\left(t, p(t), p(\gamma(t))\right) + g\left(t, p(t)p(\beta(t))\right) \tag{5.3}$$

Definition 5.3:A solution$x_M$of the NFDE (1.1) is said to be a maximal if any other x to NFDE (1.1) one solution $x(t) \leq x_M(t)$ for all $t \epsilon \mathbb{R}_+$ Again the solution x_M of the NFDE (1.1) is said to be minimal if $x_M(t) \leq x(t)$for all $t \epsilon \mathbb{R}_+$, where x is any solution of the NFDE (1.1) on $\mathbb{R}_+$.

Definition 5.4(Caratheodry case): A function $\sigma(x) \leq \sigma(y) \forall x, y \epsilon \mathbb{R}$for which $x \leq y$.Similarly$\sigma(x)$ is increasing in x is increasing in x if $\sigma(x) < \sigma(y) \; \forall \; x, y \epsilon R$ for which $x < y$.

We consider the following assumption:

(A_1)The function $\left(t, x(t), x(\gamma(t))\right)$and $g\left(t, p(t)p(\beta(t))\right)$ are non-decreasing in $x \epsilon \mathbb{C}(\mathbb{R}_+, \mathbb{R})$ almost everywherefor $t \epsilon \mathbb{R}_+$

(A_2)The operator A and B are non-decreasing on$\mathbb{C}(\mathbb{R}_+, \mathbb{R})$.

(A_3)The NFDE(1.1) jas lower solution p and an upper solution q on $\mathbb{R}_+$.

(A_4)The function $l: \mathbb{R}_+ \to \mathbb{R}$ defined by

$l(t) = \left|f\left(t, x(t), x(\gamma(t))\right)\right| + \left|g\left(t, p(t)p(\beta(t))\right)\right|$ is lebesguge measurable.

Remark 5.1: Assume that $(A_2 - A_4)$ hold. Then

$\left|g\left(t, p(t)p(\beta(t))\right)\right| \leq l(t)$,a.e. for all $x \epsilon [p, q]$.

Theorem 5.3: Suppose that the assumption $(H_1) - (H_4)$and$(A_1) - (A_4)$holds an given in remark (5.1) then NFDE(1.1) has minimal and maximal solution on $\mathbb{R}_+$.

Proof: let $X = \mathbb{C}(\mathbb{R}_+, \mathbb{R})$ and we define an order relation by the cone K is given by Clearly K is normal cone in X .Define two operators A and B on X by (3.2) and respectively.Then NFDE (1.1) is transformed in to an operatorequation$\mathbb{A}x + x$.InBanach algebra$\mathbb{X}$.Noticethat $\mathbb{A}, \mathbb{B}: [p, q] \to K$since K in $\mathbb{X}$ is normal$[p, q]$ is n bounded set in $\mathbb{X}$. Now it is shown that as the proof of theorem (4.1),that contradiction with a D contraction constant and B is completely continuous operat $[p, q]$.Agin the the hypothesis(A_2) implies that $\mathbb{A}$ and $\mathbb{B}$ are non-decrasing on $[p, q$ see this. let$x, y \epsilon [p, q]$be such that $x \leq y$. Then (A_2).

$$\mathbb{A}x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{|f(t, x(t)x(\gamma(t))|}{(t-s)^{1-\alpha}} ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{|f(t, y(t)y(\gamma(t))|}{(t-s)^{1-\alpha}} ds$$

$$\leq \mathbb{A}y(t) \; \forall t \epsilon \mathbb{R}_+.$$

Similarly,

$$\mathbb{B}x(t) = \frac{1}{\Gamma(\alpha)} \int_0^t \frac{|g(t, x(t)x(\beta(t))|}{(t-s)^{1-\alpha}} ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{|g(t, y(t)y(\beta(t))|}{(t-s)^{1-\alpha}} ds$$

$$\leq \mathbb{B}y(t) \; \forall t \epsilon \mathbb{R}_+$$

Implies that $\mathbb{A}$ and $\mathbb{B}$are non-decreasing operator $[p, q]$ Again definition (5.2) hypothesis(A_3) implies that ,

$$p(t) \leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[tp(t), p(\gamma(t))]}{(t-s)^{1-\alpha}} ds + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g[t, q(t), q(\beta(t))]}{(t-s)^{1-\alpha}} ds$$

$$\leq \frac{1}{\Gamma(\alpha)} \int_0^t \frac{f[t, x(t), x(\gamma(t))]}{(t-s)^{1-\alpha}} ds + \frac{1}{\Gamma(\alpha)} \int_0^t \frac{g[t, x(t), x(\beta(t))]}{(t-s)^{1-\alpha}} ds$$

$$\leq \frac{1}{\Gamma(\alpha)}\int_0^t \frac{f[t,q(t),q(\gamma(t))]}{(t-s)^{1-\alpha}}\,ds + \frac{1}{\Gamma(\alpha)}\int_0^t \frac{g[t,q(t),q(\beta(t))]}{(t-s)^{1-\alpha}}\,ds$$

$$\leq q(t)\ \forall\ t\epsilon\mathbb{R}_+ \text{and} x\epsilon[p,q]$$

Now we apply the theorem (5.2) to the operator $\mathbb{A}x + \mathbb{B}x = x$ toyield that NPDE(1.1) has minimal and maximal solution on $\mathbb{R}_+$.

6 Example:

Example1: Consider the following nonlinear fractional differential equation

Let $x(t) = \frac{1}{\Gamma(\frac{1}{2})}\int_0^t \frac{x(e^2-e^{t+1})}{(t-s)^{1-\alpha}}\,ds + \frac{1}{\Gamma(\frac{1}{2})}\int_0^t \frac{x(e^4-e^{t+3})}{(t-s)^{1-\alpha}}\,ds$ (6.1)

Where $t\epsilon R_+$ and $\alpha\epsilon(0,1)$ be a fixed number,

Solution: Here $f: R_+ \times R \times R \to R$ is defined by

$$f\left(t,x(t),x(\gamma(t))\right) = \begin{cases} x(e^2-e^{t+1}) & ,0\leq t<1 \\ 0 & t\geq 1 \end{cases},$$

And $g\left(t,x(t),x(\gamma(t))\right) = \begin{cases} x(e^4-e^{t+3}) & ,0\leq t<1 \\ 0 & t\geq 1 \end{cases}$

Where $\gamma,\beta: R_+ \to R_+$ is defined by

$\gamma(t) = t$ and $\beta(t) = t$ are continuous on R_+.∴ Hypothesis(H_1) is satisfied.

b) Now to prove that hypothesis (H_2) is satisfied

let $\left|f\left(t,x(t),x(\gamma(t))\right) - f\left(t,y(t),y(\gamma(t))\right)\right|$

$= |x(e^2-e^{t+1}) - y(e^2-e^{t+1})|$

$= |(e^2-e^{t+1})(x-y)|$

$= |(e^2-e^{t+1})||(x-y)|$

Clearly $|e^2-e^{t+1}| \leq e^2 \forall\ t\epsilon R_+$

Hence assumptions (H_2) is hold.

Now to hypothesis $(H_3)$is satisfied that is,

$$f\left(t,x(t),x(\gamma(t))\right) = x(e^2-e^{t+1})$$

$$\leq 2(e^2-e^{t+1})$$

$$= h(t)$$

Similarly $g\left(t, x(t), x(\gamma(t))\right) = x(e^4 - e^{t+3}) \leq 2(e^4 - e^{t+3}) = h(t)$

Now based theorem NFDE(1.1) we conclude that equation(1.1) has positive non decreasing solution x.

Conclusion:

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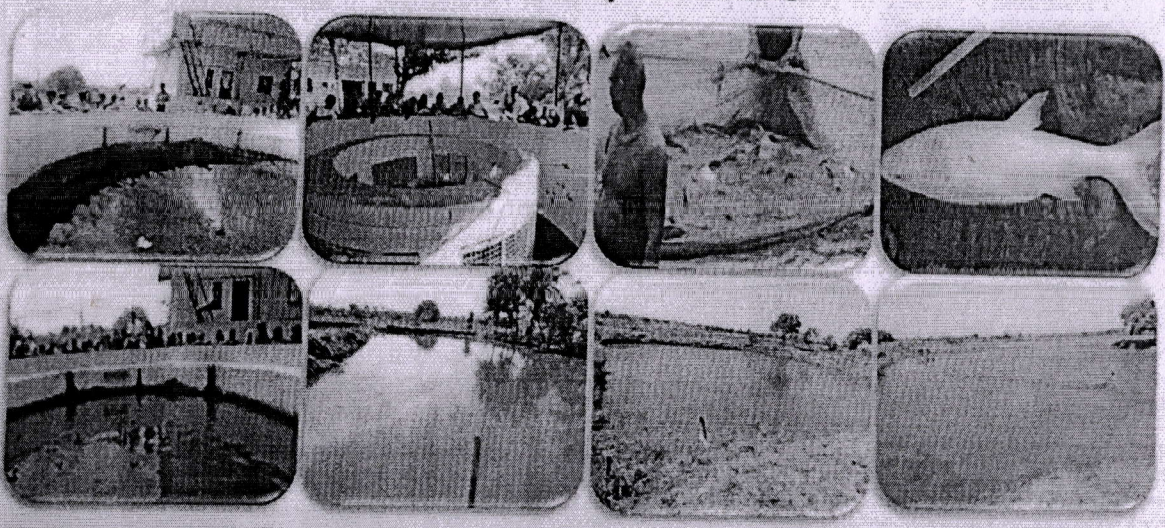

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Status of Fishes in the Majalgaon Dam Reservoir on Sindphana River, Godavari Basin in Maharashtra State, India

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Abstract: *Water covers more than 70% of the earth's surface. The high specific heat of fusion, latent heat of evaporation, high surface tension, high density and powerful solvent nature of water plays a significant role in regulation of different activities in organism. The present investigation was carried out to study the aquatic vertebrate animals with special reference to fish fauna of Majalgaon dam reservoir water during the year 2018-2019 (June to May). The Majalgaon dam water is mainly used for drinking, irrigation and fishing purposes and also establishes Hydroelectric Project on left canal from this 2.5 Mega/Hz power production. During the study period 11 species observed on different order and family. Order Cypriniformes, Ophiocephaliformes, cyprinsformes, Osteoglossiform, Mastacembeliforms, Cypriniformes, family. Cyprinidae belong to five species observed i.e., Labeorohita, Cyprinus carpeo, Catlacatla, silver carp. Cirrihina mrigal and other species belong to families Siluridae, Mastacembelidae, Notopteridae, Channidae and Bagridae. In the reservoir culture of the fish and production of Catlacatla.*

Key Words: *Majalgaon Dam, Catlacatla, Cyprinus carpio, Notopterus chital.*

Introduction:

India has a large network of river, canals, lakes and ponds, which contribute more than 30% of the total fish production. Fish form one of the most important group of animals for man and have received his attention from ancient time. Majority of our people suffer from hunger and malnutrition. Fish is an excellent food for man and provides protein, fat and vitamin A and D, which are essential for the health of man. Fish is also provided source of vitamin B, its food rich in protein is specially preferred for containing essentially amino acid such as Lysine and methionine abundantly required for formation of phospholecithine in gray matter of the brain unsaturated fat in fish also reduce the risk of formation of high blood cholesterol. Phosphorus and several minerals are also present in it. They have good test and easily digestible. Besides being a rich source of food, fishery provides job opportunities also. By product of fishes i.e., fish manure, isinglass and several other productions of commerce.

Considerable studies on fish diversity from different fresh water bodies of India have been carried out during the last few decades Hamilton Buchanan (1822), Day (1878), Mishra (1962), Jayram (1981) Thomus et al (1989), Talwar &Jhingrah (1991), Menon (1992), Rao et.al (1999), Sarkar and Banergee (2000), Mishra et.al. (2003). There are over 19000 reservoirs in India. Covering 3, 15,366 ha. And many more are under construction. (Suguman 2000) Reservoir Fishery in India is also important from social economic point of view as it has the potential of providing employment to about 2 million people (Khan Et.al.1999). According to sreenivasan (1993) the Maharashtra is endowed with an area of 1,79,430 ha. Under reservoir and the state produces 516 tones of fish of these areas the state fisheries corporation was operating in 6,272 ha. Of reservoir and marketing the catches.

The present investigation was under taken to study the aquatic vertebrate animals with reference to fishes from Majalgaon dam reservoir water. It is a second stage of Jayakwadi Project of Nath Sagar. It is irrigation project of Maharashtra state. It is situated in the latitude $16^{0}16^{8}$N and longitude 73^{0} 26E. It is multipurpose type like irrigation and power production and also fishing purposes (Table No. 1).

Material and Method:

The fishes were collected from the Majalgaon dam reservoir with the help of fisherman during the year June 2018 – May 2019. The specimen were preserved in 10% formalin and subsequently identified following work of Lagler (1956) Menon and Talwar (1972), Day (1878), Datta Munshi & Srivastav (1968), Jayram (1981) and Talwar &Jhingran (1991).

Result and Discussion:

Fish as constitute economically a very important group of animals. A large number of dams and reservoir has been constructing during the recent year to provide water for irrigation and power production. These bodies of water offer immense scope for fish culture for successful fish farming in dam and reservoir. Majalgaon dam reservoir is very productive more work has been carried out of fish fauna. The distribution of fish species is quite variable because of geographical and geological condition. The Eleven species of the fish fauna in this study belonging to four order and six families are given in the table No. 2 among them order Cypriniformes was dominant with eight species to be followed by the Mastalimbeliformes, Osteoglossifomes, and Ophiocephalifomes each with one species. Valsangkar (1993) recorded 17 indigenous and 5 introduced fish species from Shivaji Sagar reservoir. Sakhare (2001) recorded 23 fish species belonging to 7 orders in Jawalgaon reservoir in Solapur district. Pawar and Madlapure (2002) recorded 11 fish species belonging to 5order in Sivur dam. Ingole (2005) recorded 11 fish species occurrences in the during research work at Majalgaon dam reservoir.

Fig No: 1 Majalgaon Project on GOOGLE MAP

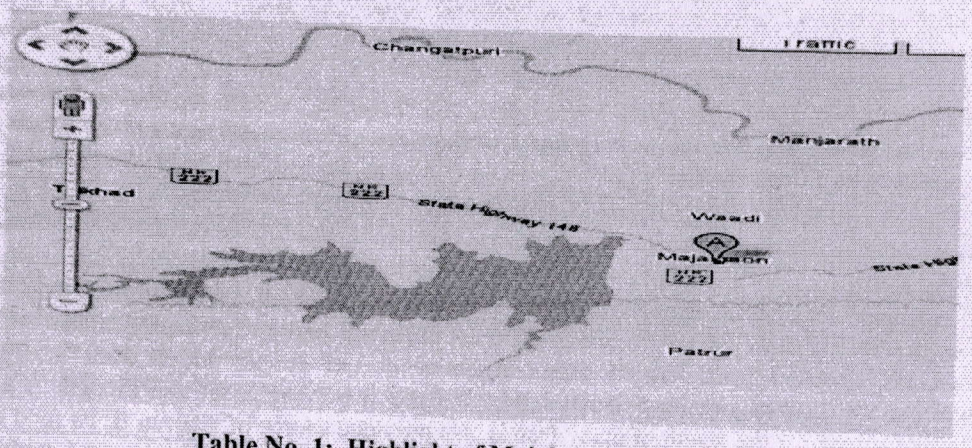


Table No. 1: Highlight of Majalgaon dam reservoir.

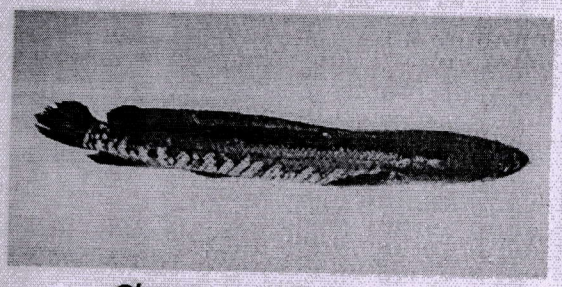
Name	Majalgaon dam Jaikwadi project Stage – II
Type	Multipurpose (Irrigation and Power production)
River	Sindphana
Basin	Godavari
Location	2 Km. u/s of MajalgaonDist-Beed (M.S.)
Year of start of Construction	1977
Year of completion	1987
Catchment area	3840 Sq.Km.
A.V. Rainfall in C.A.	800 mm.
Submerged area	7813 Ha.



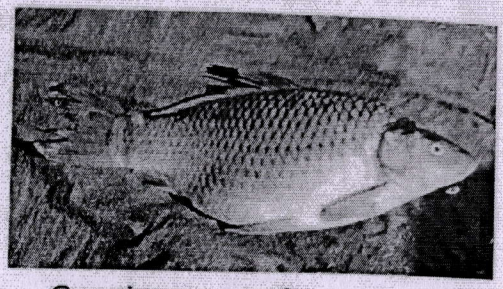
Figure No: 2 Sindphana river and Majalgaon Project

Table No. 2: Fish diversity from Majalgaon Dam reservoir

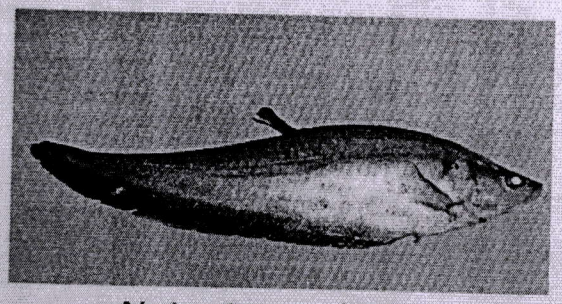
Class – Pisces	*Family -3 – Siluridae*
Sub-class – Teleostomi	*Spcies – 8 – Wallago altu*
Order 1 – Cypriniformes	*Order – 2 – Mastaembeliformes*
Family 1 – Cyprinidae	*Family 4 – Mastamecembelidae*
Speices – 1 – CatlaCatla	*Species 9 – M. armatus*
Species 2 – Labeorohita	*Order 3 – Osteoglossiformes*
Species 3 – Cirrhina mrigal	*Family 5 – Notopteridae*
Species 4 – Cyprinus carpio	*Species – 10 – N. chital*
Speices 5 – Silver carp	*Order 4 – Ophiocephaliformes*
Species 6 – Barbusticto	*Family 6 – Channidae*
Family 2 – Bagridae	*Speices – 11 – ChannaStaitus*
Species 7 – Mystusseenghala	



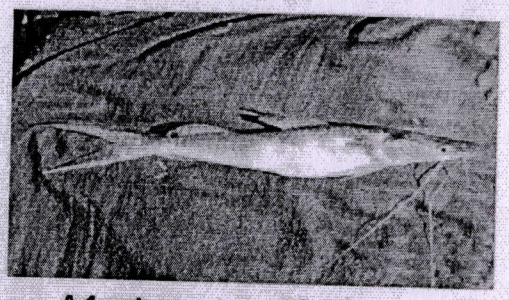
Channa striatus



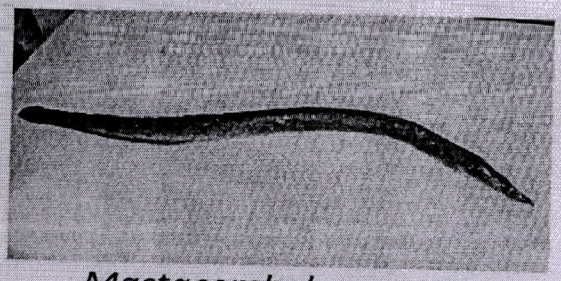
Cyprinus carpio



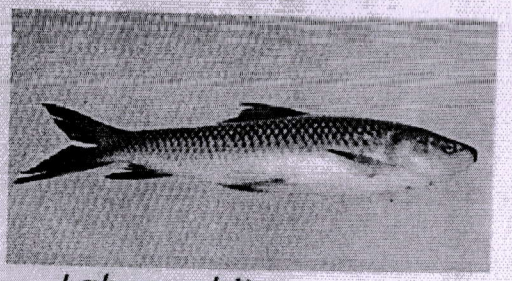
Notopterus chitla



Mystus seenghala



Mastacembelus armatus



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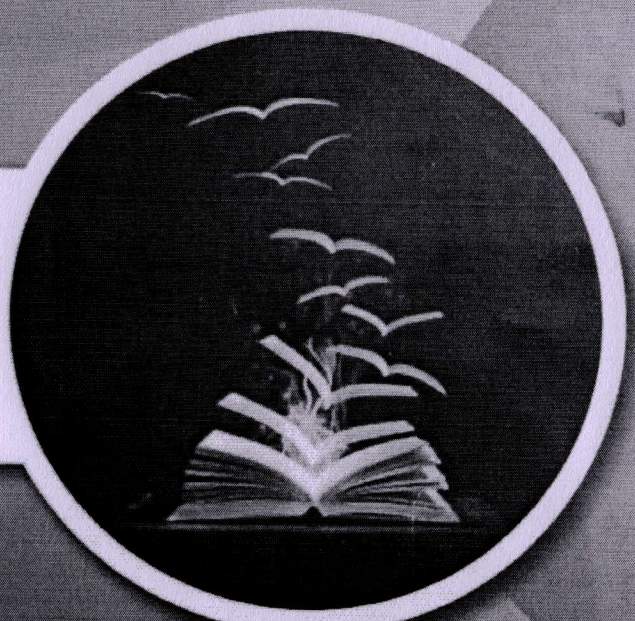

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Physico-Chemical Parameter And Ichthyofaunal Diversityof Fresh Water Reservoir Majalgaon Dam In Maharashtra State, India.

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Abstract

Majalgaon Dam was constructed on the River Sindphana which is tributary of River Godavari, in Beed District (Maharashtra, India) in 1987. Which falls 16° 16 N latitude and longitude 73° 26 E. The River Sindphana has been under constant threat of pollution by sewage and industrial wastes, disposal of dead bodies, deforestation, excessive use of fertilizers and pesticides, bathing and water development programs. The dam has a catchment area is 3840 sq. km. It is of great Importance for the region because its water is used for human and cattle consumption, It is multipurpose type like irrigation and power production (Hydro Electric Project). As a representative of these 'Majalgaon Dam' was selected for the limnology studies. As a representative of these 'Majalgaon Dam' was selected for the limnology studies.

The present study is aimed to investigate some of the important physical and chemical parameters along with the flora and fauna of the reservoir. A total of 33 species of phytoplanktons, 29 species of zooplanktons and . The reservoir is very productive. There are several types of fresh water fishes present in the dam. Labeorohita, Cirrhinamrigal, Catlacatla, Cyprinuscarpio, Silver carp, Wallagoattu, Mystancenbelusarmatus, Notopterus chital, Barbusticto, Channastaitus, Mystusseenghala, Mystuscavassius, Eutroplussuratensis, Belonconcila, Chela, Tilapia mosambica, Rohteealfrediana, Gobiusgiuris etc.17 species of fishes were identified during June2017-May2018.Hence the present work is an attempt to accumulate information pertaining to various aspect of hydrobiology of standing water bodies from this part of peninsular India.

Introduction

Water is the basic element in fish culture and its specific properties as a cultural medium of great significance in the productivity of a pond or reservoir. Pure water is unable to support living organism but it contains nitrogen, phosphorus, potassium and calcium salts, dissolved organic matter and gases like oxygen, nitrogen and carbon dioxide determine to a large extent the productivity. In water of lakes and reservoir fishes are reared more as a part of a general fishery improvement programme than as pure fish culture. Only 61.3 % of the readily cultivatable water area in the country is presently utilized for culture with regard to inland fish culture. The culture of Indian major carps and exotic species have been very popular in recent time. The study of fishes-technically known as 'Ichthyology' is one of the least popular branches of natural History.

Fish is economically a very important group of animals, beside being used as food. Fish liver is an important source of oil containing vitamins A and D. Several minerals especially

if the bones can be eaten. Fish is also a source of Vitamin B. It is rich in protein, specially preferred for containing essentially amino acid such as Lysine and Methiomine abundantly required for formation of phospholecithine in gray matter of the brain. Unsaturated fat in fish also reduce the risk of formation of high blood cholesterol. Body oil from fish is extensively used in soap industries and tanning. Fish also yield fish meal. Fish manure and several other product of commerce. For successful fish forming in dams and reservoirs, it is essential to make a detailed hydrological study of the water body. Suitable species that are stocked in dams are the major carps. These are capable of adjusting successfully to ecological condition of the reservoir. The exotic carps also Thrives in man made lakes and is suitable species for culture.

Majalgaon dam in located at Majalgaon Dist. Beed (M.S.) on river Sindphana. River Sindphana is the main tributary of Godavari river on the right bank its origin in the Balaghat range 40-50 km away from Majalgaon Dist. Beed (M.S.). On the river Sindphana the well-known Majalgaon Dam has been built near 2 km. U/S from Majalgaon city, Beed District in Maharashtra state. Which fall under 16°168 N latitude and longitude 73° 26 E. It is a multipurpose type of project like irrigation and power production (Hydro Electric Project). In 1977, dam construction started and the completed in the year 1987. The catchment area is 3840 sq. km. Majalgaon dam is a second stage of 'NathSagar' at river Godavari valley at Paithan District, Aurangabad, Maharashtra. Majalgaon dam has a submerged area 7813 hectare and the length of Dam is 6488 meter. The reservoir is very productive. There are several types of fresh water fishes present in the dam.

Fresh water fishes of Maharashtra

The Fresh water fish resource of Maharashtra constitutes 6 orders 25 families and 160 species. There are many species like Oriochromis, Grass carp, common carp, silver carp, etc. that have been introduced in the inland water of Maharashtra. The entire region comes under 4 basins viz. Narmada, Tapti, Godavari and Krishna.

Result and Discussion:

Fish as constitute economically a very important group of animals. A large number of dams and reservoir has been constructing during the recent year to provide water for irrigation and power production. These bodies of water offer immense scope for fish culture for successful fish farming in dam and reservoir.

Majalgaon dam reservoir is very productive more work has been carried out of fish fauna. The distribution of fish species is quite variable because of geographical and geological condition.

The Eleven species of the fish fauna in this study belonging to four order and six families are given in the table No. 2 among them order Cypriniformes was dominant with eight species to be followed by the Mastalimbeliformes, Osteoglossifomes, and Ophiocephalifomes each with one species. Valsangkar (1993) recorded 17 indigenous and 5 introduced fish species from ShivajiSagar reservoir. Sakhare (2001) recorded 23 fish species belonging to 7

orders in Jawalgaon reservoir in Solapur district. Pawar and Madlapure (2002) recorded 11 fish species belonging to 5order in sivur dam. Ingole (2005) recorded 11 fish species occurrence in the during research work at Majalgaon dam reservoir.

Godavari River basin

The Godavari River is a major waterway in central India, originating in the Western Ghats and flowing eastwardly across the Deccan Plateau between the states of Maharashtra and Andhra Pradesh, then crossing the latter state and turning to flow in a southeast direction until it empties into the Bay of Bengal through two mouths. Its tributaries include Indravati River, Manjira River, Sindhaphana,Bindusara River, Sabari River etc. Although the river arises only 80 kilometres from the Arabian Sea, it flows 1,465 km to empty into the Bay of Bengal. Just above Rajahmundry there is a dam that provides water for irrigation.

Below Rajahmundry, the river divides into two streams that widen into a large river delta which has an extensive navigable irrigation-canal system, Dowleswaram Barrage that links the region to the Krishna River delta to the southwest.TheIndrawati, the Wainganga, the Wardha, the Pench, the Kanhan and Penganga rivers, discharge an enormous volume of water into the Godavari system. The Godavari River has a drainage area of 313,000 km2 in seven states- Maharastra,Andhra Pradesh, Karnataka, Madhya Pradesh, Chattisgarh and Orissa.

Study area of Majalgaon Dam reservoir

Hence the present work is an attempt to accumulate information pertaining to various aspect of hydrobiology of standing water bodies from this part of peninsular India. The present investigation has been carried out on 'Majalgaon Dam' located on river Sindphana (Godavari Basin) near 2 Km. U/s from Majalgaon city (Taluka place) of Beed districts in Maharashtra State. Which falls 16° 16 N latitude and longitude 73° 26 E.

