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## ३४. महात्मा ज्योतिबा फुले यांचे अस्पृश्य विषयक विचार

प्रा. नवानाथ ज्ञानोबा पवळे

कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर (का.)

प्रस्तावना

भारतात एकोणिसाव्या शतकात समाज प्रबोधनाचे युग सुरू झाले. आणि त्यांचा परिणाम व्यक्तिस्वातंत्र्य, मानवतावाद, वैज्ञानिकता, सामाजिक व धार्मिक दास्यातून मुक्ततेचा विचार, लोकशाहीची संकल्पना इ. बाबीसंबंधी विचार बळकट होण्यासाठी झाला. लोकशिक्षणाचे कार्य विरोधासह स्वीकारण्याची एक नवी शक्ती याच काळात जन्माला आली. या शक्तीचे अग्रदुत महात्मा जोतीराव फुले हे होते. महात्मा जोतिबा फुले यांनी १९ व्या शतकात भारतीय समाजव्यवस्थेचे सुक्ष्म निरीक्षण करून समानतेचे विचार मांडले. स्त्रीशिक्षण त्यांना समान अधिकार, शेतकऱ्यांची परिस्थिती व शासन व्यवस्था चालवितांना घ्यावयाच्या धोरणात्मक गोष्टीचे विवेचन त्यांनी केले आहे. त्या काळात असलेले प्रश्न आजही या देशात आहेत. त्यामुळे महात्मा फुले यांचे विचार वर्तमान व भविष्यकाळातही नितांत आवश्यकता आहे. शिवछत्रतींनी महाराष्ट्राला पारतंत्र्याच्या गुलामगिरीतून बाहेर काढले. गुलामगिरीचे पाश तोडून टाकले. सर्व धर्मियांनाप्रेमाने जवळ करून आणि ब्राम्हण्याच्या चिकटवलेल्या जळवा महात्मा फुलांनी तोडून टाकल्या आणि राजकीय, सामाजिक, धार्मिक, शैक्षणिक आणि आर्थिक समतेचा दीपस्तंभ, महाराष्ट्राच्याच नव्हे तर भारताच्या मार्गदर्शनासाठी उभा केला.

कार्ल मार्क्सच्याही अगोदर समतेची दृष्टी महात्मा फुलांनी महाराष्ट्रास दिली. सर्वांगीन क्रांतीचे शिंग भारतात फुलांनीच प्रथम फुंकले आणि समतेचे वारे खेड्या खेड्यांतून, घरां घरातून दऱ्या खोऱ्यांतून वाहू लागले. संतांनी आध्यात्मिक समतेच्या पोटतिडकीने प्रचार केला. तर महात्मा फुल्यांनी सर्वांगीन समतेचा पाया घातला. आधुनिक प्रगत विचारांची बीजे फुल्यांनी सर्वांगीन समतेचा पाया घातला. आधुनिक प्रगत विचारांची बीजे फुल्यांच्या कार्यात, लिखाणात आणि बोलीत आढळून येतात. सामान्य माणसाच्या नवयुगाची ग्वाही देणारा आधुनिक भारतातला पहिला समाजक्रांतीकारक म्हणजे महात्मा फुले हेच होत. कारण ते सामान्यातले होते, पण विचाराने व कर्तृत्वाने असामान्य होते. महात्मा फुले यांनी आपले व्यक्तित्व स्वयंप्रेरणेने व आपल्या स्वतःच्या प्रेरणांनी घडविले आहे. त्यांचा पिंड हा कृत्तीशील क्रांतीकारकाचा होता. त्यांच्या विचारांची परिपक्वता फक्त ग्रंथावरच अवलंबून नव्हती तर उलट सामाजिक जीवनातील भल्याबुल्या प्रवृत्तींचा अन्वयार्थ लावण्याच्या बाबतीत ते बहुतांशी स्वतःच्या प्रत्यक्ष अनुभवावरच विसंबून राहत. त्यांचा स्वभाव हा चिंतनशील होता. प्रत्येक प्रश्नाच्या मुळाशी जाऊन त्यांची उकल करण्याची त्यांची प्रवृत्ती होती. महात्मा फुले हे कोणत्याही संप्रदायाचे पाईक न होता आपला मार्ग आपणच शोधून काढण्याची उमेद त्यांनी बाळगली.



## १. अंधविश्वासोंका प्रामाणिक दस्तावेज : कलिकथा वाया बाइपास

डॉ. सानप शाम बबनराय

कालिकादेवी कला, वाणिज्य एवं विज्ञान महाविद्यालय, शिरूर, का., जि. बीड.

मानव विभिन्न क्रियाओं एवं घटनाओं को अज्ञानवश न समझकर उसका उत्तरदायी एक अदृश्य शक्ति को समझता है। पहले भी वर्षा, बिजली, वृक्षपात, अन्य विपतियों को अज्ञान शक्ति या भूत प्रेत, पिशाचों के प्रकोप के परिणाम माने जाते थे। ज्ञान का प्रकाश विस्तृत होने पर भी ऐसे विचार लुप्त न हुए, विपरीत इसके मनुष्य की क्रियाओं का विस्तार होते ही अंधविश्वासी एवं विश्वासों का जाल भी फैलता गया। जादू, टोना, टोटका, शगुण, मुहूर्त, मणि, ताबीज आदि अंधविश्वास की ही संतति है। इन सबके इस्तमाल में कुछ धार्मिक भावनाएँ हैं। अतः इन भावों का विश्लेषण नहीं हो सकता। इनमें तर्क शून्य विश्वास है। कृषि रक्षा, दुर्ग रक्षा, रोग निवारण, संतान प्राप्ति, शत्रु विनाश, आयु वृद्धि आदि हेतु मंत्र प्रयोग, जादू टोना आज भी प्रचलित है।

अलका सरावगी के उपन्यास, कलिकथा वाया बाइपास के सभी पात्र काली के उपासक हैं। कलकत्ता आनेवाला हर पात्र मारवाडी पात्र हों, बंगाली पात्र हों, या हैमिल्टन जैसे अंग्रेज पात्र हों। धार्मिक अनुष्ठान सभी पात्रों के जीवन का आवश्यक अंग है। कलकत्ता काली देवी का शहर है, उपन्यास के पात्र काली के उपासक हैं। कलकत्ता आनेवाला हर पात्र सबसे पहले कालीघाट पर पूजा करता है। यहां तक कि इस्ट इंडिया कम्पनी तक जलूस लेकर गई थी कालीघाट, शुरू के दिनों में कम्पनी के पांच हजार रुपए भेंट चढ़कर मां को धन्यवाद दिया था। रामविलास, जो कि एक मारवाडी है, कलकत्ता व्यापार करने के लिए आया है। कलकत्ता आते ही वह पिता के आदेशानुसार अगले दिन कालीघाट जाकर पूजा करवाता है। बंगी पंडित ने पूरे विधि-विधान से उसकी पूजा करवाई थी- फूल-पत्र, मंत्रोच्चारण के साथ। कलकत्ते में आकर्षण का केन्द्र गंगाजल है, जिसके प्रति हर भारतीय की आस्था है। गंगाजल को बोतल में बन्द रख हिसाब-हिसाब से खर्च करने का नियम है। नहाने के पानी में दो बूंद, पीने के पानी में दो बूंद लेकिन लोग जब पहली बार कलकत्ते आए तो गंगाजल से दोनों वक्त सड़कों की धुलाई देख कर पगला गए थे। आदमी दो बूंद गंगाजल के लिए तरसता है और यहां तो सड़कों तक की गंगाजल से धुलाई होती है। इस शहर को छोड़कर मैं नहीं जाऊंगा।

कलकत्ते में मंगलवार को प्रवेश करना अमंगल माना जाता है। कथा नायक किशोर भी यह कहता है कि पिताजी ने कलकत्ता में मंगलवार को प्रवेश किया था तो फिर वह ऐसा बीमार हुए कि कभी ठीक नहीं हुए। वे चाहते थे कि एब बार कलकत्ते से निकल कर पुन लौट आए ताकि मंगलवार को लिए गए वर्जित प्रवेश का पिछला मुहूर्त बदला डालें। पर ऐसा संभव नहीं हो पाया। कलकत्ता काली मां का क्षेत्र है। नरमुण्डों की माला धारण करनेवाली, बलि के खून की प्यासी देवी का क्षेत्र है। मंगलवार को कलकत्ते में प्रवेश यात्रा भारी पड़ती है। यह मान्यता समाज में आज भी मान्य है।



के उपरान्त बनाव, सिंगार नहीं करती। मदन की तारी शाम होते ही घर के सारे शीशों पर सफेद पर्द लगवा देती है। वे कहती है कि शाम के बाद भली औरतों को शीशे में अपना चेहरा नहीं देखना चाहिए। शाम को कैसा सिंगार, शाम को तो कसबिने सिंगार करती है। अतः महिलाओं का शाम को सिंगार करना अश्लील माना जाता है। ऐसा माना जात है कि मांगलिक लडकी की शादी दुहाजू से करने पर उसकी कुंडली का विधवा दोष मिटाया जा सकता है। उसके मां-बाप ने क्यों शादी की है, उनकी दूजावर से .... मां कहती है कि वह दोहरी मांगलिक थी। यानी उसका मंगल ग्रह इतना कड़ा था कि शादी के बाद तुरंत विधवा हो जाती। इसका एक ही उपाय है कि किसी दूजावर से शादी कर दी जाए।"

बालक, शिशु प्राप्त करने के लिए महिला क्या कुछ नहीं करती। हर बार लडकी जानने के उपरान्त वह चाहती है, ".... अब अगली बार लडका हो जाएगा। भवगान सब की टेक रखते हैं। अगली बार वे खुद संतोषी माता, वैष्णो देवी, पहाड़ी देवी सब की मन्त मान लेंगी। कोई न कोई तो काम आएगा ही। इन मन्तों और विश्वासों का भी इस तकनीकी संसार में आधुनिकीकरण हो गया है। पुत्र पाने के लिए वह विज्ञान का सहारा भी ले लेती है। "इस बार भी पेट का पानी निकाल कर परीक्षा कराई, तो लडकी ही निकली, जबकि इस बार तो बच्चा पेट में इंजेक्शन से डाला था, जिसमें खाली लडका पैदा करने वाले कीड़े थे।" किन्तु फिर भी मनुष्य का जोर नहीं, ईश्वर की इच्छा ही रंग लाई। यह जानते हुए भी कि यह 'असल में यह सब छलाने के अलावा और कुछ है नहीं।' फिर भी ममतावश एक मां अपने मृत बच्चे को पुनः पाने के लिए कुछ भी कर सकती है। उपन्यास की एक महिला पात्र कहती है, ".... रात को श्मशान में 'सेवडे' तांत्रिक लोग आते हैं और बच्चों की लाशों को खोद कर निकाल लेते हैं। उस समय कोई जाकर पीछे से उनके बाल पकड़ लें, तो वह बच्चे को जिंदा ले आ सकता है। मेरी हालत भी ऐसी थी कि मैं अपनी बच्ची को वापस लाने के लिए कुछ भी करने को तैयार थी।"

आत्मा को बुला कर लाना, भूत निकालना, आत्मा घुस जाना, पितर आना जैसी बातों का उल्लेख भी उपन्यास में कई बार हुआ है। इस बात का सीधा स्पष्ट सम्बंध कथा नायक किशोर बाबू के जीवन से भी है, जो बचपन में खेले एक खेल की भांति अपने मृत मित्र की आत्मा को बुला कर मानों उसे अपने भीतर समा लेते हैं। ".... कटोरी हिलने लगी थी और सफेद कागज पर लिखे अक्षरों पर धूम रही थी। आत्मा आ गई। .... किशोर बाबू ने उस आत्मा की कटोरी को उठाकर अपने मुंह से इस तरह लगा लिया, जैसे उससे कुछ पी रहें हों।" किशोर बाबू की पत्नी यह सोचकर चकित है कि उसने कई बार सुना था कि "शांता भामी के अंदर कभी-कभी उन लोगों के कुल, पितर देवता बोलने आ जाता थे— कभी किसी शादी-ब्याह में कुछ पितरों के हिस्से का निकालना मूल गए या ऐसी ही कोई गलती हुई तो।" या ऐसा एक और उदाहरण उसने सुना था कि, ".... एक बुरी आत्मा के घुसने से एक औरत एक मैस की तरह जोर-जोर से डकार रही थी।" लेकिन यहा उसने कुछ नया देखा था कि आत्मा को बुलाकर उसे अपने भीतर घुसा ले। और जब किशोर बाबू की पत्नी को आभास होता है कि अमोलक की आत्मा ने उसके पति के शरीर पर पुरा वश पा लिया है, तो वह लाख प्रयत्न करती है कि पति को इस बुरे प्रभाव से मुक्त कराए। पति की पीड़ा से पीड़ित होकर वह चिल्ला उठती है, "अरे कोई ओझा सयाने को बुलाओ, हे मेंहदीपुर के बालाजी, इनके शरीर से अमोलक का भूत निकल गया, तो सवा मन का चुरमा चढ़ाऊंगी।" अतः असाहय पत्नी अंधविश्वास को अंधविश्वास से ही समाप्त करना चाहती है।



किशोर बाबू ने बचपन में कई बार एक महिला को चोर पकड़वाने के लिए एक टोटका करते देखा था। जैसे एक दिन उसने पड़ोसियों के यहां गहने चुराने वाले नौकर को भी पकड़वाया था। वे चोर पकड़ने के लिए अनाज फटकने का एक सूप कैंची में अटकाकर रखती, जिसे दो आदमी पकड़े रहते। जब चोर का नाम आता तभी सूप घूम जाता। और चोर का पता चल जाता था।

वस्तुशिल्प संबंधी अंधविश्वास आज के आधुनिक युग में भी प्रचलित है। सम्पत्ति, वस्तुकार एवं ज्योतिषियों का सम्बन्ध भी गहरा रहा है। वस्तुकार द्वारा घर के द्वारों की दिशा आदि के बारे में परामर्श किया जाता है। चारों दिशाओं का अपना महत्व है। उसी महत्व के आधार पर घर का पूर्व, पश्चिम, उत्तर, दक्षिण देखा जाता है और ज्योतिष ग्रह प्रवेश का उचित मुहूर्त देते हैं। यह भी एक अंधविश्वास है कि घर में कोई अनहोनी हो जाए तो उसका दोष वस्तुशिल्प की खराबी और ग्रह प्रवेश के गलत समय को दिया जाता है। किशोर बाबू के दादाजी का भी यही कहना था, "कि भिवानी की हवेली कमी फली नहीं उन लोगों को। उसका ग्रह-प्रवेश गलत निषिद्ध मुहूर्त में हुआ था— इसलिए वह कमी आबाद नहीं हुई और न वह लोग ही कमी सुखी हुए, जो उसमें रहे।

किशोर बाबू की पत्नी को भी लगता है कि उनके मकान का वस्तु शिल्प जरूर खराब होगा, तभी तो किशोर बाबू का स्वास्थ्य ठीक नहीं रहता। उसे याद आया कि एक व्यक्ति ने डर के मारे अपना पूरा मकान तुड़वा कर नया बनवाया था, जब "हैदराबाद से एक वास्तुकार पंडित आया था— उसने कह दिया कि यदि अपने सारे दरवाजे सही तरफ नहीं लगवाए तो आप पागल हो जाएंगे। इस तहर पागल होने से तो थोड़ा खर्च करना ही ज्यादा अच्छा है।" अतः घर में वास्तु सम्बन्धी दोष के निवारण के लिए ज्योतिषियों एवं वास्तुकारों से परामर्श लिया जाता है। किशोर बाबू के मित्र ने तो यहां तक भी कह दिया था कि—"भाभीजी आपके मकान के उत्तर-पूर्व कोने में यह नारियल का पेड़ ठीक नहीं है। इसे मकान के दक्षिण-पश्चिम कोने में होना चाहिए।"

वर्षा के लिए मन्नत मांगने के टोटके का उल्लेख भी उपन्यास में मिलता है। वर्षा की आशा मरुभूमि में रहने वालों की एक मीठी आस होती है। चार बच्चों की टोली अपने आठ हाथों से चादर पकड़ कर घर-घर घूमते हैं और लोग इस चादर में अनाज डालते हैं। जब चादर इतनी भारी हो जाए कि वह आठ हाथ थकने लगें तो फिर, "रामविलास की मां इस साबूत अनाज को उबाल कर उसकी 'घुघरी मिट्टी के बर्तन में पकाती है। फिर इसे चारों दिशाओं में उछाल कर हवा-पानी को अर्पित किया जाता है। यदि मेघ किसी कारण रुठा हों, तो इस भेंट से प्रसन्न हो जाए। अब घुघरी का प्रसाद घर-घर बाटा जाता है।"

इस प्रकार उपन्यास में ऐसे कोई विश्वास, अंधविश्वास, टोटे-टोटकों का उल्लेख हुआ है जो हमारे भारतीय समाज में प्रचलित है। समाज चाहे कितनी ही उन्नति क्यों न करे? मानव कितनी ही आधुनिक विचारधारा को क्यों न अपनाए, यह विश्वास हमारे समाज में प्रचलित थे और प्रचलित रहेंगे। चाहे फिर यह टोटके प्राण रक्षा, सम्पत्ति रक्षा, रोग निवारण के लिए हों, बुरे साए हटाने के लिए हों, सन्तान प्राप्ति के लिए हों, वर्षा की कामना के लिए हों या अधिक वर्षा रोकने की कामना के लिए हों या कुछ और। यह चलन चलता ही रहेगा।

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## ५. स्त्री सशक्तिकरण और वास्तविकता

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### प्रस्तावना

स्त्री सदगुणों का आगार याने स्त्री, त्याग का प्रतिक याने स्त्री। स्त्री याने मूर्तिमंत प्यार जिसे पाने के लिए हर कोई संघर्ष करते रहेता। अगर स्त्री नहीं होती तो ये संसार नहीं होता। अगर स्त्री नहीं होती तो इस दुनिया में प्यार नाम की चीज ही नष्ट हो जाती। सह तरफ अंधकार, हिंसाचार, अंदाधुंदी, गुंडाराज का साम्राज्य होता। स्त्री खुद के कार्य से संसार को निःस्वार्थ और त्याग, निर्मल प्यार के पाठ पढ़ाती है। खुद डुब जाती है, लेकिन दूसरों को किनारे पे पहुँचाती है। इसलिए मैं कहूँगा कि नारी के बिना इस संसार की कल्पना ही नहीं की जा सकती है, भारतीय परम्परा के अनुसार पुरुष और नारी दोनों भी महत्वपूर्ण घटक हैं। भारतीय संस्कृति में महिलाओंको समाज में सबसे ऊँचा दर्जा दिया गया है। नारी सशक्तीकरण वर्तमान समय का ज्वलंत प्रश्न है। आज समय उस मोड़ पर आ पहुँचा है, जब हमारे समाज के लिए आवश्यक हो गया है कि वह नारी के अस्तित्व को स्वीकार करे, उसे महत्व दे और अपनी जीवन यात्रा में संपूर्ण सहयोग भावना से उसके साथ चले। 'यत्र नार्यस्तु पूज्यन्ते रमन्ते तत्र देवता' अर्थात् जहाँ नारी की पूजा होती है वहाँ देवता निवास करते ऐसी मान्यता है। उसे सुख और समृद्धि का प्रतीक माना है।

‘या देवी सर्वभूतेषु शक्तिरूपेण संस्थिता, नमस्तस्यै नमस्तस्यै नमस्तस्यै नमो नमः।’ इससे स्पष्ट हो जाता है कि भारतीय, विशेष रूप से स्त्री को देवि, शक्ति के रूप में देखा करते थे।

प्रचीन काल में नारियों को दो स्तरों पर देखा जाता था प्रथम यह नारी है जो ज्ञान एवं ब्राह्मोपासना में व्यस्त रहती है। तो दूसरी परिवार के दैनिक कार्यक्रम के माध्यम से ईश्वर तक पहुँचना चाहती है। पर मध्ययुग में नारी अबला हो गयी, पराधीन हो गयी। कवि मैथिलीशरण गुप्त कहते हैं- अबला जीवन हाय, तुम्हारी यही कहानी। आंचल में दुःख है और आखों में पानी। आधुनिक युग के स्वतंत्रता के बाद नारी जागरण का युग आया। भारत के सावतंत्रता संग्राम में झांसी की रानी लक्ष्मीबाई कस्तुरबा गांधी, विजया लक्ष्मी पंडित, सरोजनी नायडू, सुचेती कृपलानी, लक्ष्मी सहगल आदि ने पुरुषों के साथ कंधे से कंधा मिलाकर संघर्ष किया। देखा गया है कि नारी का



## **Indian Society: Domestic Violence and Need of Woman Empowerment**

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### **Introduction:**

Today, everyone is speaking about women empowerment. In reality, there are many barriers in the way of women empowerment. It is the time to understand the different hindrances related to the lives of women. The question of Women empowerment is not confined with only one country; it is a major concern of the world. It is said that woman has got equal rights, she has made progress in each and every field, but still it is a partial. Research shows that women face many problems on the workplace as compare to men. The problems are related with gender, sexual harassment, career progression, unequal pay and domestic violence etc. It is evident that women are considered less competent. Domestic violence is seen lucid everywhere, even in the educated families. In the world of patriarchy, it is observed everywhere. Thus, the present paper is going to focus on domestic violence and need of woman empowerment in Indian society.

### **Domestic Violence:**

Domestic violence has been described by the Nevada Attorney General's Office "as a violent crime committed in the context of an intimate relationship. It is characterized by acts of violence, power and coercion intended to control another person's behavior" (Pamela Powell & others, <http://www.unce.unr.edu/>). The domestic violence is seen not only in married life but seen where there is live in relationship. It is one of the significant factors which comes and stay



as a barrier in the path of women empowerment. In ancient India and even in other countries, women enjoyed equal status with men. Society and local people used to give equal respect to women. Woman was considered as a symbol of prosperity, happiness and joy. To harass a woman was considered as a sin. It was the duty of the local people to protect the honor of women. It is also said that in some communities of India, there was matriarchal system. It means that a woman was considered supreme and the final authority to any decision was given to woman in the family.

Due to the advent of purdah system, many other factors like superstition and oppressive customs in Indian society, the position of Indian women starts to deteriorate. The patriarchy starts to think woman as a mere maid. It starts to look women from the sight of children factory and so many other things. They were restricted to the four walls only. The male dominant society look women as inferior human beings and a woman does not receive that much love, respect and regard in the family. Every day they have to face discrimination, exploitation and violence. This is not the issue of only one country but it is spread just like epidemics everywhere. This has an adverse effect on their efficiency. They are abused everywhere. Violence of women in the family is rampant. Usually they are beaten by their husbands, boyfriends, father, and brother, father in laws and even by their sons.

In India, dowry is prevalent everywhere. There are many cases of dowry deaths in India. Even the so called sophisticated and educated families in India demand dowry. If the bride is unable to bring dowry, she is tortured mercilessly. Most of the women are tortured on account of unfulfilled dowry demands. The columns of newspaper are seen filled with the news of deaths of women and the atrocities on them. It is due to not fulfilling the greed of the husbands and their families. The worse condition of women is a very serious issue it is the need of the hour to discuss these things. Domestic violence is a kind of offence that a woman suffers in the family not only by husband but at the hands of other members in the family.

Technology at some extent is proved as a curse for women. It affects the sex ratio. Sex determination of the baby leads to the abortion of the infants. Thousand of newly born baby girls are seen thrown in rivers and dust bins. In some of the families of India, women are tortured on

the issue of female child. Preference of a male child is widespread everywhere. Government has made many efforts after post independence in India to uplift the condition of women. There were certain laws made compulsory. But the law alone cannot change the condition of women. There should be change in the mentality of patriarchy. With the increase in industrialization and urbanization, there is no decrease in the exploitation of women.

The condition of elderly women and widows in the family is also not satisfactory. Woman has to earn to raise the children. If the widow does not have children, then she is treated like a maid and has to work for the family. Along with these things, threats, humiliation, underestimation is also the weapons of domestic violence. Domestic violence is done irrespective of religion and caste. Divorce and multi marriages on the part of men for different reasons are at present the different reasons for the domestic violence. Therefore there is the necessity of women empowerment.

## **The Need of Woman Empowerment:**

For all the reasons mentioned above, there is need for woman empowerment. It is important for the sustainable development of the society. Empowerment creates power in an individual. He or she can access the opportunity. Empowerment of women comprises the raising the status of woman by means of education, awareness and training. It is important to know and realize their worth and strength to them. Most of the women have realized their strength and potential yet there are many sections in the society who still due to lack of proper knowledge and education cannot find their paces.

Due to the orthodox mentality in the society, the preference is given to male children and not to the girl child. In other words it is the man who decides the course of woman's lives. From ancient time, gender discrimination and Male domination is prevalent in Indian society. Woman is given secondary position. They are suppressed for many reasons. As stated earlier, the factors like child marriage and dowry system made the lives of women miserable. Even though, the women in India made a considerable progress in each and every field. Still there are many



obstacles and issues which are being created by certain group of people. For all this, woman empowerment is necessary.

In India, in many families, the education is considered to be the privilege of boys. The girls do not get the proper education, even basic education; this is also one of the reasons of domination and violence on their part. They face violence, abuse and ill- treatment, to avoid all this and for their bright future, the woman empowerment is essential. From many generations, the woman is made dependent. To free them from the clutches of male dominated society is the need of present situation. What she needs is the only support and awareness. They can lead their life with dignity and freedom.

If they are empowered, automatically their confidence can rise, it will enhance their overall personality and position in the society. If they are financially independent, they can automatically spend on their needs and desires. They may not depend and demand on the rest of the family members. There are different ways through which the women can empower. It is observed that instead of sending the girls to the school, the parents send them to fetch water. They have to bring it from several miles. The water is also not clean. Providing clean water to them is also a step to empower them. Most of the girls are facing the problem like child labor. To make a woman self reliant through skill, training, education, counseling and extending medical help is also a kind of empowerment. They can be made self dependent by availing loan to them.

## **Conclusion:**

Today, the position of women is changing. The government and private sectors, women are seen working on different leadership positions also. It is sign of development of the society. Now days, the men and women both are enjoying equality at economic, social, political and administrative level. As India is developing country, there is much requirement in the above said aspects. Still the patriarchy does not want to miss the chance to dominate the women therefore; the condition of women in India is deteriorating. The men seem to be not helping to the women, who are working at different places in the society. Along with the routine household, domestic work, they have to manage office work. It should not forget that one should not underestimate the women because they are half power of the country. Until and unless, they become powerful,

country cannot be called powerful. When the women in India will be powerful, India would become one of the powerful nations in the globe.

The man in the family that is the patriarchy should understand the woman and her powers. If the woman in the family becomes self independent ultimately country will. Gender equality must be there in each and every aspect of society. The outlook of man should broaden. They have to share in the daily household activities with women, as men and women both are responsible for the daily routine work. If a man takes some responsibility of home, the woman can get freedom and to look after the career. The women need support for this. Without the help of men, they will remain weak and behind. The women empowerment in real sense can reduce poverty of the family and enhance the income and can bring development soon.

However, woman empowerment should start from our own home. One should start this at the workplace and community. One should not forget to praise the sister, mother, daughter and wife. In relation to this we always remember the words of Swami Vivekananda, "Educate your women first and leave them to themselves; then they will tell you what reforms are necessary for them. In matters concerning them, who are you?" (Swami, <https://www.womensweb.in/>) He further said, "The idea of perfect womanhood is perfect independence." (Ibid).

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## ❧ CONTENTS OF MARATHI PART - I ❧

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१	डॉ. बाबासाहेब आंबेडकर यांचे आर्थिक विचार डॉ. मुळे पी. एम.	१-३
२	डॉ. बाबासाहेब आंबेडकर यांचे कार्य : एक आढावा प्राचार्य डॉ. वबन पवार	४-७
३	डॉ. बाबासाहेब आंबेडकरांचे धर्मांतर एक आकलन प्रा. डॉ. अंगद पवार	८-१०
४	डॉ. बाबासाहेब आंबेडकरांच्या दृष्टिकोनातून हिंदू कोड बिल : समकालीन समाजवास्तव प्रा. डॉ. रामभाऊ मुटकुळे	११-१४
५	डॉ. बाबासाहेब आंबेडकरांचे ग्रामीण विकास व कृषी क्षेत्रातील योगदान डॉ. विनायक नागोराव शिंदे	१५-१७
६	सामाजिक परिवर्तनाचा आधारवड : डॉ. बाबासाहेब आंबेडकर डॉ. आरगडे अंबादास	१८-२२
७	शिवकालीन आर्थिक धोरणाचा अभ्यास डॉ. ज्ञानेश्वर जिगे	२३-२७
८	डॉ. बाबासाहेब आंबेडकरांचे आर्थिक विचार प्रा. डॉ. संजय भाकराव गिरे	२८-३१
९	महात्मा ज्योतीराव फुले यांचे शैक्षणिक व आर्थिक विचार प्रा. डॉ. संजय मगर	३२-३७
१०	राजर्षी छत्रपती शाहू महाराजांच्या आर्थिक विचारांची वर्तमानकालीन प्रासंगिकता प्रा. डॉ. श्रध्दानंद माने	३८-४३
११	उपविषय- फुले दांपत्याचे स्त्रीविषयक विचार प्रेरणा दिलीप दीक्षित	४४-५१
१२	राजर्षी शाहू महाराजांचे अस्मृशयोधराचे कार्य विठ्ठल बाबुराव गुंडे	५२-५४
१३	डॉ. बाबासाहेब आंबेडकरांचे आर्थिक विचार आणि आजची प्रासंगिकता प्रा. डॉ. शिवाजी नामदेव झांडुरणे	५५-५७



## १. डॉ. बाबासाहेब आंबेडकर यांचे आर्थिक विचार

डॉ. मुळे पी. एम.

अर्थशास्त्र विभाग कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय शिरूर (का.).

### प्रस्तावना

डॉ. बाबासाहेब आंबेडकर हे एक अष्टपैलू व्यक्ती महत्त्व होते. त्यांच्या अनेक पैलूंपैकी भारतीय राज्यघटनेचे शिल्पकार एक शिक्षण तज्ञ, कायदे पंडित, पत्रकार, प्राध्यापक, प्राचार्य व लेखक नामांकित वकील इत्यादी पण त्यांची अर्थतज्ञ म्हणून काय भूमिका होती. त्यांचे आर्थिक विचार कोणते होते. त्यांनी आपल्या The Problem of Rupee या ग्रंथात भारतीय रुपयांचा सखोल अभ्यास केला आहे. डॉ. आंबेडकरांनी अर्थशास्त्रामध्ये केवळ संपत्तीचा व आर्थिक संबंधाचा अभ्यास व्हावा असा विचार मांडला नाही. तर अर्थशास्त्रात समाजाच्या कल्याणासाठी विचार आला पाहिजे असा त्यांचा आग्रह होता. समाजामध्ये संपत्तीचे वाटप समानतेने व्हावे असे त्यांना वाटत होते. त्याचप्रमाणे जाती व्यवस्थेचा देशाच्या अर्थव्यवस्थेवर कसे विपरीत परिणाम होतात हे देखील त्यांनी स्पष्ट केले आहे.

आंबेडकरांच्या मते भारतीयांनी पश्चिमात्य कल्पना जशाच्या तशा स्वीकारू नयेत असे दाखवून दिले की, जाती व्यवस्थेमुळे श्रम विभागणी, चलन पुरवठा, भांडवल, उपभोग या संकल्पनांवर विपरीत परिणाम होतो. जाती व्यवस्थेतूनच दारिद्र्य, आर्थिक पिढवणूक, असमानता यामध्ये वाढ झाली. जाती व्यवस्थेमुळे विकासावर त्याचा प्रतिकूल परिणाम होतो हे दाखवून दिले. याशिवाय श्रमिकांना किमान वेतन मिळावे असाही त्यांचा आग्रह होता. वरील विवेचनावरून डॉ. बाबासाहेब आंबेडकरांच्या विविध आर्थिक कल्पनांचा आढावा घेतला. त्यांच्या आर्थिक विचारांमध्ये निश्चित कोणती दिशा होती याची कल्पना १९३६ मध्ये मजूर पक्षाची स्थापना केल्यावर जो जाहीरनामा प्रसिद्ध केला. जाहीरनाम्यामध्ये धोरणात्मक आर्थिक विचार मांडले त्यामध्ये प्रामुख्याने शेती, उद्योग, कामगार व त्यांचे वेतन, कामगार कल्याण योजना बेकारी निवारण, साधकारी नियंत्रणा संबंधी आपले विचार मांडले. हे सर्व विवेचन पाहता बाबासाहेब किती दूरदृष्टीचे होते हे लक्षात येते.

### संशोधनांची उद्दिष्टे

१. डॉ. बाबासाहेब आंबेडकर यांच्या आर्थिक विचारांचा अभ्यास करणे.
२. डॉ. बाबासाहेब आंबेडकर यांची अर्थतज्ञ म्हणून काय भूमिका होती.
३. डॉ. बाबासाहेब आंबेडकर यांनी मांडलेल्या भारतीय रुपयांचा प्रश्न यावर प्रकाश टाकणे.
४. डॉ. बाबासाहेब आंबेडकरांच्या भारतीय राजस्वा संबंधीच्या विचारांचा अभ्यास करणे.
५. डॉ. बाबासाहेब आंबेडकर यांचे उद्योग, कृषी, श्रम, कामगार विषयक विचारांवर प्रकाश टाकणे.

### संशोधन पत्रांती

प्रस्तुत निबंधांमध्ये दुय्यम साधन सामुग्र्याचा वापर केला असून त्यामध्ये प्रामुख्याने संदर्भ ग्रंथ, प्रत्यक्षपणे इंटरनेटसंपादकीय लेख, साप्ताहिक मजूर पक्षाचा जाहीरनामा शोध निबंध इत्यादींचा आधार घेतला आहे.

### भारतीय रूपयांचा प्रश्न

भारताचा रूपया आणि इंग्लंडचा पौंड यांच्या संबंधाचामहत्त्वपूर्ण प्रश्न या अध्यासात समाविष्ट असलेला आणखी दिसून येतो. रूपयांचा प्रश्न या ग्रंथांमध्ये डॉ. बाबासाहेब आंबेडकरांनी भारताच्या रूपयांची उल्लाखीची मिस्रीसा केले.

अर्थतज्ञांमध्ये भारतीय रूपयांची जडणाघडणाही सुवर्ण परिणाम (Gold Standard) असावी की सुवर्ण विनिमय (Gold Exchange Standard) असावी, याबाबत वादनिर्माण झाला होता. सामान्यपणे सुवर्ण परिणामात कागदी चलणाचा वापर होता. एवढेच नव्हे तर कागदी चलन घेऊन सरकारकडून सोन विकत घेता येऊ शकते. प्रा. केन्स यांच्या मते विनिमय परिणामाचा पुरस्कार केला. त्यांच्या मते सुवर्ण विनिमय परिणामात लवचिक असल्याने भविष्य कालीन अर्थव्यवस्थेसाठी उपयुक्त करेल. परंतु डॉ. आंबेडकरांनी केन्सच्या या मतास मात्र विरोध केला. त्यांनी असा विचार मांडला की सुवर्ण विनिमय परिणामात स्वयं राहू शकत नाही. या परिणामात लवचिकता हा गुणधर्म जरूर असेल. पण यामध्ये चलन निर्मितीवर नियंत्रण राहत नसल्या कारणाने चलन निर्मितीत बाजवीपेक्षा जास्त वाढ होईल व भावावाढ होऊन रूपये मूल्य घसरतील व त्यातून विनिमयाचे साधन म्हणून रूपयांचे स्थान अस्थिर होईल. हे त्यांनी आपल्या विचारातून दाखवून दिले आहे.

### राजस्व विषयक विचार

डॉ. आंबेडकरांनी १९२५ मध्ये जो प्रादेशिक वित्त हा ग्रंथ प्रकाशित केला. या ग्रंथांमध्ये राजस्व विषयक विचार मांडले आहेत. या ग्रंथात १८३३ ते १९२१ या कालावधीत भारतीय वित्त व्यवस्थेचा विकास काढून घेतला. याची माहिती डॉ. आंबेडकरांनी दिली आहे. प्रा. सलिंगमय यांना असे म्हटले आहे की भारतातील प्रादेशिक वित्त संबंधी जे विश्लेषण करण्यात आले.

### डॉ. आंबेडकरांचे उद्योग विषयक विचार

भारताचा आर्थिक विकास करण्यासाठी औद्योगिकरण महत्वाचे आहे. देशाच्या समतोल विकास व्हावा यासाठी भारतीय अर्थव्यवस्थेमध्ये शासनाने प्रत्यक्ष लक्ष घालून समतोल औद्योगिक विकासासाठी करावा असे त्यांना वाटत होते. सार्वजनिक मालकीचे काही मुलभूत स्वरूपाचे उद्योग शासनाने चालवावेत व अशा प्रकारचे उद्योग सुरू करण्यासाठी काही महामंडळांची स्थापना करावी व विमा उद्योगाचे राष्ट्रीयीकरण करावे कामगारांना योग्य वेतन मिळेल नागरीकांना सामाजिक व आर्थिक सुरक्षितता मिळेल. उदा नैसर्गिक आपत्ती अपघात आजार पेंशन वृद्धांगकाळ या प्रसंगांना शासनाने द्यावी वित्तीय आर्थिक मदत मिळेल असे बाबासाहेबांचे मत होते. भारतातील ग्रामीण भागात जो कामगार वर्ग असतो तो खालील वर्ग असतो. व खालील वर्गा गरजा लक्षात घेतल्यानंतर जर देशाचा आर्थिक, सामाजिक, राजकीय विकास साध्य करावयाचा असेल तर आर्थिक विकासाचाच एक भाग म्हणून औद्योगिकरणस प्राधान्य द्यावे. म्हणून भारताचे पहिले औद्योगिक धोरण १९४८ व दुसऱ्या जगातील युद्धाच्या वेळी १९५६-६१ औद्योगिकरणस प्राधान्य देण्यात आले.



### कृषी विषयक आर्थिक विचार

डॉ. बाबासाहेब आंबेडकरांनी १८१८ मध्ये The Journal of Indian Economics Society च्या अंकात Small Holdings In India and their Remedies हा लेख लिहिला या लेखामध्ये त्यांनी असे सांगितले की शेतकरी भारताचा एक सर्वात मोठा राष्ट्रीय उद्योग आहे. सर्व प्राथमिक व्यवसायांमध्ये शेतकरी महत्त्व अधिक आहे. त्यांच्या मते भारतीय शेतकऱ्यांच्या उत्पादकतेवर परिणाम करणारा जर कोणता घटक असोला तर तो घटक म्हणजे शेत जमिनीचा आकार होय. भारतीय शेतकऱ्यांचा आकारतुकटोकरणामुळे लहान झाला आहे. असे लहान लहान तुकडे सगळीकडे विखुरलेले आहेत. भारतीय शेतकरी उत्पादकता कमी आहे. म्हणून आंबेडकरांनी असा विचार मांडला आहे की विखुरलेल्या जमिनीचे एकत्रीकरण करून त्याचा आकार वाढवून ती उत्पादकता वाढवणे आवश्यक आहे.

### कामगारांविषयी विचार

डॉ. आंबेडकरांनी कामगारांच्या कल्याणासाठी मजुरांमधील असमानता विशेष प्रयत्न केले. असोसिएट सेक्रेटरीची काळजी कायद्याच्या विरोधात डॉ. आंबेडकरांनी केलेले भाषण खूपच गाजले. डॉ. बाबासाहेब आंबेडकर म्हणाले की याचा हक्क म्हणजे कामगारांच्या स्वातंत्र्याचा हक्क होय.

नागरीकांचा स्वातंत्र्य हक्क जेवढा तीव्र तेवढाच कामगारांचा हक्क तीव्र आहे. औद्योगिक कामगारांना ज्या सवलती मिळतात ते कायदे मिळतात तेच कायदे शेतमजुरांना देण्यात येऊ नयेत असे औद्योगिक कामगारांना भीषण निर्बंध मिळे, आरोग्य विमा, अपघात विमा, नुकसान भरपाई इत्यादी व्यवस्थांना सोबत मिळतात त्याच सोबत शेतमजुरांचा मिळाल्या पाहिजेत.

डॉ. आंबेडकरांच्या आर्थिक विचारांचा आढावा घेतल्यानंतर त्यांचा भारतामध्ये सत्तेवर आधारीत समाजव्यवस्था अर्थव्यवस्था स्थापन व्हावी असे वाटत होते. डॉ. आंबेडकर एक थोर विचारवंत होते. त्यांनी मांडलेले विचारांपुरण्ये व गुणात्मक बदल घडवून आणणारे होते. थोर कायदे पीछत बुद्धिवादी विचारांवर निष्ठा ठेवणारे संसदेतून म्हणून त्यांची ओळखलेली जगाला होती.

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१. जागतिक आर्थिक विचारांचा इतिहास - डॉ. एस.एम. खंदारे केजलस पब्लिकेशन्स, औरंगपूर, औरंगाबाद.
२. आर्थिक विचारांचा इतिहास : प्रा. रामचंद्रलकर, ए.आर. - कोशधारी प्रकाशन.
३. आर्थिक विचारांचा इतिहास - प्रा. डॉ. बी.डी. इंगळे
४. संपर्काचा प्रश्न : डॉ. बाबासाहेब आंबेडकर
५. लोकसत्ता पेंशनमधील लेख-मुद्रित संग्रह २०१३.
६. डॉ. बाबासाहेब आंबेडकर यांच्यामजुर पक्षाचा जाहीरनामा





## ❧ CONTENTS OF MARATHI PART - I ❧

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१	मराठवाड्यातील महिला पोलीस कर्मचाऱ्यांच्या समस्याचा समाजशास्त्रीय अभ्यास सविता एकनाथ कांबळे डॉ. शंकर लालू गायकवाड	१-५
२	पायाभूत सुविधांचा चिकित्सक अभ्यास (विशेष संदर्भ : नांदेड जिल्हा) डॉ. पी. ई. विभुते राहुल दगडू गव्हे	६-१०
३	मानवी जीवन : एक दृष्टीक्षेप डॉ. सुनील अं. काळमेघ	११-१३
४	देशातील प्रादेशिक असमतोल - एक चिंतन प्रा. डॉ. अनिल बनकर	१४-१७
५	आंबेडकरी स्वकयनातील मूल्यदर्शन प्रा. डॉ. विश्वजीत कांबळे	१८-२८
६	महात्मा गांधी यांचे धार्मिक विचार डॉ. अशोक घोळवे	२९-३३
७	भारतातील कृषी आणि ग्रामीण विकास प्रा. डॉ. मुळे पी. एम.	३४-३६
८	मानवी हक्क आणि महाराष्ट्र शासनाची महिला विषयक भूमिका प्रा. डॉ. शेंडे डी. डी.	३७-४०
९	स्व. पंडीत रामाश्रय झा लेखक, संशोधक व व्यक्तीत्व एक अभ्यास प्रा. प्रितम जनार्दन वैस	४१-४४
१०	डॉ. शंकर पाटील आणि अब्राहमणी तात्त्विक विचार प्रणाली प्राचार्य डॉ. शारदा गोविंदराव बंडे प्रा. अनिल प्रभाकर निकम	४५-४९
११	साहित्य रत्न छत्रपती संभाजी महाराज प्रा. डॉ. सोनवणे राजाराम रामदास	५०-५५

## ७. भारतातील कृषी आणि ग्रामीण विकास

प्रा. डॉ. मुळे पी. एम.

अर्थशास्त्र विभाग, कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर (का.)

### प्रस्तावना

भारत हा देश अनेक लहान मोठ्या खेड्यांनी मिळून बनलेला देश आहे. भारतातील ग्रामीण विकासाला शेतीच्या अर्थव्यवस्थेच्या अत्यंत महत्वाचे स्थान आहे. कारण की शेती हा व्यवसाय ग्रामीण भागातील लोकांच्या जिवनाचा महत्वाचा भाग आहे. याची शेती प्राचीन काळापासून दिसून येते प्राचीन काळखंडापासून ते भारतात इंग्रजी सत्ता स्थापनेपर्यंत भारतातील खेडी स्वयंपूर्ण होते कारण ते त्यावेळी ग्रामीण भागात शेतीवर आधारित लहान मोठे उद्योग अस्तित्वात होते म्हणजे त्यांना आपल्या गरजा भागवण्यासाठी त्यांच्या करणच्या आवश्यकता येता. परंतु इंग्रजी सत्ता स्थापनेनंतर भारतात औद्योगिकीकरणाला प्रारंभ झाला. त्यामुळे शेतीवर आधारित उद्योगांना बागातील लहान मोठे उद्योग बंद पडू लागले. त्यामुळे भारतातील लोक उपजिवीका भागवण्यासाठी शेतीकडे वळली परंतु काही काळ ही नैसर्गिक पावसावर अवलंबून आहे.

### संशोधन उद्दिष्टे

1. भारतातील GDP मधील कृषी क्षेत्रातील वाटाचा आढावा घेणे.
2. भारतातील क्षेत्र निहाय गुंतवणुकीचा आढावा घेणे.
3. भारतातील कृषी क्षेत्रासाठी कोट्यांचा काज गुंतवठावर प्रकाश टाकणे.
4. भारतातील शेती व्यवसायाला जोड व्यवसाय म्हणून दुग्ध व्यवसायाचा अभ्यास करणे.

### संशोधन पद्धती

प्रस्तुत शोध विषय दुय्यम साधन सामुग्री वर आधारित आहे. विविध संदर्भ ग्रंथ, नियत कालिके, संकेतस्थळ वित्त व विपणन धोरणे, इंटरनेट वामासून ही माहिती संकलीत केली आहे.

### कृषी क्षेत्राचा देशाच्या G.D.P मधील सहभाग व गुंतवणुक

देशात ५५ टक्के लोकांच्या उदरनिर्वाहाने साधन कृषी क्षेत्र आहे, म्हणून कृषी क्षेत्राचा विकास म्हणजे ग्रामीण भागाचा विकास या अनुषंगाने भारतीय अर्थव्यवस्थेत कृषी क्षेत्राची भूमिका महत्वाची आहे. GDP मधील कृषी क्षेत्राचा वाटा १५.४१% आहे. भारतातील क्षेत्र निहाय गुंतवणुक

तक्ता क्र. १.१

अ.क्र.	क्षेत्र	२०१२-१३	२०१३-१४
१	कृषी	२.६	२.५
२	उद्योग	१२.९	११.७
३	सेवा	१८.००	१७

Source : Economics survey of India 2014-2015.



इरील तक्यावरून असे दिसते की, २०१२-१३ मध्ये कृषी क्षेत्रामध्ये गुंतवणुकीचे प्रमाण २.६ टक्के तर २०१३-१४ मध्ये २.१ टक्के आहे. तर उद्योग क्षेत्रामध्ये २०१२-१३ मध्ये गुंतवणुकीचे प्रमाण १२.९ टक्के तर २०१३-१४ मध्ये ११.७ टक्के आहे. तर सेवा क्षेत्रामध्ये २०१२-१३ मध्ये गुंतवणुकीचे प्रमाण १८.०० टक्के आहे तर २०१३-१४ मध्ये १७ टक्के आहे. तर औद्योगिक क्षेत्र आणि सेवा क्षेत्रातील गुंतवणुकीचे प्रमाण कृषी क्षेत्रा पेक्षा जास्त असल्यामुळे कृषी क्षेत्राचा GDP मधील वाटा देखील १५.४ टक्के आहे. म्हणजेच औद्योगिक आणि सेवा क्षेत्रापेक्षा फारस कमी आहे.

राष्ट्रातील कृषी क्षेत्रासाठी केलेला कर्ज पुरवठा

तक्ता क्र. १.२ (कोटी रुपयात)

वर्ष	लक्ष	प्रत्यक्षात खर्च
२०११-१२	४७५,०००	५११०२९
२०१२-१३	५,७५,०००	६०७३७५
२०१३-१४	७०००००	७३०७६५
२०१४-१५	८५०,०००	३७०८२८

Source : Economics survey of India 2014-2015.

भारतामध्ये कृषी क्षेत्रासाठी केलेल्या कर्ज पुरवठ्याच्या प्रमाणाचा अभ्यास तक्ता क्रमांक १.२ मध्ये करण्यात आलेला आहे. २०११-१२ मध्ये कृषीक्षेत्रासाठी केलेला कर्जपुरवठा ५११०२९ कोटी रुपये असून ते २०१३-१४ मध्ये ७३०७६५ कोटी रुपये आहे. २०११-१२ च्या तुलनेत २०१३-१४ मध्ये कृषी क्षेत्रातील कर्जाच्या प्रमाणामध्ये वाढ झालेली आहे. परंतु २०१४-१५ मध्ये कृषी क्षेत्रातील कर्जेचे प्रमाण वरील तक्यावरून घटलेले दिसून येते ते ३७०८२८ कोटी रुपये एवढे आहे.

राष्ट्रातील विविध सिंचनाचे स्रोत

तक्ता क्र. १.३

अ.क्र.	सिंचनाचे स्रोत	प्रमाण
१	कुपनलिका	३२
२	कालवे	२४
३	विहिरी	२६
४	इतर	१८

भारतामध्ये सिंचनासाठी विविध स्रोतांचा वापर केला जातो त्यामध्ये प्रामुख्याने कुपनलिका, कालवे, विहिरी व इतर साधनांचा वापर करून जमिन ओलीताखाली आणली जाते.

शेती पुरक व्यवसायांना प्राधान्य द्यावे.

शेतकऱ्यांचा शेती उत्पादन खर्च व शेतकऱ्यांना मिळणारे उत्पन्न यांच्यातील तफावत दिवसेंदिवस वाढत जात असून शेती उत्पादनाचा शेती उत्पादन खर्च जास्त आहे ही तफावत कमी करण्यासाठी स्वामीनाथन आयोगाने शेतीला जोडून शेतकऱ्यांनी शेती पुरक व्यवसायांना प्राधान्य देण्याची शिफारस केली. शेतकऱ्यांनी शेती बरोबरच दुग्ध व्यवसाय शेती, भेंडी पालन, कुक्कुट पालन व्यवसाय यासारख्या शेती पुरक व्यवसायावर आपले लक्ष केंद्रित करावे. ग्रामीण भागातील काही शेतकरी दुग्ध व्यवसायाची जोड शेतीला देत

आहेत हे खरे असले तरी शेती पुरक व्यवसायाच्या बाबतीत आजही विविध तितक्याच समाधान कारक नाही. याचे कारण शेती पुरक व्यवसायासाठी लागणारे भांडवल हे आहे. त्याच बरोबर शेती पुरक व्यवसायाचे प्रशिक्षण देण्यासाठी आपल्या देशात कोणत्याही काम करताना दिसत नाही. शिवाय शेतीक-यांच्या मुलांना शेतीत किंवा शेती पुरक व्यवसायात काम करणे कमी रग्याचे वाटते.

**तक्ता १.४ ग्रामीण भागातील दुध उत्पादन**

अ.क्र.	वर्ष	दुध (मिलीयन टनमध्ये)
१	२०१२-१३	१३२.५
२	२०१३-१४	१३७.७
३	२०१४-१५	१४६.३

Source: Economics Survey of India 2014-15-

दुधाचे उत्पादन २०१२-१३ १३२.५ मिलीयन टन होते ते वाढून २०१४-१५ मध्ये १४६ मिलीयन टन झाले आहे. या शेतीक-यांच्या आर्थिक विकासासाठी हातभार लागत आहे.

**निष्कर्ष**

भारतीय अर्थव्यवस्थेत कृषी क्षेत्राची महत्वाची भूमिका आहे. कृषी क्षेत्र अडचणीत आले तर संपूर्ण अर्थव्यवस्था अडचणीत येते म्हणून कृषी क्षेत्राच्या विकासात निर्माण होणारे आडथळे यामध्ये विशेषतः कृषी क्षेत्रात होणाऱ्या गुंतवणुकीचे प्रमाण केंद्रित GDP च २ टक्के दरम्यान आहे. ही गुंतवणुक कृषीचे देशातील महत्व लक्षात घेता ती फारच कमी आहे. तसेच देशात सिंचन क्षेत्र ४० टक्के आहे.

**संदर्भ ग्रंथ**

१. भारतीय अर्थव्यवस्था - जगदीश नारायण मिश्र
२. भारतीय अर्थव्यवस्था - रुद्रटल व सुन्दरम
३. भारतीय अर्थव्यवस्था - डॉ. निर्मल भालेराव
४. कृषी अर्थव्यवस्था - विजय कथिमंडन
५. कृषी विकासअहवाल - २०१२ - २०१३
६. आर्थिक विश्लेषण - २०१६ - १७.





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### महिला सरपंच म्हणून अधिकार वापरतांना येणाऱ्या अडचणींचा समाजशास्त्रीय अभ्यास : बीड जिल्ह्याच्या संदर्भात

डॉ. सुधीर आ. येवले

संशोधन मार्गदर्शक व समाजशास्त्र विभागप्रमुख,  
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Email: [syevle6@gmail.com](mailto:syevle6@gmail.com)

#### संक्षिप्त गोष्टवारा (Abstract) :

७३ व्या घटना दुरुस्तीमधील महिला आरक्षण संदर्भातील ठळक तरतुदी मुळे महिलांचा राजकारणातील सहभाग वाढण्यास, स्त्री-पुरुष समानता आणण्यास मदत झाली आहे. ब्रिटिश काळापर्यंत स्थानिक स्वराज्य संस्थेत महिलांचा सहभाग नव्हता, हे कटुसत्य आहे. परंतु या घटना दुरुस्तीने स्थानिक सत्तेत महिलांचा सहभाग वाढला आहे. हा बदल फक्त पंचायतराजमध्ये झाला आहे. महिलांना जरी ३३ टक्के आरक्षण असले तरी यामध्ये केवळ फक्त ३३ टक्के महिलांचाच सहभाग असावा असे नाही. तर पंचायत समितीमध्ये कमीत कमी इतक्या जागांवर महिला असल्याच पाहिजेत.

#### Keywords: महिला

#### प्रस्तावना (Introduction):

७३ व्या घटना दुरुस्तीमधील महिला आरक्षण संदर्भातील ठळक तरतुदी मुळे महिलांचा राजकारणातील सहभाग वाढण्यास, स्त्री-पुरुष समानता आणण्यास मदत झाली आहे. ब्रिटिश काळापर्यंत स्थानिक स्वराज्य संस्थेत महिलांचा सहभाग नव्हता, हे कटुसत्य आहे. परंतु या घटना दुरुस्तीने स्थानिक सत्तेत महिलांचा सहभाग वाढला आहे. हा बदल फक्त पंचायतराजमध्ये झाला आहे. महिलांना जरी ३३ टक्के आरक्षण असले तरी यामध्ये केवळ फक्त ३३ टक्के महिलांचाच सहभाग असावा असे नाही. तर पंचायत समितीमध्ये कमीत कमी इतक्या जागांवर महिला असल्याच पाहिजेत. शिवाय या व्यतिरिक्त इतर जागांवरही त्या निवडून येऊ शकतात. महिलांसाठी ३३ टक्के जागा राखीव याचा अर्थ उरलेले ६७ टक्के आरक्षण पुरुषांसाठी आहे असे नाही. महिलांप्रमाणेच इतर मागासवर्गीय जातींना देखील २७ टक्के आरक्षण मिळाले आहे. त्यात पुन्हा मागासवर्गीय जातीच्या महिलांना ३३ टक्के मागासवर्गीय महिला किंवा सर्वच मागासवर्गीय महिला असणारी ग्रामपंचायत, पंचायत समिती वा जिल्हा परिषद ही असू शकते. पण १०० टक्के पुरुष सदस्य असणारी स्थानिक स्वराज्य संस्था असू शकणार नाही. सध्या २०११ पासून महाराष्ट्रात पंचायत राज मध्ये महिलांना ५० टक्के आरक्षण असून या महिला सरपंच म्हणून मिळालेले मुलभूत अधिकार वापरतांना कोणत्या अडचणी येतात याचा अभ्यास संबंधित संशोधनात केला आहे.