It is multipurpose type like irrigation and power production (Hydro Electric Project). As a representative of these 'Majalgaon Dam' was selected for the limnology studies. The present study is aimed to investigate some of the important physical and chemical parameters along with the flora and fauna of the reservoir. Similarly by studying the phytoplankton and zooplankton quantitatively to find out what type of exotic fishes can be introduced in the reservoir in future so as to utilize the water body successfully for fish production.

Sampling of Fishes

Different kind of fishes were collected from the selected sites with the help of fisherman of the work on the dam by using different types of craft, gears and nets and after noting down color and other external feature were preserved in 4 % formalin, seasonal collection were made from June 2017-May 2018 for two years, the period of research work.

Standard identification key where used for identification of specimen up to species level, using standard key and literature of Day (1971), Agarwal (1994), Jhingran (1982). The classification of fishes on economic importance were done by following the proforma given by Lagler (1956) and Jhingran (1982).

RESULT & DISCUSSION

Physico-Chemical parameters and Biological Characteristics and Biodiversity of Fish Fauna Lake ,reservoirs and pond constitute a great source of Inland fisheries in India. Productivity of pond and reservoirs depends upon the quality of water and soil. Incidences of light isresponsible for the production and distribution of planktons. Variation of Temperature has an important influence an all the organisms including fishes. The oxygen content of water is reduced with the rise in Temperature. pH of reservoir water may be alkaline ,acidic or neutral and is an important environmental factor influencing the species and metabolism of all animals and plants inhabiting it. pH of reservoir water having 6.5to 9.0 is most suitable for culture. Dissolved oxygen is most for the animals and plants life in a pond, on cloudy day photosynthesis is reduced and causes oxygen deficiency at night is fatal to the fish. A balance of oxygen content ismaintained is the reservoir water through plants and all animals consumeoxygen during respiration. Oxygen deficiency of reservoir causes migration,attack of parasites ,fungal diseases and death due to suffocation

Table No.1.

Fluctuation range ofPhysico-chemical Parameters on Majalgaon dam reservoir during 2017-2018

	Parameters	Min. / Max.	Site- S1	Site- S2	Site- S3	Site- S4
1.	Water (^{0}C) Temperature	Min.	23.1	24.0	23.5	24.1
		Max	30.0	29.9	29.2	31.0
2.	pH	Min.	7.4	7.3	7.4	7.5
		Max	8.5	8.5	8.4	8.9
3.	Total Solid mg/lit.	Min.	220	222	237	221
		Max	311	399	381	402
4.	Dissolved oxygen mg/lit.	Min.	4.2	3.0	4.0	4.9
		Max	10.1	10.2	10.3	10.3
5.	TotalHardness mg/lit.	Min.	95	98	95	94
		Max	147	191	155	141
6.	Calcium mg/lit.	Min.	59	50	51	55
		Max	90	77	89	79
7.	Magnesium mg/lit.	Min.	4.86	6.56	8.01	8.74
		Max	18.2	19.1	17.9	17.4

Fish fauna on Majalgaon dam reservoir

The local fish fauna are abundance and distribution of Majalgaon Dam reservoir are as 1. Labeorohita 2.Cirrhinamrigal 3.Catlacatla 4.Cyprinuscarpio 5.Silver carp 6.Wallagoattu 7. Mystacenbelusarmatus 8.Notopteruschital 9..Barbusticto 10. Channa 11. Mystusseenghala 12.Eutroplus suratensi 13.Belon concila 14.Chela 15.Tilapia mosambica 16.Rohtee alfrediana 17.Gobius giuris

Hydrobiological study and features of the fisheries of Majalgaon Dam reservoir of its self sustained ecosystem is described. Alikhuni (1957) stated that the water alkalinity over 100 ppm are called as productive water body.

Table No. 2: Highlight of Majalgaon dam reservoir and fish fauna.

Name	**Majalgaon dam Jaikwadi project Stage – II**
Type	**Multipurpose (Irrigation and Power production)**
River	**Sindphana**
Basin	**Godavari**
Location	**2 Km. u/s of MajalgaonDist-Beed (M.S.)**
Year of start of Construction	**1977**
Year of completion	**1987**
Catchment area	**3840 Sq.Km.**
A.V. Rainfall in C.A.	**800 mm.**
Submerged area	**7813 Ha.**

Class – Pisces	*Family -3 – Siluridae*
Sub-class – Teleostomi	*Spcies – 8 – Wallagoaltu*
Order 1 – Cypriniformes	*Order – 2 – Mastaembeliformes*
Family 1 – Cyprinidae	*Family 4 – Mastamecembelidae*
Speices – 1 – *CatlaCatla*	*Species 9 – M. armatus*
Species 2 – *Labeorohita*	*Order 3 – Osteoglossiformes*
Species 3 – *Cirrhinamrigal*	*Family 5 – Notopteridae*
Species 4 – *Cyprinuscarpio*	*Species – 10 – N. chital*
Speices 5 – Silver carp	*Order 4 – Ophiocephaliformes*
Species 6 – *Barbusticto*	*Family 6 – Channidae*
Family 2 – Bagridae	*Speices – 11 – ChannaStaitus*
Species 7 – *Mystusseenghala*	

FISHING ON MAJALGAON DAM RESERVOIR

Commercial fishing was done by the fisherman of the society. Fishing started after monsoon and it was done day as well as night. Hooks and line gear used for fishing of Carnivorous fishes.Drag net, gill net cast net are used for fishing. The size of the net depends upon the area of fishing and size of the mesh depends upon the size of fish.

Fishing was done with the help of wooden plates, thermocole sheets, tubes and coracle etc. as well as transportation the coracle was made from bamboo splits and covered with polythene sheet. It was light in weight and used in single fisherman. The size of thermocole wooden sheet varies from 5 to 6 feet in the length and 3 to 4 in breadth.

FISH PRODUCTION ON MAJALGAON DAM

It was very difficult to find out the exact fish production of the Majalagaon Dam reservoir because fisherman never maintains the record noted of their catches. It was very difficult to find out the growth rate of fish from the reservoir because of non availability of scientific data.

Table No. 2. Total Fish Capturing on Majalgaon Dam Reservoir.

Sr No	Months	Total Fish Catches Kg/Year		
		2009-2010	2010-2011	2011-2012
1.	August	8104.40	3471.50	6742.00
2.	September	9300.00	2895.00	3661.00
3.	October	4825.00	2014.00	3781.00
4.	November	3848.00	1420.50	4493.50
5.	December	2888.50	2761.00	4127.75
6.	January	1903.00	2405.00	5223.00
7.	February	2173.00	2021.50	7099.00
8.	March	1862.75	3557.00	7220.25
9.	April	6334.00	2527.50	2080.75
10	May	2722.50	8750.00	5736.25
11	June	6462.50	14754.00	10621.50
12	July	6260.50	12489.50	10498.00
Total		**51983.5**	**59066.75**	**71285.75**

BIOLOGICAL CHARACTERISTICS (PLANKTON STUDIES)

Nearly 40 % of the plankton communities lives at a depth of 1-5 meters. The population being densest at a depth of 7-8 meters.Phytoplankton is an important component of aquatic flora and play key role in maintaining proper equilibrium of aquatic ecosystem between abiotic and biotic component of aquatic ecosystem. They serve as food for fishes directly or indirectly and are the primary producer of phytoplankton aquatic ecosystem.

Zooplankton is an important component of secondary production in an aquatic system. They are an important food source of higher organisms including fishes. The quantitative analysis of zooplankton do not only reflect energy transfer in the system but it also certainly provides the information about the happening in the food cycle.

MARKETING OF FISH

Fisherman themselves catch the fishes and sold them at distance market at Aurangabad, Hyderabad, Mumbai, Gulbarga, Nizamabad. They also sold fishes at local market Majalgaon. Nitrud, Talkhed, Patrud ,Takarwan, Rajegaon, Dharur, Wadwani, Telgaon, Georai, Parli, Beed and Pathri. Fishes, after assembling, were sold to the merchant and send them to distance market. While transporting fishes, fishes are packed with ice in bamboo boxes.

CO-OPERATIVE SOCIETY:

Manik Shah Fish Business Co-operative Society BhatwadgaonTq.Majalgaon Dist. Beed.State Maharashtra.

1. Date of Registration - 15 Dec. 1987. 2. Registration No. - BHR / MGN / RSR / CN / 1053. 3 Total no. of member - 41.

Socio-Economic Condition of Fisherman

The most important factor that influence the utilization and development of the fishery resources in the socio-economic condition of the fisherman.. This caused them to depend upon middle man for the marketing of their producer and naturally the major portion of the

profit goes in the pocket of middleman. The fisherman of this society are belong to the caste such as, Bhoai - 90 % Fisherman & Muslims - 10 % fisherman of the fisherman do not have their own net, for it they depend upon the other fisherman and in return they give a good portion of their income as hire of the net. The net income of the fisherman is insufficient for his maintenance and of his family.

Future Scope For Development of Fisheries of Majalgaon Dam Reservoir

Adequate stocking of fish seed is necessary. They were stocked C. mrigal, Cyprinuscarpio. If fish seed of Ciprous, Rohu, Mrigal and Catlacatla is stocked then it will increase the production.Marketing should be done through the co-operative society only instead marketing through agents.Illegal fishing should be prevented.Mixed fish culture should be adopted such as culture of Indian major carps and exotic carps to increase production.Removal of predatory fishes is necessary.Fisherman should be educated for the development of reservoir fishery.

Suggestions for Improvement of Fisheries and Socio-economic Condition of the Fisherman The fisherman community should be tread in modern methods of fish culture and fishing, so that production can be increased of the reservoir.Thewell equipped fish seed production center highly progressively of fish seed production.They should be a constant cold storage plant to keep the fishes for sell in different seasons.Fisherman should be provided with educational and health facilities, so that their children can be learnt and heath of fisherman should be normal.Fisherman should be educated so that they can leave away their addiction. Illegal fishing should be stopped, so that loss of fish can be checked.

Conclusion

Productivity of reservoir is depending on physico chemical parameters &biological aspect. Maintain socio-economic condition and Management of reservoir etc.

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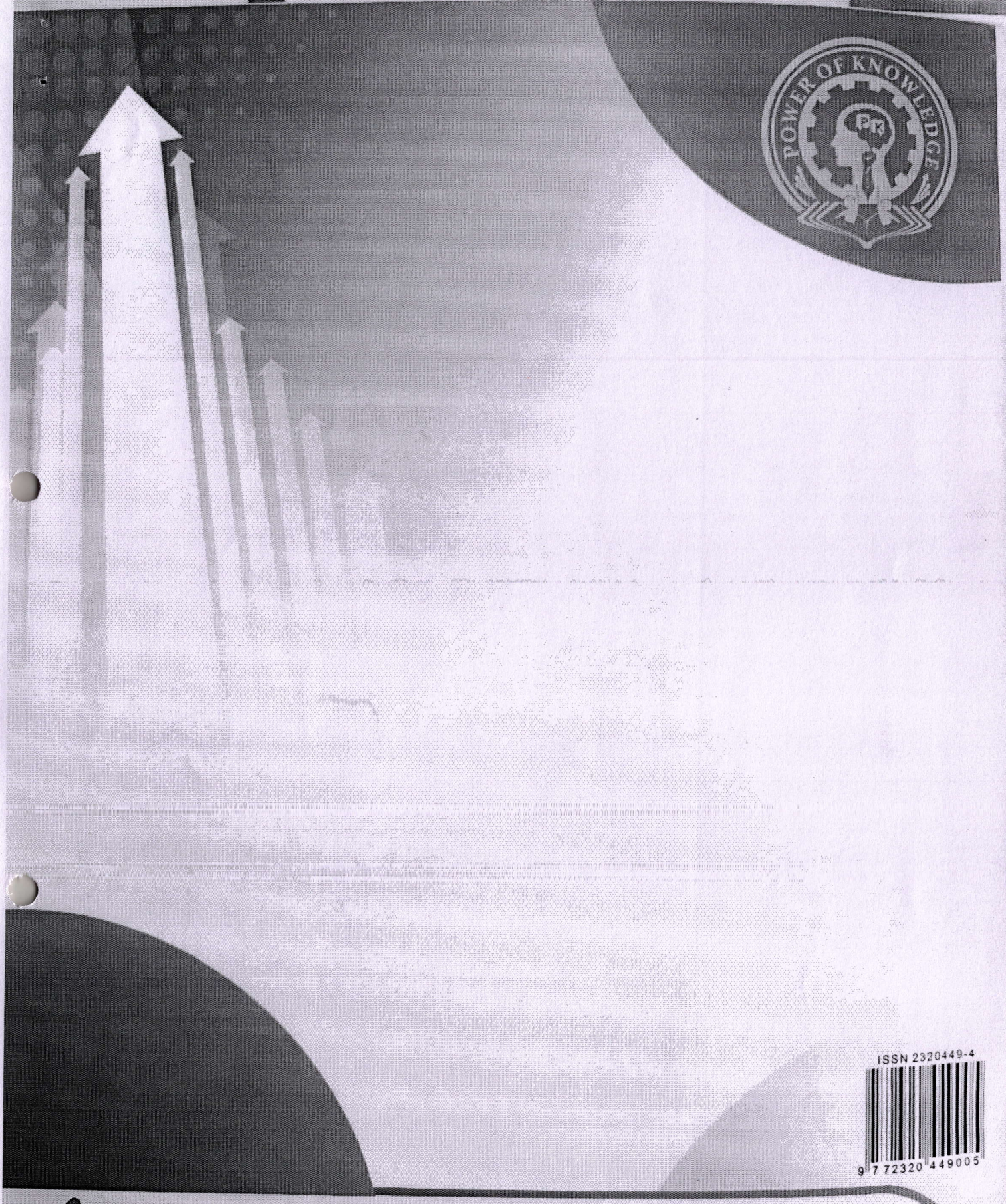

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दूरभाष–७५८८५६६८२३ / ९८९०७८५८१०
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वैश्विक दृष्टि से अगर देख जाए तो हिंदी का वैश्विक रूप दिन ब दिन विकसित ही होता जा रहा है। हिंदी हमारे देश भारत की राष्ट्रभाषा है जो विश्व –भाषा की उर्वर और बंजर भूमि में अपनी जड़ें जमाती गई। जड़ों का यह फैलाव कहीं अनायास तो कहीं सायास हुआ। मॉरीशस, फीजी, सूरीनाम, नार्वे, गयाना ,ट्रिनीडॉड आदि जगहों पर हिंदी गिरमिटियॉ मजदूरों के माध्यम से पहुँची जिनकी मूल बोली भोजपुरी या अवधी रही। अमेरिका, इंग्लैंड आदि देशों में हिंदी स्वेच्छा से जाकर बसे शिक्षित भारतीयों के साथ गई ,जो विदेशों में अपना विकास तो देख रहे थे किंतु स्वराष्ट्र से दूर होने के बाद स्वदेश की माटी की सुगंध ने उन्हें न स्वदेश भूलने दिया न अपने देश की भाषा। क्योंकि हिंदी एकमात्र ऐसी भाषा है जिसमें लगभग ४६ बोलियाँ अपनी अस्मिता बनाएँ हुए है। विश्वनाथ त्रिपाठी ने खुले तौर पर कहा, '' हिंदी सामान्य जन और शोषित की भाषा है। अगर आप हिंदी जानते हैं आप देखिए, बांगलादेश में, नेपाल में , पाकिस्तान में, काबुल में, मॉरीशस में अब तो यूरोप में में भी आपका काम ठीक से चल सकता है। तो हिंदी एक तरीके से अंतर्राष्ट्रीय भाषा बनी नहीं है, वह है।'' १

आज विश्व भर में लगभग १५६ विश्वविद्यालयों में हिंदी की पढ़ाई होती है, विदेशी छात्र भारत आकर हिंदी सीखते पढ़ते हैं ताकि इस देश की मौलिक गुणवत्ता को जान समझ सकें। यह किसी भी भाषा और भाषाभाषियों के लिए गरिमा का विषय है। हिंदी का अर्थ केवल खड़ी बोली कतई नहीं है, बल्कि वे सारी बोलियाँ और भाषाएँ हैं जिन्हें हिंदी ने अंगीकार किया। हिंदी का अर्थ केवल खड़ी बोली या तत्सम, तद्भव ही नहीं देशज और विदेशज भी हैं अब तो संकर शब्दों का प्रचलन भी जोर पर है। आज मेज लिखे या टेबुल दोनों हिंदी की धारा में समाहित है, अब गाँव पहुँचकर यही 'टेबुल' शब्द 'टेबुलवा' हो जाएगा जैसे की 'बच्चा' से 'बचवा' । किसी भी ग्राह्य शब्द को हिंदी इसप्रकार अपने में रचा बसा लेती है कि उससे पराएपन का बोध हमेशा –हमेशा के लिए समाप्त हो जाता है। फिर विद्यापति की मैथिल रसधारा बहे या कबीर की सधुक्कड़ी, जायसी और खुसरो की ठेठ अवधी और फारसी मिश्रित हिंदी हो या मीरा की राजस्थानी, सूर की ब्रज भाषा, तुलसी की परिनिष्ठित अवधी और ब्रज हिंदी की प्रकृति धरा –सी है। सभी को अंगीकार करनेवाली वाली है। हिंदी के आदिकालीन और मध्यकालीन साहित्य वर्तमान में अनुपम विरासत स्वरूप हैं। इसी भाषा ने बोलियों के साथ मिलकर समय–समय पर रंग–रूप में जरा परिवर्तन कर समाज की घिसी –पिटी रूढ़ियों,मान्यताओं को चुनौती दी और जीवन –मूल्यों की शाश्वतता को बनाए रखा। हिंदी सेतु का भी कार्य करती है । भावनाओं और संवेदनाओं की आवाजाही एक छोर से दूसरे छोर तक करानेवाली। तभी तो शेक्सपीयर के नाटक हों या मैक्सिम गोर्की के उपन्यास यमणिपुरी इरोम चानु शर्मिला की कविताएँ हों या असमिया लेखिका शर्मिष्ठा प्रीतम के उपन्यास,जिन्हें हिंदी में पढ़कर पाठक प्रेरित हुए बिना नहीं रह सकता।

किसी भी विचार, सरोकार या साहित्यिक कृति को विश्व के कोने –कोने में पहुंचाने का काम हिंदी बखूबी पूरा कर रही है। यही कारण है कि प्रत्येक भाषाभाषी अपनी पहुँच हिंदी तक बनाने हेतु प्रयासरत है।

विदेशों में बोली जानेवाली हिंदी निस्संदेह भिन्न है, उसपर स्थानीय प्रभाव स्वाभाविक है, सूरीनाम में सरनामी, मॉरीशस में क्रियोल, फीजी में फीजीबात, दक्षिण अफ्रीका में नैताली और चटनी तो गुयाना में कुछ और नाम से जानी जाती है हिंदी । वैश्विक संदर्भ में भी यह बात सटीक बैठती है कि हिंदी भाषाभाषी लोग हर जगह अपनी पैठ बनाए हैं और दूसरे भाषाभाषी भी संपर्क साधने योग्य हिंदी सीख ही लेते हैं। सर्जना की विधा कोई भी हो, उसकी समृद्धि भाषा की समृद्धि से जुड़ी है। चित्रा मुद्गल के शब्दों में, 'हिंदी का मतलब है भारत!' हिंदी ने भारत के भीतर और बाहर अपनी बाँहें फैला दी अनुवाद को माध्यम बनाया और प्रत्येक भारतीय भाषा और बोलियों में बिखरे नगीने को चुनने –पिरोने लगी। इस क्षेत्र में अहिंदी भाषी विद्वानों और समाज सुधारकों तथा विदेशी हिंदीसेवी विद्वानों के अथक प्रयास को भुलाया नहीं जा सकता और न ही परवर्ती पीढ़ी तक उनके नाम और काम को पहुंचानेवाली संस्था का। ऐसे अहिंदी भाषी भारतीयों में गुजराती भाषी महात्मा गाँधी एवं दयानंद सरस्वती, बंगला भाषी डॉ. सुनीति कुमार चटर्जी ,तेलुगुभाषी बालशौरि रेड्डी, राजस्थानी भाषी, विजयदान देथा, कश्मीरी भाषी डॉ. बीना बुदकी, मणिपुरी भाषी डॉ. सी.एच. निशान नीङ्गतंबा आदि हैं । एन.सुंदरम, तंकमणिअम्मा , प्रकाश भातम्ब्रेकर, दामोदर खडसे , अरविंदाक्षन, जे. एल. रेड्डी आदि अहिंदी भाषियों ने हिंदी में और हिंदी से मूलभाषा में अनुवाद करके हिंदी साहित्य को विस्तार और समृद्धि दी है। यहाँ यह उल्लेखनीय है, दिसंबर १९१६ में लखनऊ की एक सभा में गाँधी जी के निर्देश से हिंदी और देवनागरी को लेकर जो प्रस्ताव पास हुआ, उसके समर्थकों में दक्षिण भारतीय श्री. रामस्वामी अय्यर और श्रीरंगस्वामी आयंगर थे। इसी प्रकार 'भारत की राष्ट्रभाषा देवनागरी में लिखी जाने वाली हिंदी हो' संविधान सभा में यह प्रस्ताव गोपालस्वामी आयंगर ने पेश किया था। बापू के अनुरोध पर लोकमान्य तिलक ने हिंदी सीखी और रवीन्द्र नाथ ठाकुर ने १९२० में काठियावाड़ में पहली बार हिंदी में भाषण दिया। हिंदी सेवियों की लंबी सूची और समृद्ध हो जाती है जब उसमें विदेशी हिंदी प्रेमियों और हिंदी सेवियों के नाम जुड़ जाते हैं।

विदेशी हिंदी सेवियों में नेपाल के धूस्वाँ सायमी, केदारमान 'व्यथित',य प्राहा के डॉ. ओदोलेन स्मैकिल, रोमानिया के इमरे बंगा तथा निकोलाया ज्वेर्या य अमेरिका के डॉ. माइकल सी. शपीरो एवं रूपर्ट स्नैल य, रूस के प. आ. बारान्निकोव एवं डॉ. येवमेनी चेलीशेव,य बर्मा के ऊ– पारगू य, बेल्जियम के फादर कामिल बुल्के,यजापान के डॉ. टोमियों मिजोकामि एवं प्रोफेसर क्यूया दोई,य इटली के प्रोफेसर जोर्जो मिलानेत्ति, न्यूजीलैंड के डॉ. रोनाल्ड स्टुअर्ट मैकग्रेगर,जर्मनी के डॉ. लोथार लुत्सेय, कनाडा के डॉ. कैथरिन जी. हैन्सन ऑस्ट्रेलिया के डॉ. रिचर्ड के. बार्ज य डेनमार्क के प्रोफेसर फिन थीसनय हंगरी की मारिया नेज्यैशी, इंग्लैंड के एफ. एस. ग्राउजय के अतिरिक्त जे. फर्ज्युसन, जे. वी. गिलक्राइस्ट और डॉ. अब्राहम जॉर्ज ग्रियर्सन के नाम भुलाए नहीं जा सकते। भारत और हिंदी प्रेमी विदेशियों की संख्या दिनोंदिन बढ़ रही है। बीजिंग के डॉ. चीनशेंग एवं प्रोफेसर जिन दिंगहान आज भी इस दिशा में सक्रिय हैं। आज विश्व पटल पर दृष्टि दौड़ाएँ तो थाइलैंड, श्रीलंका भी हिंदी सीखने और भारत एवं भारतीय वांगमय से परिचित होने को कदम बढ़ा चुके हैं। फीजी में तो संसद की मान्यताप्राप्त भाषा हिंदी बनी। प्रथम विश्व हिंदी सम्मेलन में शामिल यूनेस्को के प्रतिनिधि श्री. अशर डिलियान के अनुसार, हिंदी १९४७ से यूनेस्को की शासकीय भाषा है। यूनेस्को के निर्णयों के अनुवाद हिंदी में भी किए जाते हैं।

प्रवासी भारतीय हिंदी को महज एक भाषा नहीं, बल्कि अपनी सामाजिक, सांस्कृतिक अस्मिता की वाहक समझकर उसे अंगीकार करते है और नई पीढ़ी में अपनी सभ्यता, संस्कृति का अलख जगाए रखना चाहते हैं, भले ही वे हिंदी से प्रत्यक्षत: जुड़े न हों। ये लोग अपने बच्चों को हिंदी सिखाने के लिए प्रयासरत हैं। विकसित देशों में हिंदी के प्रति उद्देश्यपूर्ण दृष्टि है। किसी भी भाषा के लिए यह महत गरिमा का विषय है। डॉ. कामता कमलेश के शब्दों में " हिंदी मात्र साहित्य की चीज नहीं वरन हृदयों को जोड़ने वाली ऊर्जा भी है और प्रेम की गंगा भी।" २

हिंदी ने विश्व पत्रकारिता में भी स्वयं को स्थापित किया है और निरंतर कर रही है। फीजी की फीजी टाइम्स, 'हिंदी शांतिदूत' मॉरीशस की 'वसंत','स्वदेश', 'आक्रोश' ,' इंद्रधनुष', इंग्लैंड की 'पुरवाई', अमेरिका की 'सौरभ' और 'विश्व विवेक' श्याम त्रिपाठी द्वारा संपादित कनाडा की 'हिंदी चेतना', सुमन घई द्वारा संपादित 'जाल' पत्रिका 'साहित्य कुंज', संयुक्त अरब इमारात के शरजाह नगर से पुर्णिमा वर्मन द्वारा संचालित 'जाल' पत्रिका 'अभिव्यक्ति' और 'अनुभूति' दीपक 'मशाल' द्वारा संपादित पित्सबर्ग, अमेरिका की 'साहित्य सेतु' पत्रिका के प्रकाशन के साथ ही विपुल मात्रा में मध्यकालीन एवं आधुनिक कालीन हिंदी कवियों, कथाकारों की कृतियों का अनेक विदेशी भाषाओं में अनुवाद भारतीय संस्कृति के प्रति उनके लगाव को और विश्वास को दर्शाता है। यही नहीं हिंदी गीत –संगीत, फिल्में, रेडियों और टीवी के धारावाहिकों ने विश्व परिसर में प्रवेश का नया मार्ग प्रशस्त किया है। हिंदी पढ़ने आए बच्चों के एक समूह ने स्वीकारा कि हिंदी फिल्मी गानों के कारण उन्हें हिंदी समझने और सीखने में मदद मिली है।

हिंदी को उसकी सही जगह प्रतिष्ठापित करने हेतु ब्रह्म समाज, आर्य समाज, सनातन धर्म सभा,विश्व हिंदू महासभा, सेवा शिविर, थियोसोफिकल सोसाइटी ,प्रार्थना समाज , रामकृष्ण मिशन,त्रिवेणी एवं राधस्वामी संप्रदाय, काशी नागरी प्रचारिणी सभा, हिंदी साहित्य सम्मेलन, प्रयाग, बंबई हिंदी विद्यापीठ, महाराष्ट्र राष्ट्रासभा पुणे, हिंदी विद्यापीठ, देवघरय असम राष्ट्रभाषा प्रचार समिति, गुवाहाटी ने महत्वपूर्ण कार्य किए और अधिकांश आज भी सक्रिय हैं । उन्होंने अपने विचारों को जन–जन तक पहुँचाने हेतु हिंदी को आपका वाहक बनाया और उसे विस्तार दिया, इससे भाषा एवं लिपि में भी आवश्यक सुधार होता गया । हिंदी को विस्तार देने में उत्तर प्रदेश हिंदी संस्थान , दक्षिण भारत हिंदी प्रचार सभा, चेन्नई, केंद्रीय हिंदी संस्थान आगरा, भारतीय सांस्कृतिक परिषद, दिल्ली, राष्ट्रभाषा प्रचार समिति वर्धा, गुजरात विद्यापीठ, अहमदाबाद, साहित्य अकादेमी, दिल्ली, राष्ट्रीय पुस्तक न्यास,दिल्ली, प्रथम बुक्स,बंगलोर, सार्क कल्चर सेंटर,कोलंबो, सेज पब्लिकेशन, दिल्ली आदि महत्वपूर्ण नाम हैं। अन्य कई निजी प्रकाशन भी अनुवाद के माध्यम से हिंदी को विदेशों तक और विदेशी साहित्यकारों को हिंदी के प्रांगण तक लाने हेतु सक्रिय भूमिका निभा रहे हैं। मॉरीशस में हिंदी को विस्तार देने में आर्य समाज, सनातन धर्म सभा एवं अनेक साधु–संतों का सक्रिय योगदान रहा है।