#### अभ्यास विषय (Study Area):

प्रस्तुत अध्ययनाचे अभ्यास क्षेत्र महाराष्ट्रातील मराठवाडा विभागातील बीड जिल्हा आहे. राजकीय रचना, घटना आणि त्यावर प्रभाव टाकणारे सामाजिक घटक यांच्यातील परस्पर संबंधातून राजकीय समाजशास्त्राचा विकास झाला. प्रस्तुत संशोधन हे राजकीय समाजशास्त्रांतर्गत करण्यात आले आहे.

#### संशोधन पद्धती (Research Methodology):

प्रस्तुत अध्ययनात संशोधकाने वैज्ञानिकदृष्ट्या संशोधन कार्याची रूपरेखा तयार करून म्हणजेच संशोधन आराखडा तयार करून त्याआधारे संशोधन समस्या, अध्ययनक्षेत्र, अध्ययनाचे ध्येय आणि उद्दिष्ट्ये तसेच कालखंड, माहितीचा स्रोत, नमुना निवड, साहित्य सर्वेक्षण इत्यादी बाबी निश्चित करून संशोधन केले आहे. अभ्यासासंबंधीत साहित्याचे सर्वेक्षण करताना विविध

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## **निवडणुक प्रक्रियेतील सुधारणाविषयीचा समाजशास्त्रीय अभ्यास : शिरूर कासार तालुक्याच्या संदर्भात**

### **सुधीर येवले**

सहा. प्राध्यापक व विभाग प्रमुख  
 समाजशास्त्र विभाग,  
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 शिरूर कासार

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भारतीय लोकशाहीचा महत्वाचा कणा म्हणजे विविध प्रकारच्या निवडणुका आणि लोकशाही मार्गाने स्थापन होणारे स्थानिक ते देशपातळीवरील शासन. या निवडणुकीच्या माध्यमातून निवडणुन आलेले लोकप्रतिनिधी राजकीय कारभार पाहतात. ह्या विविध निवडणुका म्हणजे लोकसभा, राज्यसभा, विधानसभा, विधानपरिषद, महानगरपालिका, नगरपालिका, नगरपंचायत, जिल्हा परिषद, पंचायत समिती आणि ग्रामपंचायत होत. या स्तरावर देशपातळीवर वर्षभर कोणत्या ना कोणत्या निवडणुका सुरू असतात. सार्वत्रिक निवडणुका एकत्रित घेतल्यामुळे वेळ आणि पैसेची किती प्रमाणात बचत होऊ शकते याचा अभ्यास करणे. मतदानाची टक्केवारीत वाढ आणि एकत्रित निवडणुकांचा सहसंबंध अभ्यासने. एकत्रित निवडणुकीमुळे जातीयता, धार्मिकता आणि भ्रष्टाचार कमी होऊ शकेल का? या अनुषंगाने अभ्यास करणे. मतदानाची अनिवार्यता आणि एकत्र निवडणुका FPTP & (First Past The Post) ला उपाय ठरू शकतो का? याचा अभ्यास करण्याच्या उद्देशाने प्रस्तुत शोधनिबंधाची मांडणी केली आहे.

**[Key Words:** लोकशाही, FPTP, धार्मिकता आणि भ्रष्टाचार]

### **प्रस्तावना (Introduction):**

निवडणुकीच्या माध्यमातून नवीन शासन निवडले जात असल्यामुळे निवडणुक आयोगाला महत्वाचे स्थान आहे. राज्यघटनेच्या पंधराव्या भागातील ३२४ ते ३२८ या कलमात निवडणुक आयोग आणि त्या संबंधीच्या तरतुदीचा समावेश आहे. या निवडणुका पारदर्शक होण्यासाठी निवडणुक आयोगाने वेळोवेळी विविध सुधारणा करण्याचा प्रयत्न १९५२ च्या पहिल्या लोकसभेच्या सार्वत्रिक निवडणुकीपासून सुरू ठेवले आहेत. इ.स. १९८९-९० मध्ये मतदारांचे वय २१ वर्षावरून १८ वर्षे करण्यात आले. मतपत्रिके (बॅलेट पेपर) ऐवजी इलेक्ट्रॉनिक वोटिंग मशीन (EVM) चा वापर इ.स. २००० पासून करण्यात आला. इ. स. १९९३ पासून मतदारांचे फोटोसहीत ओळखपत्र तयार करणे, फोटो सहीत मतदार यादी संगणकीकृत करण्याचा प्रयत्न १९९० च्या दशकात केला. तसेच मतदान केंद्र स्तरावर बुथस्तर अधिकारी (Booth level officer) ची नियुक्ती करण्यात आली. विविध आंदोलनामुळे निवडणुकीत उमेदवार नाकरण्याचा अधिकार (Right to Reject) ऐवजी वरील पौकी कोणीही नाही (Nota & None of the Above) अधिकार दिला आहे. वरील वेळोवेळी झालेले निवडणुकीतील बदल मतदारांनी आणि राजकीय पक्षांनी स्वीकारले आहेत.

तरी अजून ही निवडणुक प्रक्रियेत सुधारणा करण्याची मागणी होत आहे. समाजसेवक आणणा हजारे यांनी उमेदवारास परत बोलाविण्याचा अधिकार (Right to





## महात्मा गांधीजींच्या अहिंसा या विचारांचा राज्यशास्त्रीय अभ्यास

प्रा. पवार बंडू थावर

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### संक्षिप्त गोष्टवारा (Abstract) :

गांधीजींच्या मते, अहिंसा म्हणजे भेकडपणा नाही. तर उच्च नैतिक स्वरूपाच्या मनोधैर्यातून साकारलेले ते तत्व आहे. भित्री माणसे अहिंसेच्या तत्वाचा स्वीकार करतात कारण त्यांच्यात प्रतिकार करण्याची शक्ती नसते. त्यांना खरेतर हिंसा करण्याची इच्छा असते. मात्र त्यांच्यातील भित्रीपणामुळे ती ते करू शकत नाहीत. गांधीजींनी भित्री लोकांच्या अहिंसेला विरोध केला आहे. ते म्हणतात की, भित्री व्यक्तीची अहिंसा आणि हिंसा यापैकी मला जर एकाची निवड करावयाची असेल तर मी हिंसा करणे पसंत करीन.

**Keyword: अहिंसा**

**प्रस्तावना :**

महात्मा गांधींनी सत्याप्रमाने अहिंसेचा महत्त्व दिले आहे. त्याच्या मते, सत्याचा व अहिंसेचा मार्ग जितका सरळ तितकाच तो अरुंद आहे. तलवारीच्या धारेवर चालण्यासारखा तो प्रकार आहे. डोंबारी ज्या दोरीवर नजर खिळवून चालतो त्यापेक्षाही सत्य-अहिंसेची दोरी सुक्ष्म आहे. तेव्हा यात गाफीलपणा योग्य नाही. असे गांधीजींचे मत आहे.

अहिंसेशिवाय सत्याचा शोध अशक्य आहे. सत्य आणि अहिंसा एकमेकांना पुरक आहेत. एकाच नाण्याच्या त्या दोन बाजू आहेत.

१) सत्याप्रमाणे अहिंसा हा आत्म्याचा गूण आहे. अहिंसेच्या मार्गाने सत्याप्राप्त जाता येते.

२) क्रोधाने स्वार्थासाठी तसेच दुसऱ्याला जाणीव पूर्वक त्रास देण्याच्या भावनेतून केलेली कृती म्हणजे हिंसा होय.

अहिंसा यांचा अर्थ हिंसा न करणे होय. या हिंसेत शारीरिक, मानसिक, वाचिक (काया, वाचा, मन) हिंसा गांधीजींना मान्य नव्हती गांधींनी अहिंसेचा अर्थ म्हणजे, 'पृथ्वीच्या पाठीवरील वस्तु मागाला तसेच प्राणी मागाला विचाराने शब्दाने तसेच वृत्त्याने संभावणारी दुखापत टाळणे असा अर्थ अहिंसेचा गांधींनी स्पष्ट केला आहे.

गांधीजींच्या मते, अहिंसा म्हणजे प्रेमाचा प्रतिशब्द असून, प्रेमात ज्या गूणांचा समावेश होतो ते सर्व गूण अहिंसेत अंतर्भूत असतात. दुसऱ्याच्या हितासाठी स्वतःच्या त्रासाची अगर कष्टाची परवा न करता झटणे म्हणजे अहिंसा होय महात्मा गांधींनी अहिंसेचे तीन अर्थ स्पष्ट केले आहेत.

**संशोधनाची उद्दिष्ट्ये :**

१) अहिंसा यामुळे राजकीय चळवळीचा नैतिक केंद्रबिंदू कसा बनला.

२) अहिंसेमुळे जगात प्रभाव पडला का?

३) गांधीजींच्या अहिंसा यामुळे देशात शांतता प्रस्थापित झाली का?

४) गांधीजींच्या अहिंसामुळे देशाला स्वातंत्र्य मिळण्यास हातभार लागला का?

५) अहिंसा हे एक साधन आहे या साधनाद्वारे सत्यापर्यंत पोहोचता येते का?

**गृहितके १)** राजकीय दृष्टीकोनातून अहिंसा यशस्वी झाली आहे.



- २) आर्थिक दृष्टीकोनातून अहिंसेचा काय उपयोग झाला.
- ३) सामाजिक दृष्टीकोनातून व समाजासाठी अहिंसेचा उपयोग आहे काय.
- ४) स्वराज्य मिळविण्यासाठी अहिंसा हा एक मार्ग आहे.
- ५) अहिंसा मुळे देशात ऐक निर्माण झाले काय?

### संशोधन पद्धती :

सामाजिकशास्त्रामध्ये संशोधन करत असतांना संशोधन पद्धतीला अनन्य साधारण महत्व आहे.

मी माझ्या संशोधन विषयाची निवड करत असतांना व्यष्टी अध्ययन पद्धतीचा अवलंब केला आहे. यामध्ये उदा: व्यक्ती, समाज, संस्था, समुह या सर्वांचा अभ्यास केला जातो मी "महात्मा गांधीजींच्या अहिंसा या विचारांचा राज्यशास्त्रीय अभ्यास" करीत असल्यामुळे वरील संशोधन पद्धतीचा वापर केला आहे.

### अहिंसेचे तीन अर्थ

#### १) कायिक / शारीरिक अहिंसा :

या अहिंसेत कोणीही, कोणाला शारीरिक त्रास देऊ नये इजा करू नये, हे गांधीजींना अपेक्षित होते. हातात शस्त्र घेऊन अथवा विना शस्त्राने इतरांना मारणे ही शारीरिक हिंसा झाली. अशा प्रकारची हिंसा गांधींना अजिबात मान्य नव्हती. या अहिंसेला गांधींनी सर्व श्रेष्ठ मानले आहे. निरपेक्ष अहिंसेच्या मार्गाने सत्याची म्हणजे ईश्वराची प्राप्ती होत असते. म्हणून अहिंसेच्या तत्वाचे पालन करणे हे श्रेष्ठ तसेच सामर्थ्याचे मुख्य लक्षात आहे. यालाच ते महापुरुषांची अहिंसा असे म्हणतात.

#### अहिंसेचे उपप्रकार :-

गांधीजींनी अहिंसेचे तीन उपप्रकार सांगितले आहेत ते पुढील प्रमाणे आहेत.

#### १) सामर्थ्यवानांची अहिंसा :

महात्मा गांधीजींच्या मते, यात दोन व्यक्ती किंवा दोन राष्ट्रे यांच्यात संघर्ष झाल्यास व्यक्ती किंवा राष्ट्र सामर्थ्यवान असूनही प्रतिकारकरीत नाही. हिंसा करणाऱ्याला माफ करणे. त्यामुळे समोरच्या व्यक्तीचे हृदय परिवर्तन होते. अशी व्यक्ती सामर्थ्य असून ही प्रतिकार करीत नाही त्याला गांधीजींनी सामर्थ्यवानांची अहिंसा म्हटले आहे. म्हणजेच नैतिक आत्मबल व आंतरिक विश्वास याद्वारे व्यक्ती जेव्हा अहिंसेचा स्वीकार करते तेव्हा ती अहिंसा म्हणजे सामर्थ्यवानांची अहिंसा होय. अहिंसा जीवनाच्या सर्वत्र क्षेत्रात आढळून येते. या अहिंसेत पहाड हलविण्याची शक्ती असल्यामुळे तीचे पालन हे वीर पुरुषांची लक्षण होय. हिंसा करण्याची पात्रता असूनही ते केवळ तत्व म्हणून अहिंसेचा स्विकार करतात यालाच गांधीजी वीर पुरुषाचे लक्षण होय.

#### २) दुर्बलांची अहिंसा:

गांधीजींच्या मते, दोन व्यक्ती किंवा दोन गट यांच्यात संघर्ष होतो. या व्यक्ती किंवा गटातील एखादी व्यक्ती किंवा गट दुर्बल असेल म्हणजे त्यात प्रतिकार करण्याची क्षमता नसेल तेव्हा त्यांच्या हातून हिंसा होत नाही यालाच गांधीजींनी दुर्बलांची अहिंसा म्हटले आहे. यात जीवनातील काही क्षेत्रात काही व्यक्तीकडून काही गोष्टी डोळ्या समोर ठेवून या अहिंसेचा स्वीकार केला जातो. दुर्बल किंवा असहाय व्यक्ती जेव्हा एखाद्या गोष्टीचा तसेच व्यक्तीचा प्रतिकार करू शकत नाही तेव्हा ते अहिंसा या तत्वाचा आधार घेतात या अहिंसेला गांधींनी दुर्बलांची अहिंसा म्हटले आहे.

#### ३) वाचिक अहिंसा :

यांचा अर्थ कोणत्याही व्यक्तीला टोचून बोलू नये तिला बोलुन दुखावू नये. तिच्याबद्दल अपशब्द काढू नये. अथवा भांडू नये. जेणे करून त्या व्यक्तीला वाईट वाटेल याला वाचिक अहिंसा म्हटले आहे.

#### ४) मानसिक अहिंसा :

यांचा अर्थ दुसऱ्या व्यक्ती विषयी आपल्या मनात वाईट विचार येणे तसेच एखाद्या व्यक्ती विषयी द्वेष, तिरस्कार,

स्वार्थ, अहंभाव, मत्सरांची भावना बाळगणे ही सुद्धा मानसिक हिंसा आहे. अशा प्रकारे गांधींनी काय-वाचा-मने या तिन्ही अर्थाने अहिंसेचा अर्थ घेतला अहिंसेची संकल्पना व्यापक विस्तृत अर्थाने घेतली.





## अहिंसेचे प्रकार

गांधीजींनी अहिंसेचे तीन प्रकार सांगितले आहेत. ते पुढील प्रमाणे.

### १) निषेधात्मक अहिंसा :

गांधीजींच्या मते व्यक्तीने आपल्या कर्माद्वारे तसेच शब्दाद्वारे इतरांना न दुःखविणे म्हणजे निषेधात्मक अहिंसा होय. कोणालाही त्रास अगरदुःख होईल असा विचार, आचार, उच्चार न करण्याबरोबर दुःख न देणे तसेच कुणाची हत्या न करणे, कुणाला कठोर शब्द, अपशब्द न बोलणे, क्रोधीत न होणे व शत्रुबद्दल द्वेषाची भावना न बाळगणे याला निषेधात्मक अहिंसेचे पालन करणे असे म्हणतात.

### २) विधायक अहिंसा:

केवळ दुसऱ्याला दुःख न होणे त्यांची हत्या न करणे यास न देणे म्हणजे अहिंसा नसून दुसऱ्यावर प्रेम करणे, त्यांच्या सुखासाठी झटणे याला गांधीजींनी विधायक अहिंसा म्हटले आहे. अत्याचारी व्यक्तीला रोखणे, ज्यांच्यावर अन्याय होत असेल त्याच्या मदतीला धावणे याला गांधीजींनी विधायक स्वरूपाची अहिंसा म्हटले आहे.

### ३) निरपेक्ष अहिंसा:

धर्माचे पूर्णपणे पालन करणे म्हणजे निरपेक्ष अहिंसा होय.

### ४) भित्र्याची अहिंसा:

गांधीजींच्या मते, जेव्हा एखादी व्यक्ती किंवा गट भित्रा असल्यास तो प्रतिकार करण्याऐवजी रगांगण सोडून जात असेल तर त्याच्या हातातून हिंसा होण्याचा प्रश्नच उद्भवत नाही. म्हणून गांधीजींनी याला भित्र्याची अहिंसा म्हटले आहे. याचाच अर्थ भीती व अहिंसा या दोन्ही गोष्टी एकत्र राहू शकत नाहीत. अशा प्रकारची अहिंसा मनुष्याला न शोभणारी असते. व्यक्ती जेव्हा परिस्थितीशी सामना करू शकत नाही. तेव्हा ती अहिंसेचा आधार घेते.

गांधीजींच्या मते, अहिंसा म्हणजे भेकडपणा नाही. तर उच्च नैतिक स्वरूपाच्या मनोधैर्यातून साकारलेले ते तत्व आहे. भित्री माणसे अहिंसेच्या तत्वाचा स्वीकार करतात कारण त्यांच्यात प्रतिकार करण्याची शक्ती नसते. त्यांना खरेतर हिंसा करण्याची इच्छा असते. मात्र त्यांच्यातील भित्रीपणामुळे ती ते करू शकत नाहीत. गांधीजींनी भित्र्या लोकांच्या अहिंसेला विरोध केला आहे. ते म्हणतात की, भित्र्या व्यक्तीची अहिंसा आणि हिंसा यापैकी मला जर एकाची निवड करावयाची असेल तर मी हिंसा करणे पसंत करीन.

अशा प्रकारे गांधीजींनी अहिंसेच्या संदर्भात आपले विचार मांडलेले आहेत.

या अहिंसेच्या प्रकारात सर्वात श्रेष्ठ अहिंसा ही सामर्थ्यवानांची आहे. तर सद्यतः कनिष्ठ अहिंसा भित्र्यांची आहे. रणांगणातून पळून जाण्यापेक्षा देशासाठी वीरमरण आलेले केव्हाही चांगले, असा विचार गांधीजींचा होता. जी व्यक्ती सामर्थ्यवान असते. उदार असते अशी व्यक्ती आदर्शापोटी हिंसा करत नाही. ती सर्वश्रेष्ठ असते. म्हणून व्यक्तीने सामर्थ्यवानांच्या अहिंसेचा स्वीकार करावा असे गांधींचे मत होते.

### निष्कर्ष :

- १) अहिंसा या तत्वामुळे जनतेच्या मनात शांततेवर विश्वास निर्माण झाला आहे.
- २) अहिंसेच्या मार्गाने भारताला स्वातंत्र्य मिळेल असे गांधीजींना वाटले.
- ३) अहिंसेच्या मार्गाने जनतेच्या मनात सत्य बोलण्याची शक्ती निर्माण झाली.
- ४) सत्य आणि अहिंसा हे स्वातंत्र्य मिळविण्यासाठी साधन आणि साध्य होते.

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## CONTENTS OF MARATHI PART - I

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१४	डॉ. बाबासाहेब आंबेडकर यांचे शेतीविषयक विचार डॉ. सुनिल अण्णा गोरडे	५८-६१
१५	वर्तमान काळात म. जोतीराव फुले यांच्या स्त्री-विषयक विचारांची प्रासंगिकता अर्चना वैजनाथ घोडके	६२-६७
१६	डॉ. बाबासाहेब आंबेडकर यांचे लोकशाही विषयक विचार आणि प्रासंगिकता प्रा. संजय कि. भालेराव	६८-७४
१७	समाजप्रबोधनकार संत एकनाथ प्रा. डॉ. विनोद बाबूराव बोरसे	७५-७८
१८	डॉ. बाबासाहेब आंबेडकरांचा स्त्रीविषयक दृष्टीकोन प्रा. इंगळे किशोरकुमार मनोहरराव	७९-८२
१९	महात्मा गांधीजीच्या सर्वोदय संकल्पनेचा अभ्यास प्रा. पवार बंडू थावरा	८३-८६
२०	डॉ. बाबासाहेब आंबेडकर यांचे अर्थशास्त्र विषयक विचार डॉ. पी. एन. डापके	८७-८९
२१	शरण संत बसवण्णा यांच्या सामाजिक विचारांची प्रासंगिकता बिराजदार विजयकुमार गोविंद	९०-९४
२२	डॉ. बाबासाहेब आंबेडकरांच्या सामाजिक विचारांची- प्रासंगिकता प्रा. डॉ. चव्हाण सुखदेव गोविंदराव	९५-१००
२३	महात्मा गांधी यांचे स्त्री विषयक विचार प्रा. दांडगे एल. जी.	१०१-१०३
२४	डॉ. बाबासाहेब आंबेडकर प्रशासकिय विचार व प्रासंगिकता डॉ. अशोक लक्ष्मणराव गोरे	१०४-१०६
२५	डॉ. बाबासाहेब आंबेडकर यांची सामाजिक विचारसरणी व कार्य डॉ. शशिकांत दत्तोपंत परळकर	१०७-१०९
२६	भारतीय अर्थशास्त्राचे जनक दादाभाई नौरोजीचे आर्थिक विचार डॉ. बी. एम. सोनवणे	११०-११४



## १९. महात्मा गांधीजीच्या सर्वोदय संकल्पनेचा अभ्यास

प्रा. पवार बंडू थावरा

विभाग प्रमुख कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर (का), जि. बीड.

### प्रस्तावना

मोहनदास करमचंद गांधी जागतिक शांततेचे महान दूत महात्मा गांधीजीच्या सर्वोदय या संकल्पनेवर जॉन रस्किनच्या तत्त्वज्ञानाचा प्रभाव पडलेला दिसून येतो. गांधीजींनी जॉन रस्किनचे अन टु दी लास्ट हे पुस्तक वाचले आणि त्याने ते इतके प्रभावित झाले की त्यांनी त्या पुस्तकाचे गुजरातीत भाषांतर केले व त्याला ते इतके प्रभावित झाले की त्यांनी त्या पुस्तकाचे गुजरातीत भाषांतर केले व त्याला सर्वोदय हे नाव दिले गांधीजींनी आपल्या सर्वोदयाच्या संकल्पनेत जॉन रस्किनने सांगितलेली काही तत्वे मान्य केली आहेत.

महात्मा गांधीजींची सर्वोदयांची संकल्पना काही मुलभूत तत्त्वावर आधारलेली आहे. मणुष्य स्वभाव निश्चित चांगला आहे. सर्व माणसे चांगली आहेत. हे तत्त्व सर्वोदयाचे आधारभूत तत्त्व आहे. हे तत्त्व म्हणून गांधींनी स्विकारले आहे. मानवी समाजातील हितसंबंधाचा संघर्ष हा मणुष्य निर्मित आहे. योग्य अशा शिक्षणामुळे आणि प्रबोधनामुळे मानवी समाजातील हित संबंधाचा संघर्ष नष्ट केला जाऊ शकतो. यावर ही गांधीजींचा विश्वास होता. महात्मा गांधीजींची विश्वास्ताची संकल्पना ही संपत्ती बदल एक नैतिकदृष्टीकोन आहे. संपत्तीच्या एक आदर्शवादी दृष्टीकोन गांधीजी मांडला आहे. त्यादृष्टीने त्याचे विचार चांगले मांडले असले तरी विश्वस्ताची संकल्पना बरीच अस्पष्ट आहे. कारण त्यांनी गरजेपेक्षा अधिक संपत्तीची मर्यादा सांगितलेली नाही तसेच स्वतः मिळवलेल्या संपत्तीचा वापर स्वतः साठीच करणे हे स्वभाविक आहे. त्या विरुद्धचा विचार गांधीजींनी मांडला आहे. सत्याग्रहामुळे श्रीमंतांचे हृदय परिवर्तन होईल असे नाही.

महात्मा गांधीजींच्या एकंदर तत्त्वज्ञानात धर्म विषयक विचारांना महत्वाचे स्थान आहे. त्याच्या बालमनावर धार्मिक संस्कार झालेले होते. त्यामुळे त्यांच्या विचारात व कार्यात धर्माला प्राधान्य होते. ईश्वरांच्या अस्तित्वावर आणि त्याच्या सामर्थ्यावर महात्मा गांधीजींची नितांत श्रद्धा होती. त्याच्या मते ईश्वर ही एक गुढ अवर्णनीय शक्ती आहे. जी सर्व विश्वाला व्यापून टाकते.

गांधीजींच्या तत्त्वज्ञानात काही समकालीन तर काही चिरंत किंवा कायम स्वरूपाची तत्वे आहेत. तसेच त्यांच्या कार्यात जसा तत्कालीन परिणाम झाला आहे. तसेच कायमस्वरूपी ही परिणाम झाला आहे. यादृष्टीने विचार केल्यास भारतीय विचारवंतांत महात्मा गांधीजींचे स्थान अद्वितीय आहे. म्हणून त्यांना महात्मा आणि राष्ट्रपिता म्हणून गौरव केला जातो.

### संशोधनाची उद्दिष्टे

१. महात्मा गांधीजींच्या सर्वोदय संकल्पनेचा अभ्यास करणे.
२. महात्मागांधीजींच्या सर्वोदय संकल्पनेमुळे सत्याचा शोध मिळतो काय?



३. सत्य आणि संपत्तीचा काही संबंध आहे का?
४. सत्य काय आहे?
५. सर्वोदय संकल्पनेमध्ये स्वराज्य मिळेल काय?

### संशोधन पद्धती

सामाजिक शास्त्रात संशोधन पद्धतीला अनन्य साधारण महत्त्व आहे. मी माझ्या संशोधन विषयाची निवड करताना त्यासाठी व्यष्टी अध्ययन पद्धतीचा अवलंब केला आहे. उदा : व्यक्ती समाज, संस्था, समुह या सर्वांचा अभ्यास केला गेला. महात्मा गांधीजीच्या सर्वोदय या संकल्पनेचा अभ्यास करत असल्यामुळे वरील संशोधन पद्धतीचा वापर केला आहे.

### महात्मागांधीजीचे सर्वोदय विचार

#### १) सत्याची मुळे

मनुष्य अनेक चुका करत असतो परंतु माणसांच्या परस्पराविषयची भावना, प्रेम, सहानुभूती यांचा विचार न करता माणसाला एखादे यंत्र समजून जेव्हा त्यांच्यावर्तणुकीचे नियम तयार करण्यात येतात. तेव्हा माणुस सगळ्यात मोठी चुका अशा प्रकारची चुका करणे माणसाकरिता असोभनीय असते अशाच प्रकारे माणसाने केलेल्या इतर चुका पाहत असताना फा होऊ शकतो की, त्याचुका नाहीत तेच बरोबर आहे. हीच गोष्ट लौकिक नियमांनाही लागू होते. लौकिक नियम तयार करताना सांगतात की परस्परांबद्दलच्या भावना आणि प्रेम आकस्मिका गोष्टी आहेत. त्यांच्यामुळे सर्व साधारण स्वभाव असलेले माणसांच्या मार्गात अडसर निर्माण होते. परंतु लोभ आणि पूढे जाण्याची इच्छा या गोष्टी कायम राहणार असल्यामुळे परस्परांबद्दलच्या भाव आणि प्रेम कायम गोष्टी कायम राहणार असल्यामुळे परस्परांबद्दलच्या भाव आणि प्रेम यासमोर आकस्मिक गोष्टी दुर ठेवून माणसाला केवळ पैसा गोळा करणारे यत्न समजले पाहिजे कशा प्रकारच्या श्रमाने आणि देवाने माणुस जास्तीत जास्त पैसा गोळा करू शकेल. एवढाच विचार आपण केला पाहिजे. अशा प्रकारच्या विचारांच्या आधारे आमच्या व्यवहाराविषयची आपली धोरणे आखली पाहिजे. अशा प्रकारच्या विचारावर आधारीत धोरण आखल्यानंतर परस्परांचे जसे पर्यंत भावभावनांचा उपयोग करून आपण सामाजिक व्यवहार करू शकतो.