हिंदी के प्रति जनजागृति निरंतर बढ़ती जा रही है, लोग अंग्रेजी के प्रति मानसिक दासता से मुक्त होने लगे हैं। हमारे राष्ट्रपिता महात्मा गाँधी ने हिंदी की अस्मिता को राष्ट्रीय स्तर पर वैभवशाली बनाने और इसके माध्यम से देश के मौलिक विकास की बात कही थी, निस्संदेह सोलह आने सच निकली। आज हिंदी ने विज्ञान, तकनीक और अनुसंधान व अन्यान्य क्षेत्रों में पग बढ़ा दिए हैं, हालाँकि अंग्रेजी के चंगुल से पूरी तरह मुक्ति मिली नहीं किंतु विश्व भर में फैले भारतीय प्रवासी और भारत वंशियों का हिंदी के प्रति समर्पण और इसके विकास के प्रति कर्मनिष्ठता हमें आशान्वित करती है। वैश्विक पटल पर हिंदी के पुरोधा नजर आने लगे हैं। लगभग तीन करोड़ भारतवंशी और प्रवासी भारतीय विश्व के चालीस देशों में रहते हैं उनकी सामाजिक,

सांस्कृतिक और भौगोलिक स्थितियाँ निश्चित तौर पर परस्पर भिन्न हैं। अतएव उनकी रचनाएँ जो उनकी अनुभूति से बहुत कुछ जुड़ी होती है, अपने देशकाल से प्रभावित और विशिष्ट है,किंतु इन सबके बावजूद हिंदी उनके लिए माँ के आँचल के समान है, जहाँ सभी एक समान आत्मीयता पाते हैं। हिंदी का यही विस्तार उसे विश्वभाषा बनने की दिशा में आगे बढ़ाएगा। केंब्रिज विश्वविद्यालय के पूर्व अध्यापक प्रो. सत्येन्द्र श्रीवास्तव का मानना था कि '' ब्रिटेन में अंग्रेजी के बाद जो भाषा सबसे अधिक बोली जाती है वह हिंदी या हिंदुस्तानी है।'' इसी प्रकार हिंदी के सुप्रसिद्ध व्यंग्यकार और बल्गीरिया और मॉरीशस व्याख्याता रह चुके डॉ. हरीश नवल का मानना है कि " हिंदी के बल पर आप पूरे विश्व की सैर कर सकते हैं,जबकि अंग्रेजी के बल पर नहीं। अंग्रेजी के कारण कई देशों में आपको गंभीर परेशानी हो सकती है, मगर हिंदी जानने वाले लोग मिल ही जाते हैं । '' हिंदी को न सिर्फ संपूर्ण भारतवर्ष, वरन राष्ट्रसंघ में स्थान दिलाने के प्रयास स्वरूप १९७५ ई. से विश्व हिंदी सम्मेलन का निरंतर आयोजन इस दिशा में उठाया गया एक महत्वपूर्ण कदम है और इसके लिए हमारे देश की पूर्व प्रधानमंत्री श्रीमती इंदिरा गाँधी और मॉरीशस के पूर्व प्रधानमंत्री सर शिवसागर राम गुलाम एवं काका साहेब कालेलकर, अनंत गोपाल शेवड़े,डॉ. कर्ण सिंह प्रभृत जन सराहनीय हैं।

हिंदी साहित्य के स्वरूप का वैविध्य ही उसे व्यापकता देता है। भारतवंशी प्रवासी हिंदी कहानीकारों की ओर दृष्टि भर डालें तो एक लंबा इतिहास हमारे सामने अपने द्वार खोलता है। मारीशस की कहानियों के संबंध में वहाँ के अग्रणी कथाकार अभिमन्यु अनंत की उक्ति है 'चीत्कारों से भरा गूँगा आकाश!' सचमुच उस अकथ पीड़ा का मार्मिक और सजीव चित्रण वहाँ की कहानियों में मिलता है। ये कहानियाँ अस्तित्व के लिए जूझते, पसीना बहाते उन आम लोगों का प्रतिनिधित्व करती है जिन्होंने दासता, अमानवीय व्यवहार और गरीबी झेली, जबकि पाश्चात्य देशों में अरसे से या कि हाल के कुछ वर्षों से रह रहे प्रवासी भारतीय की रचनाएँ आधुनिक सभ्यता से अभिशप्त जीवन की गाथा सुनाती हैं। मॉरीशस का हिंदी साहित्य अभिमन्यु अनंत, सोमदत्त बखोरी, नेम नारायण गुप्त, धर्मवीर घूरा, रामदेव धुरंधर, बीवी साहेबा, महेश रामजियावन, हेमराज सुंदर प्रभृत साहित्यकारों की कलम से उतरकर विशिष्ट जगह बनाए हुए है। ब्रिटेन की कीर्ति चौधरी, उषा राजे सक्सेना, दिव्या माथुर ,तेजेन्द्र शर्मा इरा सक्सेना, महेंद दवेसर, तोगी आगूता , सलमा जैदी ,पद्मेश गुप्त आदि अनेक कथाकारों ने अपने –अपने क्षेत्र में हिंदी को कहानी के माध्यम से निस्संदेह तीव्र गति प्रदान की है।

अमेरिका में हिंदी कहानी लगभग ५० वर्षों का सफर तय कर चुकी है। गुलाब खंडेलवाल, सोमावीरा, डॉ. वेदप्रकाश बटुक ,सुनीता जैन, उषा प्रियंवदा आदि वरिष्ठ साहित्यकारों ने जहाँ अमेरिका की जमीन पर हिंदी बोने का काम किया , समकालीन लेखकों ने खाद– पानी देकर उसे विकसित करने का। अंजना संधीर के नाम लिखे गए उषा प्रियंवदा के खत का अंश वहाँ के हिंदी साहित्यकारों के संघर्ष और विजय का बहुत कुछ खुलासा कर देता है। सत्तर से अभी तक के कहानीकारों की फेहरिस्त बड़ी लंबी है। इनमें उमेश अग्निहोत्री, ललित आहलूवालिया, कुमार चंदर, नरेंद्र शुक्ल, सुषम बेदी, विशाखा ठाकर, वेद प्रकाश सिंह 'अरुण', अनिल प्रभा कुमार, सुधा ओम ढींगरा,अंशु जौहरी, देवी नागरानी, कैलाशनाथ तिवारी, अमरेन्द्र कुमार आदि शामिल हैं जिन्होंने हिंदी को अपनी सांस्कृतिक संपदा का वाहक माना है और निरंतर कर्मरत हैं। इनके अतिरिक्त अर्जेंटीना में प्रेमलता वर्मा, डेनमार्क में अर्चना पेन्यूलि, जापान में लक्ष्मीधर मालवीय, नार्वे में अमित जोशी, न्यूजीलैंड में महेंद्र चंद्र विनोद, यू एस में शशि पाधा,रचना श्रीवास्तव, मंजु मिश्रा, शीन के गुणशेखर, नीदरलैंड में पुष्पिता अवस्थी, फीजी के जोगिन्दर सिंह कंवल,कृष्ण बिहारी आदि लेखक निरंतर हिंदी को नित नूतन परिधान से सजाने सँवारने में संलग्न हैं। हिंदी के निरंतर उत्कर्ष में हिंदी भाषी भारतीयों से

कहीं अधिक श्रम प्रवासी भारतीय कृतिकारों की कृतियों में झलकता है, इनकी कहानी विधा इसका प्रमाण है कि रचना स्वयं में नया रंग, नए तेवर लेकर अवतरित होती है।

कथाकार हिमांशु जोशी का मानना है " अब हिंदी कथा साहित्य का अलग इतिहास लिखने की जरूरत है। इतना वैविध्य विश्व की संभवत: कम भाषाओं में देखने को मिलता है। 'इंद्रधनुष' ही नहीं, 'प्रिज्म' की तरह झिलमिलाते अनेक आयाम! जो चौंकाते ही नहीं, आह्लादित भी करते हैं। '' ३

संदर्भ ग्रंथ सूचि –

१. भाषा की अस्मिता और हिंदी का वैश्विक परिदृश्य – रवीन्द्र कालिया
२. प्रतिनिधि प्रवासी हिंदी कहानियाँ – हिमांशु जोशी
३. प्रवासी आवाज – अंजना संधीर

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द गॅझेट ऑफ इंडिया, १८ जुलै २०१८ को प्रकाशित किये गये राजपत्र में विश्वविद्यालय अनुदान आयोगने शिक्षकों और अन्य शिक्षक कर्मचारीयों को न्यूनतम अहर्ता के बारे में विनियम जारी किया है, जिसमें पृष्ठ संख्या १०५ पर peer reviewed जर्नल्स API स्कोअर या प्रमोशन के लिए मान्य किये जाऐगे ऐसा लिखा है । ये राजपत्र निम्न लिंक पर अव्हेलेबल है कृपया डाउनलोड करके देखिये।

https://www.ugc.ac.in/pdfnews/4033931_UGC-Regulation_min_Qualification_Jul2018.pdf

More Details
https://www.youtube.com/watch?v=g_fzq2Mi7yM&t=4s

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विश्वविद्यालय अनुदान आयोग (विश्वविद्यालय और महाविद्यालयों में शिक्षकों और अन्य शैक्षिक कर्मचारियों की नियुक्ति हेतु न्यूनतम अर्हता तथा उच्चतर शिक्षा में मानकों के रखरखाव हेतु अन्य उपाय संबंधी विनियम, 2018

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दुनिया भर के आज के साहित्यकारों में उदय प्रकाश का स्थान एक मूर्धन्य साहित्यकारें में लिया जाता है। हिंदी कथा साहित्य में उदय प्रकाश एक ऐसे कथाकार हैं जिन्होंने अपनी कहानियों के माध्यम से समाज की पूरी तस्वीर खींच ली है। आधुनिकता, भूमंडलीकरण, विकास की तमाम अवधारणाओं ने हमारे समाज एवं देश में उपभोक्तावादी संस्कृति को जन्म दिया है। भूमंडलीकरण और उदारीकरण के नाम पर पूंजीवाद ने जिस तरह से ओछी पाश्चात्य संस्कृति और उपभोक्तावादी संस्कृति को हमारे समाज में फैलाया है, उससे न सिर्फ व्यक्ति प्रभावित हुआ है बल्कि व्यक्ति के साथ भारतीय परिवार, समाज, हमारी सभ्यता एवं संस्कृति भी पूरी तरह प्रभावित हुई है। इस उपभोक्तावादी संस्कृति ने हमारी भारतीय सभ्यता एवं संस्कृति को पूरी तरह से तहस—नहस कर दिया है। उदय प्रकाश की अधिकांश कहानियां उपभोक्तावादी संस्कृति के साइड इफेक्ट से प्रभावित हैं। 'तिरिछ', 'और अंत में प्रार्थना', 'पॉल गोमरा का स्कूटर', 'पीली छतरी वाली लड़की', 'दत्तात्रेय के दुख', 'वारेन हेस्टिंग्स् का सांड़' आदि ऐसी अनेक कहानियां हैं जिनमें उदय प्रकाश ने उपभोक्तावादी संस्कृति और इस उपभोक्तावादी संस्कृति के दुष्परिणाम पर विस्तार से प्रकाश ड़ाला है। और इस तरह से उपभोक्तावादी संस्कृति और उसके दुष्परिणामों पर लिखने वाले बहुत कम लेखकों में उदय प्रकाश एक हैं। प्रसिद्ध लेखक ज्योतिष जोशी इस संदर्भ में लिखते हैं — ''भूमंडलीकरण से उपजी उपभोक्तावादी संस्कृति और बाजारवाद के साथ उत्तर आधुनिकता को लेकर बहस करने वाले वे हिंदी के कुछ ही बौद्धिकों में शामिल हैं। '' १ उदय प्रकाश ने अपनी कहानियों में पूंजीवाद, उदारवाद, भूमंडलीकरण, उपभोक्तावादी संस्कृति का जिस तरह से चित्रण किया है वैसा चित्रण अन्य कथाकारों की रचनाओं में देखने को बहुत कम मिलता है। पूंजीवाद के देवताओं ने विलास के नाम पर ओछी पाश्चात्य संस्कृति को हमारे देश में फैलाया है और इसी ओछी पाश्चात्य संस्कृति ने हमें उपभोक्तावादी गुलाम बना दिया है। इस उत्तर आधुनिक पाश्चात्य संस्कृति ने हमारे अंदर की चेतना को पूरी तरह से हाइजैक कर लिया है। जिसके कारण आज हमारी मौलिक संस्कृति और परंपरा इतिहास के पन्नों में सिमटती जा रही है। पूरा का पूरा देश पाश्चात्य संस्कृति के रंग में रंगता जा रहा है।

उदय प्रकाश की कहानियों में पाश्चात्य संस्कृति का प्रभाव और इस संस्कृति का युवाओं पर पड़ रहे प्रभाव को बड़े ही सुंदर तरीके से प्रस्तुत किया गया है। उपभोक्तावादी संस्कृति ने पूरे देश को अपने कब्जे में ले लिया है, कोई इससे अछूता नहीं है। विशेषकर मध्यवर्ग इस बाजार की चपेट में आ चुका था। उदय प्रकाश ने इसी बाजार की महिमा का वर्णन 'पॉल गोमरा का स्कूटर' कहानी में किया है — ''बाजार अब सभी चीजों का विकल्प बन चुका था। शहर, गांव, कस्बे बड़ी तेजी से बाजार में बदल रहे थे, हर घर दुकान में तब्दील हो रहा था। बाप अपने बेटे को इसलिए घर से निकालकर भगा रहा था कि वह बाजार में कहीं फिट नहीं बैठ रहा था। पत्नियां अपने पतियों को छोड़—छोड़कर भाग रही थीं क्योंकि बाजार में उनके पतियों की कोई खास मांग नहीं थी। औरत बिकाऊ और मर्द कमाऊ का महान चकाचक युग आ गया था।'' २ औरत बिकाऊ और मर्द कमाऊ के युग में इंसानियत, मानवता और प्रेम का कोई महत्व नहीं रह गया था। ऐसी उपभोक्तावादी संस्कृति का विकास

हो रहा था जिसमें पैसा ही सबकुछ था। इसी पैसे के लिए सारा ताम–झाम लगाया जा रहा था और इसी पैसे के लिए लोग कुछ भी करने को तैयार होने लगे थे। वहीं वे आगे कहते हैं – ''बिहार के छपरा जिले के प्राइमरी स्कूल की टीचरी का काम छोड़कर अपने उचक्के प्रेमी के साथ दिल्ली भाग आने वाली आशा मिश्रा नाम की लड़की कटेसा क्लासिक में चल रही थी। उसने किसी विज्ञापन में एक बलिष्ठ काले रंग के अरबी घाड़े की खुरदरी पीठ पर बैठकर अपने पारदर्शक जांघिए के भीतर से 'द ब्लैक हार्स' नामक बियर की बोतल निकालकर छातियों में उड़ेल ली थी और घोड़े की पीठ पर बैठी–बैठी वह खुद बियर की झाग में बदल गई थी। काले घोड़े की खुरदरी पीठ पर सिर्फ आशा मिश्रा का फेन बचा था, ज़ो धीरे–धीरे उस बियर की ब्रांड में बदल रहा था।'' ३

उपभोक्तावादी संस्कृति और मध्यवर्ग का खास रिश्ता रहा है। जितनी भी विकासशील संस्कृतियॉं हैं, आधुनिकता के मशीन हैं वे सभी के सभी मध्यवर्ग को कब्जे में करने के लिए ही बने हैं। बल्कि यूं कहा जाए कि मध्यवर्ग पूंजीवाद के लॉलीपॉप को देखकर ज्यादा उत्सुक हो जाता है, उसके मुँह में पानी आ जाता है, भले ही यह लॉलीपॉप स्वास्थ्य के लिए बुरा हो। उदय प्रकाश ने 'दत्तात्रेय के दुख' कहानी में इसी उपभोक्तावादी लॉलीपॉप का जिक्र करते हुए कहा है – ''दिवाली की रात थी। बच्चों ने कुत्ते की पूंछ में पटाखे की लड़ी बांध दी और बत्ती को तिली दिखा दी थी। पटाखे धड़ा–धड़ फूट रहे थे और कुत्ता बदहवास, होशोहवास खोकर चीखता, भौंकता, रोता, गिरता–पड़ता भाग रहा था। कुत्ता जब विनायक, दत्तात्रेय के पास से गुजरा तो उन्होंने कुत्ते के सामने हड्डी के टुकड़े फेंक दिए। एक तरफ लालच में कुत्ता हड्डी चबा रहा था, दूसरी तरफ पूंछ में बंधे पटाखे के लगातार फूटने की वजह से चीख–पुकार भी मचा रहा था। एक तरफ कुत्ते के मुंह से लार बह रही थी, दूसरी तरफ उसके गले से चीख निकल रही थी। एक अद्‌भुत ट्रैजिक–कॉमिक दृश्य था। विनायक, दत्तात्रेय हँसे। लोगों ने पूछा – आप क्यों हँस रहे हैं? तो उन्होंने जवाब दिया – देखो इस कुत्ते को। यह बिल्कुल तिसरी दुनिया का उपभोक्तावादी मनुष्य लग रहा है। उत्तर–आधुनिक उपभोक्तावाद का दुर्दांत दृष्टांत।'' ४

उपभोक्तावादी संस्कृति का जितना प्रभाव मध्यवर्ग के ऊपर पड़ा है, उतना शायद किसी अन्य वर्ग के ऊपर नहीं पड़ा। उत्तर–आधुनिकतावाद ने मध्यवर्ग को एक ऐसी जगह पर लाकर खड़ा कर दिया है जहां से वह न तो आगे जा सकता है और न ही पीछे की ओर लौट सकता है। उसकी स्थिति उस कुत्ते के जैसी है जिसके मुँह में एक तरफ लालच की हड्डी है तो दूसरी तरफ उसकी पूंछ में ट्रेजेडी रूपी जलते हुए पटाखे बंधे हैं जिनसे वे बच भी नहीं सकते। आज पूंजीवाद ने अपने स्वार्थ हेतु मध्य–वर्ग के सामने एक ऐसा लॉलीपॉप रख दिया है जिसकी लालच में वे उसी तरह फँसे जा रहे हैं जैसे कि छोटे बच्चे लॉलीपॉप को देखकर उसे हासिल करने अथवा खाने की जिद करते हैं। परंतु विडंबना यह है कि मध्यवर्ग के सामने जो लॉलीपॉप रखा जा रहा है वह और कुछ नहीं बस एक छलावा है, एक चक्रव्यूह है जिसमें वे लगातार फँसते जाते हैं, लाख कोशिश करने के बाद भी निकल नहीं पाते। विनायक, दत्तात्रेय इस तिसरी दुनिया के मध्यवर्ग की स्थिति से अच्छी तरह वाकिफ हैं। उत्तर आधुनिक और पूंजीवादी संस्कृति मनुष्य के दिमाग पर हमला करती है खास कर मध्यवर्गीय लोगों के दिमाग पर। उनकी सोचने–समझने की शक्ति क्षीण कर देती है और ऐसी स्थिति में लाकर खड़ा कर देती है कि वह पूरी तरह से अकेला हो जाता है। उनका साथ कोई नहीं देता। ऐसी दुख की घड़ी में वह अगर दिल्ली वासी हो तो फिर क्या कहना? इतिहास गवाह है कि दिल्ली कभी किसी की तन्हाई की साथी नहीं रही। दिल्ली तो ऐसी बेवफा है, जो दुःख की घड़ी में घिरे इंसान को लात मारने में देर नहीं करती। दिल्ली दिलवालों की है, यह अवधारणा पूरी तरह से गलत है बल्कि दिल्ली तो पैसे वालों की है धन–संपत्ति और सत्ता के ठेकेदारों की है। इसलिए जो व्यक्ति दुर्दिनों की चपेट में आता है दिल्ली उसे बाहर का रास्ता दिखा देती है। ऐसी स्थिति में उसका अकेलापन ही उसका साथी बन जाता है – ''जो भी दुर्दिनों में घिरता है, दिल्ली उसे त्याग देती है। विनायक, दत्तात्रेय भी दुर्दिनों

में थे। दिल्ली ने उन्हें त्याग दिया था। न उनके पास कोई आता था, न कोई उनका हाल पूछता था। टेलीफोन कभी बजता नहीं था। वे अकेले रह गए थे। अकेलापन और दुर्दिन के दिन बिताने का तरीका विनायक, दत्तात्रेय ने खोज निकाला था। वे अपने कमरे के एक कोने में जाकर खड़े हो जाते थे और पुकारकर पूछते — ''विनायक कैसे हो? फिर दूसरे कोने पर खड़े होकर मुस्कराते हुए कहते — मैं ठीक हूँ विनायक। अपनी सुनाओ। कभी—कभार आ जाया करो यार।''५

इन्हीं उत्तर आधुनिकता, उपभोक्तावादी संस्कृति और पूंजीवाद ने हमारे देश की मानवीय संवेदना को नष्ट किया। इन्हीं की वजह से हमारे देश में दिन—प्रतिदिन सामाजिक—राजनीतिक अवमूल्यन, क्षेत्रियतावाद, जातिवाद, सांप्रदायिक राष्ट्रवाद, बेरोजगारी आदि की समस्याएं बढ़ती जा रही हैं। उदय प्रकाश ने इन तमाम समस्याओं पर नजर डाली और उन समस्याओं को अपनी कहानियों के माध्यम से आम जनता तक पहुंचाने का प्रयास किया। 'पीली छतरी वाली लड़की' एक ऐसी ही लंबी कहानी है जिसमें उन्होंने राहुल और अंजली की प्रेम कहानी के माध्यम से तमाम समस्याओं को उभारने का प्रयास किया है। उदय प्रकाश ने इस कहानी के माध्यम से उपभोक्तावादी संरकृति को पूरी शिद्दत से प्रस्तुत किया है। २१वीं सदी की दहलीज पर खड़ा भारत एक नए रूप में दुनिया के सामने है। इस समय में देश की सभ्यता एवं संस्कृति लकवाग्रस्त हो चुकी है, मानवीय मूल्य पूरी तरह से गायब हो चुके हैं। अगर कुछ बचा है देश में तो वह है स्वार्थ, हिंसा, बेईमानी, लूट—खसोट आदि। और ये सारी चीजें लोगों की नस—नस में रक्त बनकर बह रही है। दुनिया की तमाम ताकतें इन्हीं बुराइयों को प्रश्रय देने में लगी हैं। पूंजीवादी संस्कृति को बढ़ावा देने के लिए पूरा का पूरा देश जी—जान से लगा हुआ है — ''यही वह आदमी है — खाऊ, तुंदियल, कामुक, लुच्चा, जालसाज और रईस जिसकी सेवा की खातिर इस व्यवस्था और सरकार का निर्माण किया गया है, इसी आदमी के सुख और भोग के लिए इतना बड़ा बाजार और इतनी सारी पुलिस और फौज है।'' ६

यह पूंजीवादी ओर उपभोक्तावादी संस्कृति की ही देन है जिसमें किसी एक आदमी की खुशी और सेवा के लिए पूरी आवाम तत्पर रहती है। उत्तर आधुनिक समाज की सबसे बड़ी विशेषता है पूंजीवाद और इस पूंजीवादी व्यवस्था में मानव और उसके समाज का कोई महत्व नहीं रह जाता है। गरीब किसान और मजदूर सिर्फ शोषण के लिए रह जाते हैं और मध्यवर्ग इस व्यवस्था को मजबूती प्रदान करने वाला अंग बन जाता है — ''यही वह आदमी है जिसके लिए संसार भर की औरतों के कपड़े उतारे जा रहे हैं। तमाम शहरों के पार्लर्स में स्त्रियों को लिटाकर उनकी त्वचा से मोम के द्वारा या एलेक्ट्रोलिसिस के जरिए रोयें उखाड़े जा रहे हैं जैसे पिछले समय में गड़ेरिये भेड़ों की खाल से ऊन उतारा करते थे। राहुल को साफ दिखाई देता है कि तमाम शहरों और कस्बों के मध्य—निम्न मध्यवर्गीय घरों से निकल—निकल कर लड़कियां इन शहरों में कुकुरमुत्तों की तरह जगह—जगह उगी ब्यूटी पार्लर्स में मेमनों की तरह झुंड बनाकर घुसतीं और फिर चिकनी—चुपड़ी होकर उस आदमी की तोंद पर अपनी टांगे छितरा कर बैठ जातीं। इन लड़कियों को टी.वी. 'बोल्ड एवं ब्यूटीफूल' कहता और वह लुजलुजा—सा तुंदियल बूढ़ा खुद 'रिच एवं फेमस' था।'' ७ सन् १९९० के बाद से भारत में नव—उपनिवेशवाद का आगमन हुआ। इस नव उपनिवेशवाद के आगमन से ही पूरी दुनिया के नक्शे में भारत की तस्वीर पूरी तरह बदल गई और यह साफ तौर पर पूरी दुनिया को पता चल गया कि 'इंडिया इज द बिगेस्ट मार्केट इन द वर्ल्ड। ' इसी मार्केट के ऊपर दुनिया के दलालों की निगाह जम गई। आज की तारीख में भारत विश्व का सबसे बड़ा बाजार है। इस बाजार में सामाजिक—मानवीय मूल्यों की कोई कीमत नहीं है। आज का मानव अपने स्वार्थ को साधने के लिए मनुष्य का सिर्फ इस्तेमाल करता है और प्रेम तथा दोस्ती को सीढ़ी बनाकर अपने स्वार्थ की मंजिल पर पहुँचना चाहता है और उस मंजिल पर पहुँचने के बाद उसके मन से मानवता और सामाजिकता पूरी तरह से गायब हो जाती है। आज के दौर में हर चीज सिमट गई है, जिंदगी के मायने बदल गए हैं और अब समाज

की पूरी तस्वीर बदल गई है जिसे उदय प्रकाश ने बहुत ही सुंदर तरीके से प्रस्तुत किया है —''इससे ज्यादा मत खाओ, इससे ज्यादा मत कमाओ, इससे ज्यादा हिंसा मत करो, इससे ज्यादा संभोग मत करो, इससे ज्यादा मत सोओ, इससे ज्यादा मत नाचो ...वे सारे सिद्धांत जो धर्मग्रंथों में भी थे, समाज शास्त्र या विज्ञान अथवा राजनीतिक पुस्तकों में भी उन्हें कुड़ेदान में डाल दिया था। इस आदमी ने बीसवीं सदी के अंतिम दशकों में पूंजी, सत्ता और तकनीक की समूची ताकत को अपनी मुट्ठियों में भरकर कहा था, स्वतंत्रता! चीखते हुए आजादी! अपनी सारी ऐषणाओं को जाग जाने दो। अपनी सारी इंद्रियों को इस पृथ्वी पर खुल्ला चरने और विचरने दो। इस धरती पर जो कुछ भी है, तुम्हारे द्वारा भोगे जाने के लिए है, न कोई राष्ट्र है, न कोई देश, समूचा भूमंडल तुम्हारा है, न कुछ नैतिक है, न कुछ अनैतिक, न कुछ पाप है, न कुछ पुण्य, खाओ, पीयो और मौज करो।'' ८