आपण लक्षात ठेवले पाहिजे की देवाने घेवानच्या नियमांच्या आधारावर कोणत्याही शास्त्राची निर्मिती करण्याचा प्रयत्न व्यर्थ ठरतो आपण जर निती मार्गाने चाललो तर त्यांचे परिणाम नक्कीच हितावहत होतील पण परिणाम कोणते होतील हे कशा प्रकारे होतील हे सांगता येणार नाही.

#### २) संपत्तीच्या रक्त वाहिन्या

रूपये व पैसे हे शरीरातील रक्त प्रवाहाप्रमाणे असते वेगात रक्त संचार होणे ही गोष्ट एक तर स्वास्थ व प्रकृतीचे व्यायामाचे लक्षण असते व लाजिरवाण्यागोष्टीचे अथवा तापाचे चिन्ह असते. शरीरावर आलेला लालीय ही स्वास्थ्याची चिन्हे असते. तर दुसऱ्या प्रकारचा लालिमा रक्तवित या रोगाचे चिन्ह असते आणि एका ठिकाणी रक्त गोळा होणे शारीरिक हानिकारक असते. त्याच प्रमाणे एका ठिकाणी संपत्ती गोळा होणे ही राष्ट्राकरिता हानिकारक असते.

कल्पना करा की एखादया जहाजांचे तुकडे तुकडे झाल्यामुळे दोन खलाशी एका निर्जन प्रदेशच्या काठावर येऊन पडले आहेत तिथे त्यांना श्रम करून स्वतः करिता अन्नधान्याची निर्मीती करावी लागत आहे. याला आपण खरी संपत्ती म्हणु शकतो आणि दोघेही चांगल्या प्रकारे काम करत असतील तर त्या संपत्तीत दोघांचा वाटा सम समान राहील. अशा प्रकारे लागू होणाऱ्या शास्त्रप्रमाणेच त्यांना आपल्या श्रमाचे फळ सम प्रमाणात वाटण्याचा अधिकार आहे. आता कल्पना करा की या दोघांपैकी एकाला समाधान वाटू लागले. त्यामुळे त्यांनी शेती वाटुन घेतली ते दोघेही वेगवेगळे काम करू लागले व एक जण आजारी पडला तरतो त्याला मदत करणे उसने स्वरूपात आणि आजारी माणुस दुरूस्त झाला तर त्या व्यक्तीचे उसने श्रम त्याला करावे लागले.

आपण पाहिले आहे की लोकांचे किती श्रम विकत घेता येऊ यावर पैशाची किंमत अवलंबून असते. पेशा शिवाय लोकांचे श्रम मिळु शकते यांनी उदारहने आहेत. पैशाच्या शक्ती पेक्षा नैतिकतेची शक्ती पेक्षा नैतिकतेची शक्ती काम जास्त करते. पैशापेक्षा व्यक्तीच्या सदगुण जास्त काम करतो. माणसाकडून काम करून घेण्याची शक्ती पैसा आहे हे जरी आपण मान्य केले तरी माणुस जेवढा चतुर आणि नितिमान असेल तेवढ्याच प्रमाणात त्याच्यासंपत्तीत वाढ होते. खरी संपत्ती सोने - चांदी नाही तर मनुष्य ही खरी संपत्ती आहे.

### ३) जशास तसेच न्याय

असे म्हणतात की, ख्रिश्चन युगाच्या म्हणजे इ.स. वी सन काही शतकांपूर्वी एक ज्यु व्यापारी होऊन गेला त्यांचे नाव सालोमन होते. व्हनिस मधील लोक त्याला एवढे मानतात की त्या लोकांनी त्यांचा पुतळा उभारला त्यांची शुभाषिते आजही लोकांच्या मनात आहेत. हे खरे असले तरी फार कमी लोक त्यानुसार आचारण करतात. उदा : जेलोक खोटे बोलून पैसा कमवतात ते अहंकारी असतात आणि तेच त्यांचे मृत्युचे चिन्ह आहे. आपण आपल्या जीवनात एवढे खोटे बोलतो या दोन्ही वचनात तो खोटे बोलणाऱ्याला तो म्हणतो की अन्यमार्गाने मिळवलेली संपत्ती म्हणजे मृत्यू आहे.

आपली संपत्ती वाढविण्याकरिता जो माणुस गरीबाचे छळ करतो तो शेवटी द्राद्रियात जातो व त्याच्यावर भिक मागण्याची वेळ येते. आजच्या युगात मड्यावरील लोनी खाणारे लोक भरपूर प्रमाणात जगात वावरत आहे. रस्त्यावर लुटमार करणे चोरी करणे हे काम सरास केले जाते. डाकु श्रीमंतांना लुटत असतो तर व्यापारी गरीबांना लुटत असतो. सालोमन नंतर आपल्या निती वचनामध्ये म्हणतो की, श्रीमंत आणि गरीब दोघेही सारखे आहेत. ईश्वर त्याची उत्पत्ती करणारा आहे. तोच त्यांना ज्ञान देतो. श्रीमंताचे गरीबाशिवाय गरीबाचे श्रीमंताशिवाय चालु शकत नाही. एकमेकांची गरज दोघांना नेहमी पडत असते. कोणी कोणाला उच्च म्हणु शकत नाही. परंतु दोघेही आपली क्षमता विसरतात आणि ईश्वर आपल्या ज्ञान देणारा आहे. या गोष्टीचे ही त्यांना भान राहत नाही तेव्हा त्यांचे विपरीत परिणाम होतात.

धन नदी प्रमाणे आहे नदी सतत समुद्राकडे म्हणजे पूर्व किंवा खालच्या पातळीकडे पाहत असते त्याच प्रकारे जिकडे गरज असेल तिकडे गेले पाहिजे. परंतु ज्या प्रमाणे नदीच्या प्रवाहाची दिशा बदलत असते त्याच प्रमाणे संपत्तीच्या प्रवाहाची दिशा सुद्धा बदली पाहिजे. निती नियंत्राने संपत्ती गोळा करणे हीच उचीत गोष्ट आहे.

स्पर्धा राष्ट्राकरीता हितावहत असते ही अर्थशास्त्राची धारना चुकीची असल्याने अशा प्रकारे लक्षात येते त्यांचे म्हणणे आहे की, जसजशी स्पर्धा वाढत जाते तसतसे राष्ट्र समृद्ध होत जाते. वास्तवात हा भ्रम आहे. स्पर्धेचा उद्देश असतो. मजुरीचा दर



कमी करणे स्पर्धेमुळे श्रीमंत अधिक श्रीमंत होतात. गरीब अधिक गरीब होतात. त्यामुळे ही स्पर्धा राष्ट्राला विनाशकडे नेऊ शकते.

### सत्य काय आहे

गेल्या तीन मुद्यामध्ये आपण पाहिले आहे की अर्थशास्त्रांनी जे सर्व सामान्य नियम सांगितले आहे. ते चुकीचे आहेत. त्या नियमाप्रमाणे आचरण केल्यामुळे व्यक्ती आणि समाज दोघेही दुःखी होतात. गरीब अधिक गरीब होतात. श्रीमंत अधिक श्रीमंत होतात आणि तरीही दोघांपैकी एक ही सुखी होत नाही.

अर्थशास्त्री व्यक्तीचा आचरणाचा विचार न करता अधिक पैसा गोळा करण्याचा ओढ आहे. समाजाची प्रगती हे पैसावर अवलंबून आहे असे मानतात त्यामुळे कला कौशल्याच्या मार्गाने अधिक पैसा मिळविता येईल. तितका मिळव्या असे त्यांचे सांगणे आहे अशा प्रकारच्या विचारामुळे इंग्लंड आणि इतर राष्ट्रांमध्ये कारखाने वाढले आहेत. अनेक लोक शहरात राहण्यासाठी धडपड करतात परंतु शहरातील पर्यावरण बिघडत आहे असे असतांना लोकांची वाढ शहराकडे आहे. औद्योगीकरणामुळे श्रीमंतीचे प्रमाण वाढले आहे. श्रीमंताच्या ऐषो आरामा करिता हे गरीब लोक गुलामाप्रमाणे रात्र-दिवस काम असतातकाही शिकण्या करिता काही चांगले काम करण्याकरिता त्यांना वेळच मिळत नाही या श्रीमंतांना पाहून गरीब ही श्रीमंत होण्यासाठी प्रयत्न करत असतो. परंतु त्यांना श्रीमंत होता येत नाही. तेव्हा ते दुःखी होतात त्यांना पश्चाताप होतो. मग त्यांचे तोल जातो. मग ते भ्रष्टाचाराच्या बळावर पैसा मिळविण्याचा व्यर्थ प्रयत्न करतात अशा प्रकारे पैसा आणि मेहनत या दोन्ही गोष्टे मधून काहीही निष्पन्न होत नाही असे दिसल्या नंतर आपल्या सर्व कौशल्याचा उपयोग लोकांची फसवणुक करण्यासाठी करतात.

वास्तवतः खरे श्रम तेच असतात ज्यामुळे काही तरी उपयोगी वस्तू निर्माण होत असते. भरणपोषण यास म्हणतात. माणसांची भूक भागविण्याचे कार्य करते. नितीच्या मार्गावर राहून आजीवन सत्कर्म करत राहण्या करिता प्रेरणा हे सत्य आहे.

### निष्कर्ष

१. संपत्तीचे समान वाटप गांधीजींच्या मते संपत्तीच्या समान वाटपासाठी सर्वोदयांची संकल्पना उपयुक्त आहे. श्रीमंतांना व भांडवलदारांनी आपल्या गरजा मर्यादित ठेवण्यात आवश्यक तेवढीच संपत्तीस्वतःकडे बाळगावी. जास्तीचा संपत्तीचा विनीयोग समाजासाठी करावा.
२. स्वतःकडे बाळगावी जास्तीच्यासंपत्तीचा विनीयोग समाजासाठी करावा.
३. अहिंसेच्यामार्गाने हृदय परिवर्तन श्रीमंत व्यक्तीचे हृदय परिवर्तन करून संपत्तीचा समाजासाठी उपयोग करणे.
४. स्वदेशीला महत्त्व स्वतःच्या वस्तूचा वापर करणे.

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## CONTENTS OF MARATHI PART - I



अ. क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१	डॉ. बाबासाहेब आंबेडकर यांचे आर्थिक विचार डॉ. मुळे पी. एम.	१-३
२	डॉ. बाबासाहेब आंबेडकर यांचे कार्य : एक आढावा प्राचार्य डॉ. बबन पवार	४-७
३	डॉ. बाबासाहेब आंबेडकरांचे धर्मांतर एक आकलन प्रा. डॉ. अंगद पवार	८-१०
४	डॉ. बाबासाहेब आंबेडकरांच्या दृष्टिकोनातून हिंदू कोड बिल : समकालीन समाजवास्तव प्रा. डॉ. रामभाऊ मुटकुळे	११-१४
५	डॉ. बाबासाहेब आंबेडकरांचे ग्रामीण विकास व कृषी क्षेत्रातील योगदान डॉ. विनायक नागोराव शिंदे	१५-१७
६	सामाजिक परिवर्तनाचा आधारवड : डॉ. बाबासाहेब आंबेडकर डॉ. आरगडे अंबादास	१८-२२
७	शिवकालीन आर्थिक घोरणाचा अभ्यास डॉ. ज्ञानेश्वर जिगे	२३-२७
८	डॉ. बाबासाहेब आंबेडकरांचे आर्थिक विचार प्रा. डॉ. संजय भाऊराव गिरे	२८-३१
९	महात्मा ज्योतीराव फुले यांचे शैक्षणिक व आर्थिक विचार प्रा. डॉ. संजय मगर	३२-३७
१०	राजर्षी छत्रपती शाहू महाराजांच्या आर्थिक विचारांची वर्तमानकालीन प्रासंगिकता प्रा. डॉ. श्रध्दानंद माने	३८-४३
११	उपविषय- फुले दाम्पत्याचे स्त्रीविषयक विचार प्रेरणा दिलीप दीक्षित	४४-५१
१२	राजर्षी शाहू महाराजांचे अस्पृश्योद्धाराचे कार्य विठ्ठल बाबूराव गुंडे	५२-५४
१३	डॉ. बाबासाहेब आंबेडकरांचे आर्थिक विचार आणि आजची प्रासंगिकता प्रा. डॉ. शिवाजी नामदेव झांझुरणे	५५-५७



## १२. राजर्षी शाहू महाराजांचे अस्पृश्योद्धाराचे कार्य

विठ्ठल बाबुराव गुंडे

इतिहास विभाग, पुणे, कलाकलेची कला, वाणिज्य व विज्ञान महाविद्यालय शिरूर (का.)

### प्रस्तावना

भारतात आणि विशेषतः महाराष्ट्राच्या समाजसुधारणेच्या इतिहासात अनेक घोर समाजविभूती होऊन गेलेल्या आहेत. त्या परंपरेत शाहू महाराजांचे नाव कोणातही वगळता येणार नाही. समाजाला मानवी समान संधीचे मूलभूत हक्क व सामाजिक न्याय मिळवून देणारे ते घोर राष्ट्रपुरुष होते. २ एप्रिल १८९४ रोजी वयाच्या २० व्या वर्षी छत्रपती शाहू महाराजांनी कोल्हापूर संस्थानच्या राज्यकारभाराचे सुभे हाती घेतली आणि आपली प्रत्यक्ष राजवट सुरू केली. ही घटना कोल्हापूर संस्थानच्या इतिहासातच नव्हे तर महाराष्ट्राच्या इतिहासातही विशेष अशी होती. कारण या घटनेमुळे कोल्हापूर संस्थानाला प्रत्यक्ष कारभार करणारा छत्रपती लाभला होता. शाहू महाराजांना छत्रपती म्हणून कारभार २८ वर्षे करता आला या कार्यकालानेच सान्या महाराष्ट्राच्या इतिहासात कलाटणी देण्याचे कार्य केले. कारण छत्रपती घटनेमुळे कोल्हापूर संस्थानाला प्रत्यक्ष कारभार करणारा छत्रपती लाभला होता. कारण छत्रपती शाहू महाराज यांनी श्वेदवादी दृष्टीकोनातून व निधोजनपूर्वक केलेल्या बहुविध व सर्वेक सुधारणामुळे कोल्हापूर संस्थानात जनतेमध्ये दूरगामी परिणाम घडून आले. जनतेमध्ये सामाजिक क्रांती घडून आणि केवळ जन्मले श्रेष्ठ मानल्या गेलेल्या समाजातील ब्रिश्चिष्ट लोकांना जे तूटसमूहचे जीवन उपभोगता येते, त्याच पद्धतीचे जीवन हजारो वर्षे अस्पृश्यतेच्या वेड्या घालून जगणाऱ्या बहुसंख्याकांच्या वाटचाली आले पाहिजे व त्या दृष्टीकोनातून त्यांच्यासाठी इ. गणहारा व प्रवाच करून अस्पृश्यांना मानसिक गुलामगोरेतून मुक्त करून त्यांना समाजाच्या मुख्य प्रवाहात आणण्याचे कार्य त्यांनी केले. त्यांची धोरणे आजही शासनाला मार्गदर्शन करण्याचे कार्य करत असे म्हणू की शासनाला भूमिका ठरवतांना त्यांच्या धोरणाचा मनावो घेणे क्रम द्याय ठरते.

### चातुर्वर्ण्य पद्धती

शाहू महाराजांनी सत्तासूत्रे आपल्या हाती घेण्या अगोदर समाजस्थिती अतिशय विदारक होती. परंपरागत ब्राम्हणवादाचा पगडा समाज जिथेला काळीमा कासण्याचे काम करत होता. त्यांनी केलेली समाजाची विभागणी ब्राह्मण, क्षत्रिय, वैश्य आणि शूद्र यांची गुंडांची अवस्था अतिशय दिन दोन झाली होती. यांना शिक्षणाचा अधिकार नकारण्यात आला होता. पदोपाने सुधारणेचा हक्क त्यांच्या पासून घेण्यात आला होता. भारतात ईश्वरी सत्तेची स्थापना झाल्यानंतर त्यांनी सर्वोच्च शिक्षणाची सोई उपलब्ध करून देण्याचे कार्य केले. असे झाले तरी परंपरागत शिक्षणाची पक्केदारी ब्राह्मण वर्गाकडे असल्याने त्यांचे बघेसब फारसे कमी झाले नव्हते. पुढे महात्मा फुले यांनी चातुर्वर्ण्य व्यवस्थेवर जोरदार हल्ले करून बहुजन समाजात शिक्षणाच्या मुख्य प्रवाहात आणण्याचे कार्य केले. किंचि रि पुढे ओढून शाहूंनी इथल्या विषमतावादी व शोर्षक सामान्यव्यवस्थेबद्दल आपला राजसत्तेचा असूड उगारला.



### जाती आधारित व्यवसाय बंदी

सांस्कृतिक समानतेबद्दल आपणही एक निवेद्य होता की जाती आधारित व्यवसाय बंदी होय. छत्रपती शाहूने हे निवेद्य होय तब जाणिवा. त्यामुळे जाती निहाय व्यवसाय करण्यांना परंपरागत व्यवसाय करण्याची सक्ती राहिली नाही. प्रत्येकाचा काढेल तो व्यवसाय त्या पद्धतीने व काढेल त्या ठिकाणी करण्याची मुक्ती मिळाली. याप्रकारे राजांनी मागास जातींना व्यवसाय, मंदार व निवडामध्ये स्वातंत्र्य देऊन जातीव्यवस्थेच्या तडबडीला जबरदस्त हादरा दिला.

### जातीवाचक आडनावे बदलली

छ. शाहूंनी असुराणांच्या उजळीसाठी व असुराणां समाजात बरोबरचा दर्जा प्राप्त करून देण्यासाठी व्यक्तींची आजन्म कालावधीची नावे शास्त्रानुसार ठरविली. त्यांच्या आडवाड्यातल्या महार पहिल्यांदा 'जाठ' म्हणून तर चांधार पहिल्यांदा 'मंदार' म्हणून कुमथ्यांच्या आज्ञाकडून पुकारले जाई. याबरोबरच भंग्यांना 'विंहीत' अशी नावे ठेवली.

### महार वतन कायद्याने बंद केले

परंपरागत याच गाड्यात महार समाजाला असुराण म्हणून महार वतनाच्या नावाखाली गायलेले सर्व घाणीची व खालच्या दर्जाच्या कामे करावी लागत असत. ही वतन पद्धती म्हणजे एक प्रकारची गुलामगिरीच होती. त्यामुळे छत्रपती शाहूने असुराणांची या पुलावर प्रथे यथुन सुटका होण्यासाठी मे १९२१ मध्ये महार वतन पद्धती नष्ट केली परंतु पुढेही काही काळ महारात अनेक ठिकाणी ही प्रथा चालू होती, ती बंद करण्यासाठी डॉ. बाबासाहेब आंबेडकरांनी प्रयत्न केले. पुढे इ.स. १९५८ साली मुंबई प्रांताचे मुख्यमंत्री दत्तवर्तमान पंधराव्या यांनी हे महार वतन कायदा करून बंद केली.

### सभाराय

उपरोक्त विस्तरेणवयान असं दिसून येतं की, शाहू महाराज हे कलं सुधारक होते. असुराणता ही माणुकीला काळीम पासणारी बाय आहे असे त्यांना वाटत होते. म्हणून त्यांनी आपल्या संस्थानातील असुराणतेचे उखाटून करण्याचा निर्धार केला. उजळीला त्यांची कुलीची जोड दिली एकामागून एक जसे अनेक आदेश काढून असुराणांद्वाराचे कार्य केले. महार, मांग, चांधार, होत या असुराण जातींची आर्थी दयनीय अवस्था होती या जातीतील लोकांना पदपेक्षाही दिन वागणूक दिली जात होती. त्यांचे अवस्थेतून सुटका करण्यासाठी त्यांना लोकांमध्ये सामावून घेण्याचे कार्य त्यांनी केले.

त्यांनी केलेल्या कार्यामुळे कुठेली समाजात असुराणांना मानने सन्मानाने वागण्यास संधी मिळाली. असे म्हटले तर बांधो उपकार नाही.

### संदर्भ ग्रंथ

१. किर धनेजय - राजर्षी शाहू छत्रपती, पोपुलर प्रकाशन, मुंबई.
२. पंढार जय सिराध - (संपा) राजर्षी छत्रपती शाहू स्मारक ग्रंथ, महाराष्ट्र इतिहास प्रबोधिनी.
३. भोसले एस.एस. - (संपा) ज्ञातिसुक्ते : राजर्षी छत्रपती शाहू, महाराष्ट्र राज्य साहित्य संस्कृती मंडळ, मुंबई.
४. पंढार धर्मराय - राजर्षी शाहू छत्रपती : एक अभ्यास, सुमेरु प्रकाशन, डोंडिवली.
५. नारदस तुकाराम - छत्रपती राजर्षी शाहू महाराज, युनिव्हर्सल पब्लिकेशन, कोल्हापूर.

## अस्मृति उद्घाटनार्थ कार्य

### शिक्षण

शिक्षणाशिवाय अस्मृतींची सुधारणा होणार नाही. मोक्या तसेच उद्योग, स्थानिक राज्यकारभार आणि सार्वजनिक संस्थान यांमध्ये अस्मृतींना मोठ्या प्रमाणात प्रतिनिधित्व द्यायचे असे शाहूंना वाटत असे. त्यातूनच त्यांनी अस्मृतींच्या शिक्षणासाठी शाळांची संख्या वाढवली. शिक्षणाचा ओढा वाढावा म्हणून २४ नोव्हेंबर १९११ रोजी एक आदेश काढून राज्यातील सर्व अस्मृतींसाठी मोफत शिक्षण देण्याची तरतुद केली. तसेच काही शिष्यवृत्ती हो जाहीर केल्या. १९१२ साली अस्मृतींच्या शाळांची संख्या २७ व विद्यार्थी संख्या ६३६ इतली बरिल धोरणाच्या परिणामांमुळेच विद्यार्थी संख्या मोठ्या प्रमाणात वाढू लागली.

इ.स. १९१९ च्या एप्रिल महिन्यात एक आदेश काढून संस्थानातील अस्मृतींना पुरतक, पाठ्या, पेन्सिली इ. शैक्षणिक माहित्य मोफत देण्यासाठी २५.०० रुपये मंजूर केले. या दरम्यानच्या काळातच त्यांच्या लहान मुलांचे अपघाती निधन झाल्याने त्यांच्या स्मरणार्थ १०,०००/- रुपयाचा प्रीमिसरीनोट तयार करून त्यांच्या व्यावावर मासिक पाच रुपयांच्या शिष्यवृत्त्या चालू केल्या.

### हजेरी व खंडखरला पद्धती बंद

गुन्हेगार जातीतील माणूस म्हणजे जन्मजात गुन्हेगार असून त्यांच्यात कधीच बदल होणार नाही हे हिंदी समाजाचे व इंग्रज राज्यकर्त्यांचे समीकरण शाहू महाराजांनी स्विकारण्यास नकार दिला. माणूस इथून तिथून सारखाच मात्र परिस्थितीने तो 'साब' किंवा 'गुन्हेगार' बनतो. माणुसकीने, प्रेमाने वागवले तर हिंस्र पशू देखील बदलतो तर माणसेला बदलनार नाहीत. त्यामुळे शाहू महाराजांनी ०३ ऑगस्ट १९१८ रोजी अस्मृतींवर लादलेली अमानुष अशी 'हजेरी' पद्धत कायद्याने बंद केली. महार, मांग, रामोशी या जातीच्या लोकांची हजेरी पद्धत बंद करण्यात यावी, यातील ते कांणी गुन्हात सापडून शिक्षा झालेली असले तर त्यांना हजेरीची माफी नसावी.

२९ सप्टेंबर १९१८ रोजी महाराजांनी हजेरी संदर्भात एक हुकुम आणखी काढला त्यात गुन्हेगार म्हणून कपाळावर कायमच शिक्का बसलेला परंतु शिक्षा भोगून झाल्या नंतर पाच वर्षे चांगले राहिला असेल तर त्याला हजेरतुन मुक्त करण्यात यावे. हजेरी प्रमाणेच महार समाजाच्या माथ्यावर खंडखरला ही अमानुष पद्धत लादली गेली होती तीही इ.स. १९२० मध्ये राजर्षी शाहू महाराजांनी कायद्याने बंद केली.

### आंतरजातीय विवाह

जो पर्यंत जातीची विषमता वाढी चौकट मांडली जात नाही, तो पर्यंत जातीवादचा प्रभाव कमी होणार नाही, तो पर्यंत जातीवादचा प्रभाव कमी होणार नाही. त्यामुळे राजर्षी शाहू महाराजांनी बंटीबंदीचा निबंध उठवण्याचा निर्णय घेतला. महाराजांनी आपल्या संस्थानात १२ जुलै १९१९ मध्ये आंतरजातीय व आंतरधर्मीय विवाहास मान्यता देणारा कायदा लागू केला. नृसंग कायदाकरण ते थांबले नाही तर, त्यांनी केल्हापुर व इंदूर या दोन संस्थानांच्या दरम्यान १०० आंतरजातीय विवाह ठरवून त्यापैकी २५ आंतरजातीय विवाह घडवूनही आणले.



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### कृषी समस्या आणि ग्रामीण जीवन

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#### गोष्टवार (Abstract):

ग्रामीण जीवनामध्ये अन्न, वस्त्र व निवारा या मुलभूत गरजांना जास्त प्राधान्य आहे. व त्या पूर्ण होण्यासाठी प्रत्येकजण झगडत आहे. या प्राथमिक गरजा पैकी काही गरजा भागविल्या नाहितर कुटूंब व्यवस्था, समाजव्यवस्था विस्कळीत होते. तसेच आज ग्रामीण भागामध्ये जमीनीच्या क्षेत्रामध्ये पाण्याची पातळी फार खोल गेली आहे. त्यामुळे मिळणारे पाणी सुध्दा अपुरे मिळत आहे. जसे की, डोक्यावर हंडे घेवून पाण्यासाठी शिवारात निघालेल्या माय मावल्या पाणी आनण्यासाठी फार दुखवर जात होत्या. वास्तविक हे दृष्य शिवारात जलसाठा असल्याचे दर्शवत होते. आता डोक्यावरील हंडयाची जागा टँकरने घेतली आहे. याचा अर्थ त्या शिवारातील पाणीपातळी खूपच खाली गेल्यामुळे तेथील लोकांना पाणी बाहेरून मागावे लागते. याचाच अर्थ ग्रामीण भागामध्ये मानवी जीवन पध्दती फार भयावह झालेली आहे.

**Keywords:** कृषी समस्या, ग्रामीण जीवन

#### प्रस्तावना

† आपला भारत देश कृषीप्रधान देश आहे. देशाची अर्थव्यवस्था कृषीवर आधारित आहे. म्हणून शेती हा ग्रामीण भागातील जीवन पध्दतीचा मुख्य आधार आहे. शेतकरी हा येथील अर्थव्यवस्थेचा मुख्य आधार असून तो प्रामुख्याने खेड्यात राहतो. शेतकरी हा सान्या जगाचा पोशिंदा असून ही तो स्वतः नेहमीच अर्धपोटी राहत आला आहे. २१ व्या शतकात ही हीच परिस्थिती दिसून येते. इंग्रजांच्या आगमना नंतर या देशाची अर्थव्यवस्था मात्र बदलत गेली. ब्रिटीशांनी खूप मोठ्या प्रमाणात या देशाचे आर्थिक शोषण केले. या समाजितील सामान्य वर्गच नाहीतर मध्यमवर्गीय माणूस देखील आर्थिक दृष्ट्या दुर्बल होत गेला. त्यामुळे कृषी विषयक प्रश्नांचा वेध घेणे उपयुक्त ठरणारे आहे. कृषीव्यवसाय हा प्रामुख्याने नैसर्गिक, आर्थिक, सामाजिक व तंत्रज्ञान या घटकावर अवलंबून आहे. कारण शेतीवर प्राकृतिक घटकांचा प्रभाव जास्त असतो. त्याच बरोबर मानवी घटकही तेवढेच महत्वाचे असतात. नैसर्गिक घटकात भूरचना, हवामान व नैसर्गिक अपत्ती यांचा समावेश होतो. तर आर्थिक घटकात भांडवल, बाजारपेठ, वाहतूक व कमी उत्पादन क्षमता तर सामाजिक घटकात जमीनीचे तुकडे धारक व भूधारकांचे स्वरूप यांचा विचार केला जातो. आज मात्र नवीन तंत्रज्ञानाचा रिवेकार व कृषी तंत्राचा प्रसार याचा





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परिणाम शेतीवर होत आहे. आज सुद्धा ग्रामीण भागामध्ये पारंपारिक पध्दतीने शेती केली जाते. त्यामुळे मिळणारे उत्पादन दर हेक्टरी कमी होत आहे. कारण अनियमित व अनिश्चित प्रजन्य, जमीनी धुप, जमीनीचा योग्य वापर, नापिक जमीनीवर पिके घेणे, जुन्या पध्दीचा अवलंब करणे, असुधारीत बी बीयाने खतांचा कमी वापर इत्यादी कारणांमुळे येणारे उत्पादन कमी मिळाल्यामुळे मानवी जीवनात निरुत्साह व नैराश्य आले जाते. यामुळे यातूनच शेतकऱ्यांचे आत्महत्यांचे प्रमाण वाढत आहे.