उस आदमी, और उस आदमी जैसे और भी तमाम लोग जो उनके सिद्धांतों पर चलने वाले लोग थे, उनकी समाज में तूती बोलती थी। आज की तारीख में बाजार का जाल जिस तरह से फैला है, उससे कोई भी अछूता नहीं है। दुनिया जिस तरह से बदल रही थी, भूमंडलीकरण और उदारीकरण के कारण जिस तरह से विश्व बाजार का कान्सेप्ट आया था और पूंजीवाद ने जिस तरह से पूरी दुनिया को अपना सामान बेचने का मार्केट बना डाला था, ऐसी परिस्थिति में अगर युवावर्ग या फिर कोई महत्वाकांक्षी व्यक्ति जल्द अमीर बन कर ऐश की जिंदगी व्यतीत करना चाहता हो तो कतई बुरा नहीं। लेकिन यह आम आदमी के लिए बिल्कुल भी नहीं। इस प्रतिस्पर्धा के दौड़ में वही लोग कामयाब हैं जो जिंदगी शॉर्टकट तरीके से जीना चाहते हैं, अच्छे, ईमानदार और मेहनती लोगों के लिए तो रोजी—रोटी हासिल करना भी एक चुनौती हो जाती है — ''तो क्या ये जो भूमंडलीकरण हो रहा है, यह उन्हीं के लिए है जो विश्व बाजार के हिस्से हैं, सटोरिये, व्यापारी, तस्कर, अपराधी या सरकारी मंत्री—अफसर अगर आज डॉ. कोटणीस जैसे लोग चीन जाना चाहें या राहुल सांकृत्यायन जैसे लोग रूस और मध्य एशिया, तो क्या यह संभव होगा? 'नाट एट आल!' कार्तिकेय ने जवाब दिया — दिस इज द एंड ऑफ द सिविल सोसायटी। अब कहीं कोई नागरिक समाज नहीं बचा, सिर्फ सरकारें हैं, कंपनियां हैं, संस्थाएं हैं, माफिया और गिरोह हैं और अगर अब भी तुम किसी लेखक, कवि या विद्वान को हवाई जहाज में सवार होकर विदेश जाते देखते हो, तो जान लो, वह किसी कंपनी, किसी व्यापारी, किसी संस्था या गिरोह का सदस्य या दलाल है।''९

उदय प्रकाश की इस टिप्पणी से यह बात स्पष्ट हो जाती है कि अब कोई नागरिक समाज नहीं रहा बल्कि यहां सिर्फ कंपनियां हैं और कंपनियों को मुनाफा कराने वाले दलाल हैं जो तरह—तरह के तिकड़म करके लोगों को लूटते हैं। मध्यवर्गीय लोग बाजार की चकाचौंध में अपना सबकुछ अर्पण करने को तैयार रहते हैं, उन्हें तो बस एक आरामपरस्त और विलासितापूर्ण जिंदगी जीने का आदी बना दिया गया है। जिसे वे भला क्यों न अपनाएं और सिर्फ बड़े—बड़े महानगरों में ही नहीं बल्कि छोटे—छोटे शहरों और कस्बों में भी ये आदतें फैल चुकी हैं जिन्हें किसी भी कीमत पर अलग नहीं किया जा सकता — ''यह वह उत्तर आधुनिक समय है जब छोटे—छोटे शहरों में 'वेलेंटाइन डे' मनाया जा रहा है और 'न्यू ईयर ईव' के लिए भुच्च पिछड़े कस्बों में भी टी.वी. विज्ञापनों की बदौलत केक, आर्चीज के कार्ड की बिक्री बढ़ गई है।'' १०

इस प्रकार उदय प्रकाश ने अपनी कहानियों के माध्यम से एक तरफ जहां उपभोक्तावादी संस्कृति के कुप्रभाव पर प्रकाश डाला वहीं इस संस्कृति का मध्यवर्ग पर पड़ने वाले प्रभाव को बड़ी ही संजीदगी से प्रस्तुत किया। आजाद भारत के इतिहास में उदय प्रकाश की कहानियां पूरे सिस्टम के ऊपर सवाल उठाती हैं कि आजादी के इतने साल बाद भी मध्यवर्ग जो मेहनत और ईमानदारी से जीवन व्यतीत करने की कोशिश करता है, उनके सामने पूंजीवादी शक्तियों ने लॉलीपॉप रख दिया और इसी लॉलीपॉप को हासिल करने के लिए मध्यवर्गीय समाज उपभोक्तावादी संस्कृति का गुलाम बनता जा रहा है।

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आदिवासी साहित्य का स्वरूप

डॉ परमेश्वर जिजाराव काकड़े
हिंदी विभाग
ज. शि. प्र. मंडल संचालित,
महिला कला महाविद्यालय औरंगाबाद

****

आदिवासी शब्द का अर्थ मूलनिवासी होता है। भारत की जनसंख्या का बड़ा हिस्सा आदिवासियों का है। पुरातन लेखों में आदिवासियों को अतिवका और वनवासी भी कहा गया है । संस्कृत ग्रंथों में, संविधान में आदिवासियों के लिए अनुसूचित जनजाति पद का उपयोग किया गया है । भारत के प्रमुख आदिवासी समुदायों में संथाल, गोंड,मुंडा, हो,बोडो, भील, खासी, सहरिया, गरसिया, मीठा, उराव, बिरहोर आदि है।

आज तक अनेक अध्ययन कर्ताओं, संशोधकोंने आदिवासी किसे कहना चाहिए? इस संदर्भ में अपने विचार व्यक्त किए हैं जिनमें प्रमुखत: आदिवासियों का वसिस्थान, भूप्रदेश, भाषा, सांस्कृतिक संस्कृति आदि के बारे में विचार प्रस्तुत किए हैं । लेकिन यहाँ आदिवासी इस भूमि का मूल निवासी है यह बात हमें ध्यान में रखनी चाहिए क्योंकि आर्य अनार्य संघर्ष में से अनार्य पराभूत हो गए और यहाँ के मूल निवासी आदिवासी जंगलों में पहाड़ियों में जाकर अपना दुखद जीवन जी रहे हैं । वहाँ इस शहर गांव के जगमगाहट से कोसों दूर चला गया है। किसी भी सुविधा के बिना हवा पानी का सामना करता हुआ जीवन जीने लगे वही आदिवासी है आदिवासी हम किसे कहते हैं इस शब्द को वनवासी वन्य जमाती धरती के बच्चे वनराई के बच्चे गिरिराज आदि । पुत्र आदि संतान वनपुत्र, निषाद, कीरात इन समानार्थी शब्दों के माध्यम से पहचाना जाता है ।

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तहसिल — माजलगांव, जिला — बीड़

प्रस्तावना :—

'दलित' विमर्श को समझने के लिए 'दलित' शब्द से सबसे पहले परिचित होना आवश्यक है। जादातर लोग तो दलितों द्वारा लिखित साहित्य को ही दलित साहित्य मानते है। 'दलित' शब्द का अर्थ है, दबाया गया, कुचला गया, शोषित, पीड़ित, उत्पीड़ित या जिनका हक्क छीना गया हो। दलित साहित्य वर्तमान का एक ऐसा विमर्श बन चुका है जिसका अध्ययन किए बिना संपूर्ण हिंदी साहित्य को समझना ही गलत होगा। भारतीय सामाजिकव्यवस्था के सन्दर्भ में 'दलित' सम्बोधनवर्ण व्यवस्था के निचले पायदान पर होने के कारण शताब्दियों से शोषण, दमन व सामाजिक असमानता के शिकार असवर्ण वर्ग केलिए किया जाता है। जब वर्ण व्यवस्था कर्मानुसार न होकर जन्मानुसार हो गयी तो शूद्रसमझी जाने वाली जातियों को शिक्षा व सामाजिक न्याय से वंचितहोना पड़ा औरकालान्तर में इनकी अस्मिता विलीन हो गयी। आधुनिक काल में भारतीय नव जागरण के साथ निम्नवर्ण की दुरावस्था की ओर सुधारकों का ध्यान आकृष्ट हुआ। इस सन्दर्भ में एक ओर तो अस्पृश्यता एवं वर्णगतअसमानता को दूर करने हेतु राजा राममोहन राय, दयानन्द सरस्वती, बाल गंगाधरतिलक और महात्मा गाँधी जैसे विभूतियों ने —समाज सुधार' के प्रयत्न किये तो दूसरीओर ज्योतिबा फुले, नारायण गुरू तथा डॉ० भीमराव अम्बेडकर जैसे दलित वर्ग की विभूतियों ने 'परिवर्तन' का स्वर बुलन्द किया। उत्तर आधुनिक दलित विमर्श ने हाशिये के वर्गों को केन्द्र में लाने के लिये 'व्यवस्था परिवर्तन' पर बल दिया और बीसवीं शताब्दी के अन्तिम दो दशकों में विभिन्न भारतीय भाषाओं के साहित्य में दलित—विमर्श तीव्रता से उभरा। दलित—विमर्श का प्रारम्भ मराठी साहित्य से हुआ, तदुपरान्त हिन्दी, गुजराती, कन्नड़,मलयालम, तेलगू, व तमिल में भी दलितों द्वारा रचित साहित्य के स्वर सुनायी देने लगे। हिन्दी में ओम प्रकाश वाल्मीकि, रमणिका गुप्ता, मैत्रेयी पुष्पा, मोहनदास नैमिशराय, कँवल भारती,डॉ०धर्मवीर भारती जैसे अनेक दलित साहित्यकारों ने दलित साहित्य की विशेष स्थिति और आवश्यकताओं को रेखांकित करते हुये प्रतिपादित किया है कि दलितों के द्वारा दलितोंके जीवन पर लिखा गया साहित्य दलित साहित्य है। किसी गैर दलित या सवर्ण द्वारालिखे गये दलित सम्बन्धी साहित्य को वे दलित साहित्य मानने को तैयार नहीं है। उनकीदृष्टि में ऐसा साहित्य सहानुभूति या दया का साहित्य है, चेतना का नहीं वह चाहे प्रेमचन्द्रया निराला का ही दलित साहित्य क्यों न हो?प्रेम कुमार मणि के अनुसार— ''दलितों के द्वारा दलितों के लिये लिखा जा रहा साहित्यदलित—साहित्य है।''१

सबसे पहले हमें यह पता करना चाहिए कि, दलित साहित्य के सन्दर्भ में आलोचकों केदो मत हैं— एक वर्ग दलितों की नियति पररचित साहित्य को दलित साहित्य मानता है, चाहे उसका लेखक सवर्ण ही क्यों न हो? इसके विपरीत कुछ लेखक दलितों द्वारा दलितों के लिये लिखित साहित्य को ही दलित साहित्य की संज्ञा देते हैं। इन साहित्यकारों का मानना है कि सवर्णों द्वारा जो यथार्थभोगा ही नहीं गया उसकी प्रमाणिक अनुभूति को वह कैसे अभिव्यक्त कर सकता है? मोहनदास नैमिशराय का कहना है कि ''दलित

साहित्य दलितों का ही हो सकता है,क्योंकि उन्होंने जो नारकीय उपेक्षापूर्ण जीवन भोगा है वह कल्पना की वस्तु नहीं वहउनका भोगा हुआ यथार्थ और जख्मी लोगों का दस्तावेज है।''२

हालाँकि दलित साहित्यकार प्रेमचंद को दलित साहित्य के दायरे में लाना पसंद नही करते क्योंकि उनका मानना है कि प्रेमचंद ने कभी भी दलित जीवन की पीड़ाओं को नहीं झेला हैं। दलित साहित्य के उद्देश्य पर प्रकाश डालते हुये डॉ० जयप्रकाश कर्दम कहते हैं, ''दलितोंद्वारा लिखा गया ऐसा साहित्य दलित साहित्य है जो उन्हें अपना दमन और शोषण करनेवालों के विरूद्ध संघर्ष के लिये प्रेरित करें। उनके अन्दर सम्मान और स्वाभिमान से जीने की भावना पैदा करे। भाग्य, भगवान, पुनर्जन्म, परलोक आदि में विश्वास की बजाय वैज्ञानिक सोच का विकास करें। वर्ण व्यवस्था, जाति व्यवस्था सहित उन तमाम शोषणमूलक व्यवस्थाओं का विरोध करने की सीख दे जो असमानता, अन्याय और अमानवीयता की जनक या पोषक है।''३ मराठी लेखक डॉ०खांडेकर दलित–साहित्य का मूल स्वर हिन्दू धर्म पर आधारित परम्पराओं, रूढ़ियों और विचारों के विरूद्ध मानते हुये लिखते हैं – ''दलित साहित्य केवल प्रतिकार या प्रतिशोध नहीं है या केवल नकार यानिषेध नहीं हैं, बल्कि जो कुछ मंगल और शुभ है उन सबकी निर्मित के लिये यह पूर्व परम्पराओं से विद्रोह है। यह विद्रोह हिन्दू धर्म पर आधारित परम्पराओं, रूढ़ियों और विचारों से है और उस समाज के विरूद्ध जिसने उन्हें पद दलित, शूद्र और अस्पृश्य नाम देकर अन्याय, अत्याचारों के द्वारा मन में छिपी बर्बरता का पूरा–पूरा परिचय दिया। यह कहना उचित होगा कि 'विद्रोह' ही दलित साहित्य का मूल धर्म और उसकी विशिष्टता है।४

दलित साहित्य का विस्तार वह हिंदी साहित्य में आने के बाद ही हुआ है। हिन्दी साहित्य में दलित–विमर्श मध्यकाल में भक्ति आन्दोलन के साथ आरम्भ हुआ था। जब जातिगत संकीर्णता अपने चरम पर पहुँच गयी तो निम्नवर्ण का आक्रोश उभरा। मानव मात्र में एक ही परमतत्व के दर्शन करने वाली भारतीय संस्कृति में जातिगत कट्टरता का मूलोच्छेद करने के लिये जो सन्त आगे बढ़े वे उन निम्न जातियों से आये थे, जिन्होंने अत्याचार को सहन किया था इसलिये वे जातिवादी व्यवस्था पर तीव्र कटाक्षेप करते हैं। नामदेव, कबीर और रविदास जैसे संतों ने दलितों की पीड़ा को अत्यन्त मार्मिक शब्दों में व्यक्त किया है।

दलित लेखक समानता, सम्मान और अपनी आजादी के लिए लिख रहे है। हिन्दी साहित्य में दलितों के जीवन से जुड़ी समस्याओं को उठाने में सर्वप्रथम प्रेमचन्द कानाम आता है। दलित जीवन से जुड़ी प्रेमचन्द की कई कहानियाँ हैं। कुछ कहानियों में दलितों की समस्यायें सीधे–सीधे उठायी गयी हैं। इनमें मुख्य पात्र दलित हैं। प्रथम प्रकार की कहानियों में दलित–प्रश्न है, जबकि द्वितीय प्रकार की कहानियाँ दलित जीवन से सम्बन्धित हैं। प्रेमचन्द की कहानियों में दलित पात्र व जीवन किसी–न–किसी रूप में आदि से अन्त तक आया है। दलित–प्रश्न से सम्बन्धित प्रेमचन्द की कहानियों में दो प्रकार के दलित पात्र हैं। एक वे जो ब्राह्मण वादी मान्यताओं में रचे–बसे हैं तथा दूसरे वे जो इसका प्रतिरोध करते हैं। दलितों पर केन्द्रित प्रेमचन्द की चार कहानियाँ उल्लेख्य हैं– 'कफन', 'मन्दिर', 'सद्गति', 'ठाकुर का कुआँ', और 'दूध का दाम'। 'सद्गति' का दु:खी एवं 'मन्दिर' की सुखिया ब्राह्मणवादी मान्यताओं को स्वीकार कर चुके हैं। सदियों से चली आ रही शोषण मूलकमान्यताएँ इनके लिये स्वाभाविक बन गयी लगती हैं। 'सद्गति' के 'दुखी' को इनमान्यताओं में विश्वास की कैसी त्रासद सद्गति मिलती है? इस सद्गति से व्यवस्था की क्रूरता उजागर होती है। 'मंदिर' की सुखिया मंदिर में घुसने के लिये चोरी–चुपके प्रतिरोध करती है। धर्म के ठेकेदार सुखिया की पिटाई करते हैं और उसके बेटे की हत्याकर देते हैं। यह कहानी गैर दलितों की

अमानवीयता, क्रूरता एवं दलितों के शोषण के दुष्टचक्र की जटिलता को अभिव्यक्त करती है। 'ठाकुर का कुआँ' कहानी में ब्राह्मणवादी व्यवस्था में दलितों के छूआछूत के दंश का चित्रण है साथ ही दलित स्त्रियों की दशा भी चित्रित है जहाँ उन्हें शारीरिक व भावनात्मक शोषण का शिकार होना पड़ता है। गंगी सोचती है अभी इस ठाकुर ने तो उस दिन बेचारे गड़रिये की भेड़ चुरा ली थी और बाद में मारकर खा गया। इन्हीं पण्डित जी के घर तो बारहोंमास जुआँ होता है। यही साहू जी तो घी मे तेल मिलाकर बेचते हैं। काम करा लेते हैं मजदूरी देते नानी मरती है। किस बात में हैं हमसे ऊँचे। हाँ! मुँह से हमसे ऊँचे है। हम गली—गली चिल्लाते नहीं कि हम ऊँचे हैं, हम ऊँचे हैं। कभी गांव आ जाती हूँ तो रसभरी आँखों से देखने लगते हैं। जैसे सबकी छाती पर साँप लोटने लगता है, परन्तु घमण्ड यह कि हम ऊँचे हैं।५

'दूध का दाम' कहानी में प्रेमचन्द जी ने गैर दलितों की धूर्तता एवं पाखण्ड के चक्र में फँसे दलित बालक के करूण यथार्थ का चित्रण किया है जो हर बार घोड़ा बनने से इसलिये इन्कार करता है, क्योंकि वह सवर्णों की चालाकी समझ चुका है। इस कहानी में गैर दलितों की अवसरवादिता अभिव्यक्त हुई है। जमीदार का बेटा मंगल की मां का स्तनपान करके बड़ा हुआ है, पर बड़ा होने पर वही मंगल भंगी जाति का होने के कारण अस्पृश्य है। दूध का दाम उसे कुत्ते की भांति जूठन देकर चुकाया जाता है। प्रेमचन्द ने 'कर्मभूमि' नामक उपन्यास में दलितों के मन्दिर—प्रवेश का समर्थन किया है। वे दलितों के प्रति भेद—भाव का दोषी समाज को मानते हुए दलितों में क्रान्ति उत्पन्न करना चाहते थे। उन्होंने भरपूर प्रयत्न किया कि दलित अपने अधिकारों के प्रति जागरूक हों। 'कर्मभूमि' में डॉ. शान्तिकुमार कहते हैं— ''क्या तुम ईश्वर के घर से गुलामी का बीड़ा लेकर आये हो ?
तुम तन—मन से दूसरों की सेवा करते हो, पर तुम गुलाम हो। तुम्हारा समाज में कोई स्थान नहीं। तुम बुनियाद हो। तुम्हारे ही ऊपर समाज खड़ा है, पर तुम अछूत हो। तुम मन्दिरों में नहीं जा सकते। ऐसी अनीति इस अभागे देश के सिवा और कहाँ हो सकती है? क्या तुम सदैव इसी भाँति पतित और दलित बने रहना चाहते हो ? ''६

दलित साहित्य का प्रारंभ १९८० के बाद आत्मकथा लेखन से हूआ। कथाकार राजेंद्र यादव ने विख्यात दलित साहित्यकार ओमप्रकाश वाल्मीकि की चर्चित आत्मकथा 'जूठन' को कई अंशों में 'हंस' में प्रकाशित किया जिसने संपूर्ण भारतीय साहित्य में अपना स्थान बनाया। अमृतलाल नगर ने 'नाच्यों बहुत गोपाल' में सामाजिक विषमता के साथ संवाद करता एवं अस्तित्व के लिये संघर्षरत दलित मध्य वर्ग चित्रित है। उनका मानना है कि दलित (भंगी) समाज के शोषण और दमन का कारण समाज निर्मित व्यवस्था है। समकालीन हिन्दी साहित्य में दलित सन्दर्भों की दृष्टि से शैलेश मटियानी का नाम उल्लेखनीय है। 'अहिंसा', 'जुलूस', 'हारा हुआ', 'संगीत भरी संध्या', 'माँ तुम आओ', 'अलाप', 'लाटी', 'भँवरे की जात', 'आँधी से आँधी तक', ' परिवर्तन', 'आक्रोश', 'भय', 'आवरण', 'दो दुखों का एक सुख', ' चुनाव', 'प्रेममुक्ति', 'चिट्ठी के चारअक्षर', 'वृत्ति', 'सतजुगिया', 'गोपुली', 'गफूरन', 'गृहस्थी', 'इब्बूमगल', 'प्यास', 'शरण्य की ओर' आदि कहानियाँ दलित जीवन सन्दर्भों से सम्बन्धित हैं। इन कहानियों में दलित वर्ग से सम्बन्धित चरित्र मुख्यत: तीन रूपों में चित्रित हुए हैं। पहला वह जो भारतीय समाज की अमानवीयता से लाचार होकर समझौता करता दिखाई देता है। दूसरा वह जो समाज व्यवस्था के प्रति आक्रोश तो व्यक्त करता है, किन्तु उसका आक्रोश इतना दबा होता है कि अंतत: टूटकर समझौता की विवशता को झेलता है। तीसरा वह जो अपनी मान मर्यादा एवं हितों के लिये समाज व्यवस्था से सीधे टकराता है।

युवा कहानीकारों में अजय नावरिया, अनिता भारती, दिलीप काठेरिया, कैलाश वानखेडे आदि का

नाम लिया जाता हैं। माँ तुम आओ' कहानी में गैर दलितों की अमानवीयता और दलित वर्ग से सम्बद्ध चरित्रोंको दलित होने के बोध के स्तरों से गुजरते हुए चित्रित किया गया है। इस कहानी से दलित वर्ग से सम्बद्ध 'बच्चू' बाल चरित्र और बड़ी माँ नारी चरित्र को गैर दलित चरित्र माधो काका दलित होने के त्रासद बोध के धरातल पर ले जाता हुआ चित्रित हुआ है। 'हत्यारे' कहानी में दलितों की भावनाओं को भड़काकर राजनीति करने वाले नेताओं की कुत्सित चेष्टायें अनावृत हुई हैं। इस कहानी में हरफल चन्द्र अपनी बिरादरी को क्रान्ति का आह्वान करता चित्रित हुआ है, ''तो मैं आप लोगों से कह रहा था कि हम हरिजनभाइयों पर जोर जुल्म की हुकूमत चलाने के वे नादिरशाही जमाने गुजर चुके, जो हमारे बाप—दादाओं के पीठों पर अपने जालिम निशान छोड़ गये हैं। .....
अब वक्त आ गया है कि हम हरिजन दुनियाँ में अपने नामोनिशान छोड़ जायें।'' ७

निष्कर्ष :—

अत: हम कह सकते है कि इस देश में जातिवाद की समस्या भयावाह है। परंतु आज दलित साहित्य में जड़—रूढ़िजातिपाती सामाजिक संरचना को बदलने की शक्तिनिहित है। सदियों से शोषण का शिकार दलित वर्ग संघर्षरत है कि वह भी स्वतंत्रता, समानता व सम्मान को प्राप्त कर सके। जबकि प्रकशति ने किसी के साथ भेद—भाव नहीं किया तो समाज में भेदभाव क्यों ? आज दलित साहित्य सहजता की ओर बढ़ रहा है। समाज में शोषित वर्ग की समस्याओं को सामने लाने वाले दलित साहित्य का भविष्य उज्जवलहै। इसमें दो राय नहीं हो सकती।

सारांश :—

इस संपूर्ण आलेख के सार रूप में मैं कह सकता हूँ कि भारतीय सामाजिक व्यवस्था में चार वर्ण थे — ब्राह्मण, क्षत्रिय, वैश्य एवं शूद्र। प्रारम्भ मेंवर्ण व्यवस्था कर्मानुसार थी। कालान्तर में यह जन्मानुसार हो गयी और चतुर्थ वर्ग को सबसे निचले पायदान पर होने के कारण शोषण व अमानुषिक व्यवहार का शिकार बननापड़ा। जब व्यक्ति की पहचान उसकी शिक्षा या निपुणता से नहीं बल्कि जाति के आधार पर होने लगी तो शूद्र समझी जाने वाली जातियाँ पद दलित की जाने लगीं।

हिन्दी साहित्य के क्षेत्र में सर्वप्रथम मध्यकालीन सन्तों के काव्य में जातिगत संकीर्णता की सशक्त स्वर में भर्त्सना दिखायी देती है। नामदेव, कबीर, रैदास आदि सन्त कवि जोनिम्न जातियों से आये थे, जातिवादी व्यवस्था पर तीव्र कटाक्षेप करते हैं। उनके साहित्यमें घट—घट में एक ही परमतत्व का दर्शन करने वाली भारतीय संस्कृति का जयघोष है। आधुनिक काल में साहित्यकारों ने जातिगत रूढ़ियों के मूलोच्छेद के लिये प्रतिबद्धताव्यक्त की। उत्तर आधुनिक युग में दलितों में अस्तित्व बोध की पीड़ा को लेकर प्रस्फुटित स्फुलिंग दहकता अंगारा बन जड़ व्यवस्था को दग्ध करने को मचल उठा। दलित साहित्यकारों ने आप बीती की अभिव्यक्ति की। मोहनदास नैमिशराय, सूरज पाल चौहान, ओमप्रकाश वाल्मीकि, शरण कुमार लिम्बाले, जयप्रकाश कर्दम, श्योराजसिंह बेचैन, रजतरानी, सुदेश तनवीर ने साहित्य का विविध विधाओं में शोषण और अपमानकी प्रतिक्रिया की दर्द भरी और रोषपूर्ण अभिव्यक्ति की। दलित पत्रिकाओं (शंबूक,युद्धरत, आम आदमी) का प्रकाशन हुआ। दलित चेतना के आधार पर हिन्दी साहित्य कापुनर्पाठ किया गया और १९१४ में सरस्वती में प्रकाशित हीरा डोम की कविता 'अछूत की शिकायत' को हिन्दी की प्रथम दलित रचना के रूप में स्वीकृति प्राप्त हुई। आज दलित साहित्यकार परम्परागत काव्यशास्त्र और सौन्दर्य बोध के स्थान पर साहित्य की नवीनकसौटी की खोज कर रहें हैं तथा अफ्रीका की अश्वेत जातियों के साहित्य से प्रेरणाप्राप्त कर रहे हैं । इन साहित्यकारों ने काव्यशास्त्रीय मान्यताओं को नकारा है तथा अन्याय का विरोध करने के कारण इनकी भाषा चुटीली एवं व्यंग्यात्मक है। इस साहित्य के द्वारा दलित अस्मिता

को सफलता पूर्वक रेखांकित किया गया है, किन्तु यदि जातिवादी क्रोध प्रतिहिंसा एवं घृणा के रूप में सामने आती हैं, तो चिन्तनीय है। नि:संदेह जातिवाद की समस्या सम्पूर्ण समाज व राष्ट्र की समस्या है। आज दलित विमर्श को संवैधानिक शक्ति प्राप्त है और दलित साहित्य में जड़ रूढ़िवादी सामाजिक संरचना को बदलने की शक्ति निहित है। सदियों से दलित, शोषित अपना अधिकार प्राप्त कर सकें। यदि प्रकृति अपने संसाधनों के अवदान में भेद नहीं करती तो समाज में भेदभाव क्यों? यह निष्कर्ष अंतिमता मेरे शोध आलेख से निकालना चाहता हूँ।

संदर्भ ग्रन्थ सूचि :—

१. प्रतियोगिता दर्पण, नवम्बर २००५

२. प्रतियोगिता दर्पण, नवम्बर २००५

३. वाङ्मय — दलित विशेषांक, अंक ८ जनवरी—मार्च २००६ पृष्ठ १२४

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५. प्रेमचन्द्र— मानसरोवर भाग — १ पृष्ठ १२५

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कृष्णा सोबती और उनका लेखन

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****

सारांश

साहित्यकार का व्यक्तित्व, उसके विचार, उसके भाव और उसकी संवेदनाएँ उसके कृतित्व में विद्यमान रहती हैं। हमें देश की महान लेखिका कृष्णा सोबती की कृतियों में भी उनके बहुआयामी व्यक्तित्व के दर्शन होते हैं। जिस तरह उनकी रचनाएँ असाधारण प्रतीत होती हैं, उसी तरह उनका व्यक्तित्व भी उनकी कृतियों की तरह असाधारण है। अपनी रचनाओं में कृष्णा जी ने पूरे साहस के साथ समाज के यथार्थ तथा नारी की दयनीय स्थिति को प्रस्तुत किया है। प्रस्तुत शोध पत्र में कृष्णा सोबती के व्यक्तित्व एवं कृतित्व की संक्षिप्त विवेचना की गई है। इसके अंतर्गत व्यक्तित्व को परिभाषित करते हुए लेखिका के जन्म एवं पारिवारिक पृष्ठभूमि, शिक्षा, पुरस्कार तथा कृतित्व के अंतर्गत नारी जीवन की दशा एवं दिशा पर भी प्रकाश डाला गया है।

मूल शब्द: कृष्णा सोबती, व्यक्तित्व, कृतित्व

प्रस्तावना

साहित्यकार का जीवन और उनकी कृतियों का गहरा सबंध होता है। यद्यपि एक लेखक के व्यक्तित्व का परिचय उसकी रचनाओं में प्रतिबिंबित

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आधुनिक समाज में कबीर की प्रासंगिकता

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भक्ति की निर्गुण काव्य धारा के अंतर्गत ज्ञानमार्गी शाखा के प्रवर्तक कबीर एक महान संत,सजग समाज सुधारक और क्रांतिदर्शी कवि है। भारतीय धर्म साधना के इतिहास में कबीर ऐसे महान विचारक एवं प्रतिभाशाली महाकवि है, जिन्होंने शताब्दियों की सीमा का उल्लंघन कर दीर्घकाल तक भारतीय जनता का पथ आलोकित किया और सच्चे अर्थों में जनजीवन का नायकत्व किया। संत कबीर एक साथ भक्तों,कवि,सुधारक और युग नेता भी है। वेसमरथ का परवाना लाये थे, हंस उबारने के लिए।कबीर ने यह सब कुछ धर्मोपदेशों के माध्यम से किया है। उस समय धर्म ही युग चेतना का रूप और माध्यम था। ईश्वरोपासना के अधिकार की मांग वास्तव में धार्मिक,सामाजिक न्याय की मांग थी और उन बनावटी तथा ऊपर से थोपी गई मर्यादाओं को तोड़ने की मांग थी,जो विशाल जनसमूह को अपने अधिकारों से वंचित किए हुए थी।यही कारण है कि उस समय के तमाम जन- आंदोलनों का बाह्य रूप धार्मिक था, तमाम उद्बुद्ध नेता धर्म के नाम पर ही मानव- मुक्ति और मानव मात्र की समानता और एकता पर जोर देते थे। उन सबने उन तमाम सामाजिक कुरीतियों,अंधविश्वासों,रूढ़ियो,सांप्रदायिककट्टरताओं,बाह्य विधि-विधानों और कर्मकांड के आडम्बरो पर खुलकर आक्रमण किया है।

संत कबीर ने अपने युग में जो देखा और भोगा था उसी का सामाजिक यथार्थ प्रस्तुत किया है।इसलिए यह कहना होगा कि आज भक्तिकालीन कवियों में कबीर का काल तुलसीदास से अधिक निकट पाते हैं।सही अर्थ में जाने तो कबीर के पास सत्यान्वेषी दृष्टि थी।वे समाज में होनेवाली विकृतियों की निंदा करते हैं। कबीर की वाणी रहस्य की अनुभूतियों की वाणी है। वे अनुभूति पर बल देते हैं तथा पुस्तक ज्ञान का विरोध करती है। कबीर ने आत्मज्ञानपर बल दिया है। कबीर कहते हैं कि इस संसार में सब अपने सुखों में मगन है।वह खाते हैं,पीते हैं, मौज मस्ती करते हैं और सो जाते हैं।संसार के लोग विषय वासनाओं में उलझे है उसे ही सच्चा सुख मान बैठे हैं। जब की सच्चा सुख तो प्रभु की भक्ति है। संसार के लोगों यह हालत देखकर कबीर को रोना आ रहा है,वे लोग क्षणिक सुख रुपी अज्ञान के अंधेरे में खुद गुमा चुके हैं और ज्ञान रूपी ईश्वर की भक्ति के सच्चे सुख से वंचित है।कबीर के शब्दों में-

"सुखिया सब संसार है, खायेअरुसोवै।
दुखिया दास कबीर है,जागे अरुरोवै ।।"१

आज भी समाज में यही दिखाई दे रहा है। सभी लोग अपने अपने संसार में मगन हैं।आज पूरे विश्व में कोरोना १९ वायरस प्रादुर्भाव होने के कारण गरीब लोग रास्तोपर एक समय की रोटी के लिए भीख मांग रहे हैं।परंतु इस गरीब तरफ कोई देख नहीं रही।सच्चा सुख तो इसीमें हैवह गरीब लोगों की मदतो में है। यह पूरा विश्व संसार सुखी रह सकता है।

कबीर के समय देश में धर्म की एक और धारा प्रवाहित हो रही थी, वह थी सूफी साधना की धारा।सूफी लोग इस्लाम के एकेश्वरवाद से संतुष्ट न थे और भगवान को विशिष्ट द्वैतवादीवे दान्तियों की तरह मानते थे।ये लोग मुसलमान उलेमाओं की तरह कट्टर और संकीर्ण मतवादी न थे और न ही इन्हें मुस्लिम धर्म के कर्मकांड पक्ष पर विश्वास था। इस प्रकार कबीर के समय में और उससे पहले धार्मिक आंदोलनों के रूप मेंजनता का विद्रोह तीनधाराओं में फूटा और जनवादी कबीर ने इन तीनों को सम्यक रूप से आत्मसात करके सर्वसाधारण जनता के लिए एक सामान्य मार्ग का संदेश किया बड़ी-बड़ी पुस्तकें पढ़कर संसार में कितने ही लोग मृत्यु के द्वार पहुंच गए,पर सभी विद्वान न हो सके।यदि कोई प्रेम या प्यार के केवल ढाई अक्षर ही अच्छी तरह पढ़ लेअर्थात प्यारका वास्तविक रूप पहचान ले तो वही सच्चा ज्ञानी होगा। सर्व साधारण जनता के लिए एक सामान्य मार्ग का निर्देश किया।कबीर के शब्दों में-

" पोथी पढ़ि-पढ़ि जग मुआ, पंडित भया न कोय।
ढाई आखर प्रेम का, पढ़े सो पंडित होय।।"२

आज समाज में धर्म के नामपर राजनीति हो रही है। सभी लोग अपने- अपने धर्म के नाम परभड़का रहे हैंऔर आम लोग पिसता जा रहा है। पूरी दुनिया में धर्म का अंधा भक्त इतनेहुए हैं कि बताना ही मुश्किल है। वह अपने धर्म के लिए कुछ भीकरने के लिए तैयार है।आमिर और राजनीतिक लोग धर्म के नाम से धंधा कर रहे है। इसे रुकाना चाहिए एक दूसरों के धर्मों का सम्मान करनाऔर एक दूसरे धर्मों के प्रति प्रेम से बातें करना चाहिए।अपने धर्म के अच्छे तत्वों का पालन करना चाहिए।

कबीर के सामाजिक चिंतन की सबसे महत्वपूर्ण विशेषता यह है कि उनमें एक अद्भुत संतुलन मौजूद है। संवेदनशील मनुष्य उनके कवि से भी ज्यादा महान है। तभी तो वे समस्त सांसारिक पीड़ा का वर्णन किया है।एक और

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माया हैं और दूसरी और भक्ति का मार्ग है।एक के मार्ग में बाधा है माया और उसके द्वारा फैलाई गया लालच जिसमें उलझ कर व्यक्ति कहीं का भी नहीं रह जाता है। दोनों एक दूसरे के विपरीत है जिनमें व्यक्ति उलझकर रह जाता है। उसे ना तो कभी माया मिलती है और ना ही कभी मुक्ति का मार्ग। कबीर कहते हैं-

" चलती चक्की देख के दिया कबीरा रोए।
दुई पाटन के बीच में सावुत बचा न कोई।।"३

यूं कहें कि समाज में लोग मोह,माया,लालची की और बढ़ता दिखाई दे रहा है। आज इस आधुनिकता में मनुष्य अपने भाई-बहन,रिश्तेदार, पड़ौसी लोगों का ख्याल करता नहीं है।खुद अपना ही विकास की ओर बढ़ता दिखाई देता है। मनुष्य समाज,राजनीति,नौकर में भ्रष्टाचार करता है और वही पैसे से ईश्वर की पूजा करता है उसे ऐसा लगता है कि मैं जो कुछ भी भ्रष्ट किया था अब मेरा सारा पाप मिट जाएगा ऐसा कहकर ईश्वर की पूजा कर रहा है। उसी प्रकार जो इंसान है, इंसान भीइस दुनिया रूपी चक्की के बीच में फस जाता है।

भारत में मध्ययुग सामाजिक उथल-पुथल का काल रहा है। शोषक,सामंत निर्धनों और निम्न वर्ग का शोषण कर रहे थे। निम्न वर्ग अथवा स्पष्ट कहे तो निचली जातिया एक और सामंती उत्पीड़न से बेहाल थी तथा दूसरी ओर सामाजिक भेदभाव से त्रस्त थी। जाती-पाती का भेदभाव अपने चरम पर था। मानवीय मूल्यों का रहास होता जा रहा था तथा पाखंड और आडंबर की जड़े तेजी से फैलती जा रही थी। कबीर का जन्म ऐसे ही समय में हुआ था।उन्होंने सामाजिक भेदभाव का विषदंश झेला था।जाति प्रथा पर आधारित जन्म वरिष्ठता का प्रचलन तथा श्रेष्ठ गुणों का स्वीकार आदि उन्होंने स्वयं देखा था। कबीर को ये भेदभाव स्वीकार नहीं थे। कबीर के शब्दों में-

"जाति न पूछो साधु की, पूछ लीजिये ज्ञान।
मोल करो तलवार की पड़ी रहन दो म्यान।।"४

इक्कीसवीं शताब्दी में भी जातिव्यवस्था दिखाई देता हैं।परंतुआज जो जातनिम्न दो वर्गो में बाट चुका है एक वरिष्ट जात और दूसरा कनिष्ट जात क प्रथा निर्माण हुआ है वरिष्ट जात में जमींदार,राजनीतिक,नौकरशाही,उधोगपती कनिष्ट जात में मजदूर और किसान यह दोनों की खाईदिन में दिन बढ़ता जा रहा है।आज हमें सिर्फ फिल्मों में दिखाई देता है आमिर का लड़का किसी गरीब मजदूर लड़की से प्रेम और ब्याहहो जाता है। परंतु वास्तव की दुनिया में और कुछ अलग दिखाई देता है। अमीर और अमीर होता जा रहा है गरीब और गरीब होता जा रहा है। यह दोनों एक दूसरे कोनीचता का ऊंच-नीच का भेदभाव समाज में फैलता जा रहा है।इसे रोकने की आवश्यकता है अन्यथा कुछ दिनों के बाद संघर्षों में दिखाई दिखाई देगा।

भक्तिकाल में अमीरों के पास मंदिरों में अपने नाम खुदे संगमर के बरामद बड़े-बड़े हालों के निर्माण के लिए लाखों करोड़ों रुपए होते हैं। विदेशों से पत्थर आयात कर मूर्तियों का निर्माण किया जा रहा है। भ्रष्टाचार से कमाई गई पैसों से धर्म के कार्य के निमित्त यह आकर पुण्य करने का समाज में प्रयास किया जाता है। मूर्तियों को रेशमी वस्त्रों से,स्वर्ण के रत्न जड़ित आभूषणों से सुसज्जित किया जाता है लेकिन उन गरीब लोगों की तरफ किसी का ध्यान नहीं जाता।जिनके सिर पर छत,तन ढकने के लिए कपड़ा और एक वक्त की रोटी तक नहीं,बड़े-बड़े मंदिरों के बाहर टाट बीचाकर बैठने वाले सूखे कंगाल इन लोगों को शर्मिंदगी का अहसास नहीं करते बल्कि मंदिरों की शोभा में बट्टा लगाते हुए दिखाई देते हैं।ऐसी इन मूर्ति पूजा की दिखावटी के बारे में कबीर कहते हैं-

" पाथर हा का देहुरा,पाथरी ही का देव।
पूजण हारा अंधला लागा खोटी सेव।।"५

इस देश में जहां प्रत्येक वर्ष किसी ना किसी राज्य में सुखा,भूकंप,बाढ़ या कोरोना महामारी जैसे प्रकृति का सामना करना पड़ रहा है। प्रतिवर्ष हजारों मासूम बच्चे भूख अथवा कुपोषण रोगों से अपनी जान गंवा बैठते हैं।गरीबी के कारण लोग आत्महत्या कर रहे हैं।आज भगवान के नाम से कुछ लोग व्यापार बनाकर लोगों को फसाया जा रहा है।श्रद्धा और भक्ति करना है आज के युग में तो हमें यह करना चाहिए जो एक वक्त की रोटीखा सकता नहीं,तन ढकने के लिए कपड़ा नहीं,धूप और ठंडी से बचने के लिए मकान नहींऐसे लोगों को हम सहायता किए तो हमारी भक्ति ईश्वर तक पहुंच सकती है और हमें प्रमोच्च आनंद और फल मिलता है।

हम संक्षेप में यह कह सकते हैं कि,संत कबीर के उपदेशों को इक्कीसवीं शताब्दी में फिर से उबारने की आवश्यकता है।आजकल धार्मिक कर्मकांडको बहुत ही विकृत रूप समाज में दिखाई दे रहा है। राजनीतिक लोग धार्मिक भावना को उकसाया जाता है। ऊंच-नीच की भावना,सामाजिक बुराई को हटाने की आज जरूरत है। कबीर की साधना पद्धति, उनकी भक्ति और उनके समाज सुधारक के विधान उस समयमहत्वपूर्ण थे तथा आज भी महत्वपूर्ण है। मनुष्य वैश्वीकरण के भंवरजाल में फंसकर अपने आप को उस से बचाए और इन्हीं कारणों सेवे सर्वाधिक प्रासंगिकता है और रहेंगे।

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इक्कीसवी सदी यह साहित्य के क्षेत्र में सबसे ज्यादा मात्रा में आदिवासी साहित्य पर चर्चा होती नजर आ रही है।इक्कीसवीं सदी में आदिवासियों का महत्वपूर्ण स्थान है। आदिवासी यह समाज से अलग होने के कारण पिछड़ गए है। इक्कीसवी सदी में भी आदिवासी समाज संकट के कठिन दौर से गुजर रहा है। आज देश में औद्योगिकरण के कारण आदिवासी समाज शहर से दूरी होता जा रहा है। और जो मूलभूत आवश्यकताओं जल, जमीन और जंगल की समस्या,दूसरी और शिक्षा समस्या के कारण दिनो–दिन गंभीर होता जा रहा है। आज इनके लोक संस्कृति पर भी समस्या निर्माण होती जा रहा है। सच में देखे जाये तो आदिवासी यह भारत के मूल निवासी है। परंतु आज जैसे–जैसे औद्योगिक का विकास होता जा रहा है। वैसे–वैसे आदिवासी लोग जो घने जंगलों, ऊँचे पर्वतों और दुर्गम घाटियों में निवास करते जा रहे हैं। क्योंकि उनकी शहर की बोली भाषा समझ में नहीं आता और जो आदिवासी अर्द्ध नग्न अवस्था में होने के कारण इन लोगों को शहर से दूरी रहना और घने जंगलों में रहना यह पसंद करते हैं। 'ग्लोबल गाँव के देवता' और 'गायब होता देश' इन दोनों उपन्यासों में रणेंद्र ने आदिवासी समाज पर किस तरह से अन्याय हो रहा है। इसी का यथार्थ चित्रण प्रस्तुत किया है।

इक्कीसवी सदी विश्व में औद्योगिक क्षेत्र में अग्रसर होता जा रहा है। जैसे–जैसे भारत देश में बहुराष्ट्रीय कंपनियाँ आते जा रहे हैं वैसे लोग अमीर होते जा रहे हैं। किंतु यहाँ का जो मूल निवासी है वह लोग नरक की ओर जाते दिखाई दे रहा है। रणेंद्र का उपन्यास 'ग्लोबल गांव के देवता' में यहाँ के मूल निवासियों की व्यथा कथा अपनी दृष्टि सेउजागर किया है। असुरों के बारे में समाज में गलत धारणा बनी ती इसी के कारण समाज में यथार्थ प्रस्तुत करता है। उपन्यासकार रणेंद्र लिखते हैं – ''असूरो के बारे में मेरी धारणा थी कि खूब चौड़े, काले कलूटे भयानक, दाँत–वाँत निकले हुए, माथे पर सिंग–वींग हुए लोग होंगे। लेकिन लालचन को देखकर सब उलट–पुलट हो रहा था। बचपन की सारी कहानियाँ उलटी घूम रही थी।''घ परंपरा से जो चली आती लोग श्रुतियों में,ग्रंथों में असुरों का बड़ा भयानक और जंगली जैसा चित्रण प्रस्तुत किया गया था। मगर सही मायने में असुर की मान्यता राक्षस नहीं है,असुर का अर्थ बलवान पुरुष होता है। बलवान व्यक्ति शत्रुओं का नाश करने वाला है। यह लोगों की मानसिकता बदलना चाहिए।

'गायब होता देश' में रणेंद्र ने झारखंड के मूल रूप से जमीन के संघर्ष को साहित्य के दुनिया के सामने लाने का प्रयास किया है। मुंडाओ को अपने देश से कितना प्यार है। इसका चित्रण बताया गया है। अपना सोने जैसा देश गायब होता जा रहा है जिसका दर्द सोमेश्वर के शब्दों में रणेंद्र लिखते हैं – ''थोड़ी देर के लिए सोचिए बच्चू! अगर लुटियन दिल्ली के नीचे कोयला निकल आये, इलाहाबाद सिविल लाइंस के नीचे बॉक्साइट, यूरेनियम चंडीगढ़ के नीचे आयरन, लखनऊ, चेन्नई,बेंगलुरु के नीचे तो क्या उजडेगा लोग उसे?. .....क्या हम आपके सौतेले बेटे हैं' भारतमाता।''ह्मऔद्योगिक विकास के कारण भारत देश में सभी लोग खुश हैं और व्यापारी लोग भी किंतु दूसरी और मुंडा समाज के लोग और औद्योगिक विकास के कारण उनकी जमीन सरकार गायब

करता जा रहा है। मुंडा समाज में स्त्रीयों को जमीन नहीं देते परंतू सरकार उनकी जमीन पर हक चला रहा है। इसलिए वह सरकार से कहते हैं कि हम भारत देश के बच्चे नहीं हैं, हम क्या सौतेले बच्चे हैं इस देश के? यह सवाल मुंडाओ समाज सरकार के सामने सवाल खड़ा करते हैं। आज इस शान शौक के कारण जो सोने जैसे जमीन को हम खराब करते जा रहे हैं। आधुनिक समाज की इस खोखली दृष्टि को इस उपन्यास में स्पष्ट किया है।

रणेंद्र ने 'ग्लोबल के गाँव के देवता' में यहाँ की लोक संस्कृति को प्रस्तुत किया है। त्योहार, लोकगीत, खान–पान,रहन–सहन जमीन के अधिग्रहण की कष्टदायी प्रक्रिया आदि का यथार्थ चित्रण किया है। समाज में लालचन दा,रामझुम,रूमचन,सोमा,भीखा,गोनू सिंह यह से इतने ईमानदार से जीवंत बना दिया है। यहाँ के हर लड़का लोहा जैसा खड़ा होकर काम करते थे। यह लोग केवल मक्का या कंदा खाकर बंजर पत्थर की जमीन को कोड–जोत कर तयार करने में दिन–रात मेहनत करते हैं। लेखक के शब्दों में – ''श्रम रस से डूबते,उभरते, सरहुल, हरीअरी, सोहराय सडसी–कुटासी,पर्व–त्यौहारों में, अखड़ा में, जदुरा,झूमर करम नाचते अपने बैगा– पूजार–पाहन के साथ सामुदायिक जीवन जीते,वे जिंदगी का घोडा दौडते रहते है।''[1] इस ससार का कठिन परिश्रम करके यह लोग अपनी व्यथा किससे कहें, अंदर से बुरी तरह टूट चुके समाज हैं। भूख और गरीबी इतन अंदर से खोखला कर दिया है कि सामाजिक व्यवस्था चरमरा गई है। इसी यथार्थ चित्रण प्रस्तुत उपन्यास में किया गया है।

'ग्लोबल के देवता के रूप में खनन क्षेत्र में रहने वाले असुर लोग मोटा–मोटी तीन भागों में बँटे हैं– बीर असुर,अगरिया असुर और बिरजिया असुर। बीर यहाँ बहादुर के सेंस में नहीं आया, बल्कि जंगल के अर्थ में आया। वह ग्लोबल संस्कृति के द्वारा रोंदे जाने का भयावह रूप है। खानों के खनन के असुरों की बदहाल जिंदगी को संस्कृति विहीन,भाषा विहीन, साहित्य विहीन,धर्म विहीन कर एक प्रकार से उनको विस्थापित कर वहाँ के नव धनाढ्य वर्ग के लिए 'सिल्वर सिटी' सृजित कर डाली है जो स्वर्ग के नंदन कानन से कम नहीं है। रणेंद्र लिखते हैं–''फूलों,पार्को से लदी हरी–भरी खूबसूरत कॉलोनी। एक से एक स्कूल, चमचमाते बाजार, क्लब घर,योगा केंद्र ,लाइब्रेरी, खेल के मैदान और न जाने क्या–क्या। सुंदर–सुंदर कुत्तों की गुमती सुंदर सुंदर महिलाएँ, बर्फ के गोलों से गुलथुल उजले–उजले बच्चे, रंग–बिरंगी गाड़ियाँ लगा इंद्रलोक धरती पर उतर आया हो।''[2] दूसरी और बॉक्साइट निकले जाने से भूमि में जो गड्ढे हो जाते हैं, कंपनियाँ उन्हें भरवानी नहीं है जबकि खनन की शर्तों के अनुसार कंपनियों द्वारा ही गडरो को भरवाया जाना चाहिए, गडढो में पानी भर जाने से जो पोखर से बन जाते हैं, उनमें यहाँ के बच्चे सुअरों के बच्चों की तरह लोट लगाते हैं तो दूसरी तरह–तरह की जानलेवा बीमारियाँ पाल लेते हैं। इसी कारण आदिवासी लोग कीड़े मकोड़े जैसे मर जाते हैं। इसके तरफ कोई ध्यान नहीं देता है। इसका यथार्थ चित्रण 'ग्लोबल गाँव के देवता' इस उपन्यास में प्रस्तुत किया है।

भूमंडलीकरण ने आदिवासी समाज को भुखमरी और गरीबी का तोहफा दे दिया है। पूँजीवादी और व्यापारी ने खासकर औद्योगिकीकरण के होने से अपना अस्तित्व विश्व में निर्माण कर रहे हैं दूसरी और आदिवासियों ने अपने अस्तित्व को बचाने के लिए पूरी जिंदगी बिता दे रहे हैं। आदिवासी समाज सामाजिक, सांस्कृतिक, आर्थिक खतरों के खिलाफ के साथ भूमंडलीकरण के विरोध में नारे बाजी कर रहे हैं इस आदिवासी समाज को न्याय मिलना चाहिए।

संदर्भ ग्रंथ सूची

१)ग्लोबल गाँव के देवता–रणेंद्र, पृ.सं.११
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Solvent Free Synthesis of some Metal Complexes of Novel Ligand Derived from 2-Amino-5, 6-Dimethyl Benzimidazole with 2-Bromo Isophthalaldehyde and Characterization, Biological Activity of Same

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Abstract: ***A solvent free and environmentally green synthesis using scientific microwave method of novel ligand derived from 2-amino-5,6-dimethyl benzimidazole with 2-bromo Isophthalaldehyde. Metal complexes were derived from nitrate of Mn(II) and chlorides Ag(I), Co(II), Ni(II), Cu(II), Zn(II), Cd(II), Fe(III) salts with novel ligand. At the end of the reaction all metal complexes show fine color. By TLC and melting point of each complex was confirming the formation of metal complex. Characterization of novel ligand carried out by elemental analysis, IR spectroscopy, ^{1}HNMR spectroscopy, LCMS and characterization of metal complexes carried out by IR spectroscopy, UV spectroscopy and TGA. The novel ligand and its all metal complexes show antibacterial activity against E-Coli, S.Aureus and S.Typhi.***

Keywords: Solvent free, Green Synthesis, 2-amino-5,6-dimethyl benzimidazole, 2-bromo Isophthalaldehyde, Antibacterial activity.

I. INTRODUCTION

Solvent free, green and eco-friendly view of synthesis is increasing in chemistry. Now a day, use of scientific microwave for synthesis is becoming popular. This is the solvent free or less solvent synthesis. It helps to reduce pollution, gives better yield and reduces cost. Simple reaction conditions and important is time saving [1-3]. Synthesis using microwave irradiation technique is environmentally very safe and effective [4-5]. The compound containing Azomethine/Imine (C=N) group are known as Schiff base ligand [6]. The products of ketone or aldehyde with primary amine are generally known as Schiff base [7]. They are biologically very active compounds, having biological activities like antibacterial [8], antimicrobial [9], anticancer [10], plant growth inhibitors [11] and so on.

II. EXPERIMENTAL SECTION

All the chemicals used in this work were of analytical grade. 2-amino-5,6-dimethyl benzimidazole and 2-bromo Isophthalaldehyde form Sigma Aldrich and metal nitrates and chlorides from loba chem and MERCK. The novel ligand synthesized in scientific microwave oven. Metal complexes were synthesized by reacting novel ligand with metal salts in scientific microwave oven.

A. Material and Method

All the starting chemicals are of analytical grade. 2-amino-5,6-dimethyl benzimidazole and 2-bromo Isophthalaldehyde were purchased from Sigma Aldrich and metal salts from Loba chem and MERCK. The novel Schiff base ligand was synthesized by using scientific microwave oven: Syntheses of metal complexes were performed by reacting Schiff base ligand with metal salts in scientific microwave oven.

B. Techniques

Synthesis was performing in microwave extraction system in scientific microwave oven. Melting points were measured on digital melting point apparatus. The electronic absorption spectra were recorded in the wavelength range 200 to 400 nm using UV spectrophotometer. IR spectra were analyses on Shimadzu Dr 8031. The ^{1}HNMR spectra was analyse in DMSO D6 on Brakers 400 MHz instrument. The mass spectrum was recorded by LCMS spectrophotometer. The TGA were carried out in dynamic nitrogen atmosphere (30ml/min) with heating rate of 10^0C/min using Shimadzu TGA 50H thermal analyser. TLC analysis performs on pre coated aluminium plates.