ग्रामीण जीवनामध्ये अन्न, वस्त्र व निवारा या मुलभूत गरजांना जास्त प्राधान्य आहे. व त्या पूर्ण होण्यासाठी प्रत्येकजण झगडत आहे. या प्राथमिक गरजा पैकी काही गरजा भागविल्या नाहिले कुटूंब व्यवस्था, समाजव्यवस्था विस्कळीत होते. तसेच आज ग्रामीण भागामध्ये जमीनीच्या क्षेत्रामध्ये पाण्याची पातळी फार खोल गेली आहे. त्यामुळे मिळणारे पाणी सुद्धा अपुरे मिळत आहे. जसे की, डोक्यावर हंडे घेवून पाण्यासाठी शिवारात निघालेल्या माय मावल्या पाणी आनण्यासाठी फार दुरवर जात होत्या. वास्तविक हे दृष्य शिवारात जलसाठा असल्याचे दर्शवत होते. आता डोक्यावरील हंड्याची जागा टँकरने घेतली आहे. याचा अर्थ त्या शिवारातील पाणीपातळी खूपच खाली गेल्यामुळे तेथील लोकांना पाणी वाहेरून मागावे लागते. याचाच अर्थ ग्रामीण भागामध्ये मानवी जीवन पध्दती फार भयावह झालेली आहे.

### उद्दिष्टे :-

- बदलत्या आर्थिक, सामाजिक स्थितीत शेतकऱ्यांना सक्षम करण्याच्या दृष्टीने बाजाराशी सुसंगत धोरणे अंगीकारण्यासाठी सहकार्य करणे.
- शेतकऱ्यांना शेती संबंधीची माहिती ज्ञान आणि कौशल्य विकासाद्वारे शेतकरी समुहापर्यंत विविध माध्यमातून पोहचविण्यात येते.
- शेतकरी वर्गाच्या आर्थिक उन्नतीसाठी कृषी विकासाची गरज जाणून घेणे. श
- शेती संबंधीत तंत्रज्ञान शेतकऱ्या पर्यंत प्रभावी व परिणामकारक रित्या प्रसारित करणे आणि त्याची उत्पादकता वाढविण्यासाठी प्रत्यक्ष अवलंब करण्याच्या दृष्टीने शेतकऱ्यांनी सक्षम निर्णय घ्यावा. या साठी त्यांची क्षमता बांधणी करणे.
- कृषी उत्पादन वाढीसाठी सधन शेती पध्दतीद्वारे बियाने, खते, किटकनाशके व उपलब्ध पाण्याच्या सिंचनाचा वापर करून कृषी उत्पादन वाढवण्यास चालणा देणे.
- कृषी विद्यापीठा मार्फत ग्रामीण जीवनामध्ये शेतकऱ्यांसाठी कृषी तज्ञांचे शिबीर आयोजित करणे.
- शिक्षणाचा दर्जा उंचावण्यासाठी ग्रामीण भागातील शेतकऱ्यांच्या मुलांमध्ये शिक्षणा विषयीची आवड निर्माण करणे.

### कृषीतील नवीन तंत्रज्ञाचा प्रसार :

आज ज्या ठिकाणी जास्त जलसिंचनाच्या सुविधा आहेत अशा ठिकाणी नवीन तंत्राचा प्रसार मोठ्या प्रमाणावर झाला आहे. भारतात बहुतांश शेतकरी आडाणी व ग्रीड असल्याने नवीन तंत्रास विरोध करतात. मात्र कृषी विद्यापीठ, कृषी विभाग यांच्या सक्रीय सहभागातून शेतकऱ्या पर्यंत सर्व माहिती पोहचविण्याचे प्रयत्न होत



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आहे. पातळ तुरचित्रवाणी व आकाशवाणी या माध्यमांचा मौलिक असा वाटा आहे. शेतकऱ्यांना नवीन तंत्रात कृत्रीम खताचे डोस, पाण्याचा पर्याप्त वापर तसेच जंतूनाशक व किटकनाशकांचा वापर यांचे शास्त्रीय ज्ञान व तंत्र अवगत होणे गरजेचे असते.

कृषी ही एक गतीमान संकल्पना आहे. मानव कृषी उत्पादन वाढीसाठी जमीनीची मशागत करत आलेला आहे. परंतु कालप्रवाहात कृषी व्यवसाय व मशागतीच्या स्वरूपात अत्यंत मोठ्या प्रमाणात स्थित्यंतरे व परिवर्तने झाली. ग्रामीण भागातील सध्याची आर्थिक स्थिती अपेक्षित परिस्थितीही यातील रुंदावत चाललेली दरी कमी करण्यासाठी आधुनिक विज्ञान आणि तंत्रज्ञानाच्या अंगीकारातून शेती व्यवसायात योग्य बदल घडून आणण्यासाठी कृषी विकासाची आवश्यकता आहे. कृषीतील बदल हा प्रामुख्याने शेतकऱ्यांना त्यांच्या गरजेनुसार कृषी उत्पादनाशिवाय पुरविण्यासाठी असून सुधारित शेती तंत्रज्ञानाच्या वापराद्वारे शेतकऱ्यांच्या जीवनात सुधारणा घडवून आणणे शक्य होते. भारत सरकारही शेतकऱ्यांच्या पथकास इस्त्राईल सारख्या कृषीप्रगत देशात पाठवून त्यांचे नवनविन प्रयोग दाखविण्यात येतात. याच्यातूनच शेतीची प्रगती केली जाते. याच्यातून ग्रामीण जीवनात अमुलाग्र बदल घडवून आलेले आहेत.

### शेती पुढील प्रमुख समस्या:-

- अनिश्चित स्वरूपाचे मानसून हवामान, थंडीच्या व उष्णतेच्या लाटा, धुलीचे वादळे, चक्रीवादळे, दहिवर, दहिवुक, गारांचा पाऊस, पुर, दुष्काल, मृदा धुप, पिकावरील रोग, इत्यादी संकटे व नैसर्गिक आपत्तींना सामोरे जावे लागते.
- आधुनिक शेती करण्यासाठी शेतकऱ्यांना भाडविलेले उपलब्ध होत नाही. जर भाडविलेले उपलब्ध झाले तर मिळणाऱ्या उत्पादनाला योग्य बाजारपेठ नसते. कारण वाहतुक खर्च, कमी उत्पादन या समस्यांना सामोरे जावे लागते.
- शेती क्षेत्रामध्ये मानवामध्ये बुद्धीमत्ता, कल्पकता, निर्णय क्षमता, महत्त्वकांक्षा, आकलन शक्ती, कष्ट न करण्याची वृत्ती इत्यादी गोष्टींचा आभाव आढळतो. तसेच जमीन धारणा क्षमता, जमीनीच्या तुकड्यांचे स्वरूप इत्यादी सामाजिक समस्या आढळून येतात.
- तांत्रिक समस्यात नवीन तंत्राचा स्वीकार करणे व नवीन तंत्र देशाच्या वेगवेगळ्या भागात पसरविणे यांचा समावेश होतो.

इत्यादी समस्यांमुळे ग्रामीण जीवन हे विस्कळीत झाले आहे.

### शेती समस्यावरील उपाय :-

- शेतीसाठी पाण्याचे योग्य नियोजन करून त्यांना ठिबक व तुषार सिंचन या सारख्या आधुनिक जलसिंचन तंत्रज्ञानाची माहिती करून देणे.
- मिळणाऱ्या उत्पादनाला शासनाने हमी भाव ठरवून देणे.
- शेतीमध्ये रासायनिक खतांच्या ऐवजी सेंद्रीय खताला प्राधान्य देवून जमीनीचा पोत टिकवून ठेवणे.





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- नवनविन बी बीयाने, रासायनिक खते, किटकनाशके, व तनणाशकांचा वापर करण्यास शेतकऱ्यांना प्रवृत्त केले पाहिजे.
- पुराच्या पाण्यामुळे मृदा धुप होणार नाही याकडे लक्ष देवून या पाण्याचा योग्य उपयोग केला जाईल.
- शेतीचा विकास करण्यासाठी कमी व्याजदरात शेतकऱ्यांना कर्ज उपलब्ध करून देणाऱ्या बँका शासनाने उपलब्ध करून दिल्या पाहिजेत.
- मिळणाऱ्या उत्पादनाला बाजारपेठ उपलब्ध करून देण्यासाठी सरकारने कृषी विभागाद्वारे प्रात्यक्षीक शिबीराचे आयोजन ग्रामीण भागामध्ये केले पाहिजे.

अशा प्रकारे असे आनेक उपाय सांगता येतील. त्यातूनच ग्रामीण जीवनाला जीवन जगण्याची योग्य दिशा उपलब्ध होईल.

### निष्कर्ष :-

- पारंपारिक पध्दतीने केलेल्या शेतीमध्ये मिळणारे उत्पादन कमी होते. मात्र नंतर अभ्यास व नविन तंत्रज्ञान वापर केलेल्या शेतीमध्ये निश्चितच दर हेक्टरी उत्पादन जास्त मिळते.
- ग्रामीण जीवनामध्ये शिक्षणाचा दर्जा उंचवल्या कारणाने शेतीचा विकास आणि मानवी प्रगती होऊ लागली आहे.
- ग्रामीण जीवनात प्रगती झाल्यामुळे कमी वेळात व कमी खर्चात अधिक उत्पादन मिळविणे शक्य होते.
- मानवाच्या बदलत्या गरजा भागवितांना कृषीसाठी लागणाऱ्या साधनांची सुव्यवस्थीत नियोजन केल्यामुळे त्या शेतीचा दर्जा देखील सुधारला जातो.
- जमीनीची योग्य निगा केल्यानंतर जसे की बांधबंदीस्ती यामुळे तेथील मृदेचे संधारण होवून पाण्याचा साठा वाढला जातो.
- जैवीक व सेंद्रीय शेती उत्पादने घेवून समाजाला विषमुक्त कृषी उत्पादने पुरविले जातात.

कृषी समस्या आणि ग्रामीण जीवन या विषयाचा अभ्यास करून कृषी मधील मानवी जीवनमान सुधारून ते भावी पिढीसाठी कसे दिर्घकाळ टिकवता येईल एवढेच पाहिले पाहिजे.

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## मराठवाड्यातील पर्यटन विकासाचे नियोजन

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### प्रस्तावना :-

पर्यटन हा वैश्विक पातळीवर महत्वाचा उद्योग आहे. सामान्य वर्गापासून उच्च प्रतिच्या लोकापर्यंत सर्वजन एका ठिकाणाहून दुसऱ्या ठिकाणाकडे प्रवास करतात. त्या काळात त्यांना राहण्यासाठी धर्मशाळा, मंदिरे, सांस्कृतिक सभागृह, आश्रम इत्यादी ठिकाणी पर्यटकांची सोय होत असे. आज मात्र पर्यटनाला उद्योगाचा दर्जा प्राप्त झाल्यामुळे त्यामध्ये येणाऱ्या अडचणी आणि त्रुटी याचा पद्धतशीर अभ्यास करून त्याचे नियोजन केले पाहिजे. आपला देश जगाच्या दृष्टीने पर्यटन क्षेत्रामध्ये आकर्षक केंद्र मानले जाते. म्हणून पर्यटन वाढीसाठी येथे खुप संधी आहेत. मात्र या संधीचा शोध घेवून त्याचे योग्य नियोजन केले पाहिजे. तसे पाहिले तर आपल्या देशामध्ये प्राचिन संस्कृती, स्मारके, नैसर्गिक आकर्षण, धबधबे यामुळे पर्यटनात वाढ होत आहे. मात्र काही पायाभूत सुविधांच्या अभावामुळे पर्यटन उद्योग विकासात अडथळे निर्माण झाली आहेत. त्यासाठी पर्यटन विकासाचे नियोजन महत्वाचे आहे.

महाराष्ट्र राज्यात येणाऱ्या पर्यटकांना मनसोक्त पर्यटनाचा आनंद घेता येतो. कारण महाराष्ट्र शासनाने पर्यटन क्षेत्रामध्ये विविध संकल्पना राबवल्या आहेत. महाराष्ट्र हे देशातील इतर राज्यापेक्षा शांतता प्रिय असल्याने पर्यटकांना संरक्षणाच्या दृष्टीने अनुकूल आहे. त्यामध्ये मराठवाडा विभाग हा महाराष्ट्रातील महत्वाचा पर्यटन विभाग म्हणून पाहिले जाते. मात्र येथे पर्यटन विकासाचा आभाव असल्या कारणाने येथे मनावा असा पर्यटन विकास झालेला नाही. मराठवाडा विभागातील काही पर्यटन स्थळे जागतिक स्तरावर प्रसिद्ध असल्याने देशाच्या पर्यटन क्षेत्रात महत्वपूर्ण स्थान आहे. पर्यटनाचा विकास करतांना स्थानिक उद्योगांचा विचार घेणे आवश्यक असते. पर्यटनाच्या विकासांमुळे हस्तकला, हस्त उद्योग इत्यादीचा विकास होऊन रोजगार उपलब्ध होतो. पर्यटन उद्योग इतर उद्योगापेक्षा वेगळा आहे. हा उद्योग मालापेक्षा लोकांच्या स्थलांतरावर अवलंबून आहे. त्यासाठी या उद्योगाचा विकास करावयाचा असेल तर त्याचे नियोजन काळजीपूर्वक झाले पाहिजे.



पर्यटन विकासाचे नियोजन खालील मुद्याला अनुसरून केलेले आहे.

- त्या ठिकाणची स्थानिक पर्यटन क्षमता, समाज निर्णय व त्या ठिकाणची नैसर्गिक साधन संपत्ती या नुसार पर्यटन नियोजन केले जाते.
- पर्यटकांची मागणी व त्यानुसार पुरविल्या जाणाऱ्या सोयी यांचे मूल्यमापन केले जाते.
- पर्यटनाचा विकास प्राकृतीक, आर्थिक व सामाजिक घटकाशी जोडला पाहिजे.
- पर्यटनाची प्राथमिक माहिती व आकडेवारी वरून पर्यटनासाठी विकास आराखडा तयार केला पाहिजे.
- पर्यटनाचा विकास करतांना स्थानिक हस्तकला, हस्तउद्योग यांचे अस्तित्व टिकून रहावे व ते वाढीला लागावे अशा रितीने पर्यटनाचे नियोजन असावे.
- प्रत्येक ठिकाणच्या नैसर्गिक व सांस्कृतीक गोष्टींना प्राधान्य दिले पाहिजे. तसेच त्या ठिकाणचे औद्योगीकरण व नागरिकरण लक्षात घेणे महत्वाचे असते. कारण त्याचा परिणाम त्या ठिकाणच्या पर्यावरणावर होणार नाही याची काळजी घेतली जाते.
- पर्यटन हे चांगल्या प्रकारचे व्हावे असे वाटत असल्यास तेथील पर्यटकांना सर्व प्रकारच्या सुविधा व सेवा देणे गरजेचे असते.
- पर्यटन नियोजनात पर्यावरणाला अधिक प्राधान्य दिले पाहिजे.
- पर्यटन विकास योजने मध्ये आर्थिक नियोजन महत्वाचे असते.
- पर्यटन विकासाच्या दृष्टीने पर्यटन नियोजन हे व्यवस्थापनाशी जोडले पाहिजे.
- पर्यटन नियोजनात पर्यटन बाजारपेठाचे नियोजन हे महत्वाचे काम आहे. कारण या नियोजनावर पर्यटनाचे यश असते.

**संशोधन पद्धती :-**

मराठवाड्यातील पर्यटन विकासाचे नियोजन या विषयावर संशोधन करण्यासाठी मी सामाजिक संशोधन पद्धतीच्या विविध पैलूचा उपयोग केला आहे. या मध्ये तुलनात्मक संशोधन पद्धती तसेच गंथालयीन संशोधनाचा वापर करून प्रस्तुत विषयाचा अभ्यास केला आहे. उपलब्ध वेगवेगळ्या संदर्भ ग्रंथांचा अभ्यास आणि प्रशासनाकडून प्रकाशित झालेले वार्षिक अहवाल याचा अभ्यास करून व खात्री लायक माहिती जमा करून त्याचे विश्लेषण केले आहे. या विषयाच्या अभ्यासासाठी प्राथमिक माहिती संकलीत करण्यासाठी नमुना निवडीच्या आधारे मराठवाड्यातील प्रत्येक जिल्ह्यातील पर्यटन क्षेत्रातील स्थानिक जनता व्यवसायिक प्रशासनातील अधिकारी, कर्मचारी आणि पर्यटन क्षेत्राला भेट देणाऱ्या पर्यटकाकडून माहिती घेतली आहे. त्याच बरोबर मी स्वतः विविध पर्यटन स्थळांना भेटी देवून निरीक्षण केले आहे.



## विषयाची उद्दिष्टे :-

मराठवाड्यातील पर्यटन विकासाच्या नियोजना बद्दल स्थानिक जनता, प्रशासनातील अधिकारी, कर्मचारी यांची काय मानसिकता आहे, शासनाकडून कोणत्या अपेक्षा आहेत याचा अभ्यास करण्यासाठी हा विषय निवडला आहे. त्याची उद्दिष्टे खालील प्रमाणे.

- मराठवाड्यातील पर्यटन विकासाचे नियोजन करून त्यामध्ये येणाऱ्या उणिवांचा शोध घेणे.
- पर्यटन क्षेत्राला शासनाकडून पुरविल्या जाणाऱ्या सुविधांचा अभ्यास करणे.
- शासनाकडून राबविल्या जाणाऱ्या विविध योजना व कार्यक्रमाचे मुल्यमापन करून उपाय योजना करणे.
- स्थानिक जनता व पर्यटका सोबतचा व्यवहार कसा आहे याचा शोध घेवून पर्यटन नियोजन करणे.
- मराठवाड्यातील पर्यटन प्रशासनाचे पर्यटन विकासातील कार्यक्षमता वाढविण्याच्या दृष्टीने नियोजन करणे.
- पर्यटन क्षेत्रातील नियोजन आणि समन्वय त्या व्यवसायातील रोजगार व व्यापार मधील नवीन संधीचा शोध घेणे.
- मराठवाड्यातील पर्यटन क्षेत्राकडे बाहेरच्या देशातील पर्यटकांना आकर्षित करण्यासाठीचे नियोजन करणे.

## निष्कर्ष :-

- मराठवाड्यातील पर्यटन विकासाचे नियोजन करण्यासाठी हा अभ्यास विषय निवडलेला आहे.
- या संशोधन विषयाचे अध्ययन सोयीचे व सुलभ व्हावे यासाठी प्रस्तुत संशोधन विषयाची व्याप्ती व मर्यादा स्पष्ट करण्यात आल्या आहेत.
- हा शोध निबंध दर्जेदार व प्रभावी होण्यासाठी स्थानिक व राष्ट्रीय व आंतरराष्ट्रीय स्तरावरील माहितीचा आढावा घेण्याचा प्रयत्न केला आहे.
- मराठवाड्यातील पर्यटन विकासाचे नियोजन व व्यवस्थापन आणि महाराष्ट्रातील पर्यटन विकासातील भूमीकेचा शोध घेणे व प्रदेशातील पर्यटकांची संख्या आपल्या मराठवाड्याकडे वळवणे हा महत्वाचा अभ्यास केलेला आहे.
- प्रस्तुत शोध प्रबंधात मराठवाड्यातील विकासाच्या नियोजनाच्या निगडीत तथ्यांचे विश्लेषण करण्यात आलेले आहे.

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## **Body Image Concern: Social Media and Adolescents**

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### **Introduction:**

How people think and feel about their own body is what we call as **Body Image**. It relates to a person's perceptions, feelings, and thoughts about his or her body and is usually conceptualized as incorporating body size estimation, evaluation of body attractiveness, and emotions associated with body shape and size.(1) With the growing sense of ideal body image, adolescents try to lose or gain body weight to attain that perfect body. Because of various physical, psychological and social changes adolescents are more vulnerable to body dissatisfaction (2); especially girls when going through puberty (3). Along with biopsychosocial factors like today social media contributes a lot to develop body image dissatisfaction among adolescents.

We all see media promoting unrealistic ideals about what should be the men and women's body type which is considered to be attractive. Such as men should be extremely lean and muscular and women should be extremely thin. Media has a negative influence on body image and can actually cause body dissatisfaction and especially girls follow the mantra of thin/muscular = beauty. These unrealistic ideals lead to, dieting in extreme ways or engaging in various unhealthy weight control behaviors, such as taking diet pills, steroids, laxatives, or diuretics (4).

The media and our society serve up rigid and uniform standards of beauty. "Fair & Lovely" "Get a slimmer waist in just 10 days" "Join this gym to be the complete man" "The Axe

## **Socio-Economic Impact on Dietary Intake Patterns of Adolescents: A Study**

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### **Abstract**

*Estimated 1.2 billion number of adolescents (10-19 years) are in the world. Around 253 million of them live in India. Today we are on the cross roads between losing out the potential of a generation or nurturing them to transform society. If we want to meet sustainable development growth and want to end poverty, hunger and achieve equality, the adolescents of India should be flourished, along with their communities, and all of us have a collective responsibility in ensuring that adolescence does in fact become an age of opportunity. Improving adolescents' food habits is of great importance in addressing overweight and chronic diseases. Because food habits established in the early years tend to continue into adulthood. Generally it is seen that social inequalities in food habits are found to be less robust during teenage compared to other periods in life. But still Environmental and adaptable factors need to be considered to develop effective healthy-eating interventions. This study examines the contributions of different factors which influence adolescent food consumption patterns especially family socioeconomic status.*

**Keywords:** Diet pattern of Adolescents, Diet Pattern and Socio- Economic Status, Factors Effecting Diet Pattern of Adolescents

### **INTRODUCTION:**

From last few decades, the quality of adolescent's diet has been declined and the energy intake has increased due to consumption of fast food, soft drinks, and salty snacks, also we could see the decreased fruit and vegetable intake (1-3). A significant change in the lifestyles and the dietary habits of urban Indians has been triggered by a complex mix of marketing, social, and economic policies and the Indian nutrition transition (1,2,3,4).

Because of the increased growth rate and changes in body composition associated with puberty, Nutritional needs during adolescence are increased, (1-3). Researchers have





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## CONTENTS OF MARATHI PART - I

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
२४	भारतीय संविधान : आणि महिला विषयक कायदे प्रा. डॉ. शामल भिमराव जाधव	१०९-११२
२५	महिला सबलीकरणात शालेय पोषण आहार योजनेचे योगदान प्रा. डॉ. माया खंदाट शिल्पा माणिकराव वाघ	११३-११६
२६	कौटुंबिक हिंसा आणि महिला सोनाली पं. पांडे	११७-१२१
२७	महिलांच्या आरोग्यावर ताणतणावाचा होणारा परिणाम प्रा. सय्यद अफरोज	१२२-१२५
२८	ग्रामीण महिला आणि शिक्षणाची समस्या डॉ. वागडव ए. आर.	१२६-१२८
२९	कौटुंबिक हिंसाचार-स्त्री आणि महिला आयोगाची भूमिका Dr. Archana R. Choudhari	१२९-१३३
३०	महिला सबलीकरण व किशोरवयीन मुलींचे आरोग्य अभ्यासने डॉ. माया खंदाट अश्विनी संतोष बळसाणे	१३४-१४३
३१	भारतीय राज्यघटना : महिलांविषयक कायदे कु. आरती नरसिंग बिरादार	१४४-१४५
३२	उद्योजकतेतून महिला विकास प्रा. बोरीवाले मिनाक्षी पांडुरंगसा	१४६-१४८
३३	आदिवासी स्त्रियांच्या समस्या व त्यावरील उपाययोजना डॉ. वंदना बनकर	१४९-१५४



## २७. महिलांच्या आरोग्यावर ताणतणावाचा होणारा परिणाम

प्रा. सय्यद अफरोज

कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर कासार जि. बीड.

### प्रस्तावना

शरीर व मन ह्यांचा संबंध अनादी काळापासून चालत आलेला आहे. शरीर व मन हे एकाच नान्याच्या दोन बाजू आहेत, असे म्हणता येईल. ज्या वेळी मन अस्वस्थ असेल, मनात नकारात्मक भावना असतील त्यावेळी शरीरावर त्याचा परीणाम होतो. त्यावेळी शरीर व्याधीग्रस्त होते. म्हणजेच मानवी मनावरील ताणतणावाचा परिणाम शरीरावर झालेला दिसतो. त्यामुळे हृदय विकार, मधुमेह यासारखे गंभीर आजारां देखील उद्भवतात. या आजारांवर मात करणे शक्य नसले तरी त्यास आटोक्यात आणणे शक्य आहे. या करीता ताणतणावाचे योग्य व्यवस्थापन व नियंत्रण करणे आवश्यक आहे. तसेच योग्य आहार नियोजन केल्यास शरीराबरोबर मनाचे आरोग्यही उत्तम राखण्यास मदत होत शकते.

### ताणतणाव म्हणजे काय?

ताण किंवा स्ट्रेस हा शब्द आजकाल रोजच वापरला जातो. लहानपणापासून ते वृद्धापार्यंत प्रत्येक जण ताणतणावात वावरत असतो. आजचे स्पर्धेचे युग, विभक्त कुटुंब पद्धती, ओढाताण, बदललेली जीवनशैली, मुलां संगोपन इ. कारणामुळे मनावन ताण येत असतो. रोजच्या धकाधकीच्या व धावपळीच्या जीवनात अनेक समस्या सामोरे जाताना परिवर्तणाची समायोजन साधताना ताण निर्माण होतो. परंतु वारंवार यंत्रणा ताण हा धोकादायक आहे.

ताण ही व्यक्तीच्या जीवनातील गतिशील अवस्था असून समायोजनाच्या गरजा पूर्ण न झाल्यामुळे उद्भवते. दाबामुळे ताण निर्माण होवून पूर्वस्थितीत येण्यासाठी व्यक्ती दाबाला प्रतिकार करतो. जसे स्त्रीगला ओढल्यानंतर रिंग लांबते व सोडल्यानंतर पूर्वस्थितीत येते. तसेच बाहेरील दाबामुळे ताण निर्माण होवून त्यातून मानसीक विचार येतात व आरोग्यावर परिणाम करतात.

एखादी घटना मनाविरुद्ध घडणे आणि त्यातून मार्ग न निघणे म्हणजे ताण होय. राग, भीती, चिंता, काळजी, अस्वस्थता, धास्ती, मत्सर, अपेक्षाभंग, वैफल्य, अपराधीपणा, न्यूनगंड, भ्रमनिरास, असुरक्षितता, दडपण, भिडतापण, इर्ष्या या वृत्ती आणि भावनांचा अतिरेक होवून व्यक्तीच्या शरीर व मनावर झालेले अतिक्रमण म्हणजे ताणतणाव होय. थोडक्यात ताणतणाव म्हणजे भावनांचे अव्यवस्थापन होय. अशा चिंताग्रस्त अवस्थेत जेव्हा व्यक्तीवरील अपेक्षांचे जड त्याच्या एकदंरीत कुवतीपेक्षा अवजड होते तेव्हा निर्माण होणारी मानसिक किंवा भावनिक स्थिती म्हणजे ताणतणाव होय.

### ताणतणावाचे आरोग्यावर होणारे दुष्परिणाम

ताण आणि आरोग्य यांचा जवळचा संबंध आहे. ताण दोन प्रकारचा आहे. 1. सकारात्मक ताण 2. नकारात्मक ताण. या दोन्ही ताणाचा आरोग्यावर परिणाम होतो. ताण आल्यावर शरीरातील निरनिराळ्या ग्रंथीतून कमी जास्त



तणाव विधुन रासायनिक बदल घडतात. एखादा आजार झाल्यानंतर आजारी व्यक्ती ताणाची कमी होण्याकडे  
जाण प्रभाव आजारावर पडतो.  
ताणामुळे व्यक्तीचे शारीरिक व मानसीक आरोग्य विघडून कार्यक्षमता कमी होते. त्यामुळे व्यक्ती असमर्थतेने

ताण आल्यामुळे व्यक्तीच्या शरीरावरच नाही तर मनावर सुद्धा विपरीत परिणाम होतो. त्यामुळे शारीरिक,  
मानसीक व भावनीक वर्तणात्मक लक्षणे दिसायला लागतात.

**शारीरिक परिणाम**  
हातापायाला मुंग्या येणे, थरथर हांणे, घाम येणे, थकवा, निद्रानास, डोकेंदुखी, पचनक्रिया विघडणे रक्तादाह

**वर्तनावरील परिणाम**  
आहारविषयक अनियमितता, चहा कॉफी खूप पिणे, मद्यपान करणे, सिगारेट ओढणे, एखादे व्यसन लागणे,  
अवस्थ, अस्थिरता, दिनचर्येत अनियमितता, आत्महत्ये सारखे विचार मनात येणे, नाते संबंधात व सहकारी यांच्यातील  
स्वभावतः दुरावा.

**मानसीक परिणाम**  
स्मरणशक्ती कमी होणे, चिडचिडेपणा, कामात मन न लागणे, एकाग्रतेचा अभाव, नियमिततेचा अभाव,  
ज्वलने, हीन भावना. इ.

**तणावामुळे उद्भवणारे आजार**  
21 व्या शतकाकडे वाटचाल करतांना दैनंदिन बैठी कामे, वाढते औद्योगीकीकरण, पाश्चात्य संस्कृती,  
व्यापारिण्याच्या अयोग्य सवयी, व्यायामाचा अभाव, स्पर्धात्मक जीवनशैली व प्रचंड मानसीक ताणतणावाचा मानवी  
हृदयावर परिणाम. आज हृदयरोग्यांच्या प्रमाणात प्रचंड वाढ झालेली दिसून येत आहे.

**वाढते आत्महत्येचे प्रमाण**  
अनेक वेळेस ताणतणावाची स्थिती गंभीर रूप धारण करत असते. अपेक्षामग, भावनांचा अतिरेक होवून  
व्यक्तीच्या मन व मेंदुवरील ताबा सुटतो. अशा वेळेस व्यक्ती नकारात्मक विचारांच्या अधिन होतो व मृत्यूला जवळ  
कतो. संकटांला सामोरं जाण्यापेक्षा संकटाकडे पाठ करून माणुस ताणाचा परिणाम आत्महत्येच्या स्वरूपात होतो. या  
आत्महत्येमध्ये किशोरवयीन मुलामुलीपासून वयोवृद्धांचाही समावेश होतो.

**तणाव आणि हृदय विकार**

ताणतणावाचा आणि हृदय विकाराचा जवळचा संबंध आहे. मेंदू व हृदयाला जोडणारी चेतासंस्था तणावाने  
प्रत असते. तेव्हा हृदयाचे स्पंदन जोरात होते. त्यामुळे हृदय आंकुचित होते. त्याचवेळेस मेंदुच्या माध्यमाने शरीरातील  
वर्तणेत भागात संदेश पोहचल्याने अॅड्रेनेल ग्रंथीमधून अॅड्रेनेलीन नावाचा स्टेरॉईड निघत असतो. सौम्य तणाव  
तणावामध्ये कॉर्टीझोन्स वाढवितो या हार्मोन्समुळे शरीरावर स्नायू कडक होणे, हृदयाचे स्पंदन जोरजोरात होणे,  
अन्य लक्षणे जाणवतात. हा तणाव दीर्घकाळ राहिल्यास चेतासंस्थेचा ताण व कार्य वाढते आणि त्याच बरोबर  
हृदयातील रक्तावाहिन्या आंकुचित होतात. ही शारीरिक स्थिती हृदय विकाराकरता कारणीभूत ठरते.

## मधुमेह

आधुनिक जीवनातील ताणामुळे मधुमेहाचे प्रमाण दिवसेंदिवस वाढतच आहे. मधुमेह होण्यास अनुवांशिक लक्षणे व हेतु कमी ही कारणे आहेत. तसेच ताणातूनही मधुमेह होतो. मानवीक ताणातूनही मधुमेह होण्याची प्रकृती असाते. दीर्घकालीन चिंता आणि मानवीक संघर्ष हे घटक मधुमेह होण्यास कारणीभूत ठरतात.

## कर्करोग

अनेक संशोधनावरून दिसून आले की विकारासाठी ताणाची निश्चितच महत्वाची भूमिका आहे. मानवीक ताणातूनही रक्तातील कॅन्सेरोलमाइन आणि कोटीसोलेची रक्तातील जास्तीचा रक्त होतो. जास्तीच्या कोटीसोलेच्या रक्तातूनही दबाव येतून पेशीची अनियंत्रित वाढ झाल्याने शरीराच्या वेगवेगळ्या अवयवात गाती होऊ शकतात. या कॅन्सरच्या गाती असतात.

## एड्स

भारतात एड्सचा प्रसार प्रामुख्याने असुरक्षित शारीरिक संकष, वेष्ट्यागमन यामुळे झाला आहे. जीवनातील वैकल्या, ताणतणाव, लैंगिक पूर्तता करण्यासाठी काही लोक वेष्ट्यागमन करतात आणि असुरक्षित लैंगिक संकषातून एड्स सारख्या रोगाला बळी पडतात. तसेच कोणत्याही कारणातूनही ताणतणाव निर्माण होतून रिक्त्यांमध्ये लैंगिक नैराश्य निर्माण होत असते.

## वेहऱ्यावर मुरुम येणे, केस गळणे

ताणाचा परिणाम वेहऱ्यावर होतून वेहऱ्या तेलकट होणे, मुरुम येणे, वेहऱ्या व डोळ्याच्या तंतुला भोवती काळ सक्कल पडणे, रिक्त्यांमध्ये केस गळण्याचे प्रमाण वाढते.

## ताणतणावातून रिक्त्या कसे व्हाल?

फिजिओथेरपी पद्धतीनुसार रनायू रिक्त्या केल्यास शरीरावरचा आणि मनावरचा ताण कमी व्हायला शकतो. नेहमी सकरात्मक विचार मनात आणावे, रक्तसाठी वेळ काढावा आणि आवडेल अशी कामे करावीत. या पिच्चर पहाणे, खेळ, शोपींग, छंद जोपासणे, दररोज 1 तास व्यायाम करावा, योगा व प्राणायामाने ताण कमी होणे. आहार आणि ताणाचा संबंध

नियमित व्यायामाप्रमाणे योग्य आहार हा आपल्या आरोग्याचे चांगल्या पद्धतीने संरक्षण करत असतो. हा ताणालाही प्रतिराधक असतो. आयुष्यातील बिकट प्रसंगाना समोरे जाताना शक्ती निर्माण करण्यासाठी उष्मांकनी आवश्यकता असते. बऱ्याचदा लहाण मुले, प्रौढ गृहीनी, मजूर, पदाधीकारी आपासात बोक्काना व्हाय लवकर येतो असे सांगतात. या मागचे कारण म्हणजे सकाळचा नाष्टा न करणे हे आहे आणि फळे, पालेभाज्या व आहारात समावेश न करणे हे आहे. व्यक्तीला शरीराचे कार्य सुरळीतपणे चालवण्यासाठी शरीराला अनेक वेळ घटकांची आवश्यकता असते. अतिकमी खाणे आणि जास्त खाणे याचा संबंध लक्षणे व अशक्तपणावर होतो. उष्मांकनी 25 ते 30 पेशा कमी घरबंदीयुक्त पदार्थांचा आहारात उपयोग करावा. आहारात जीवनातील खनिजयुक्त पदार्थांचे प्रमाण कमी असेल तर अशक्तपणा, चिडचिडेपणा, चिंता, बी कॉम्प्लेक्सची कमतरता असते.



कोणत्याही गोष्टीचा अतिरेक, अतीकमतरता, आपल्या आहारात होवू न देणे, भरपूर पाणी पिणे, शांतपणे  
जिवन व पुरेची झोप घेणे. या सर्व नियमांचे पालन केल्यास ताणतणावाला आळा बसून निरोगी जीवन जगता येईल.

"टेन्शन ये ऐसा दिमक है जो इन्सान को

लकड़ी की तरह थोडा थोडा खाकर खत्म करता है।"

संदर्भ ग्रंथ

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२. सहृदय - डॉ. गुरुनाथ परळे
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# **TAX REFORM FOR DEVELOPING VIABLE AND SUSTAINABLE TAX SYSTEM IN INDIA**



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128





## Index

Title of The Paper	Name of The Author	Page No.
Impact of Goods and Services Tax on Indian Economy	Dr. Esha Jain	1-14
GST in India : Challenges and Prospects	Prof. Jayasheela .G	15-18
Impact on Direct Tax on Indian Economy	Ghazala Yasmin	19-23
Impact of Goods and Services Tax on Various Sectors of Indian Economy	Bushra Rahman	24-29-
Impact of GST on Various Sectors	Dr.Rajesh Bhausahab Lahane	30-35
Tax Structure in India: Reforms and Intriguing Facts	Dr.Yogesh L.Patinge	36-40
Analytical Study of Tax Revenue Collection in India	Dr. Kishor P. Bholane	41-45
The impact of GST on insurance sector in India	Mr . Sachin S. Rudrawar	46-50
Impact of Goods and Services Tax on Various Sectors in Indian Economy	Dr.Prof. Jawale Dnyaneshwar Vinayakrao	51-54
Value Addition and Goods and Service Tax	Rathi Satyakumar Gopikishan	55-58
To Study an Impact of GST on Automobile Industries in India. (Year; 2016- 2019)	Dr. Ajay N.Saratkar	59-63
A study of Demonetization & its impact on Indian Economy.	Prof. Dr. S.J. Jadhav Mr. Shyamsingh V. Raghuwanshi	64-67
A Study of Tax Payer's Awareness towards E-Filing of Income Tax Returns	Dr. G.N. Kathar	68-74
A Study of GST Implications on Indian Banking Sector	Dr. Lakshkaushik Dattatraya Puri	75-79
An Overview Impact of GST on Indian Economy	Dr. Patil Bhagyashri Dinesh	80-82
Demonetization and Tax System in India	Dr.Adgaonkar Ganesh Sudhakar	83-87
Impact of GST on Various Sectors in India	Dr. B.N. Mutkule	88-90
GST and its Impact on Logistics Industry in India	Chandak Pavankumar Vijaykumar	91-93
Impact of GST on Various Sector in India	Dr. Chavan Ashok Daulatrao	94-98
Impact of GST on Various Sectors in India	Mr. Dnyaneshwar Ankushrao Yewale	99-102
A Study of Advantages and Disadvantages of GST	Dr. Choudhari Rekha Laxmanrao	103-105





## OUR HERITAGE

ISSN (Online): 0474-9030 Vol-68, Special Issue-7

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# Demonetization and Tax System in India

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### Abstract

Demonetization has impacted the Indian Taxation system by making digitalization of payment and collection system. There is a drastic increase in income declaration, payment of tax, filing of return, search and seize procedure of Government. The present paper will reveal the change entered in Indian Taxation system after announcement of demonetization. The study is more focused on post demonetization impact on income tax return filing and tax collection and advance payment of Income Tax which has revealed that income tax growth increased.

**Keywords:-** Demonetization, Taxation, System, Growth.

### Introduction

"Demonetization is that the withdrawal of a specific sort of currency from circulation." Through demonetization the old currency is replaced by the new currency or a currency circulation is blocked. There are multiple reasons why a rustic demonetizes its currency; some reasons include checking the inflation, to curb the corruption and to market the cashless transactions. Recently the Indian government decided to demonetize the most important denomination notes i.e. 500-1000 Rupees notes, this step has been declared as a master stroke for the Indian economy by various experts. This is not the primary time that India has demonetized its currency, earlier it had been wiped out 1946 with the entire ban of Rs 1000 and Rs 10000 notes to deal with the unaccounted money i.e. black money. Second time it had been wiped out 1978 by Government headed by Morarji Desai, when Rs 1000, Rs 5000 and Rs 10000 notes were demonetized. The main objective of this step is to unearth the black money, to curb corruption, counterfeit currency also as terror financing. This step is taken into account because the biggest cleanliness drive against the black money within the history of Indian economy. As per RBI, 87% transactions in India are cash transactions and this loophole is employed by corrupted people to create a parallel economy with unaccounted money. This parallel economy helps in terror financing which successively hampers the expansion and development of country. Currently high- values notes account for total value of 86% of the notes in circulation in India. It is expected that this step will help in reducing the fiscal deficit of India and promote the cashless economy in India which may be easily monitored.

**Definition of Demonetization** Demonetization is an act of cancelling the tender status of a currency unit in circulation. Anticipating positive changes on the liquidity structure as an entire, nations often adopt Demonetization policy as a measure to counterbalance the present financial condition. Countries across the world have used Demonetization at some or the opposite point to regulate situations like inflation and to spice up economy. In November, Indian government banned the high denomination notes of Rs.1000 and Rs.500 as move to curb counterfeiting and money laundering.





## OUR HERITAGE

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### Objectives of the Study

1. To study about Demonetization
2. To study about Demonetization has affected the Income Tax Scenario in India
3. To review about Impact of demonetization on tax System

### Methodology

This study is descriptive and uses the exploratory technique. The data for the study data was collected from secondary sources like magazines, articles published online and offline on various newspapers and websites **How Demonetization has affected the Income Tax Scenario in India**. The cash was stashed away in underground bunkers, stitched into mattresses and left to remain crisp for such a time when it might be pumped back to the vicious underbelly of India's black money empire. For the black money hoarder, business was good and therefore the possibilities, endless. He was seemingly invincible and glib about it too. That was until November 8th. In what was an unprecedented exercise of powers by the govt, the writing was on the wall for anyone who was hoarding a fortune in 500 and 1000 notes.

Indeed, an unfathomable volume of currency circulates within the economy sans accountability like an intricate network of sewer pipes that ultimately drain into a couple of deep pockets at the expense of the sanctity of innocent taxpayers. What this inevitably does is make the taxation system adversarial and fewer reliant on business analytics for scrutiny.

This paradigm creates what's called the grey economy. It carries on legitimate business, but using cash so it can conceal income and pay lower taxes as against sector which is that the illegal business of taking bribes, capitation fees, ransom, protection money and such in cash. Such is that the nature of Black economy: it uses the cash it makes, but focuses more on assets and hoarding. It pushes up demand for property and gold. It hoards the cash locally and globally, treating it as a store useful. While the intent in both systems is to cover earnings and evade tax, the grey economy uses the cash to shop for goods and services and inflates prices for all of us making it an equally potent threat.

The unenviable job of managing this ugly network and creating liquidity falls on the banking industry. The ugliness of it lies within the extent and dissemination of unaccounted cash spread across many unscrupulous players using their accounts as storage tanks and siphoning off the water for future use, compounding the matter at each stage. The cash economy harms all folks by that specialize in storing money at every stage, instead of letting it flow during a stream, getting used only where it's needed.

Undisclosed cash that's pouring into bank accounts will enable the tax department to gather taxes. Taxpayers who have drawn cash for various uses, can deposit it all back as long as

### Impact of demonetization on tax System

Widening the tax base and collecting more taxes has been a priority for the current government at the centre. This government's two major economic disruptions—the introduction of goods and services tax (GST) and demonetization—were justified in the name of raising tax compliance among other things. However, these moves have not exactly turned out as planned and the government is set to miss its fiscal deficit target for 2018-19.

The Economic Survey released by the finance ministry earlier this year had lauded GST for widening the indirect tax base. The number of indirect tax payers rose by 50% in the first six months of GST implementation, estimated the survey, partly attributable to many small enterprises voluntarily choosing to be part of GST in order to avail input tax credits.





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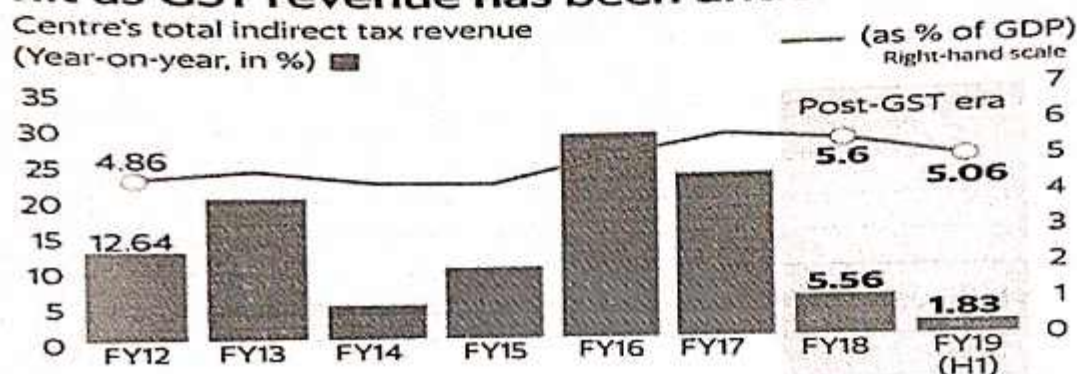


However, even with the wider base, GST collections have been underwhelming. Centre's total indirect tax collections in the post-GST era shows a marked decline. Indirect tax collections (accruing to the centre) in April to September 2018 grew by only 1.8% from a year earlier, much slower than the 5.6% growth seen in 2017-18 full year and even lower than above 20% growth witnessed in the previous two years.

Chart 1

### Centre's indirect tax collections have been hit as GST revenue has been underwhelming

Centre's total indirect tax revenue (Year-on-year, in %) ■



FY19 refers to only first half of the year, i.e. April to September. Indirect tax collections include GST revenue applicable to centre and other indirect taxes outside GST ambit. For years before FY18 (when GST was first introduced), indirect taxes mainly consisted of customs, excise and service tax.

Prior to GST rollout in July 2017, the centre's indirect taxes mainly consisted of customs duties, excise duties and repair tax, almost in equal proportion. Now, quite 60% of centre's tax revenue comes from GST.

While tax collections have lagged, tax collections are robust. Evidently, the demonetization shock in November 2016 did cause a rise in tax collections—both from individuals and firms. However, this increase in tax revenues after demonetization don't appear to be staggering enough or unprecedented to justify such a large-scale disruption. Part of the rise in tax collections in 2016-17, the year of demonetization, are often attributed to the Income Disclosure Scheme 2016, as an earlier Plain Facts story pointed out.

Further, the speed of increase in tax collections post demonetization has not been entirely unprecedented. The 18% rate of growth in direct taxes achieved in 2017-18 was almost like the expansion seen in 2010-11.





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### Conclusion

Thus, it's too early to conclude whether demonetization has led to any substantial or sustainable increase in tax compliance. The fact that quite 99% of all demonetized notes returned to the system also suggests that the exercise did not bring much "black money"—i.e. tax-evaded income—into the tax net. This is because only little portion of evasion is administered in cash.

A January 2018 research paper by R. Mohan et al. of the Centre for Development Studies (CDS) estimated that demonetisation could have taken out just 12% of the tax-evaded income in India. While the consequences of GST and demonetisation on tax-compliance appear unclear, what's clear is that the significant disruption these measures have caused. Demonetisation disrupted economic activity and hurt growth, especially in areas with high share of informal activity, consistent with a 2018 International Bank for Reconstruction and Development research paper. The paper shows that in districts with more informal activity, local gross domestic product (GDP) fell by 4.7 to 7.3 percentage points within the quarter after demonetization.

A recent Federal Reserve Bank of India (RBI) study further suggests that demonetization caused a "decline within the already decelerating credit growth of the MSME (micro, small and medium enterprises) sector". The same report also highlights how GST implementation hindered MSME sector's exports. Part from GST and demonetization, the government's zeal in raising tax income is additionally reflected in increased cases and surcharges, which aren't shared with states. The focus on taxation could seem excessive, as contrary to public opinion, India isn't necessarily a tax evading nation. India's tax to GDP ratio is respectable among developing countries, when adjusted for income levels, as a previous Plain Facts story has acknowledged. Despite of these efforts, fiscal deficit for 2018-19 is probably going to overshoot the targeted 3.3% of GDP given downbeat GST collections, disinvestment proceeds and limited scope to further tax petroleum products. A recent note by Upasna Bhardwaj, Suvodeep Rakshit and Avijit Puri, economists with Kotak Mahindra Bank, pegged the FY19 fiscal deficit at 3.5% of GDP, after factoring some reduction in government's planned capital expenditure.

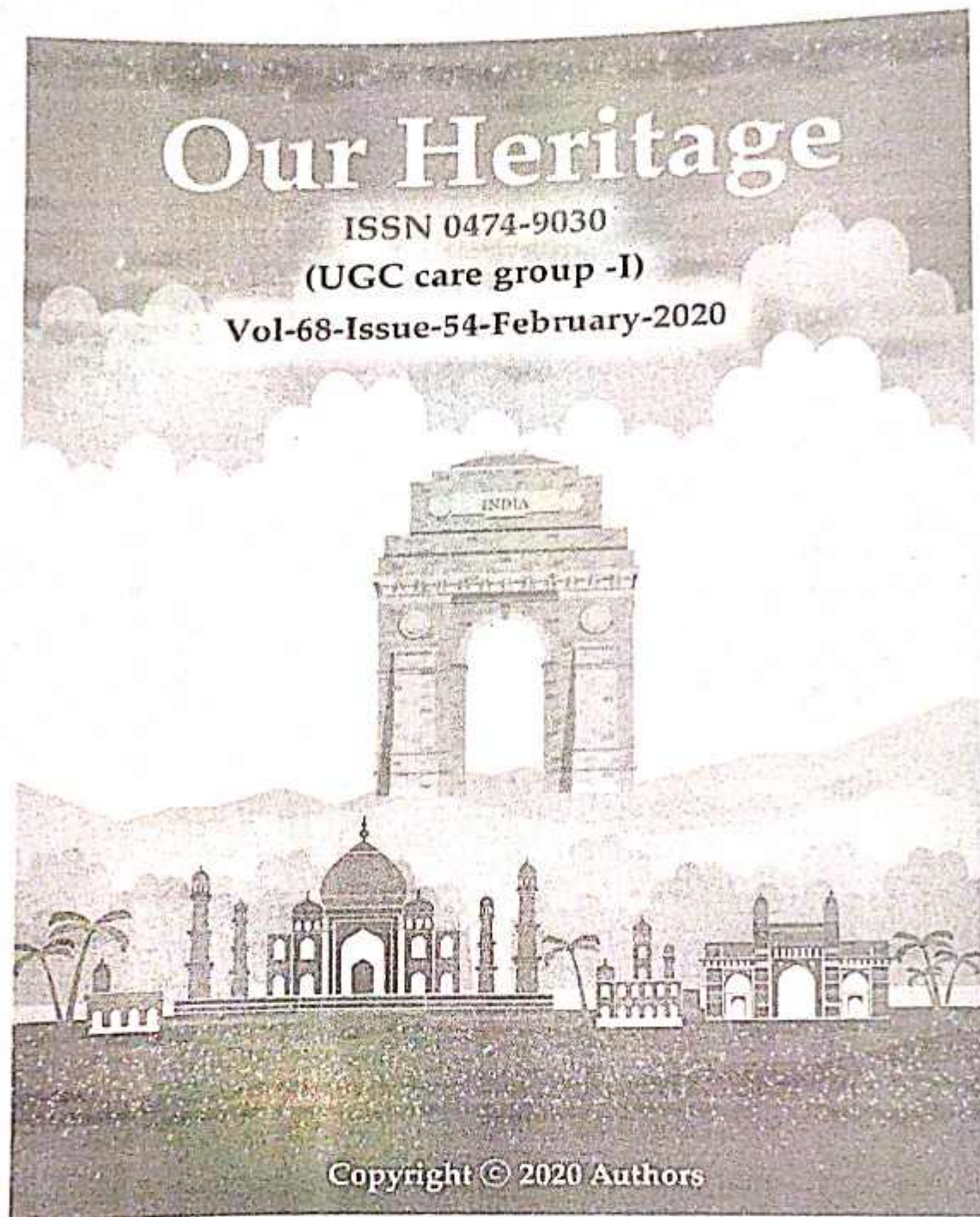
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Vol-68-Issue-54-February-2020



Sl. No	Author	INDEX Title of the article	Page No
1	Dr M. Muninarayanappa & Varna K B	"Issues And Effects Of Climate Change on Corporate Sector In Creating Glass Ceiling From Gender Perspective- A Study Based on Indian Context."	2
2	Deepak G	A Study on Merger of Banks in India	9
3	Dr. Geetha Pandey	Sustainability Matters- Design and Development of Multi- Functional Bamboo and Modal Fabrics for Active Swimwear	17
4	Veena K Thimmaiah	The Paradox of Sustainability In Fashion Industry	26
5	Deekshith Kumar M	Globalization And Its Dimensions	30
6	Racherla Swapna & Febina K S	A Study on Applications of IoT	34
7	Radhika T & Dr. Sandhya Ravi	Implementation of Karnataka's Traditional Folk Art "Togalu Gombeyaata" Prints on Textiles	39
8	Pratibha Singh	Social Media and its changing perspective of English	43
9	Venkatesan R & Nagaveni B R	"Cyber Security In It Modern Era"	47
10	Tanuja Hemchand	Mathematics – All Over the Creation! - A historical View point	53
11	Dr. Indu.GK	A Study of Properties of Natural Fibres	56
12	Lahari K V & Kalpana C	A Study On The Extent Of Economic Inequality By Gender Across Asia And The Pacific	68
13	Adgaonkar Ganesh Sudhakar	Social Entrepreneurship in India	77
14	Mamatha Subraya & Abharana	Social Transformation In India Through English Literature	82
15	Neeraja Srihari	The Connection between SWAYAM, E-Governance and ICT Networking	86
16	Bharathi.P.S & Ambily I P	Sustainable fashion - a new shift in the world of Fashion Industry.	89
17	Shilpa.R & Jayalakshmi B	A Comparative study on online store and in store shopping experience over Artificial Intelligence as an enhancing fashion channel	102





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### Social Entrepreneurship in India

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#### Abstract

Social entrepreneurship entails the utilization and creation of startup companies to reinforce awareness and are available up with solutions to cultural, social and environmental issues. The importance of social entrepreneurship is that it serves to point out profit and find success while helping others throughout the earth without the practice or involvement of misconception and fraud. In other words, social entrepreneurship is that the act of managing a business with the respect for others in mind- a business that believes in achieving success while improving the lives of others also because the environment during which we all live. The focus of the paper is to study the definition of Social Entrepreneurship, Importance, challenges faced by social entrepreneurs in India. Keywords:- Entrepreneurship, Business, Social And Environment Issues.

#### Introduction

In today's day and age, the expansion of the entrepreneurial world is rapidly increasing. Successful entrepreneurs often create a gateway to exciting new innovations that would greatly enhance the way we live. As they plan to achieving their financial goals and aspirations with the sale of their service or product, they're creating more job opportunities, helping their community and industry to flourish. Since entrepreneurs are considered national assets to the economy, they're often encouraged and assisted through local, state and federal agencies. This assistance helps them find success in their startups, allowing them to grow by bringing light and visibility to their business venture while providing them with support along the way. The type of assistance provided to entrepreneurs typically depends on the character of the industry they're entering or the service/product they're offering and the way it affects the expansion of society. With the increase in economic developments and therefore the increased use and growth of technology, entrepreneurs find it less challenging to determine their startup companies. For example, the demand for the web heightened over 20 years ago creating more opportunities for entrepreneurs. Since then, we've seen, become members, and made use of the accelerated amount of internet sites , social platforms, mobile apps, and other Wi-Fi driven services. These Internet ran businesses and creations became a standard way of life thanks to their convenience also as their ease and quickness to serve us. We have entrepreneurs to thank for the event and enhancement of Internet ran services and innovations.