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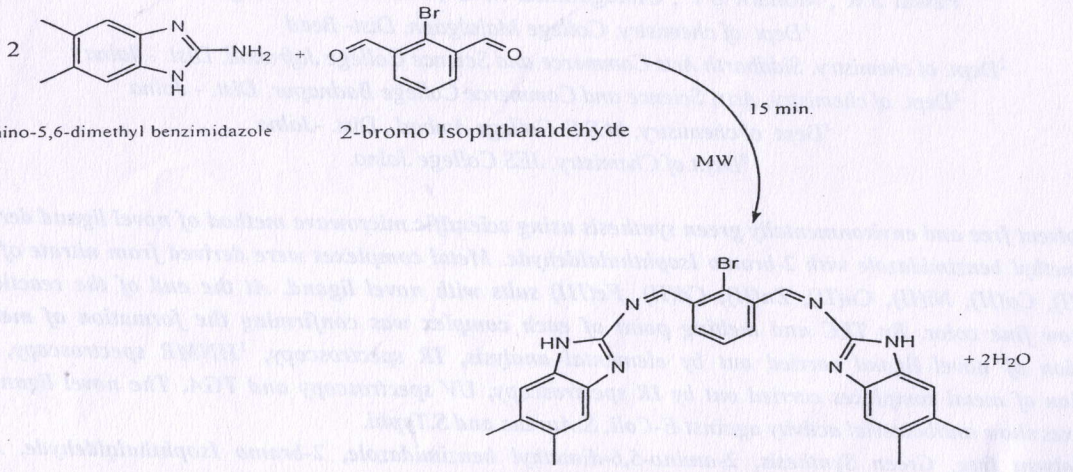
C. Preparation of Novel Ligand

The novel Schiff base ligand was prepared by the reaction between 2-amino-5,6-dimethyl benzimidazole (0.63 gm.) and 2-bromo Isophthalaldehyde (0.38 gm.) under solvent free condition in scientific microwave oven about 15 min. The irradiated product after cooling at room temperature washed with dry ether. The yield obtained was 0.84 gm. And melting point was 256^{0}C. The purity of the product confirm by TLC.

1) Reaction



2-amino-5,6-dimethyl benzimidazole 2-bromo Isophthalaldehyde

(*Z*)-*N*-((2-bromo-3-((*Z*)-(5,6-dimethyl-1*H*-benzo[*d*]imidazol-2-ylimino)methyl)phenyl)methylene)-5,6-dimethyl-1*H*-benzo[*d*]imidazol-2-amine

D. Preparation of Metal Complexes

The metal complexes were synthesized under solvent free condition by irradiating metal nitrate or metal chloride with the required amount of the ligand. The reaction mixture was irradiated in microwave oven. The products were washed with dry ether, filter and dried at room temperature. The metal salts used were $MnCl_2$, $Fe(NO_3)_3.9H_2O$, $Co(NO_3)_2.6H_2O$, $Ni(NO_3)_2.6H_2O$, $Cu(NO_3)_2.3H_2O$, $Zn(NO_3)_2.6H_2O$, $Cd(NO_3)_2.4H_2O$ and $AgNO_3$.

III. RESULT AND DISSCUSION

All metal complexes and novel ligand are colored, solid and stable at room temperature. They possess sharp melting point. The complexes are insoluble in common organic solvents but soluble in DMF and DMSO.

A. Physical Properties

Physical properties of the novel ligand and metal complexes summarized in Table I

Table I

Sr. No	Molecular formula	Color	Melting point (^{0}c)	Time	Yield %
1	$C_{26}H_{23}N_6Br$	Yellow	256	15 min	83
2	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Mn$	Dark Yellow	181	240 sec.	83
3	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Fe$	Brown	188	60 sec.	85
4	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Co$	Brown	174	120 sec.	96
5	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$	Light Green	208	60 sec.	100
6	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cu$	Green	148	60 sec.	100
7	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Zn$	Dark Yellow	132	60 sec.	100
8	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cd$	Greenish	280	90 sec.	100
9	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ag$	Yellow	218	60 sec.	100

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B. Mass Spectral Studies

The mass spectrum study of novel ligand showed a peak at m/z. 500(M+1) that corresponds to the molecular weight of the Schiff base ligand 499.

C. ^{1}HNMR Spectral Studies

Observed ^{1}HNMR peaks (ppm) of novel Schiff base ligand summarized in Table II.

Table-II

Compound	H-from four Methyl Groups in ppm	H-from Aromatic ring In ppm	H-from-NH of Imidazole In ppm
$C_{26}H_{23}N_6Br$	2.50 - 2.51	6.87 - 8.48	5.89

The ^{1}HNMR spectrum of novel ligand shows different peaks. The characteristic peak observed at 5.89 ppm is due to H-from NH-of Imidazole. The peaks observed at 6.87 – 8.48 ppm are due to H-from aromatic rings. The peaks observed at 2.50 - 2.51 ppm is due to H-from four Methyl Groups.

D. Infrared spectra analysis

Observed IR frequencies of novel ligand and its metal complexes summarized in Table III.

Table-III

Sr. No	Ligand/complex	C=N (cm^{-1})	C-H (cm^{-1})	N-H (cm^{-1})	C=C (cm^{-1})	M-N (cm^{-1})
1	$C_{26}H_{23}N_6Br$	1662.64	3280.92	3452.58	1471.69	---
2	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$	1730.15	3200.00	3420.00	1454.33	576.72
3	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cu$	1680.00	3190.00	3400.00	1575.84	513.07

The IR spectrum of novel ligand show characteristics band at 1662.64 cm^{-1} which indicates (C=N) stretching vibration of azomethine group [12-17]. The vibrational band at 3452.58 cm^{-1} assigned N-H stretching in the ligand. Band observed at 1471.69 cm^{-1} corresponds to C=C stretching. The band observed at 3280.92 cm^{-1} indicates aromatic C-H stretching in the ligand.

IR spectral study of Ni metal complex: The band appeared at 1730.15 cm^{-1} corresponds to azomethine (C=N) stretching, whereas same azomethine band is observed at 1662.64 cm^{-1} in spectrum of ligand. Which indicate coordination of ligand with metal ion [18]. The band appeared at 3200.00 cm^{-1} indicates the aromatic (C-H) stretching in complex, whereas same aromatic (C-H) stretching is observed at 3280.92 cm^{-1} in spectrum of ligand. The band observed at 3420.00 cm^{-1} assign to (N-H) stretching, whereas in spectrum of ligand it is observed at 3425.58 cm^{-1}. The vibration observed at 1454.33 cm^{-1} due to aromatic (C=C) stretching. The characteristics band appeared at 576.72 cm^{-1} assign to (M-N) vibration, which confirms coordination of azomethine and metal ion [19-20]. The weak bands observed at 825.53 cm^{-1} and 1035.77 cm^{-1} were due to OH wagging mode of vibration, indicating coordination of water molecule in metal complex [21-24]. Above bands which are appeared in spectrum of complex are not appeared in spectrum of ligand that confirm the formation of metal complex with stable metal ligand bonding.

IR spectral study of Cu metal complex: A stretching observed at 1680.00 cm^{-1}, which corresponds to azomethine (C=N) stretching vibrations, whereas same stretching is observed at 1662.64 cm^{-1} in spectrum of ligand. The band appeared at 3190.00 cm^{-1} assign to aromatic (C-H) stretching, whereas same stretching is observed at 3280.92 cm^{-1} in spectrum of ligand. The vibration observed at 1575.84 cm^{-1} due to aromatic (C=C) stretching. The coordination of metal to nitrogen was justified by stretching observed at 490 cm^{-1} [25]. The weak bands observed at 825.53 cm^{-1} and 1033.85 cm^{-1} were due to OH wagging mode of vibration, indicating coordination of water molecule in metal complex [21-24]. Above bands which are appeared in spectrum of complex are not appeared in spectrum of ligand that confirm the formation of metal complex with stable metal ligand bonding.

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E. Electronic spectra

UV-Vis spectral data and probable geometry for the metal complexes summarized in Table IV

Table-IV

Sr. No.	Complex	UV-visible major bands. Absorption Maxima cm^{-1}(nm)	Assignment	Proposed geometry
1	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$	43898.15 (227.80)	$^3A_{2g} \rightarrow {}^3T_{2g}(F)$	Octahedral
		44563.27 (224.40)	$^3A_{2g} \rightarrow {}^3T_{1g}(F)$	
		47438.33 (210.80)	$^3A_{2g} \rightarrow {}^3T_{1g}(P)$	
2	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cu$	40650.40 (216.00)	$^2B_{1g} \rightarrow {}^2A_{1g}$	Octahedral
		46296.29 (208.60)	$^2B_{1g} \rightarrow {}^2B_{2g}$	
			$^2B_{1g} \rightarrow {}^2E_g$	

UV-Vis spectrum of both metal complexes Ni(II), Cu(II) recorded in the wavelength region 200nm to 400nm in DMSO solution.

UV-Vis spectral data of Ni: Electronic spectrum of Ni(II) complex shows absorption maxima at 43898.15 (227.80), 44563.27 (224.40) and 47438.33 (210.80) assign to $^3A_{2g} \rightarrow {}^3T_{2g}(F)$, $^3A_{2g} \rightarrow {}^3T_{1g}(F)$ and $^3A_{2g} \rightarrow {}^3T_{1g}(P)$ transitions respectively indicating that complex possess octahedral geometry[26-27].

UV-Vis spectral data of Cu: Electronic spectrum of Cu(II) complex shows absorption maxima at 40650.40 (216.00) and 46296.29 (208.60) assign to $^2B_{1g} \rightarrow {}^2A_{1g}$, $^2B_{1g} \rightarrow {}^2B_{2g}$ and $^2B_{1g} \rightarrow {}^2E_g$ transitions indicating that complex possess octahedral geometry[28-29].

F. Thermo Gravimetric Analysis of Metal Complexes

Thermo gravimetric analytical data of metal complexes were summarized in Table V.

Table-V

$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$		$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cu$	
Weight loss %	Temperature ^0C	Weight loss %	Temperature ^0C
0	29.22	0	29.74
10	143.30	10	93.52
20	213.54	20	145.87
30	292.20	30	226.75
40	314.92	40	263.84
50	367.38	50	348.18
60	422.05	60	377.77
70	449.05	70	394.49
80	476.17	80	452.83
84.184% total wt. loss	500	84.832% total wt. loss	500

The TGA curve of Ni(II) was carried out in the temperature range from 29.22^0C to 500^0C. The heating was carried out in the nitrogen atmosphere, with heating rate $10^0C\ min^{-1}$.

In the range of 29.94^0C to 143.30^0C water of crystallization lost with 10% weight loss is observed. Then loss up to organic moiety total weight loss of 84.184% at 500^0C. Stable curve indicates formation of metal oxide of nickel.

The TGA curve of Cu(II) was carried out in the temperature range from 29.74^0C to 500^0C. The heating was carried out in the nitrogen atmosphere, with heating rate $10^0C\ min^{-1}$. The thermogram of Cu(II) shows total weight loss of 69.51%. Firstly loss water of crystallization in the range of 29.74^0C to 93.52^0C. Lastly loss of organic moiety with total weight loss at 500^0C was 84.832%. A stable curve shows the formation of metal oxide of copper.

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B. Mass Spectral Studies

The mass spectrum study of novel ligand showed a peak at m/z. 500(M+1) that corresponds to the molecular weight of the Schiff base ligand 499.

C. ^{1}HNMR Spectral Studies

Observed ^{1}HNMR peaks (ppm) of novel Schiff base ligand summarized in Table II.

Table-II

Compound	H-from four Methyl Groups in ppm	H-from Aromatic ring In ppm	H-from-NH of Imidazole In ppm
$C_{26}H_{23}N_6Br$	2.50 - 2.51	6.87 - 8.48	5.89

The ^{1}HNMR spectrum of novel ligand shows different peaks. The characteristic peak observed at 5.89 ppm is due to H-from NH-of Imidazole. The peaks observed at 6.87 – 8.48 ppm are due to H-from aromatic rings. The peaks observed at 2.50 - 2.51 ppm is due to H-from four Methyl Groups.

D. Infrared spectra analysis

Observed IR frequencies of novel ligand and its metal complexes summarized in Table III.

Table-III

Sr. No	Ligand/complex	C=N (cm^{-1})	C-H (cm^{-1})	N-H (cm^{-1})	C=C (cm^{-1})	M-N (cm^{-1})
1	$C_{26}H_{23}N_6Br$	1662.64	3280.92	3452.58	1471.69	---
2	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$	1730.15	3200.00	3420.00	1454.33	576.72
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IR spectral study of Cu metal complex: A stretching observed at 1680.00 cm^{-1}, which corresponds to azomethine (C=N) stretching vibrations, whereas same stretching is observed at 1662.64 cm^{-1} in spectrum of ligand. The band appeared at 3190.00 cm^{-1} assign to aromatic (C-H) stretching, whereas same stretching is observed at 3280.92 cm^{-1} in spectrum of ligand. The vibration observed at 1575.84 cm^{-1} due to aromatic (C=C) stretching. The coordination of metal to nitrogen was justified by stretching observed at 490 cm^{-1} [25]. The weak bands observed at 825.53 cm^{-1} and 1033.85 cm^{-1} were due to OH wagging mode of vibration, indicating coordination of water molecule in metal complex [21-24]. Above bands which are appeared in spectrum of complex are not appeared in spectrum of ligand that confirm the formation of metal complex with stable metal ligand bonding.

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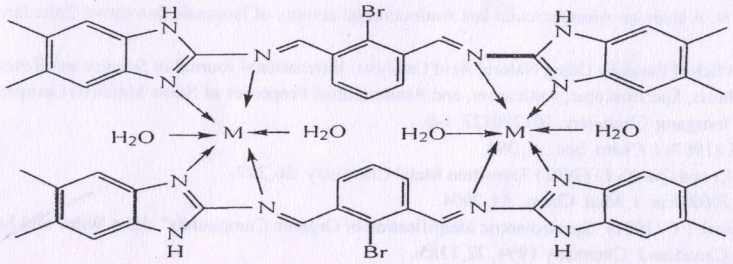

Proposed structure of metal complex (M)=Mn(II),Fe(III),Co(II),Ni(II),Cu(II),Zn(II),Cd(II),Ag(I).

G. Bioactivity Study

Antibacterial activity of novel Schiff base ligand and its metal complexes were summarized in Table VI.

Table-VI

Sr. No.	Compound	Minimum inhabitation concentration (ug/ml)		
		E. Coli	S. Aureus	S. Typhi
1	$C_{26}H_{23}N_6Br$	250	125	250
2	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Mn$	62.5	500	250
3	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Fe$	500	500	100
4	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Co$	100	250	100
5	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ni$	125	250	50
6	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cu$	100	250	125
7	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Zn$	200	50	25
8	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Cd$	100	125	125
9	$[(C_{26}H_{23}N_6Br)_2(H_2O)_4]Ag$	250	250	200

Antibacterial activity of synthesized novel ligand and its metal complexes were performing against Escherichia Coli, Staphylococcus Aureus and Salmonella Typhi. Which were grown overnight at 37^{0}C temperature. The minimum inhibitory concentration (MIC) was evaluated against test bacteria. Concentration ranging is in between 0.4 ug/ml to10 ug/ml.

Mn(II) shows better and Co(II), Cu(II), Cd(II) good antibacterial activity on E.coli as compared to rest of metal complexes and parent ligand. Zn(II) complex shows excellent antibacterial activity on S.Aureus as compared to rest of metal complexes and parent ligand. Zn(II) and Ni(II) shows excellent antibacterial activity on S.Typhi as compared to rest of metal complexes and parent ligand.

IV. CONCLUSION

The microwave method assures the principle of green chemistry. The novel ligand was synthesized from 2-amino-5,6-dimethyl benzimidazole and 2-bromo Isophthalaldehyde. It forms stable binuclear complexes with transition metal ions such as Mn(II), Fe(III), Ni(II), Cu(II), Co(II), Zn(II), Cd(II) and Ag(I). The novel ligand and its eight metal complexes show good antibacterial activity.

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Isolation of Seed Mycoflora of Black Gram

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Research Paper - Botany

ABSTRACT

Today only 20 species provides 90% of world's food and just three species namely wheat, rice, and maize supply more. Pulses (Pigeon pea green gram Black gram) are the second most important group of plant for food belonging to Leguminosae. They form an important and indispensible part of our daily diet. Today, nutritionists tell us that pulses are important because they provided the essential proteins. About 88% of the protein consumed in India is of vegetable origin, dependence on animal protein is being less. Legumes are widely used as food and are next to cereals.

Black gram (Vigna mungo) Pigeon pea (Cajanus cajan) Green gram (Vigna radiate) are the major pulses crop cultivated in Our region during Kharif and Rabbi season. These pulses crops are affected by different fungal pathogens. However, fungal, bacterial and viral diseases are found on pulse crop in this region which includes Powdery mildew Leaf spot and wilt.

Association of fungi with seed has found to be harmful to the seed health and seed content. Such infected seed may carry many pathogens as shown by studies in case of leguminous crop. In Latur region recently occurrence of leaf spot, powdery mildew of this crop have posed a serious problem with limited scope of disease management.

A systemic study of Mycoflora associated with the selected crop was done. More than thirty fungi from three different varities of Pigeon pea and green gram were isolated. The most common and dominant fungi were Alternaria Tenius, A. alternate, Aspergillius niger, A. flavus, Cladosporium herbarum, Rhizopus nigrican, R. stolonifer, Curvularia lunata. These fungi were brought in pure culture and maintained in laboratory for further studies. During mapping of the most dominant seed borne fungi Aspergillius niger, A. flavus, R. stolonifer.

Key words – Black gram seed, Mycoflora, Alternaria, Fusurium.

INTRODUCTION

Pulses, the food legumes, have been grown by the farmers since millennia and these have contributed in providing nutritionally balanced food to the people of India. While Pigeon pea Black gram Green gram have definitely originated and domesticated in Indian subcontinent. Even balanced food as defined over 1000 year ago, consisted of pulses, besides cereals vegetables and fruits and milk products (Ayachit, 2002).

Today, nutritionist tells us that pulses are the important because they provide the essential proteins. India has been growing 12 different pulses crops, but the major grown are Pigeon pea, green gram and black gram.

The Production of pulses had gone up from 9.89 lakh tonne in 1960-61 to 22.09 lakh tonne in 1999-2000 and in 2000-2001 it was only 16.36 lakh tonnes. The area under total pulses has been declining, however due to improvement in productivity there has been an increase in the production of pulses in the country since 1981-82.In Maharashtra region the western Maharashtra region has the maximum area (26.23%).

Most of the pulses disease in Marathawada region of Maharashtra is caused by fungi. However, bacterial and viral diseases have also been reported. The major fungal diseases in pulses are Fusarium wilt caused by F. oxysporium, Blight caused by Phytopthora drechsleri. Diseases in Green and Black gram are Leaf spots caused by Alternaria, Cercospora. Blight by Macrophomina phaseolina and root and seedling rot caused by Rhizoctonia solani and Macrophomina phaseolina.

In Marathawada region recently occurrence of root rot, seedling rot and wilting

has posed a serious threat to the pulses with a very limited scope of disease management. The fungal species of Alternaria, Cercospora Fusarium Aspergillus Macrophomina Rhizoctonia a cause major loses in the crop yields not only in Maharashtra but throughout India.

MATERIAL AND METHODS

Assessment of seed Mycoflora:

The seed borne fungi of pulses were detected by agar plate and Standard blotter test method recommended by ISTA ;(1966). The procedure of agar plate and Standard blotter test is described as below. Three methods were used for isolation of externally and internally seed borne fungi.

Seed washate test:

One hundred seeds were taken in flask which contains sufficient water for their soaking. These seed were first shaken over a mechanical shaker for 5-10 minutes. The sediment thus obtained was examined under microscope for the identification of fungi. Ten seed of each variety were washed in 20ml. of sterile Distilled water and 1 ml. of seed washing obtained thus was plated on PDA (Potato Dextrose Agar). Fungi will develop within 3 days.

Standard blotter test:

Seed were equidistantly spaced on moist sterile blotter in Petri plate moist chambers. Petri plates of 9" diameter each containing 10 seeds were incubated at 27° c for eight days. Observation was made for fungi appearing on each seed every 24 hrs and growth was carefully transferred to PDA slant for further studies. A minimum of 400 seeds were observed in each case. Untreated seeds were used for mapping external seed Mycoflora, where as disinfected externally by treating with 10% $Hgcl_2$ solution for 10 minutes where used for internally seed mycoflora.

Agar plating:

Seeds were equidistantly spaced on PDA plate aseptically. Colonies which developed during three days were picked up and maintained on PDA slant. Untreated seeds disinfected externally by treating 10% $Hgcl_2$ solution for 10 minutes where used for internally seed mycoflora.

Identification of Fungi:

The various fungi were identified to their generic and specific taxon on the basis of gross colonial and microscopic morphology as per the key given by "Pictorial atlas of soil and seed fungi: morphologies of cultured fungi and key to species" (Tsuneo Watanabe,2002). The fungi were identified on the basis of the shape, measurement and size of the conidiophores, sporangiophores, stergimata, condia, hyphae by using binocular microscope. Morphological studies were usually made from the material mounted on slides in lacto phenol and cotton blue.

EXPERIMENTAL RESULT

Fungi association with the seed of Black gram Cv.1:

Eight fungi appeared on the seeds of Cv.1 (Table no. 1).Aspergillus niger (36 %) and Alternaria tenius (33%) were dominant. These eight fungi were isolated by blotter method. Among them Curvularia lunata appeared on the blotter method only. Percentage of non- germinated seeds was high and six fungi were associated with the germinated seeds. Six fungi were found to associate with the seeds of agar plate method. A. niger (31%) gave the highest percentage of incidence followed by Aspergillius tenius (27%). Agar plating gives Mucor sp. Rhizoctonia sp. which was isolated from the agar plate only.

Seven fungi appeared on the seeds of Cv. 1 by washiate method. A.tenius (31%) gave highest percentage of incidence followed by A. niger (28%) A. flavus (15%). A variation in the fungi was observed by this method.

Table No.1: Isolation of Fungi by different methods from the seeds of Black gram Cv.1

Name of the Fungi	Std.Blotter Test (% incidence)		Agar Plating (% incidence)		Seed Washate (% incidence)	Appearance of colony	Association of Fungi on Non Germinating Seeds
	External	Internal	External	Internal			
Aspergillus niger	36	21	31	19	28	E	RS-AN
Aspergillus flavus	25	13	20	12	15	E	AN-AF
Aspergillus terreus	21	15	17	08	08	L	-
Alternaria tenuis	33	17	27	15	31	E	RS-AF
Penicillium sp.	06	-	15	-	-	E	-
Fusarium moniliformae	15	08	-	-	05	L	-
Fusarium oxysporum	15	12	-	-	06	L	-
Rhizopus stolonifer	-	-	03	02	01	L	-
Curvularia lunata	12	06	-	-	-	L	-

(-) absent (E) early (L) Late (RS) Rhizopus stolonifer(AN) Aspergillus niger (AF) Aspergillus flavus

Fungi associated with seeds of Black gram Var. 2:

In all nine were found associated with seeds of var. 2 (Tables no. 2). There is a wide variation in the methods employed for the isolation of fungi associated with the seeds. Blotter method yields fungi A. niger gave highest incidence followed by A. terrus(53%) and A. flavus (37%). Observation of non-germinated seeds gave four fungi Aspergilli developed colonies early and were followed by R. stolonifer.

By agar plate method seven fungi were detected. A. niger (55%) gave highest incidence followed by A. terrus(41%) and A. flavus (37%). Agar support the growth of the dominant fungi. Non-germinated seeds gave six fungi.

By seed washate method eight fungi was found to harboured. A. niger(45%) gave highest incidence followed by A. terrus(28%) and A. flavus (33%). Verticillium albo-atrum appeared by Washate method.

In the overall study there is a little difference in unsterilized and sterilized seed. This may be attributed to the different type of internal and external seed borne fungi associate with the varity.

Table No.2: Isolation of Fungi by different methods from the seeds of Black gram Cv.2

Name of the Fungi	Std.Blotter Test (% incidence)		Agar Plating (% incidence)		Seed Washate (% incidence)	Appearance of colony	Association of Fungi on Non Germinating Seeds
	External	Internal	External	Internal			
Aspergillus niger	59	40	55	43	45	E	RS-AN
Aspergillus flavus	37	29	30	19	33	E	AN-AF
Aspergillus terreus	53	33	41	27	28	E	RS-AF
Alternaria tenuis	15	10	14	08	13	L	-
Penicillium sp.	12	09	-	-	11	L	-
Verticillum alboatrum	-	-	-	-	14	L	-
Rhizoctonia sp.	-	-	06	03	13	E	-
Rhizopus stolonifer	04	02	11	06	-	E	-
Curvularia lunata	05	03	08	05	07	L	-

(-) absent (E) carly (L) Latc (RS) Rhizopus stolonifer**(AN)** Aspergillus niger **(AF)** Aspergillus flavus

Fungi associated with seeds of Black gram Var. 3:

Total nine fungi were found associated with the seeds. Aspergillius niger (57%) gave highest percentage of incidence followed by A. fumigates (53%), A. flavus (45%) and F. moniliform (33%) (Table no. 3). These fungi were isolated by standard blotter method.

Agar plating revealed association of eight fungi with Aspergillius niger (43%) gave highest percentage of incidence followed by A. fumigates (39%), A. flavus (35%) and F. moniliform (19%), which were also early colonizer.

Similarly nine fungi were found associated with the seeds by seed washate method. Aspergillius niger (50%) gave highest percentage of incidence followed by A. fumigates (45%).

The pattern of percentage incidence and dominance where considered than it was species Aspergilli(Aspergillius niger, A. flavus).

Table No.3: Isolation of Fungi by different methods from the seeds of Black gram Cv.3

Name of the Fungi	Std.Blotter Test (% incidence)		Agar Plating (% incidence)		Seed Washate (% incidence)	Appearance of colony	Association of Fungi on Non Germinating Seeds
	External	Internal	External	Internal			
Aspergillus niger	57	49	43	36	50	E	RS-AN
Aspergillus flavus	45	37	35	28	33	E	AN-AF
Aspergillus terreus	53	44	39	31	45	E	RS-AF
Alternaria tenuis	05	03	02	01	07	L	-
Penicillium sp.	-	-	15	09	21	L	-
Fusarium moniliformae	33	28	27	21	17	E	-
Rhizoctonia sp.	-	-	10	07	02	E	-
Rhizopus stolonifer	30	19	19	14	62	L	-
Curvularia lunata	03	02	-	-	03	L	-

(-) absent (E) early (L) Late (RS) Rhizopus stolonifer**(AN)** Aspergillus niger **(AF)** Aspergillus flavus

DISSCUSION

Seed health conceptually is a process proportionately successful to the degree of optimization of condition of growth and function. Health of the seed therefore envisages normal function of the seed and hence paramount importance, since some of the diseases of epidemic potential are recognized through seed borne inoculum.

Presence or absence of Mycoflora on the seed is one of the important aspect

that determines the quality of seed. In the present investigation attempts were made to isolate the seed Mycoflora from the seeds with view to study the seed borne pathogen. Different incubation methods viz. moist blotter papers, agar plates and washate method were employed for screening of seed borne fungi of the test crop.

From the (Table no. 1,2, 3) highest percentage of incidence on Black gram were noticed. The seed when subjected to isolation methods by blotter and agar plate method presence of nine species of fungi viz Alternaria tenius, Aspergillius niger, A. flavus, A. fumigates, Penicillum sp.

Washate test employed in respect of three varieties indicated presence of fungal spores of A. niger, A. flavus, Alternaria sp., Fusarium sp.

Blotter and Agar plate method were found versatile in exhibiting spectrum of fungi. Number of colonies was obtained by these methods.

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Amino acids and Sugars from floral nectars of some local plants

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1 Research Paper - Botany

In addition to major constituent sugars, the floral nectar contains different amino acids and minerals. A qualitative study was carried out to detect kinds of sugars and amino acids from floral nectars of fifteen plants belonging to nine families by thin layer chromatography . As many as seven amino acids were detected from floral nectar of Erythrina plants. Nectar of two showed two amino acids. Only one amino acid was detected from nectar of three plants. Fructose was found more common among sugars. Two different unidentified amino acids were found to be present in nectars of plants studied.