#### Objectives of the Study

1. To study about social entrepreneurship
2. To study about Importance of Social Entrepreneurship and Social Entrepreneur
3. To review about the challenges faced by social entrepreneurs in India





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### Methodology

This study is descriptive and uses the exploratory technique. The data for the study data was collected from secondary sources like magazines, articles published online and offline on various newspapers and websites.

### What is Social Entrepreneurship?

Social Entrepreneurship is that the profession of enterprising the method towards bringing about major social changes within the society for the greater good of the society. Social entrepreneurs are the catalyst behind the change, challenging the established order by extracting the unforeseen opportunities and changing the planet for the higher . These agents of change are literally filling the loopholes of the bureaucracies and therefore the government.

### What does a social entrepreneur do?

The role of a social entrepreneur is to enhance the social values of a society while a business entrepreneur aims at profit. Social entrepreneurs aren't like non-government organizations who aim to realize short—term goals — they struggle to realize broad-based goals so as to form future differences. They address that problem of the society which is hindering within the overall growth of the society by providing innovative solutions to the matter . They recognize those shortcomings which aren't working then altering those shortcomings into the strength of the society. They detect those resources which make the society better and also feel the affected people are a part of the answer instead of passive beneficiaries. They convince the society to adopt those innovative solutions.

### Importance of Social Entrepreneurship and Social Entrepreneur

Social entrepreneur are the visionary change agent, thinker and disrupter who is functioning for betterment of society and for the matter which is faced by the society. They bring positive change in society by their efforts and initiative. Social entrepreneur's idea and creativity can change the social problem and brings disruptive change in society. Social are the pioneer who initiates the idea or solution for the existing social problem and which is faced by the society. They are resolving this issue and problem with bunch of comparable interested people. They generally attempt to gather right people in team then choose the matter solving by taking actions and spreading awareness in society.

- Social Entrepreneurs are innovators
- Social Entrepreneurs are change agent
- Social Entrepreneurs are dreamers
- Social Entrepreneurs are leader
- They analyze these social issues and problems
- they're inspiration and motivator for the various upcoming social entrepreneurs.

### Five key challenges faced by social entrepreneurs in India

#### 1. Raising funds in times of austerity

Across the world, investors and donors are looking for rapid and larger impact growth. Not something that all social entrepreneurs can promise to deliver. The overarching reason behind this





## OUR HERITAGE

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Special Issue on " Social Entrepreneurship in India"



trend may be a sluggish global economy, but its ramification on the social sector is huge. often, social enterprises work in areas where the gestation period for new product development or behaviour change is high. In this situation, investor/donor focus on short term - higher yield situations makes fund raising difficult. As a result, several social entrepreneurs end up vying for a slice of the same pie, and end up going to family and friends for money or crowdsourcing. Successful social entrepreneurs are able to raise funds by clearly demonstrating how they are different from other players and staying focused in a specific area. They are also able to stay connected with the ecosystem using digital communication interspersed with one-on-one interactions in key events. Moreover, their communication mirrors the needs of donors / investors in an explicit manner with easy-to-relate metrics of performance. In other words, there is a science to fund raising, and needs to be a key focus area for the founders.

### 2. Building and following a ground up business plan

All enterprises need a strong ground-up business plan to help achieve milestones. The rigour of building and following a plan that is based on market realities and customer insight is critical. It ensures adequate focus on both raising funds and meeting operational targets. Founders also find themselves more in tune with the market and their end customer requirements as they chase well-defined business targets and part of the scaling up process. Plus, an action-oriented team with a strong business plan instills confidence in the investor community, as eventually the social enterprise will need to become profitable. However, many social entrepreneurs are visionaries who do not have much experience in running a business. This aspect of planning and evaluating performance vis-à-vis metrics in a systematic manner may be a new experience for them. Now hiring a senior resource, who will stay focused on meeting business numbers, is an ideal option, but it may not be feasible for cash-strapped companies. For them, I recommend the founders commit to a business plan and review it weekly. This will ensure barriers and triggers to growth are captured and acted upon in a timely manner. If funds permit, a business consultant can facilitate the transition and help bring about the necessary change.

### 3. Investing in the right people

Hiring the right people to compliment the skill set of founders is an essential part of scaling up for every enterprise. The social sector is no different as the skills required to sell, brand, and manage financials are specialised. Many cash-strapped founders over-extend themselves, multi-tasking product development, fund raising, and running the business. While this may work in the short run, it eventually leads to sub-optimal performance. As without the right team – an organisation will not grow. A social entrepreneur in the environment sector once informed me that they were unable to afford the right people. Plus, expensive resources don't perform in the short run (as they don't know the category) and leave because they don't meet targets. This leads to churn and re-hiring. So, founders prefer to do both operations and fund raising by themselves. Eventually, this company, which has great products, ended up stagnating and becoming limited to specific geographies. In my experience, all companies who want to scale up face these challenges. The successful ones find a solution that works for them. Without the right people and a proper, fact-based business plan, growth is difficult in the long run.

### 4. Process Management & Planning for Growth

Firms that offer good products and services quickly grow and reach an inflexion point. In this situation, process management comes into play and companies who have not planned for growth often end up missing the bus. We have all heard of a great social enterprise doing good work, but





## OUR HERITAGE

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limited to specific geographies. The primary reason they are not able to scale up is lack of funds or the founders' limited bandwidth. Take for example a social enterprise that offers housekeeping services by differently-abled people. As their brand offering is fulfilled by front-line staff with specific needs, they need to invest in training, monitoring processes, and equipment (if any). Without planning for the above and ensuring a pipeline of staff across locations, they will not be able to grow. Personally, I have learnt a lot from MNCs who invest in great processes to ensure profitable growth with fewer people. They also heavily invest in technology to ensure process efficiency. So, while a startup / social entrepreneur may not be able to replicate Unilever's manufacturing processes – staying process oriented at the start of the entrepreneurship journey is extremely helpful.

### 5. Balancing the vision with business

A lot of social entrepreneurs start off as activists. And over a period of time, create a social enterprise that is in line with their passion. These founders need to draw a line between volunteering for a cause and running a profitable business. And it's difficult. A social entrepreneur once told me she never gets paid her 'market rate' for consulting engagements because as an activist, she often gives the knowledge away for free. This is a typical conundrum. Sharing knowledge is necessary for change and creates credibility, but it should not be at the expense of growth. On the other hand, once a social enterprise scales up and overcomes various hurdles, there is a lot of pressure on the founders to stay profitable. This may lead them to dilute their vision and focus on RoI and compete with other 'for profit' businesses. A healthtech entrepreneur confided in me that it was so much easier to sell her company's innovative service to corporate hospitals rather than government ones. But she chose the difficult path as her offering was designed to make the lives of the poor easier. Not just for easily accessible rich people. So, it is important for social entrepreneurs to have a mission statement, which they review on a regular basis and stay true to the same.

### Conclusion

Social enterprises play a key role for the development of our country. They help alleviate poverty, bring about hope, and provide people access to a brighter future. However, like all organizations, social enterprises face challenges while scaling up. Most of them are related to funding, people, process, and technology. In order to grow, the founders need to acknowledge the issues and work towards addressing the same. Moreover, such enterprises don't need to hire long-term resources to solve specific problems. They can easily tap into a large base of experts who are willing to share their skills and knowledge for a good cause. But at the end of the day, it all depends on the founders and their vision. If the vision is strong enough and the founders are resourceful, the enterprise will succeed and thrive.

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## COMPARATIVE STUDY OF VARIOUS CIRCUIT DESIGNING SPICE SOFTWARE'S - A SIMULATION STUDY PERFORMED USING TRIANGULAR WAVE GENERATOR

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### ABSTRACT:

*This paper addresses performance of triangular wave generator using different spice software's. Traditionally, electronic circuit design was verified by building prototypes, subjecting the circuit to various stimuli and then measuring its response using appropriate laboratory equipment's. Prototype building is somewhat time consuming, but produces practical experience from which we judge the manufacturability of the design. Computer programs that simulate the performance of an electronic circuit provide a simple cost effective means of confirming the intended operation prior to circuit construction and of verifying new ideas that could lead to improve the circuit performance.*

**KEYWORDS:** *Triangular wave generator, Transient analysis, Simulation.*

### I. INTRODUCTION:

The evolution of electronics technology almost in to every facet because of low cost, reliability and ease of interface [1]. The electronic industry is getting progressively more and more efficiently at developing new products in wide ranges and verity of circuits in service of human being. We also saw the more and more products coming into the market with shorter time and product lives and sometimes float at times [2]. Hence low cost circuit design, with an accurate, linear and faster testing technique is

addressed. A verity of electronic components is commercially available which plays an important role in design and development of accurate circuit performance and optimum reliability [3]. Comparative study of various spice software's by using triangular wave generator is made by using the transient mode of analysis is discussed in this paper.

### II. SIMULATION CONCEPT:

Electronic simulation of circuit function is now a common practice in the design both of individual circuits and complete systems. The more of the circuit a designer can simulate, the faster

the circuit can get in to production and hence to market [4]. SPICE software's contains models for common circuit elements, active as well as passive, and it is capable of simulating most electronic circuits. It is versatile program and is widely used both in industries and universities [5]. The circuit performance and its reliability in any circuit to minimize failure can be tested. To meet the required standards of a circuit and hence quality instrument, the circuit analysis is performed. In case of any failure or problems observed, one can easily redesign it by modifying the very same circuit in few minute using highly sophisticated



simulation tools [6]. With adequate number of design and redesign interactions on a computer platform where it consume only a small amount of time and no material. The design can be made robust. The simulated circuit can then be subjected to different analysis i.e. actual tests. The performance and reliability of circuit and instrument definitely shows results of up most levels. Thus it is the faster and low cost cumbersome process [7]. The design center software package has three major interactive programs; Schematics, Spice and probe. Schematics are a powerful program that lets you build circuits by drawing in a window on the screen. Spice analyzes the circuit created by schematics and generates voltage and current solutions. Probe is a graphic postprocessor that allows you to display plots of parameter such as voltage, current, impedance and power [8].

### III. Theory of Triangular Wave Generator Circuit:

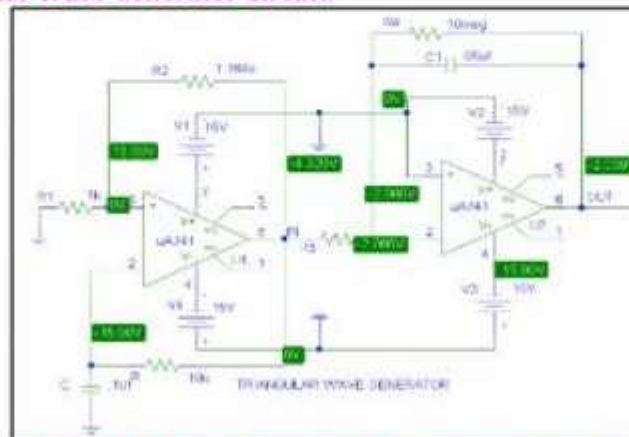


Figure 1 Triangular wave form generator circuit

The simplest method of forming a triangular waveform generator is to integrate the square waveform. By connecting an integrator to a square waveform generator, a triangular waveform can be generated as shown in figure 1

In this circuit the astable multivibrator output is connected to an integrator. The frequencies of the square wave and the triangular waveforms are identical.  $R_3C_1$  is chosen equal to  $T$  and the  $R_4$  10M $\Omega$  resistor shunts the capacitor  $C_1$  to obtain a triangular waveform.

The operation can be described by assuming that the output of op-amp  $A_1$  is at  $+V_{sat}$ . this will force a current  $+V_{sat} / R$  through the integrator capacitor  $C$  causing the integrator output to decrease linearly. This will continue until the non-inverting terminal voltage of  $A_2$  crosses zero and becomes negative. At this instant,  $V_0 = -V_{sat}$  and the current through  $R$  and  $C$  will reverse direction. The integrator output starts increasing. This continues till the voltage  $V^+$  crosses zero and becomes positive, thereby making  $V_0' = +V_{sat}$  the cycle thereafter repeat itself.

Let  $V_0' = +V_{sat}$  at  $t = t_0$ . The current flowing in to the integrator is constant, given by  $I^+ = +V_{sat} / R$  and the integrator output is-

$$V_0(t) = V_0(t_0) - \frac{1}{C} \int_{t_0}^t I dt$$

$$V_0(t) = V_0(t_0) - I \frac{(t-t_0)}{C}$$

The voltage  $V^+$  can be obtained by superposition. Therefore,

$$V^+(t) = \frac{V_{sat} R_1}{R_1 + R_2} + \frac{V_0 R_2}{R_1 + R_2}$$

When  $V_i$  goes through zero and becomes negative, the comparator output  $V_{01} = -V_{sat}$  at this instant  $V_i(t_1) = 0$  or  $V_0(T_1) = - (R_1 / R_2) V_{sat}$ , the current supplied to the integrator for  $T_2 > t > T_1$  is  $I = (-V_{sat}) / R$ .

The integrator output becomes a positive going ramp with the same slope as the negative going ramp. At a time  $t = T_2$

$$V_0(T_2) = \left(\frac{R_1}{R_2}\right) V_{sat}$$

The comparator switches again to  $+V_{sat}$  and the cycle repeats. The frequency can be determined by substituting the values in the  $V_0(t)$  relationships. At  $t = T_1$ ,

$$V_0(T_1) = -\left(\frac{R_1}{R_2}\right) V_{sat}$$

Hence

$$-\left(\frac{R_1}{R_2}\right) V_{sat} = \left(\frac{R_1}{R_2}\right) V_{sat} - \left(\frac{V_{sat}}{RC}\right) \frac{T}{2}, \text{ since } t_1 = \frac{T}{2}$$

$$\text{Therefore } T = 4RC \frac{R_1}{R_2}$$

Or the frequency of the triangular waveform,

$$f = \frac{R_2}{4RCR_1}$$

The amplitude can be controlled by the ratio  $(R_1 / R_2) V_{sat}$ .

The amplitude can be controlled by a back to back connected Zener diode combination at the output of the comparator [9, 10].

#### IV. Triangular Wave Form Generator Output in Different Software:

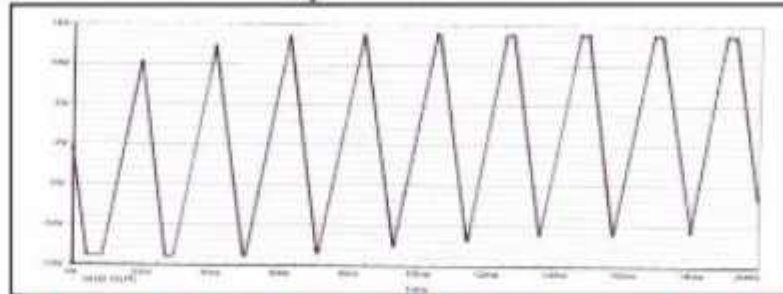


Figure 2 Output Voltage of Triangular wave form generator using PSpice

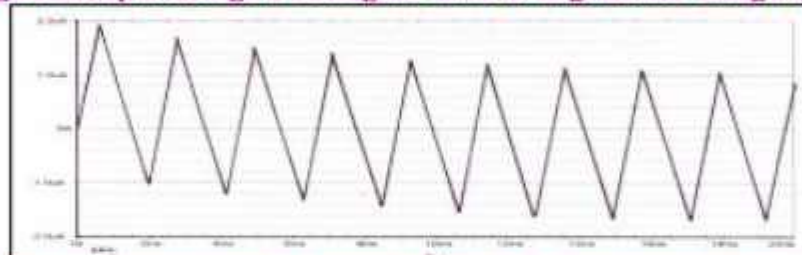


Figure 3 Output current of Triangular wave form generator using PSpice



- Here wave starts from 200 ns. At this time the potential is 8.1905 mV.
- Initially at the positive half we get the sharp peak but opposite to it there is thick peak but after the time 7.1277 ms at the positive half we get the thick peak but opposite to it there is sharp peak.
- At the starts Pulse goes to -Ve amplitude.
- Initially at the positive amplitude peak potential is 10.374 V and it increases up to the 13.853 V peak potential, but at the negative amplitude initial peak is at the maximum Potential i.e. -13.853 V and up to 20ms it decreases to the -9.1836 V.
- Frequency is near about 460 Hz.
- The potential and currents are out of phase shown in the above graph.
- Current wave starts at 200 ns.
- Initially at the positive amplitude peak current is 1.9143  $\mu\text{A}$  and it decreases up to the 919.120  $\mu\text{A}$  peak current, but at the negative amplitude initial peak is at the -1.0340  $\mu\text{A}$  and up to 19.204 ms it decreases to the -1.7145  $\mu\text{A}$ .
- Minimum current is -1.7145  $\mu\text{A}$ .
- Maximum current is 1.9143  $\mu\text{A}$  [11].

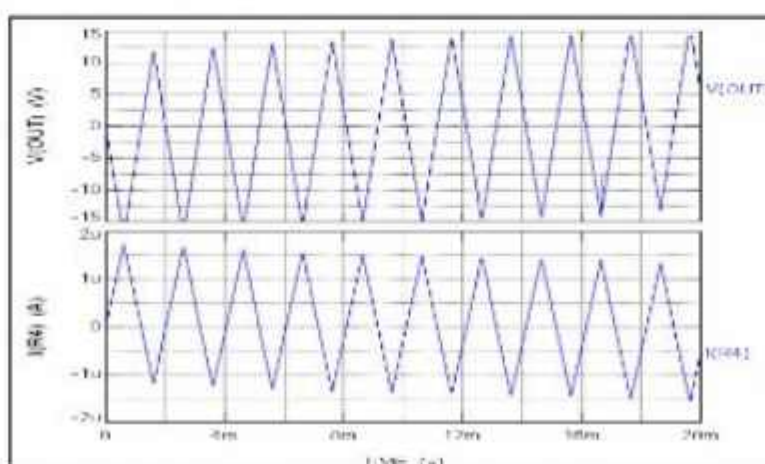


Figure 4 Output potential & current of Triangular wave generator using Top Spice

- Here the wave starts from 27.714  $\mu\text{s}$ . At this time the potential is -803.58 mV.
- Initially at the positive half we get the sharp peak but opposite to it there is thick peak but after the time 17.63 ms at the positive half we get the thick peak but opposite to it there is sharp peak.
- At the starts Pulse goes to -Ve amplitude.
- Initially at the positive amplitude peak potential is 11.71 V and it increases up to the 14.30 V peak potential, but at the negative amplitude initial peak is at the maximum Potential i.e. -14.796 V and up to 20ms it decreases to the -13.13 V.
- Frequency is near about 485 Hz.
- The potential and currents are out of phase shown in the above graph.
- Current wave starts at 27.714  $\mu\text{s}$ .
- Initially at the positive amplitude peak current is 1.71  $\mu\text{A}$  and it decreases up to the 1.32  $\mu\text{A}$  peak current, but at the negative amplitude initial peak is at the -1.23  $\mu\text{A}$  and up to 19.65 ms it decreases to the -1.55  $\mu\text{A}$ .
- Minimum current is -1.55  $\mu\text{A}$ .
- Maximum current is 1.71  $\mu\text{A}$
- In this software, dead time is 27.714  $\mu\text{s}$  [12].

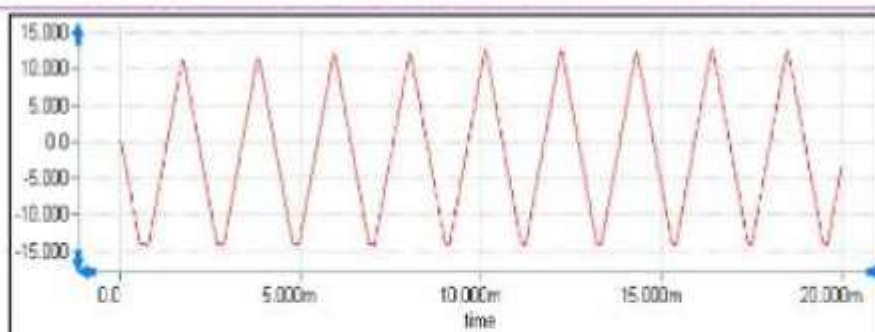


Figure 5 Output potential of Triangular wave generator using B2 Spice

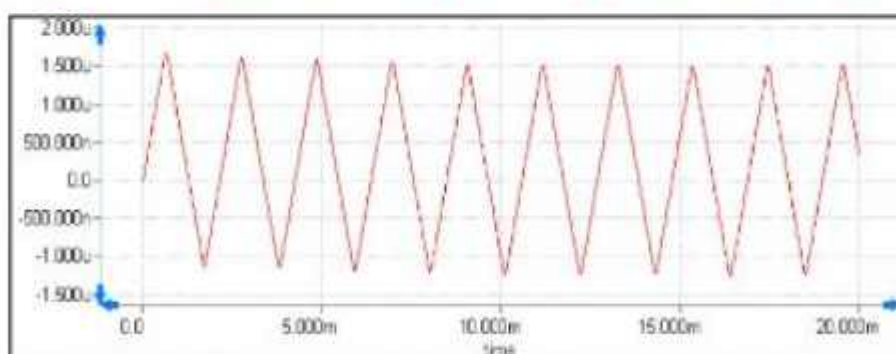


Figure 6 Output current of Triangular wave generator using B2 Spice

- Here wave starts from 0 s. At this time the potential is 0.002 V.
- At the positive half we get the sharp peak but opposite to it there is thick peak.
- At the starts Pulse goes to -Ve amplitude.
- Initially at the positive amplitude peak potential is 11.204 V and it increases up to the 12.549 V peak potential, but at the negative amplitude initial peak is at the maximum Potential i.e. -14.136 V and up to 20 ms it increases to the -14.133 V.
- Frequency is near about 475 Hz.
- The potential and currents are out of phase shown in the above graph.
- Current wave starts at 0 s.
- Minimum current is -1.45  $\mu\text{A}$ .
- Maximum current is 1.700  $\mu\text{A}$ .
- In this software, dead time is 0 s.
- Period of the wave is 2.1 ms [13].

Table 1 Data for simulated triangular wave generator circuit in PSpice, Top Spice and B2 Spice

Software	Negative Maxima	Positive Maxima	Start Time	Starting potential
PSpice	-13.856	13.853	0.0002	8.1905
Top Spice	-14.802	14.32	0.028	-803.589
B2 Spice	-14.138	12.549	0	0



**Table 2 Data for simulated triangular wave generator circuit in PSpice, Top Spice and B2 Spice.**

PSPICE		TOPSPICE		B2 SPICE	
Negative Potential	Positive Potential	Negative Potential	Positive Potential	Negative Potential	Positive Potential
-13.856	10.374	-14.796	11.71	-14.136	11.204
-13.853	12.236	-14.798	12.334	-14.139	11.446
-13.853	13.582	-14.796	12.789	-14.138	11.893
-13.778	13.853	-14.797	12.97	-14.138	12.089
-12.674	13.853	-14.61	13.75	-14.133	12.367
-11.892	13.853	-14.44	14.15	-14.134	12.349
-11.344	13.853	-14.51	14.22	-14.136	12.18
-10.985	13.853	-14.26	14.3	-14.125	12.549
-10.73	13.853	-13.73	14.29	-14.133	12.375
-9.2	13.853	-13.13	14.3	-14.133	12.375

**Table 3 Data for period, frequency, % output wrt theoretical value and theoretical value of frequency of simulated Triangular wave generator circuit in Pspice, TopSpice & B2 Spice.**

Triangular wave generator				
Software	Period in ms	Simulation frequency in Hz	% output wrt theoretical value	Theoretical value of frequency in Hz
PSpice	2.1711	460	79.04	582
Top Spice	2.062	485	83.34	
B2 Spice	2.105	475	81.61	

## V. RESULTS AND DISCUSSION:

This paper reports that the results obtained after simulating the triangular wave generator using astable multivibrator ( same circuit ) using different spice software test tools i.e. PSpice, B2 Spice and Top Spice. We observed the Positive maxima, negative maxima, starting potential and starting time for the triangular waves are different in different software's are given in Table 1. Table 2 shows us the peak to peak -Ve & +Ve potential & Table 3 Data for period, frequency, % output wrt theoretical value and theoretical value of frequency in different software's. The results obtained after performing simulation and theoretical results are not matching exactly, there is little bit variation. These software's avoids the complex, cumbersome, cyclic testing procedure for a newly developed product.

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## Study of Molecular Interaction in Binary Mixture of Lorazepam with Methanol Using Bruggeman Model

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### ABSTRACT

The dielectric relaxation parameters of Lorazepam with Ethanol in the microwave frequency range of 10MHz to 50MHz have been determined using time domain reflectometry technique. The Tektronix DSA8300 sampling oscilloscope sampling main frame with the dual channel sampling module 80E10B has been used for these measurements. The time dependent data is analyzed to obtain complex reflection coefficient. The complex permittivity spectra obtained by applying bilinear calibration method. The Bruggeman parameters are obtained using static dielectric constant. It is observed that  $f_R$  shows a small deviation to upper side from the ideal Bruggeman behavior for every temperature studied of Lorazepam with Methanol as binary mixture.

**KEYWORDS :-** Lorazepam, Methanol, Time domain reflectometry, Dielectric relaxation, Bruggeman factor.

### INTRODUCTION

The dielectric relaxation measurement at microwave frequencies have provided an effective means of studying mechanism of molecular process and intermolecular interaction between the binary mixtures of the organic compounds [1-5]. The Bruggeman parameter of binary polar liquids provides information regarding solute-solvent intermolecular interaction between the molecules.

Lorazepam, is a medicine sold under the brand name Ativan, Tavor, Temesta, among others. It is used to treat anxiety disorders, trouble sleeping. Lorazepam is also used, along with other



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treatments, for acute coronary syndrome due to cocaine use [6]. Methanol is a clear, colorless liquid. It has an alcoholic or repulsive odor, flammable. Methanol mixes easily with water. It occurs naturally in humans, animals and plants. Many fruits, vegetables, fermented drinks and soda provide a source of methanol in the diet. Methanol is an important commercial chemical. It is used as a solvent [7].

In this work we report the dielectric study of Bruggeman factor of Lorazepam with Methanol binary mixture at 20% of volume fraction concentration and 283, 288, 293 and 298K temperature.

**Table 1.** Physical constant of pure liquids.

Name of Compound	Mol. Formula	Literature Value of $\epsilon_s$	Mol. Wt. g/mol	Density in g/cm <sup>3</sup>	Dipole Moment $\mu$ D	R.I.
Lorazepam	C <sub>15</sub> H <sub>10</sub> Cl <sub>2</sub> N <sub>2</sub> O <sub>2</sub>	N.A.	321.2	1.52	N.A.	1.60
Methanol	CH <sub>3</sub> OH	32.7	32.04	0.792	1.69	1.3314

## EXPERIMENTAL

### A. Chemical and sample preparation

The chemical used in the present work are Lorazepam and Methanol is of spectroscopic grade, obtained commercially with 99% purity and used without further purification. The solutions were prepared at six different compositions in steps of 20 % by volume. These volume fractions are converted to mole fractions for further calculations. Using this volume percentage the weight fraction is calculate [8] as

$$X_A = \frac{V_A \rho_A}{[(V_A \rho_A) + (V_B \rho_B)]}$$

where,  $V_A$  and  $V_B$  are the volume and  $\rho_A$  and  $\rho_B$  is the density of liquid A(Atarax) and B (other chemical) respectively.