Introduction:

Pollination is successful in many plant species as a consequence of pollinators seeking nectar (Southwick, etal 1981).Nectar is an aqueous solution of sugars mainly sucrose , glucose and fructose. Amino acids and proteins are other common constituents (Baker and Baker1983a).Nectar plays an important role in the plant animal interactions and its study provides clues to the understanding of the evolutionary relationships between plants and animals. Qualitative and quantitative investigations of the nectar constituents are important to understand i) reproductive biology of the plant, including mating patterns of the populations ii) the energetic, nutritional demands, behavior and movements of the pollinators and visitors and iii) the ecology and evolution of animal plant interactions. Nectar composition of a single plant species may vary due to concentration changes, pollinator activity and pollen contamination (Cruden and Herman, 1983)

We present here the floral nectar sugars and amino acids in fifteen species of local plants.

Material and Methods:

For detection of amino acids and sugars from floral nectar, fifteen wild and cultivated plant species belonging to ten families were selected (Table -1). The study was carried out at Akot town. Akot town lies between 21.06N and longitude 77.06 E in the northern most of the Akola district. Flowers were collected at proper time of the day from each species when nectar quantity was found to be optimum. Nectar was drawn out from flowers with the help of micro capillaries and stored in is opropanol. For the qualitative study the most suitable method of thin layer chromatography (TLC) was employed. For amino acid and sugar detection one directional thin layer chromatography method was followed. Prepared aluminium silica gel plates were used for detection of amino acids and sugars a chromatogram for 24 known available amino acids was developed as a standard for identification. The colour characters and Rf values were used to identify the amino acids present in the nectar sample. Sucrose, glucose and fructose was used as a reference material for sugars and loaded on the same strips used for sugar chromatography. The developed spots were compared with those of standard sugars.

Table:1 Plant species studied

S.N.	Plant species	Family
1	Citrus limon	Rutaceae
2	Murraya paniculata	Rutaceae
3	Murraya koenigii	Rutaceae
4	Butea monosperma	Papillionaceae
5	Erythrina variegata	Papillionaceae
6	Mucuna prurience	Papillionaceae
7	Quisqualis indica	Combretaceae
8	Ipomoea hederifolia	Convolvulaceae
9	Adhatoda vasica	Acanthaceae
10	Bignonia unguis-cati	Acanthaceae
11	Pyrostegia venusta	Acanthaceae
12	Foeniculum vulgare	Apiaceae
13	Peristrophe bicalyculata	Acanthaceae
14	Vitex negundo	Verbenaceae
15	Antigonon leptopus	Polygonaceae

Table: 2. Amino acids detected in nectars of plants

S.N.	Plant species	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
1	*Citrus limon*											+		+	
2	*Murraya koenigii*							+							
3	*Murraya paniculata*				+									+	
4	*Butea monosperma*									+					
5	*Erythrina variegata*	+				+		+	+				+	+	+
6	*Mucuna pruriens*						+								
7	*Foeniculum vulgare*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	*Quisqualis indica*						+	+							
9	*Ipomoea hederifolia*											+			
10	*Bignonia unguis-cati*										+				
11	*Pyrostegia venusta*	+						+						+	
12	*Adhatoda zeylanica*											+		+	
13	*Peristrophe bicalyculata*							+							
14	*Vitex negundo*		+				+								
15	*Antigonon leptopus*			+										+	

A1 DL-Alanine
A2 L-Arginine monohydrochloride
A3 L-Cysteine
A4 L-Glutamic acid
A5 L-Hydroxyproline
A6 L-Leucine
A7 Isoleucine
A8 DL-Nor leucine
A9 L-methionine
A10 DL-Tryptophan
A11 L-Tyrosine
A12 DL Valine
A13 unidentified -1
A14 unidentified -II

Table: 3. Sugars detected from the nectars of species.

S.N	Name of Plant	Sucrose	Glucose	Fructose
1	*Citrus limon*	+	+	+
2	*Murraya koenigii*		+	+
3	*Murraya paniculata*	+		+
4	*Butea monosperma*		+	+
5	*Erythrina variegata*		+	+
6	*Mucuna pruriens*	+	+	+
7	*Foeniculum vulgare*		+	+
8	*Quisqualis indica*	+	+	+
9	*Ipomoea hederifolia*	+	+	+
10	*Bignonia unguis-cati*	+		+
11	*Pyrostegia venusta*	+	+	+
12	*Adhatoda zeylanica*		+	+
13	*Peristrophe bicalyculata*		+	+
14	*Vitex negundo*	+	+	+
15	*Antigonon leptopus*	+	+	+

Results and Discussion:

Sufficient amounts of nectar for qualitative determination of amino acids and sugars in fifteen species were obtained. The results for each species are presented in Table 2 and 3. As many as seven amino acids were detected from the nectar of Erythrina variegata. The combinations of three different amino acids were detected from the nectar of Murraya paniculata and Pyrostegia venusta . The nectar of Murraya koenigii, Butea monosperma, Mucuna pruriens, Ipomoea hederifolia, Bignonia unguis-cati and Peristrophe bicalyculata showed the presence of single amino acid. Two amino acids were detected from the nectar of Citrus limon Quisqualis indica, Adhatoda zeylanica, Vitex negundo and in Antigonon leptopus. The amino acid Isoleucine, L-leucine and L-tyrosine were found to

be a more common component of nectar (Table 2).Three sugars sucrose,glucose and fructose were identified from the nectar of Citrus limon,Mucuna pruriens,Quisqualis indica ,Ipomoea hederifolia,Pyrostegia venusta,Vitex negundo and Antigonon leptopus flowers.Two sugar types sucrose and fructose were identified from the nectar of Murraya paniculata and Bignonia unguis-cati. In Murraya koenigii,Butea monosperma ,Erythrina variegata,Foeniculum vulgare,Adhatoda zeylanica and Peristrophe bicalyculata two sugars glucose and fructose were present in nectar.Among the sugars fructose was found more common constituent of nectar (Table3). Nectar is the most important floral reward offered by the plants to pollinating animal. Floral nectars play an important role in plant-pollinator interactions. The chemical compositions of floral nectar affect the reproductive success of plants visited by nectar –seeking pollinators(Pyke etal, 1988, Hodges, 1995).Baker and Baker (1983) reported that hexose-rich or dominant nectar flowers are regularly attended by flies,short –tongued bees and butterflies.

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"Yoga" : An Effective Measure Against the Covid 19

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Abstract:-

Yoga has been the subject of research in the past few decades for the therapeutic purposes for modern epidemic diseases like hypertension, heart disease and chronic obstructive pulmonary disease. Physical activity among people is essential for complimenting sedentary behaviour and for individual's future health. The benefits of yoga and exercise appear to outweigh the hazards.

***Introduction*:-** Nowadays, the World Health Organization (WHO) has declared the Covid 19 as pandemic. The corona virus, which is mainly responsible for the Covid-19, is a very small but very effective virus. The corona virus is 900 times smaller than a human hair. Inspite of that its infection is spreading rapidly throughout the world.

Corona virus was firstly discovered in the 1960's. It entered in India in the January, 2020 and the first patient of Covid 19 was found in India on January 30, 2020. The higher numbers of patient found in Mumbai, Maharashtra. On March 22, 2020. The hon'ble Prime minister of India immediately declared a lockdown in the country to break the chain of the Corona Virus.

Today, the corona virus is commonplace and it is found in approximately 200 Nations in the world. The whole world is waging a war against mental and physical illness caused by the Covid-19 and there is no cure nor any vaccine to prevent this disease yet. To survive this epidemic crisis, we should follow the preventative rules of Social distancing, using of mask, washing of hands by sanitizer or soap, increasing the immunity and the scheme of lockdown developed by government. In such peculiar situation, we must understand the importance of Yoga which a gift of ancient Indian culture. If we practice the Yoga, then no one will suffer from heart attack, kidney failure or even covid 19.

One of the leading medical schools in the United States now recommends Yoga, meditation and controlled breathing to answer the anxious questions related to the rapidly spreading Covid 19 across the United States.

Yoga, it's various poses and pranayama can act as one of the simplest and effective ways to boost immunity and instil some vigour and positive energy into your body. The immunity provided by the Yoga can provide defence against the Covid 19.

Yoga Guru Baba Ramdev in one of his interviews has said that , if a person can hold their breath for a minute, then he or she is not suffering from corona virus.

He also demonstrated a special pranayam for corona virus and said," It is called ujjal. in it you contract your thorat, then pump in air with a noise, hold it for a while and then gradually release it ".

So, every one should practice yoga at home to boost the body's immunity, to strengthen internal organs and to protect themselves from corona virus and encourage people to do the same.

***Conclusion* : -**

One of the most popular verses quoted in the BhagvadGeeta is, "Yoga is a Practice". So we should not be disturbed by the fear and anxiety. But some may fear how to get to the coolness of mind; while this fear of Corona Virus is upperhand. But the modern science will help us to understand the effectiveness of such yoga methods, which have been practicing for a long time. We should practice Yoga to increase our immunity to prevent coronavirus. It is high time for the Yoga.

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Special Issue on *"Tax Reform for Developing Viable and Sustainable Tax System in India"*

Impact of GST on Agricultural Sector

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Abstract
GST would also help in reducing the cost of machinery reduced for producing Agricultural commodities. An increase in the cost of few Agricultural products is anticipated due to the rise in inflation index for a brief period. Though, implementation of GST is going to benefit a lot, the farmers is the long run as there will a single unified national Agriculture market. GST would ensure that farmers in India, who contribute the most to GDP, will be able to sell their product for the best available price.
Keyword : GST, Agriculture Sector

Introduction :

The president of India approved the Constitution Amendment Bill for Goods and Services tax on 8 Sep 2016 following the bill's passage in the Indian parliament and it's ratification by more than 50% of state legislatures, GST is one single tax replacing all the indirect Taxes levied at Central and State level in India. GST is a consumption based Tax levied on sale, manufacture and consumption on goods and services at a national level. This Tax will be substitute for all indirect Tax levied by State and Central governors. Exports and direct Tax like income tax, corporate tax & capital gain tax will not be affected by GST.

GST in only on the value addition at each stage it is destination based tax. The proposed Tax system will take the form of dual GST which is concurrently levied by central and state government. This will comprise of

1) Central GST (CGST) which will be levied by Centre
2) State GST (SGST) which will e levied by state government on interstate supply of Goods and Services.

GST is a single tax on the supply of goods and services right from the manufacturer to the consumer credits of input Taxes paid at each stage will be available in the subsequent stage of value addition.

*** Objectives of the Study:**

1) To study the various aspects of Goods and Services Tax system in India.
2) To study the need of Goods and Services Tax
3) To the study the impact of Goods and Services Tax on Agricultural Sector

*** Research Methodology:**

This study is bases on available secondary data. Data available from book's, journals, new paper and internet websites.

*** Need of GST:**

There are various taxes that have to pay at every stage and differently collected by State and Central Government and rated differ from one state to another. If we talk about GST, it will unified whole nation and taxes will be divided among Central State Government, which will easier to provide services & goods across country, as no more transparency in taxation system and increases GDP rate from 1% to 2% and reduces tax theft and corruption in country.

Vat rates and regulations differ from State to State and it has been observed that state often resort to slashing these rates for attracting investors. This result in loss of revenue for both the Central as well as State Government.

GST brings in uniform tax law across all the States spanning across diverse Industries. Here, the taxes would be divided between the Central and State Government based on a predefined and pre-approved formula. In addition, it would become much easier to offer services and goods uniformly across the nation, since there won't be only addition state levied tax.

*** Impact of GST on Agricultural Sector:**

The Agricultural Sector is the largest contributing sector the overall Indian GDP. It covers around 16% of Indian GDP. The implementation of GST would have an impact on many sections of the society. One of the major issues faced by the Agricultural sector is the transportation of Agriculture products across State lines all over India. It is highly probable that GST shall resolve the issue of transportation. GST may provide India with its first National market for the Agricultural goods. There are a lot of classifications which need to be provided for rates for Agricultural products. Special reduced rates should be declared for items like tea, coffee, and milk under GST.

GST is essential to improve the transparency, reliability, timeline of supply chain mechanism. A better supply chain mechanism would ensure a reduction in wastage and cost for the farmer. GST would also help in reducing the cost of heavy machinery required for producing Agricultural commodities under the model GST law, dairy farming, poultry farming, and stock breeding are kept out of definition of Agriculture. Therefore these will be taxable under the GST.

Fertilizer as important element of Agriculture was previously taxed 6% (1% excise + 5% vat) in the GST regime; the tax on fertilizers has been increased to 12%. The same impact is on tractors wavier on the manufacture of tractors is removed and GST of 12% has been imposed, this is beneficial as now the manufactures will be able to claim input credit.

Agriculture ministry discussed the issue of deep irrigation machine prices with the finance ministry in the recent 25th GST council meeting. Acting upon the recommendations, the GST council has now reduced GST rate on sprinkles and Nozzles which was earlier attracting 18% to new applicable 12% GST As the Government wants' to focus on deep irrigation techniques to support Agriculture practices in India.

***Conclusion:**

GST is a milestone in Tax reform in India. The main objective behind to implement the GST in India are one nation, one tax. GST would also help in reducing the cost of machinery reduced for producing Agricultural commodities. An increase in the cost of few Agricultural products is anticipated due to the rise in inflation index for a brief period. Though, implementation of GST is going to benefit a lot, the farmers is the long run as there will a single unified national Agriculture market. GST would ensure that farmers in India, who contribute the most to GDP, will be able to sell their product for the best available price.

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Optimization of Aluminium Doping Concentration in Titanium Dioxide Nanoparticles Photo Anode for Enhancing Efficiency of Dye-Sensitized Solar Cell

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Well crystallized Aluminium (Al) doped Titanium dioxide (TiO_2) nanoparticles with various doping concentration (0, 0.05 M, 0.07 M, 0.09 M and 0.11 M) were synthesized successfully by sol–gel route to develop the photo anode of Dye Sensitized Solar Cell (DSSC). Anatase crystalline nature of TiO_2 nanoparticles was confirmed using X-ray diffraction (XRD) and Raman spectrophotometer. The Atomic Force Microscopy (AFM) was used to investigate the morphology of the photo anode (Al-doped TiO_2 nanoparticles). The photovoltaic performance of the DSSC in terms of Current, Voltage and efficiency was investigated with a standard illumination of AM1.5G having an irradiance 100 mW/cm^2. Optimized values of Short Circuit Current density (I_{sc}), Open Circuit Voltage (V_{oc}) and efficiency (η) obtained was 247.62 μA/cm^2, 359 mV and 0.02456%, respectively for 0.07 M Al doping concentration. Eco-friendly Eosin

Y dye was used for sensitization of the photo anode. The optimized photovoltaic cell exhibits very good efficiency (80.05% more than the earlier reported work).

Keywords: TiO_2 nanoparticles; Al doping; Eosin Y dye; dye sensitized solar cell.

1. Introduction

Dye Sensitized Solar Cells (DSSCs) have become popular in the scientific and industrial world due to their high efficiency, environmental friendliness and low cost.[1–5] DSSCs are comprised of five layers, namely, conductive mechanical support, mesoporous semiconductor film, dye sensitizer, electrolyte and counter electrode.[6–8] The process of charge transfer through these components is illustrated in Fig. 1.

Electrons of dye sensitizer atoms are excited by solar energy absorption. Subsequently, these excited electrons are transferred to the conduction band of TiO_2 and transferred to counter electrode via conducting oxide and the external circuit. Oxidized dye is reduced back to the original state by reduction of electrolyte as mentioned in Eq. (1), the process is termed as dye regeneration.

$$3I^- \rightarrow I^{-3} + 2e^-. \quad (1)$$

Reduced species of electrolyte again get oxidized by accepting electrons at the counter electrode as shown in the following equation:

$$I^{-3} + 2e^- \rightarrow 3I^-. \quad (2)$$

The cycle repeats again and again to generate photo current.[9,10]

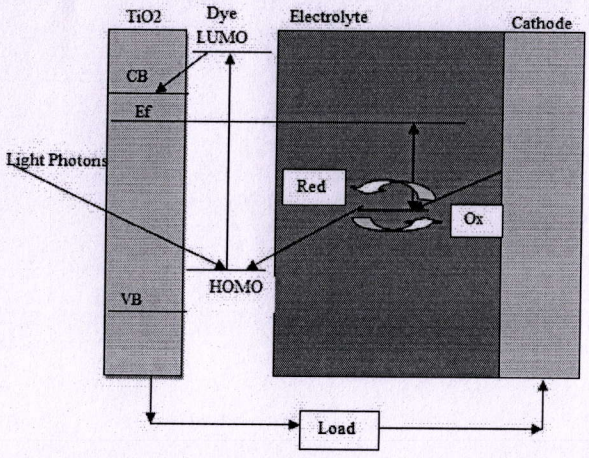

Fig. 1. Schematic representation of charge transfer though the layers of DSSC.

Undesired back flow of the photo generated electrons takes place at two possible interfaces; TiO_2/dye/electrolyte and transparent conducting oxide/electrolyte. At these interfaces, recombination of electrons with oxidized dye or oxidized electrolyte has been proved to be the most important source of reduction of the photo current.[11] Aiming at improving the photo current, previous researchers have proposed several techniques like band gap engineering of TiO_2,[12–14] anode surface treatment like TiCl4 pre/post treatment or pre and post treatment of oxygen plasma treatments.[11,15–17] All the efforts have been found to be applied to modify the properties of photo electrode such as surface morphology, position of the conduction band and to minimize the trap or defect levels. Doping metals or nonmetals in TiO_2 is a commonly adopted technique to overcome the hurdles in enhancing the above-mentioned properties of photo anode. In literature, various metals had been doped in TiO_2 nanoparticles, such as Zr,[18] Sr,[19] Ag,[20] Al[21–23] and also nonmetals such as N,[24] Carbonate,[25] C, F, I, etc.[26] to enhance the performance of the photo anode in of DSSCs.

In our previous studies, Al-doped TiO_2 photo anode was proved to be fruitful to increment the photovoltaic parameters like photo current and efficiency of the DSSC contrived using Eosin Y dye as photo sensitizer.[27] The purpose of using Eosin Y dye is to craft the eco-friendly, metal free and cost effective DSSC. In our previous research work, doping concentration had been used as per referred work.[28,29] However, it had been shown that the doping concentration also affects the photo current and open circuit voltage of DSSCs.[28–30] Consequently, DSSC comprising the Al-doped TiO_2 photo anode along with Eosin Y dye deserves further studies towards the variation of Al doping concentration.

Obviously, the present investigation proposes the variation in doping concentration of Aluminium (Al) in TiO_2 nanoparticles for optimization of photo anode of DSSC. The doping concentration of Al in TiO_2 nanoparticles varied from standard values mentioned in the literature, i.e., 0.05 M.[30] Al- doped

TiO_2 nanoparticles of doping concentration 0.05 M, 0.07 M, 0.09 M and 0.11 M were synthesized and the crystalline nature was verified using XRD and Raman spectroscopy. The photo anodes were developed using these nanoparticles and used for DSSC. It was observed that the DSSC developed using photo anode with Al doping concentration of 0.07 M offers improved results as compared to the earlier reported work.

2. Experimental

2.1. *Materials*

Chemical reagents including titanium isopropoxide, Al nitrate, polyethylene glycol 600, Triton X-100 (Otto Chemicals, Germany), Eosin Y dye and Chloroplatinic acid (H_2PtCl_6) (Ward Hill, U.S.A.), acetyl acetone (Merck) and the organic solvent were used as received without further purification. FTO (Fluorine doped SnO_2, 10 Ω/Sq.cm) coated glass substrates were cleaned in a soap solution, tap water, acetone and DI water sequentially by ultrasonic treatment for 15 min each before using for electrode preparation.

2.2. *Preparation of undoped and Al-doped TiO_2*

Both undoped and Al-doped TiO_2 nanoparticles were synthesized by simple and cost effective sol–gel method as mentioned in the previous studies[27,30,31] Doping concentration of Al varied as 0.05 M, 0.07 M, 0.09 M and 0.11 M to synthesize the Al-doped TiO_2 nanoparticles. Al-doped TiO_2 nanoparticles of all concentrations along with undoped TiO_2 nanoparticles were washed several times, dried at 100°C and the calcined at 450°C for 1 h.

2.3. *Preparation of electrodes*

DSSC of effective area 1 cm^2 was developed according to the following process. Paste of TiO_2 nanoparticles, of various doping concentrations, was prepared using distilled water, acetyl acetone, polyethylene glycol and Triton X-100 in an agate mortar.[27] The photo anodes were obtained using the doctor blade method on the conductive glasses and then sintered at 450°C for 30 min in the air in the muffle furnace. After being cooled to 80°C, the TiO_2 electrodes were immersed into 0.03 mM Eosin Y dye solution in ethanol and allowed to soak for 24 h in dark space. Cathode electrodes were fabricated by drop casting, the 5 mM solution of H_2PtCl_6 in 2-propanol, on 1 cm^2 area on a cleaned FTO glass. Cathodes were also calcined at 450°C for half an hour before use.

2.4. *Development of DSSCs*

Electrolyte prepared using 0.05 mM Iodine and 0.5 mM lithium triiodide in acetonitrile was kept ready. The photo electrodes immersed in dye were taken out, washed with ethanol to remove excessive dye, dried on a hot plate and assembled with a platinum cathode with the help of Surlyn polymer spacer, crocodile clips and alligator pins. A drop of electrolyte was inserted in between the two electrodes before illuminating to obtain the J-V characteristics using the Semiconductor Parameter Analyzer- Keithley 4200 unit and overhead projector assembly.

2.5. *Spectroscopic analysis*

X-Ray Diffraction (XRD) patterns were recorded on a Brooker X-Ray diffractometer using Cu Kα radiation source. The XRD patterns were recorded in the 2θ range from 20° to 80°. Raman spectra were measured at room temperature with an AIRIX Corp (STR150 Raman, Japan). The laser line at 532 nm of an Argon ion laser was used as an excitation source with an output of 50 mW. The power of the laser at the sample was about 25 mW. Morphology of films was characterized using Atomic Force Microscope (AFM) (Park XE-7) in a non-contact mode. The Adsorption effect of the dye by TiO_2 photo anodes of different Al doping concentrations was measured by ultraviolet-visible (UV-Vis) spectrophotometer. The photovoltaic characteristics of the DSSCs were investigated with the help of semiconductor parameter analyzer (SPU) (Keithley 4200). The fill factor (ff) and energy conversion efficiency (η) were calculated as

$$\text{ff} = \frac{(I\max \times V\max)}{Isc \times Voc}, \tag{3}$$

$$\eta = \frac{Isc \times Voc \times \text{ff} \times 100}{Iin}, \tag{4}$$

where I_{max} and V_{max} are the current density and voltage generated by DSSC at maximum power point. V_{oc} open circuit voltage and I_{sc} represent the short circuit current density of DSSC and I_{in} is the intensity of incident light.

3. Result and Discussion

3.1. *Structural analysis*

Figure 2 shows the XRD pattern of Al-doped TiO_2 nanoparticles with doping concentration from 0.07 M to 0.11 M. The patterns[31] are matched with the diffraction patterns of pure and 0.05 M Al-doped TiO_2 nanoparticles considered in our previous paper.[27,30] The dominant peaks near 25.3, corresponding to (101) plane, for all the nanoparticles, indicate formation of anatase phase of TiO_2 nanoparticles. The rest of the planes are also corresponding to anatase phase as per JCPDS file 21-1272 and 21-1276.[27] There was not any special peak observed for Al. A small rutile peak appears in the XRD pattern of doping concentration 0.11 M. The size of nanoparticles was calculated using Debye Scherrer formula ($D = k\lambda/\beta\cos\theta$).[27] It was observed that the size of Al-doped TiO_2 nanoparticles increased initially as doping concentration has been increased from 0 M to 0.07 M. However, doping concentration of 0.09 M and 0.11 M size of nanoparticles found to be decreased. This may be due to increased dopant concentration and sintering temperature. Perhaps, increased doping concentration may have inhibited the crystal growth during heat treatment.

Raman spectroscopy is a very sensitive tool to confirm the phase of TiO_2 nanoparticles. Figure 3 shows the Raman spectra of pure and Al-doped TiO_2 nanoparticles. The strong bands near 145 per cm, 397 per cm, 513 per cm and 639 per cm are observed for all samples. According to factor group analysis, all of these are assigned to anatase phase and can be attributed to Eg, B1g, A1g and Eg, respectively.[32]

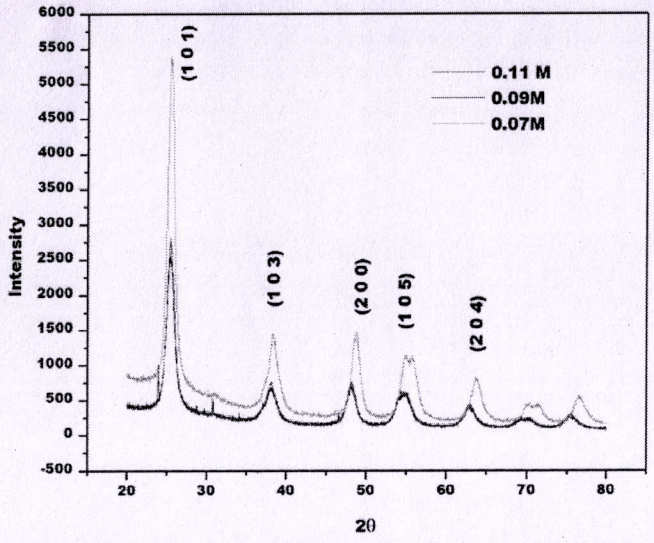

Fig. 2. X-ray diffractogram for Al-doped TiO_2 nanoparticles of Al concentration 0.07 M, 0.09 M and 0.11 M.

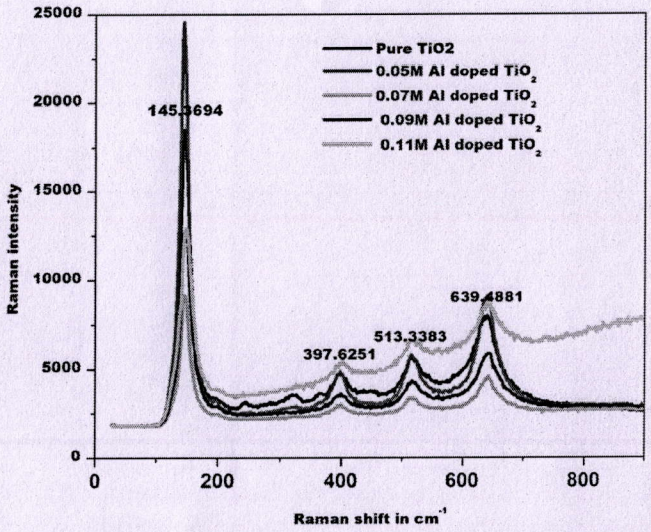

Fig. 3. Raman spectra of pure and Al-doped TiO_2 nanoparticles.

3.2. *Morphological investigation of Al-doped TiO_2 photo anode*

The AFM was availed for investigation of the surface morphology of the photo anodes. The surface roughness value determined by AFM could decide the photocatalytic activity of the photo anode. When the roughness is greater, the photocatalytic activity is greater, because there is a larger surface area to absorb the dye.[33] The surface morphology of undoped and Al-doped TiO_2 thin films are revealed in Figs. 4(a)–4(c). These images were obtained in the area of $2 \times 2\,\mu$m. The surface roughness of the undoped and Al-doped TiO_2 photo anodes measured using XEI software is listed in Table 1.

It can be observed that the surface roughness of the thin film increases initially with increasing doping concentration up to 0.07 M and after that decreases as the concentration of Al increases to 0.09 M and 0.11 M.

3.3. *Photovoltaic characterization*

In order to investigate the influence of doping concentration on the photovoltaic properties of DSSCs, The current density–voltage (J–V) characteristics were studied. The characteristic curves are shown in Fig. 5 and the corresponding photovoltaic parameters are listed in Table 2.

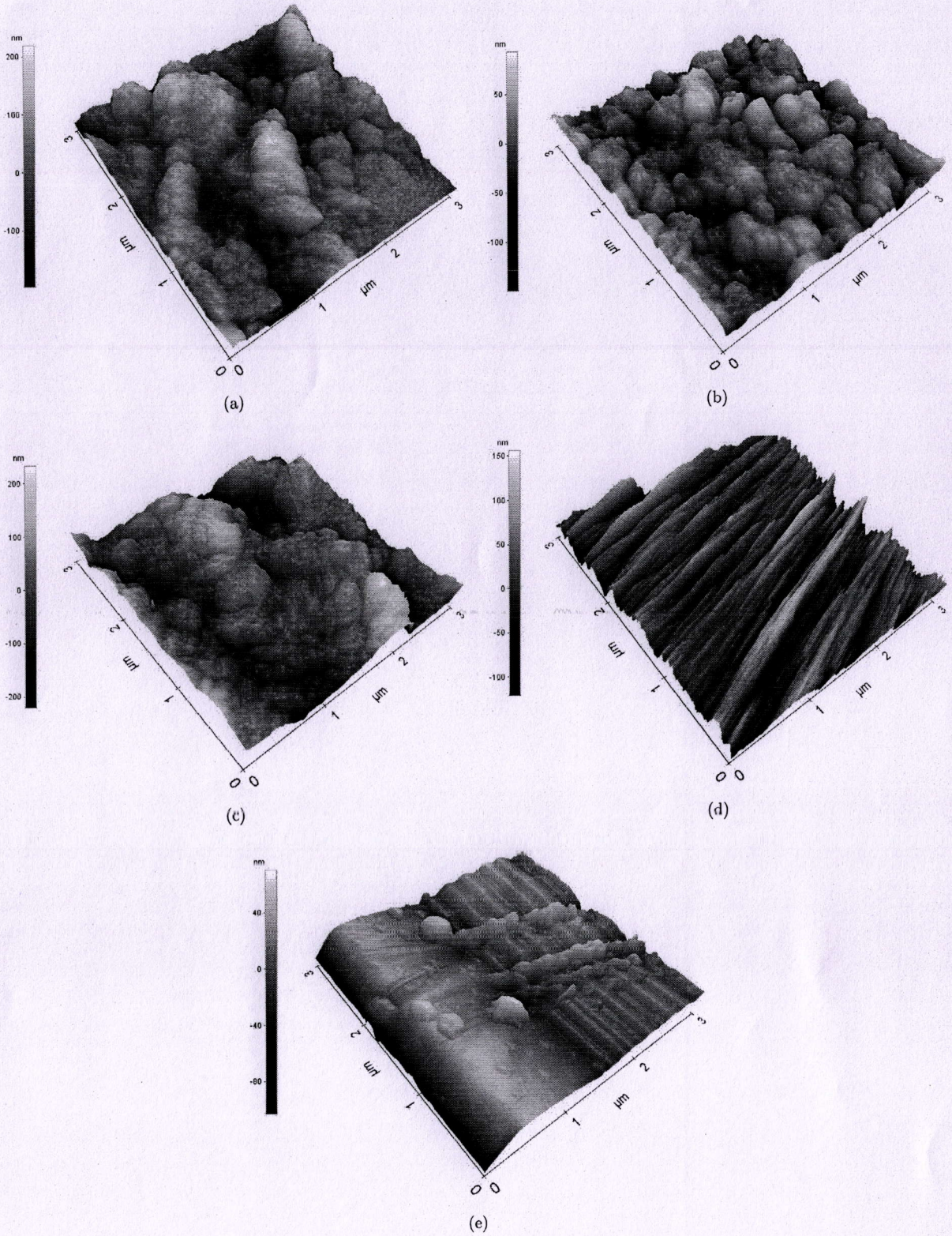

Fig. 4. (a) AFM image of undoped TiO_2 nanoparticles photo anode, (b) AFM image of 0.05 M Al-doped TiO_2 nanoparticles photo anode, (c) AFM images of 0.07 M Al-doped TiO_2 nanoparticles photo anode, (d) AFM image of 0.09 M Al-doped TiO_2 nanoparticles photo anode and (e) AFM image of 0.11 M Al-doped TiO_2 nanoparticles photo anode.

Table 1. Amount of surface roughness in the photo anodes of different Al-doped TiO_2 nanoparticles.

Amount of Al doping in mole %	Surface roughness Rq in nm
0.00	91.77
0.05	117.38
0.07	202.90
0.09	168.00
0.11	131.00

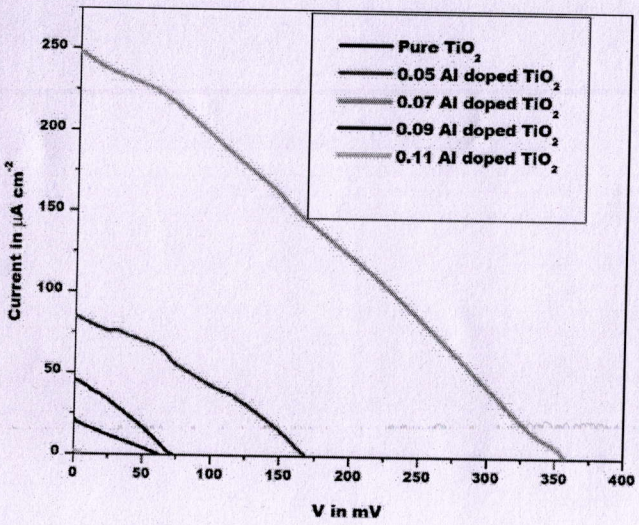

Fig. 5. Photovoltaic characteristics of DSSCs using photo comprised of pure and Al-doped TiO_2 nanoparticles.

As compared with the cell using undoped TiO_2 photo anode, the cells with increasing Al-doped TiO_2 photo anodes yielded a remarkably high photo current density (J_{sc}) and open circuit voltage (V_{oc}) initially up to 0.07 M doping concentrations of Al in the photo anode. The cell with 0.07 M Al-doped TiO_2 photo anode exhibited the best performance with photo current density 247.6 mA/cm^2, open circuit voltage 0.357 V, fill factor of 27% and the photoelectric conversion efficiency of 0.02456%. It was 98.66% higher than that of DSSC using pure TiO_2 photo anode (0.0003277%). However, the overall cell performance decreases drastically as the

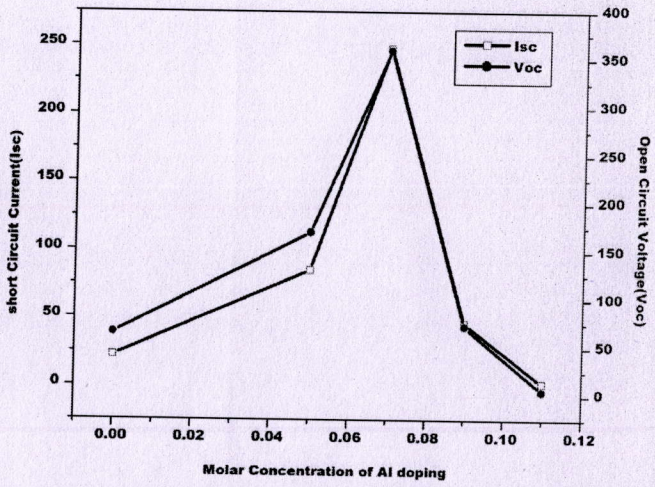

Fig. 6. Variation of I_{sc} and V_{oc} along with anode Molar Concentration of Al doping.

doping concentration of Al becomes greater than 0.07 M. This drastic fall in efficiency may be attributed to decrease in dye loading due to increasing concentration of doping.

From Fig. 6 and Table 2, it can be observed that the values of photovoltaic parameters increase up to the Al concentration 0.07 M.

However, after that the short circuit current, open circuit voltage and the efficiency of DSSC decrease drastically. It has been reported that increasing impurity traps are formed in the path of electrons while passing through anode which causes the recombination, decreasing the open circuit voltage and short circuit current.[34] The initial increase in short circuit current can be explained on the basis of theoretical model of electrical conductivity[35] given by

$$\sigma = ne\mu, \tag{5}$$

where e is the charge of electron, n is the concentration of electrons, σ is the electrical conductivity, and μ is electron mobility.

According to Lu *et al.*,[36] the increase in doping concentration enhances the electron concentration,

Table 2. Photovoltaic parameters of DSSCs: photo current density (J_{sc}), open circuit voltage (V_{oc}), maximum photo current (I_{max}), maximum photo voltage (V_{oc}), Fill Factor(ff) and efficiency (η).

Photo anode synthesized using	J_{sc} (μAcm^{-2})	V_{oc} (mV)	I_{max} (μAcm^{-2})	V_{max} (mV)	ff	(%) η
Pure TiO_2 nanoparticles	21.91	65	10.24	32	0.23	0.000330
0.05 M Al-doped TiO_2 nanoparticles	85.03	170	45.13	95	0.30	0.004290
0.07 M Al-doped TiO_2 nanoparticles	247.62	359	129.30	190	0.28	0.024560
0.09 M Al-doped TiO_2 nanoparticles	45.85	72	25.20	38	0.29	0.000960
0.11 M Al-doped TiO_2 nanoparticles	2.05	5	1.13	2	0.22	0.000002

thereby, improving the electron transport efficiency and hence improving the photo current. However, as doping concentration increases, electron mobility decreases rapidly due to the electron scattering by defects. As concentration increases more and more defect points also increases, causing increased scattering of electrons, increasing the recombination and suppressing the short circuit current.[34]

4. Conclusions

Al-doped TiO_2 nanoparticles of various doping concentrations were synthesized and incorporated to develop photo anode of a DSSC. XRD investigation confirms that with increased concentration of grain size increasing up to a certain limit, thereafter, grain size decreases even if the doping concentration is augmented. The maximum grain size of 20.534 nm was observed for 0.07 M Al-doped TiO_2 nanoparticles. Moreover, the DSSC developed using photo anode of 0.07 M Al-doped TiO_2 nanoparticles exhibited a dramatic increase in the photovoltaic parameters in comparison with all other synthesized devices. The increase in efficiency of DSSC with 0.07 M Al-doped TiO_2 nanoparticles photo anode was 98.66% more than the undoped TiO_2 photo anode DSSC and 80.05% more than the most studied concentration value (0.05 M) of Al doping.

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Green Route of Synthesis, Characterization and Antibacterial Activity of Novel Ligand and its Metal Complexes Derived from 2-Amino Benzimidazole and Acenaphthenequinone

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Abstract: ***The microwave assisted green synthesis of novel ligand derived from 2-Amino benzimidazole and Acenaphthenequinone and its metal complexes of Mn(II), Fe(III), Ni(II), Cu(II), Co(II), Zn(II), Cd(II) and Ag(I). The novel ligand was identified by melting point and thin layer chromatography. Characterization of novel ligand was by elemental analysis, Infrared spectra, ^{1}HNMR spectra and mass spectroscopy. The metal complexes were identified by melting point, thin layer chromatography and their distinguishing colour metal complexes were characterized by Infrared spectroscopy, UV-visible spectroscopy and thermo gravimetric analysis. The antibacterial activities of the novel ligand and its metal complexes were tested against Escherichia coli, Staphylococcus aurous and Salmonella Typhi.***

Keywords: ***Green synthesis, 2-Amino benzimidazole, Acenaphthenequinone, Antibacterial activities.***

I. INTRODUCTION

The azomethine group present in Schiff base ligand, which forms highly stable complex with transition metal ions. In the present work we focus on green and efficient synthesis of novel Schiff base ligand and their metal complexes. The main feature of microwave synthesis approach are shorter reaction time, larger the yield and simple conditions for reaction. The few reports are on the synthesis of metal complexes by microwave assisted method [1-3].

The use of microwave assisted irradiation in synthesis of drugs and organic compounds have proved that it is effective, safe and eco-friendly with shorter reaction time [4-5]. Compound containing azomethine/imine (C=N) group are known as ligand [6]. The product of ketone and aldehyde with primary amine are generally known as Schiff base ligand [7]. They are biological very active compounds, having biological activities like antibacterial [8-11], antimicrobial [12], anticancer [13], plant growth inhibitors [14] and so on.

II. EXPERIMENTAL SECTION

All the chemicals used in this work were of analytical grade. 2-Amino benzimidazole and Acenaphthenequinone form Sigma Aldrich and metal nitrates and chlorides from loba chem and MERCK. The novel ligand synthesized in scientific microwave oven. Metal complexes were synthesized by reacting novel ligand with metal salts in scientific microwave oven.

A. Techniques

Synthesis of novel ligand and its metal complexes were performing in microwave extraction system in scientific microwave oven. Melting points were measured on digital melting point apparatus. The electronic absorption spectra were recorded in the wavelength range 200 to 400 nm using UV spectrophotometer. IR spectra were analyses on Shimadzu Dr 8031. The ^{1}HNMR spectra was analyse in DMSO D6 on Brakers 400 MHz instrument. The mass spectrum was recorded by LCMS spectrophotometer. The TGA were carried out in dynamic nitrogen atmosphere (30ml/min) with heating rate of 10^0C/min using Shimadzu TGA 50H thermal analyser. TLC analysis performs on pre coated aluminium plates.

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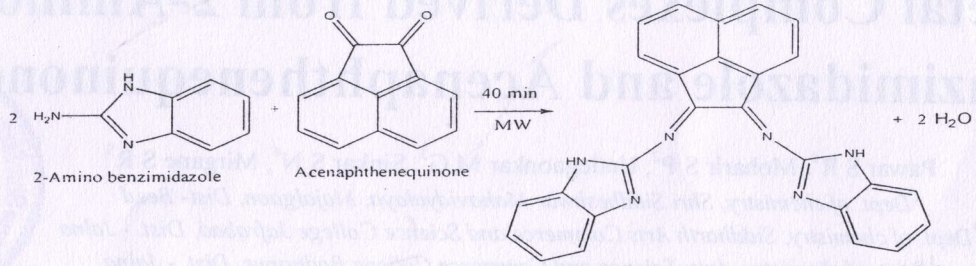
B. Preparation of Novel Ligand

The novel ligand was prepared by the reaction between 2-Amino benzimidazole (1.34 gm.) and Acenaphthenequinone (0.92 gm.) under solvent free condition in scientific microwave oven about 40 min. The irradiated product after cooling at room temperature washed with dry ether. The yield obtained was 2.12 gm. And melting point was 180^{0}C. The purity of the product confirm by TLC.

Reaction



(*E*)-*N*-((*E*)-2-(1*H*-benzo[*d*]imidazol-2-ylimino)acenaphthylen-1(2*H*)-ylidene)-1*H*-benzo[*d*]imidazol-2-amine

C. Preparation of metal complexes

The metal complexes were synthesized under solvent free condition by irradiating metal nitrate or metal chloride with the required amount of the ligand. The reaction mixture was irradiated in microwave oven. The products were washed with dry ether, filter and dried at room temperature. The metal salts used were $MnCl_2$, $Fe(NO_3)_3.9H_2O$, $Co(NO_3)_2.6H_2O$, $Ni(NO_3)_2.6H_2O$, $Cu(NO_3)_2.3H_2O$, $Zn(NO_3)_2.6H_2O$, $Cd(NO_3)_2.4H_2O$ and $AgNO_3$.

III. RESULT AND DISCUSSION

All metal complexes and novel ligand are colored, solid and stable at room temperature. They possess sharp melting point. The complexes are insoluble in common organic solvents but soluble in DMF and DMSO.

A. Physical Properties

Physical properties of the novel ligand and metal complexes summarized in Table I

Table I

Sr. No	Molecular formula	Color	Melting point (^{0}c)	Time	Yield %
1	$C_{26}H_{16}N_6$	Yellow	180	40 min	93.80
2	$[C_{26}H_{16}N_6(H_2O)_2]Mn$	Light Yellow	118	360 sec.	95
3	$[C_{26}H_{16}N_6(H_2O)_2]Fe$	Brown	110	30 sec.	75
4	$[C_{26}H_{16}N_6(H_2O)_2]Co$	Purple	132	300 sec.	87
5	$[C_{26}H_{16}N_6(H_2O)_2]Ni$	Greenish	168	150 sec.	96
6	$[C_{26}H_{16}N_6(H_2O)_2]Cu$	Green	154	90 sec.	95
7	$[C_{26}H_{16}N_6(H_2O)_2]Zn$	Brownish Yellow	124	120 sec.	91
8	$[C_{26}H_{16}N_6(H_2O)_2]Cd$	Brownish Yellow	146	180 sec.	87
9	$[C_{26}H_{16}N_6(H_2O)_2]Ag$	Dark Yellow	176	360 sec.	95

B. Elemental Analysis

Elemental analysis (CHN) data of the novel ligand is summarized in Table II

Table II

Comp.	Empirical formula	Molecular Weight	C Found (cal.)	H Found(cal.)	N Found (cal.)
Novel Ligand	$C_{26}H_{16}N_6$	412	75.95 (75.73)	3.96 (3.88)	20.09 (20.39)

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C. Mass Spectral Studies

The mass spectrum study of novel ligand showed a peak at m/z. 413(M+1) that corresponds to the molecular weight of the ligand 412.

D. ^{1}HNMR Spectral Studies

Observed ^{1}HNMR peaks (ppm) of novel Schiff base ligand summarized in Table III.

Table-III

Compound	H-from Aromatic ring in ppm	H-from-NH of Imidazole in ppm
$C_{26}H_{16}N_6$	6.81 - 8.46	6.07

The ^{1}HNMR spectrum of novel ligand shows different peaks. The characteristic peak observed at 6.07 ppm is due to H-from NH-of Imidazole. The peaks observed at 6.81 – 8.46 ppm are due to H-from aromatic rings.

E. Infrared Spectra Analysis

Observed IR frequencies of novel ligand and its metal complexes summarized in Table IV.

Table-IV

Sr. No	Ligand/complex	C=N (cm^{-1})	N-H (cm^{-1})	C=C (cm^{-1})	M-N (cm^{-1})
1	$C_{26}H_{16}N_6$	1630	3350	1450	---
2	$[C_{26}H_{16}N_6(H_2O)_2]Fe$	1647.21	3400	1454.33	547.78
3	$[C_{26}H_{16}N_6(H_2O)_2]Cu$	1643.35	3360	1492.90	677.01

The IR spectrum of novel ligand show characteristics band at 1630 cm^{-1} which indicates (C=N) stretching vibration of azomethine group [15-20]. The vibrational band at 3350 cm^{-1} assigned N-H stretching in the ligand. Band observed at 1450 cm^{-1} corresponds to C=C stretching.

IR spectral study of Fe metal complex: The band appeared at 1647.21 cm^{-1} corresponds to azomethine (C=N) stretching, whereas same azomethine band is observed at 1630 cm^{-1} in spectrum of ligand. Which indicate coordination of ligand with metal ion [21]. The band observed at 3400.00 cm^{-1} assign to (N-H) stretching, whereas in spectrum of ligand it is observed at 3350 cm^{-1}. The vibration observed at 1454.33 cm^{-1} due to aromatic (C=C) stretching. The characteristics band appeared at 547.78 cm^{-1} assign to (M-N) vibration, which confirms coordination of azomethine and metal ion [22-23]. The weak bands observed at 893.04 cm^{-1} and 1041.56 cm^{-1} were due to OH wagging mode of vibration, indicating coordination of water molecule in metal complex [24-27]. Above bands which are appeared in spectrum of complex are not appeared in spectrum of ligand that confirm the formation of metal complex with stable metal ligand bonding.

IR spectral study of Cu metal complex: A stretching observed at 1643.35 cm^{-1}, which corresponds to azomethine (C=N) stretching vibrations, whereas same stretching is observed at 1630 cm^{-1} in spectrum of ligand. The band observed at 3360.00 cm^{-1} assign to (N-H) stretching, whereas in spectrum of ligand it is observed at 3350 cm^{-1}. The vibration observed at 1492.90 cm^{-1} due to aromatic (C=C) stretching.

The coordination of metal to nitrogen was justified by stretching observed at 677.01 cm^{-1} [28]. The weak bands observed at 893.04 cm^{-1} and 1043.49 cm^{-1} were due to OH wagging mode of vibration, indicating coordination of water molecule in metal complex [24-27]. Above bands which are appeared in spectrum of complex are not appeared in spectrum of ligand that confirm the formation of metal complex with stable metal ligand bonding.

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F. Electronic Spectra

UV-Vis spectral data and probable geometry for the metal complexes summarized in Table V

Table-V

Sr. No.	Complex	UV-visible major bands. Absorption Maxima cm^{-1}(nm)	Assignment	Proposed geometry
1	$[C_{26}H_{16}N_6(H_2O)_2]Fe$	43706.29 (228.80)	$^6A_{1g}(S) \rightarrow {}^4T_{1g}(G)$	Octahedral
		49019.60 (204.00)	$^6A_{1g}(S) \rightarrow {}^4T_{2g}(G)$	
		49455.98 (202.20)	$^6A_{1g}(S) \rightarrow {}^4E_g, {}^4A_{1g}$	
2	$[C_{26}H_{16}N_6(H_2O)_2]Cu$	44682.75 (223.80)	$^2B_{1g} \rightarrow {}^2A_{1g}$	Octahedral
		45289.85 (220.80)	$^2B_{1g} \rightarrow {}^2B_{2g}$	
		47619.04 (210.00)	$^2B_{1g} \rightarrow {}^2E_g$	

UV-Vis spectrum of both metal complexes Fe(III), Cu(II) recorded in the wavelength region 200nm to 400nm in DMSO solution.

UV-Vis spectral data of Fe: Electronic spectrum of Fe(III) complex shows absorption maxima at 43706.29 (228.80), 49019.60 (204.00) and 49455.98 (202.20) assign to $^6A_{1g}(S) \rightarrow {}^4T_{1g}(G)$, $^6A_{1g}(S) \rightarrow {}^4T_{2g}(G)$ and $^6A_{1g}(S) \rightarrow {}^4E_g, {}^4A_{1g}$ transitions respectively indicating that complex possess octahedral geometry[29-30].

UV-Vis spectral data of Cu: Electronic spectrum of Cu(II) complex shows absorption maxima at 44682.75 (223.80), 45289.85 (220.80) and 47619.04 (210.00) assign to $^2B_{1g} \rightarrow {}^2A_{1g}$, $^2B_{1g} \rightarrow {}^2B_{2g}$ and $^2B_{1g} \rightarrow {}^2E_g$ transitions indicating that complex possess octahedral geometry[31-32].

G. Thermo Gravimetric Analysis of Metal Complexes

Thermo gravimetric analytical data of metal complexes were summarized in Table VI.

Table-VI

$[C_{26}H_{16}N_6(H_2O)_2]Fe$		$[C_{26}H_{16}N_6(H_2O)_2]Cu$	
Weight loss %	Temperature ^0C	Weight loss %	Temperature ^0C
0	29.76	0	31.79
10	179.04	10	172.61
20	287.10	20	214.19
30	431.47	30	295.40
----	----	40	372.32
-----	----	50	423.73
-----	-----	60	432.89
-----	----	70	449.31
------	----	80	485.49
33.231% total wt. loss	500	82.323% total wt. loss	500

The TGA curve of Fe(III) was carried out in the temperature range from 28.55^{0}C to 500^{0}C. The heating was carried out in the nitrogen atmosphere, with heating rate 10^{0}C min^{-1}.

In the range of 29.76^{0}C to 179.04^{0}C water of crystallization lost with 10% weight loss is observed. Then loss up to organic moiety total weight loss of 33.231% at 500^{0}C. Stable curve indicates formation of metal oxide.

The TGA curve of Cu(II) was carried out in the temperature range from 30.58^{0}C to 500^{0}C. The heating was carried out in the nitrogen atmosphere, with heating rate 10^{0}C min^{-1}. The thermogram of Cu(II) shows total weight loss of 82.323%. The water of crystallization was loses in the range of 31.79^{0}C to 172.61^{0}C. The loss of organic moiety with total weight loss at 500^{0}C was 82.323%. A stable curve shows the formation of metal oxide of copper.

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C. Mass Spectral Studies

The mass spectrum study of novel ligand showed a peak at m/z. 413(M+1) that corresponds to the molecular weight of the ligand 412.

D. ^{1}HNMR Spectral Studies

Observed ^{1}HNMR peaks (ppm) of novel Schiff base ligand summarized in Table III.

Table-III

Compound	H-from Aromatic ring in ppm	H-from-NH of Imidazole in ppm
$C_{26}H_{16}N_6$	6.81 - 8.46	6.07

The ^{1}HNMR spectrum of novel ligand shows different peaks. The characteristic peak observed at 6.07 ppm is due to H-from NH-of Imidazole. The peaks observed at 6.81 – 8.46 ppm are due to H-from aromatic rings.

E. Infrared Spectra Analysis

Observed IR frequencies of novel ligand and its metal complexes summarized in Table IV.

Table-IV

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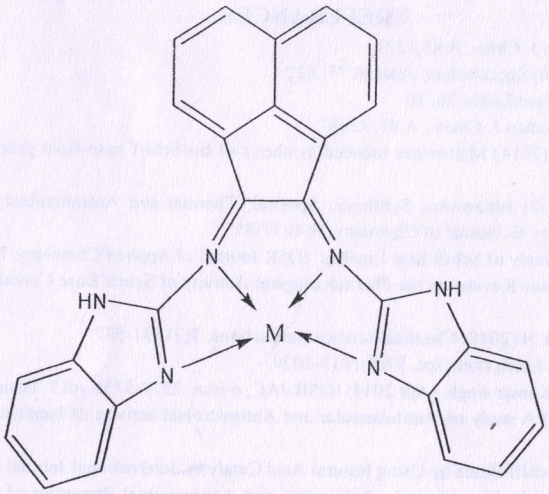

Proposed structure of metal complex (M)=Mn(II),Fe(III),Co(II),Ni(II),Cu(II),Zn(II),Cd(II),Ag(I).

H. Bioactivity study

Antibacterial activity of novel Schiff base ligand and its metal complexes were summarized in Table VII.

Table-VII

Sr. No.	Compound	Minimum inhabitation concentration (ug/ml)		
		E. Coli	S. Aureus	S. Typhi
1	$C_{26}H_{16}N_6$	250	125	250
2	$[C_{26}H_{16}N_6(H_2O)_2]Mn$	62.5	125	200
3	$[C_{26}H_{16}N_6(H_2O)_2]Fe$	100	250	100
4	$[C_{26}H_{16}N_6(H_2O)_2]Co$	100	100	250
5	$[C_{26}H_{16}N_6(H_2O)_2]Ni$	500	250	500
6	$[C_{26}H_{16}N_6(H_2O)_2]Cu$	100	125	250
7	$[C_{26}H_{16}N_6(H_2O)_2]Zn$	500	500	100
8	$[C_{26}H_{16}N_6(H_2O)_2]Cd$	62.5	500	250
9	$[C_{26}H_{16}N_6(H_2O)_2]Ag$	125	250	100

Antibacterial activity of synthesized novel ligand and its metal complexes were performing against Escherichia Coli, Staphylococcus Aureus and Salmonella Typhi. Which were grown overnight at 37^0C temperature. The minimum inhibitory concentration (MIC) was evaluated against test bacteria. Concentration ranging is in between 0.4 ug/ml to10 ug/ml.

The comparative antibacterial study of novel ligand and its metal complexes show that the MIC value of Mn(II) and Cd(II) shows good antibacterial activity on E.Coli bacteria as compared to rest of metal complexes and parent ligand. The MIC value of Co(II) complex shows good antibacterial activity on S.aureus bacteria as compared to rest of metal complexes and parent ligand. The MIC value of Fe(III), Zn(II) and Ag(I) shows good antibacterial activity on S.Typhi bacteria as compared to rest of metal complexes and parent ligand. It get result as that in some quantity novel Schiff base ligand and its metal complexes are greatly useful against E. Coli, S. Aureus and S. Typhi.

IV. CONCLUSION

The microwave method assures the principle of green chemistry. The novel ligand was synthesized from 2-Amino benzimidazole and Acenaphthenequinone. It forms stable complexes with transition metal ions such as Mn(II), Fe(III), Ni(II), Cu(II), Co(II), Zn(II), Cd(II) and Ag(I). The novel ligand and its eight metal complexes show good antibacterial activity.

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