### B. T.D.R. specification, Time domain reflectometry set up and data acquisition.

The Tektronix DSA8300 sampling oscilloscope sampling main frame with the dual channel sampling module 80E10B has been used for time domain reflectometry. The sampling





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module provides 12ps incident and 15ps reflected rise time pulse. The coaxial cable used to feed pulse has 50 Ohm impedance, inner diameter of 0.28mm and outer diameter of 1.19mm. Sampling oscilloscope monitors changes in pulse after reflection from end of line. Reflected pulse without sample  $R_1(t)$  and with sample  $R_s(t)$  were recorded in time window of 5 ns and digitized in 2000 points. To minimize the signal to noise ratio the signal reflected is obtained from 512 samples after an optimum average of 100 times for each record. The subtraction  $[p(t) = R_1(t) - R_s(t)]$  and addition  $[q(t) = R_1(t) + R_s(t)]$  of these pulses are done in oscilloscope memory. These subtracted and added pulses are transferred to PC through compact disc for further analysis [9].

### C. Data analysis

The time dependent data were processed to obtain complex reflection coefficient spectra,  $\rho^*(\omega)$  over the frequency range from 10 MHz to 50 GHz using Fourier transformation [10,11] as

$$\rho^*(\omega) = \left[ \frac{c}{j\omega d} \right] \left[ \frac{p(\omega)}{q(\omega)} \right]$$

Where,  $p(\omega)$  and  $q(\omega)$  are Fourier transforms of  $[R_1(t) - R_s(t)]$  and  $[R_1(t) + R_s(t)]$ , respectively.  $C$  is the velocity of light,  $\omega$  is angular frequency and  $d$  is the effective pin length and  $j = \text{root } (-1)$ . The complex permittivity spectra [12]  $\epsilon^*(\omega)$  were obtained from reflection coefficient spectra  $\rho^*(\omega)$  by applying a bilinear calibration method. The experimental values of  $\epsilon^*(\omega)$  are fitted by Debye equation [13].

$$\epsilon^*(\omega) = \epsilon_\infty + \frac{\epsilon_0 - \epsilon_\infty}{1 + j\omega\tau}$$

where,  $\epsilon_0$ ,  $\epsilon_\infty$  and  $\tau$  as fitting parameters. The value of  $\epsilon_\infty$  was kept to be constant as the fitting parameters are not sensitive to  $\epsilon_\infty$ . A non-linear least squares fit method [14] used to determine the values of dielectric parameters.

## RESULT AND DISCUSSION

The static permittivity of two component mixture must lie somewhere between two extremes corresponding to static permittivity of two liquids. In order to understand the dipole interaction in the mixture of two liquids, a various mixture formulae have been proposed [15,



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16]. Bruggeman mixture formulae [16-18] can be used as first evidence of molecular interactions in binary mixture. This formula states that static permittivity of binary mixture ( $\epsilon_{sm}$ ), solute A ( $\epsilon_{sA}$ ) and solvent B ( $\epsilon_{sB}$ ) can be related to volume fraction of solvent (V) in mixture as  $f_B = 1 - V$

$$f_B = \left( \frac{\epsilon_{sm} - \epsilon_{sB}}{\epsilon_{sA} - \epsilon_{sB}} \right) \left( \frac{\epsilon_{sA}}{\epsilon_{sm}} \right)^{1/3} = 1 - V$$

According to above equation linear relationship is expected in Bruggeman factor  $f_B$  and (V). Any deviation from this linear relation indicates molecular interactions. Experimentally, it was found that the Bruggeman factor deviates from the linear behavior. It was proposed to modify the model as follows [19]

$$f_B = \left( \frac{\epsilon_{sm} - \epsilon_{sB}}{\epsilon_{sA} - \epsilon_{sB}} \right) \left( \frac{\epsilon_{sA}}{\epsilon_{sm}} \right)^{1/3} = 1 - [a - (a - 1)V]V$$

In this model, it is assumed that the volume fraction V is modified by a factor  $a - (a - 1)V$  in the mixture due to solute – solvent interaction. The value of  $a=1$  corresponds to the Bruggeman's equations. The value of  $a$  can be determined by statistical technique of least square fit method [20].

**Table: 2.** Temperature dependent dielectric parameters for binary mixture of Lorazepam with Methanol.

Mole Fraction of Lorazepam	283K		288K		293K		298K	
	$\epsilon_s$	$\tau$ (ps)	$\epsilon_s$	$\tau$ (ps)	$\epsilon_s$	$\tau$ (ps)	$\epsilon_s$	$\tau$ (ps)
0	33.27	56.25	32.03	51.7	31.69	49.94	32.12	48.81
0.046	34.46	64.87	33.85	57.24	33.58	53.14	33.52	52.94
0.113	38.14	68.59	36.14	60	34.32	55.59	34.14	54.51
0.223	40.58	78.1	38.96	67.71	38.45	57.55	37.35	57.59
0.434	45.87	77.36	43.76	70.07	41.98	58.33	41.42	53.6
1	58.96	81.78	53.47	71.66	52.58	67.13	48.43	59.27





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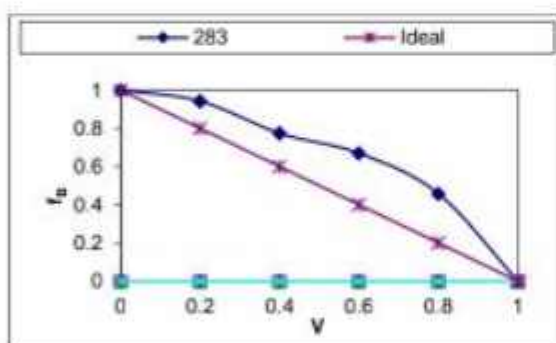
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The Bruggemen factor which is the ratio of theoretical value of static dielectric constant computed from Bruggemen mixture formulae and practically obtained values has been obtained [21]. A linear relationship has been expected from the Bruggemen factor values, which gives a straight line when  $f_B$  plotted against volume fraction. However the experimental values of  $f_B$  were found to deviate from the linear relationship. The nonlinear relationship of Lorazepam with Methanol system suggest an intermolecular interaction takes place in the mixed components. It is assume that volume fraction in the mixture is modified by a factor  $[a-(a-1)\phi]$ . This modification may be due to the structural rearrangement of solute molecules in the mixture. The value of 'a' contain information regarding the change in orientation of solute molecules in the mixture. The value of 'a' determined from the least square fit method, for all the studied system. The value of 'a' = 1 corresponds to ideal Bruggemen mixture formulae. The deviation from unity relates to corresponding mixture interaction [22]. The parameter 'a' in the modified Bruggemen model also provide information regarding nature of molecular interaction as [23]

1. The straight line from (0,1) to (1,0) represents noninteraction between solute – solvent system. In such case, the value of parameter 'a' will be 1.
2. The deviation to the upper part of the straight line indicates that effective volume of the solvents gets enhanced in presence of solute. The value of 'a' becomes less than one in such case.
3. The deviation to the lower part of the straight line indicates reduction of effective volume and value of the parameter 'a' gets larger than one.



**Figure 1:** The Bruggeman plot for Lorazepam with Methanol at 283K



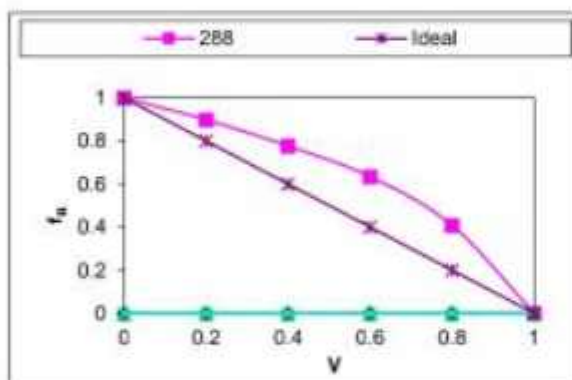
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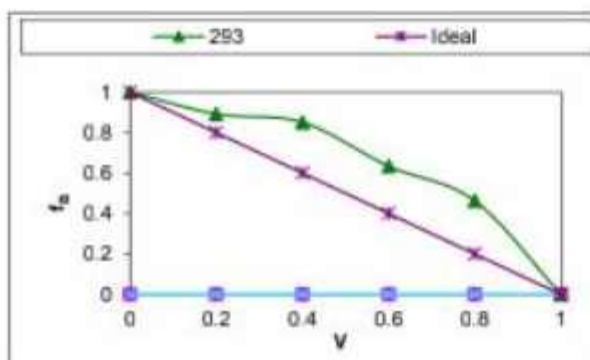
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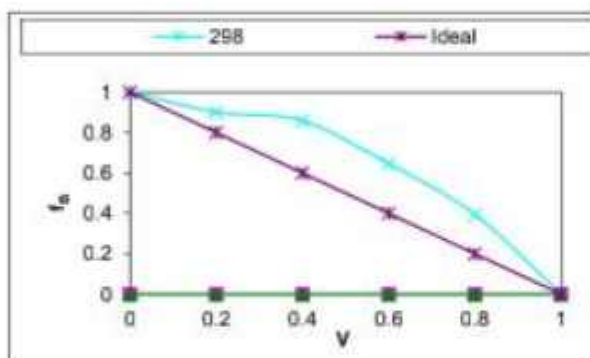
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**Figure 2:** The Bruggeman plot for Lorazepam with Methanol at 288K



**Figure 3:** The Bruggeman plot for Lorazepam with Methanol at 293K



**Figure 4:** The Bruggeman plot for Lorazepam with Methanol at 298K





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Figure shows the Bruggeman plot for Lorazepam with Methanol, volume fraction of Lorazepam ( $V$ ) against Bruggeman factor  $f_B$  at particular temperature  $K$ . Linear line shows expected ideal behavior, small deviation line shows the experimental obtained behavior.

It can be seen from figure 1, 2, 3 and 4  $f_B$  shows a small deviation to upper side from the ideal Bruggeman behavior [21]. Indicate that effective volume of the solvents gets enhanced in presence of solute. The value of 'a' becomes less than one in such case. This confirms the weak intermolecular interaction in the mixture. Furthermore values of ( $f_B$ ) increase with increase in temperature and decrease in volume fraction of Diazepam, which shows temperature dependent nature of molecular interactions [24].

## CONCLUSION

It can be concluded that  $f_B$  shows a small deviation to upper side from the ideal Bruggeman behavior of Lorazepam with Methanol in binary mixture. The interaction of the mixture is discussed using Bruggeman model at four different temperatures is weak and nature of molecular interactions is temperature dependent.

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### Study of RC Coupled Amplifier using PSPICE

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#### Abstract

*This paper addresses simulation is necessary for various types of circuit analysis. Traditionally electronic circuit design was verified by building prototypes, subjecting the circuits to various stimuli and measuring its response using appropriate laboratory equipment's. It is time consuming, instead of this if we use various SPICE software's, we have study the performance of the RC coupled amplifier circuit using the PSPICE. Virtual results are very close to the actually build circuits. It gives new ideas that could lead to improve the circuit performance.*

**Key words:-**PSPICE, Virtual results, Transient Analysis

#### Introduction

The RC coupled transistor amplifier circuit is the most popular circuit because it is cheap and excellent audio fidelity over wide range of frequency. It is usually employed for the voltage amplification. The figure shows the screen shot of the RC coupled amplifier circuit drawn in PSPICE software, in simulating condition.

**Design:-**For to build the circuit we have used 10 volt D.C. battery, R<sub>1</sub> is 20K $\Omega$ , R<sub>2</sub> is 5K $\Omega$ , R<sub>C</sub> 2K $\Omega$ , R<sub>E</sub> 500  $\Omega$ , R<sub>in</sub> 10 K $\Omega$  and R<sub>out</sub> 10K $\Omega$ , C<sub>in</sub> 0.1 $\mu$ F, C<sub>out</sub> 0.1 $\mu$ F and C<sub>e</sub> 0.1 $\mu$ F transistor Q2N2222 Sinusoidal input signal sin (0, 1mV, 10KHz) are connected as shown in circuit diagram. When a. c. signal is applied to the base of the transistor it appears in the amplified form across its collector load. The amplified signal is developed across R. The RC coupled amplifiers have excellent over wide range of frequency. Therefore they are widely used as voltage amplifiers in the initial stage of public address system. If other type of coupling is employed in







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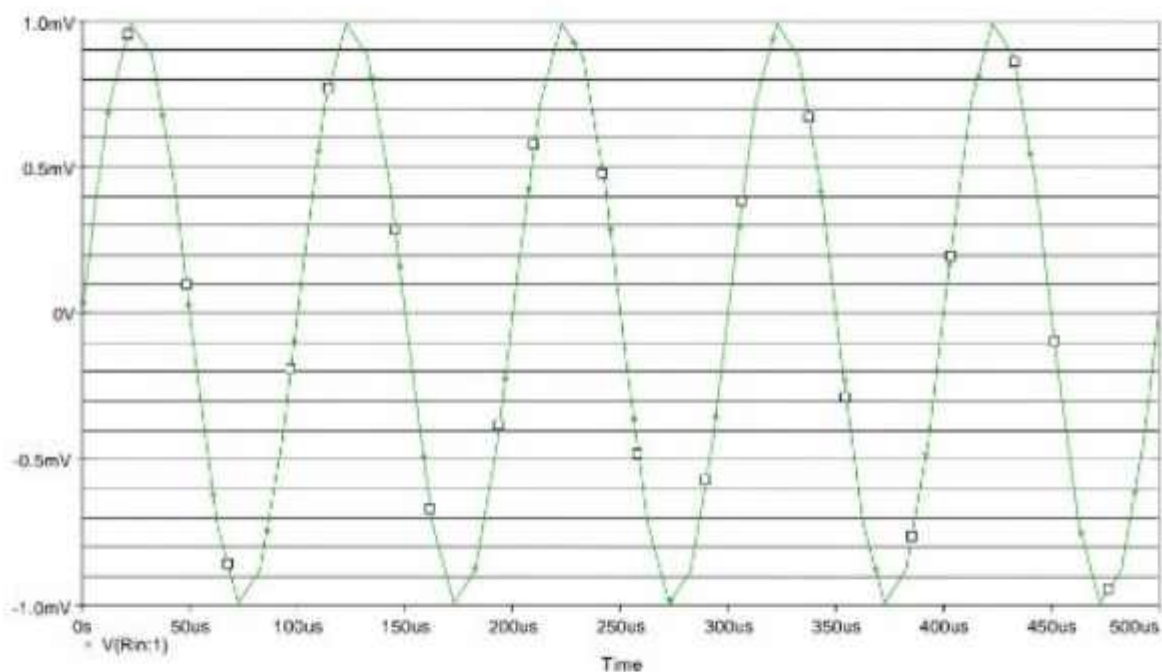
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**Observations:-**When we build the circuit in PSPICE software and simulate it we observed the amplification in voltage as shown in following table.

Obs no	Terminal	Voltage in volt
1.	V <sub>in</sub>	1mV
2.	V <sub>b</sub>	1.939
3.	V <sub>e</sub>	1.270
4.	V <sub>c</sub>	4.950







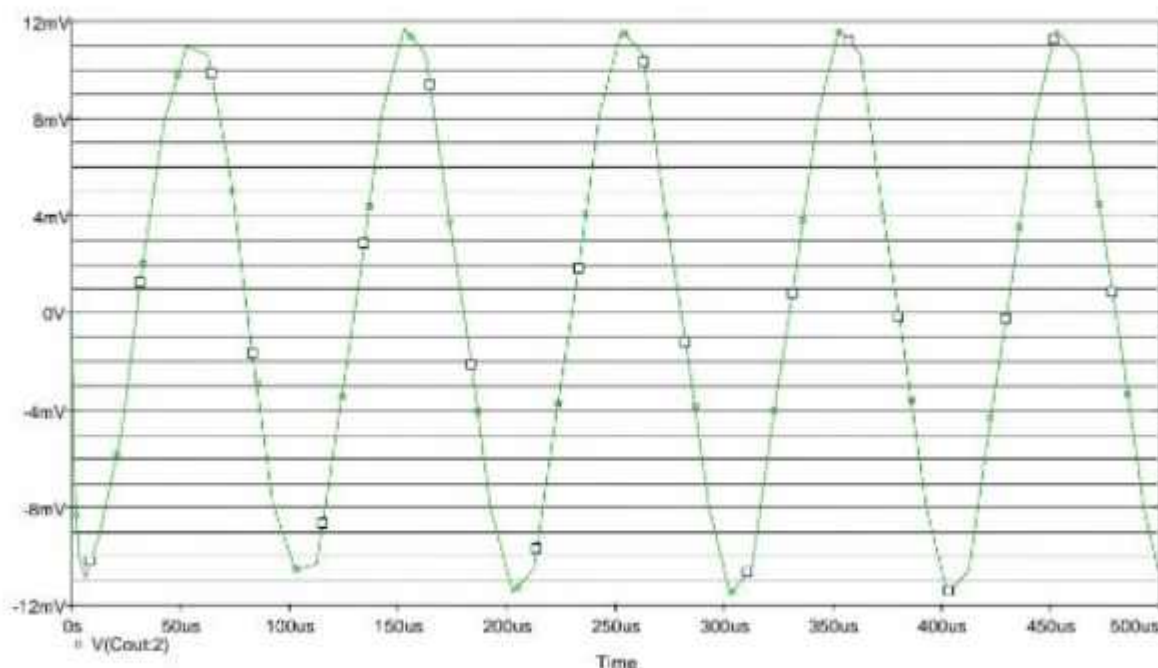
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When we observed the Input and output signals on the screen we observed actually the following facts.

Input Signals		Output Signals	
Min. Amplitude mV	Max. Amplitude mV	Min. Amplitude mV	Max. Amplitude mV
-0.995	0.995	11.674	-10.561

**Conclusion:-**Here we observed the voltage amplification in this amplifier is very high in comparison with amplitude amplification in input frequency to output frequency. This software is student friendly. We must use this in electronic practical's lab. It saves the time of practical and gives appropriate results.



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## HISTOPATHOLOGICAL CHANGES IN LIVER AND KIDNEY OF FRESHWATER FISH, *RASBORA DANICONIUS* EXPOSED TO SUB-LETHAL CONCENTRATION PAPER MILL EFFLUENT

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**ABSTRACT :** The histopathological changes in the liver and kidney of *Rasbora daniconius* have been investigated after exposed to sublethal concentration of paper mill effluent. The result of acute toxicity shows that the paper mill effluent was highly toxic. The fish, *Rasbora daniconius* were exposed two sub-lethal concentrations of paper mill effluent [1.9% (1/5) and 0.95% (1/10)  $LC_{50}$  of 96hr] for 30 days to study the impacts on the histology of liver and kidney. Histopathological examination revealed, swollen hepatocytes, nuclear hypertrophy, rupture sinusoids, hemorrhages, vacuolation in hepatic cells and broken central vein in liver. Kidney showed hypertrophy of hematopoietic tissues, cell necrosis, blocked glomerules with full of blood stain, dilated renal tubules with pyknotic nuclei and tubular necrosis. Histopathological changes were dose dependent. The results of histopathological changes in liver and kidney of *Rasbora daniconius* shows that, fish were under high stress during exposure to sublethal concentration of paper mill effluent.

**Key words :** *Rasbora daniconius*, paper mill effluent, liver, kidney, histopathology.

### INTRODUCTION

In India, initial paper mill was started in West Bengal at Serampore. In geographic area initial paper mill was started as "Deccan Paper Mill" at Pune in 1951. Now there is tremendous expansion in these industries during last twenty five years. Controversially, the paper industry as it stands now as one of the largest major industries and contributes a lot towards the water pollution.

The pulp and paper mill effluent contains a wide variety of inorganic and organic compounds, which are partly removed (if at all). These effluents have been found to be containing more than 200-300 different organic compounds (Fortin *et al.*, 1998; Houk, 1992; Pérez-Alzola and Santos, 1997; Suntio *et al.*, 1988) and approximately 700 organic and inorganic compounds (Cernakova and Golis, 1994). The effluent contains a mixture of substances stemming from wood, the chemicals used (particularly  $Cl_2$ ,  $ClO_2$  and other chlorine compounds), and compounds arising during the pulping and bleaching processes (Muttray *et al.*, 2001).

Due to high chemical diversity of the organic pollutants in paper and pulp mill effluent, a high variety of toxic effects on aquatic communities in recipient water courses have been observed (e.g. Kim Oanh, 1996; Yen *et al.*, 1996). A significant number of these substances

have been classified as carcinogenic, mutagenic and clastogenic (Ericson and Larsson, 2000; Houk, 1992) and endocrine (Zacharewski *et al.*, 1995). The pollutants concerned also kill fish or affect their reproductive physiology (Van den Heuvel and Ellis, 2002) or may induce male-biased sex ratios among fish embryos (Larsson and Forlin, 2002).

In fishes, it has been ascertained that the external organ is affected due to the harm chemicals and it causes loss of equilibrium, increase in opercular movement, irregular movement and at last ends up in death. Industrial effluent soil aquatic ecosystem and find their way in the body of aquatic animals by means of gills, gastrointestinal tract and general body surface. As effluent accumulates in the totally different tissues of body, it's necessary to study in detail the histopathological changes made by industrial effluent in numerous organs of fishes completely, investigate them so as to assess the extent of harm.

Histopathological studies have been conducted to establish fundamental relationships between contaminant exposure and various biological responses. Histopathological examinations are a sensitive tool to detect direct effects of chemical compounds within target organs of fish in laboratory experiments (Schwaiger *et al.*, 1996). The exposure of fish to chemical contaminants

induces a number of lesions in different organs (Bucke *et al.*, 1996). ICES (1997), Bucher and Hofer (1993) reported that liver and kidney are suitable target organs for histological examination to determine the effect of pollution. Fish liver is regarded as a major site of storage, biotransformation and excretion of toxic substances. In fish, the kidney performs an important function related to electrolytes and water balance and maintenance of a stable internal environment. These organs have been proved to be indicators of possible pollution (Hinton and Lauren, 1990).

Very few studies have been carried out in connection with the histopathological effects of pulp and paper mill effluent in fish. Khan *et al.* (1992) observed the occurrence of fin necrosis, kidney tumors, anemia change in parastiofauna, low condition factors and organ somatic indices of winter flounder living in the vicinity of a pulp and paper mill. Discharge of untreated pulp and paper effluent into receiving waters is known to be toxic to some aquatic organisms. Manifestations of toxicity in fish includes fin necrosis, increase of parasites, changes in physiology, detoxifying enzyme activities, hematology, osmoregulation and reproduction (Anderson *et al.*, 1987; 1988; Myllyvirta and Vuorinen, 1989; Lindesjoo and Thulin, 1990; Lindstrom-Seppa and Oikari, 1990). Lesions have also observed the gill and liver of effluent Exposed fish (Lehtinen *et al.*, 1984).

Therefore, the main objective of study is to assess histopathological alterations in liver and kidney of fish, *Rasbora daniconius* exposed to sub-lethal concentration of the paper mill effluent.

## MATERIALS AND METHODS

### Experimental fish

The *Rasbora daniconius* were obtained from Godavari river watercourse at Kaigaon Toka (latitude 19° 37.463 and longitude 75° 01.409) 45 km away from Aurangabad (MS), India. The fishes were unbroken in glass aquaria acclimatized for the period of four weeks, throughout amount of adaptation the fishes were fed once each twenty four hours on items of live earthworm. Healthy fishes showed active movement were solely thought for the experimentation.

### Paper mill effluent

The paper mill effluent was collected directly from the Kaigaon paper mill at releasing site 45 km away from Aurangabad. The percentage concentration of test solution is obtained by using formula (FAO, 1984), which is as follow.

$$\text{Volume percent} = \frac{\text{Volume of effluent}}{V_E + V_{DW}} \times 100$$

$V_E$  = Vol. of Effluent,  $V_{DW}$  = Vol. of Dilution water.

### Determination sublethal concentrations

The  $LC_{50}$  value for 96 hrs was determined by renewal bioassay following probit analysis (Finney, 1971), because of its advantage over other bioassay techniques. On the basis of 96 hrs  $LC_{50}$  of paper mill effluent two sublethal concentrations *i.e.* 1.9% and 0.95% concentration (1/5 and 1/10 of the  $LC_{50}$  values for 96 hrs) were selected for the present study.

### Histological biomarkers

*Rasbora daniconius* (length 8 to 8.5 cm and weight 4 to 4.5 gm) were exposed sublethal concentrations of paper mill effluent (1.9% and 0.95%) for 30 days. At the tip of exposure period the survived fishes were sacrificed dissect carefully to isolate gill and fixed in bounis fluid. After 24 hrs they were processed following the standards technique. Tissues were embedded in paraffin wax and serial section of 4-6  $\mu$ m thickness were cut, deparaffinised and stained in haematoxylin and counterstained with eosin.

## RESULTS

### Physicochemical parameters

The values of physicochemical parameters were observed and recorded in Table 1. The values of physicochemical parameters of paper mill more or less effluent fall within acceptable limits, except values of dissolved oxygen (DO), chemical Oxygen Demand (COD), biological Oxygen Demand (BOD) and hardness. The raised values of physicochemical parameters may imply an increased toxicity.

### Histological biomarkers

#### Liver

The liver of control *Rasbora daniconius* was composed of hepatocytes (parenchymal cells) arranged in typical tubular architecture, sinusoids and blood vessels filled with numerous blood cells. The hepatocytes were morphologically polygonal and had conspicuous nuclei with densely stained nucleoli (Fig. 1). In contrast, the liver of fish treated with lethal concentration for 96 hrs at 9.5% ( $LC_{50}$ ). The fish exposed to sublethal concentration (1.9%) of paper mill effluent for 30 days revealed the shrinkage of central vein. The hemorrhages with destruction of sinusoids were observed. The polygonal shape of hepatocytes was disturbed along with severe swelling of hepatocytes, nuclear hypertrophy, and vacuole formation in the hepatic cells was observed. At some places degeneration of nuclei of hepatocytes were



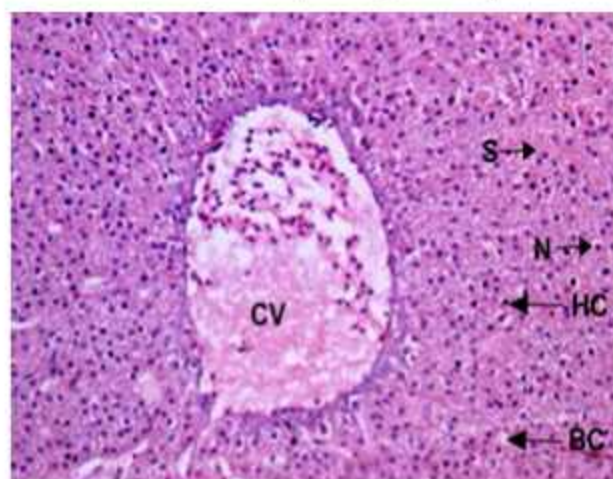


Fig. 1 : Transverse section of the liver of control fish, *Rasbora daniconius* showing central vein (CV), sinusoid (S), nucleus (N), hepatic cell (HC), bile canaliculi (BC) (400x).

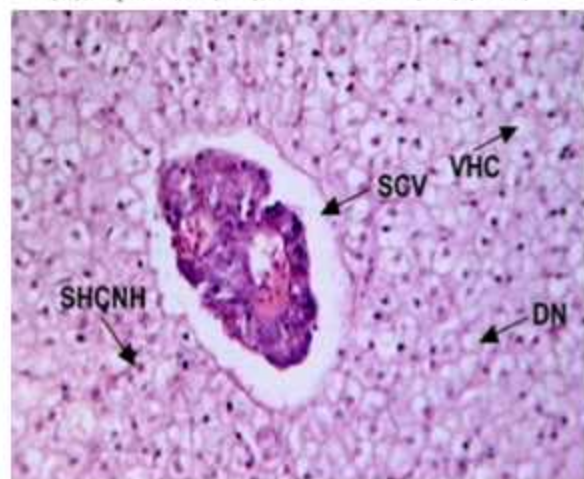


Fig. 2 : After exposure sub-lethal concentration at 1.9% (1/5) of paper mill effluent for 30 days, liver showing swollen hepatocyte with nuclear hypertrophy (SHCNH), shrinkage of central vein (SCV), degeneration of nucleus cell (DN), vacuolated hepatocyte (VHC) (400x).

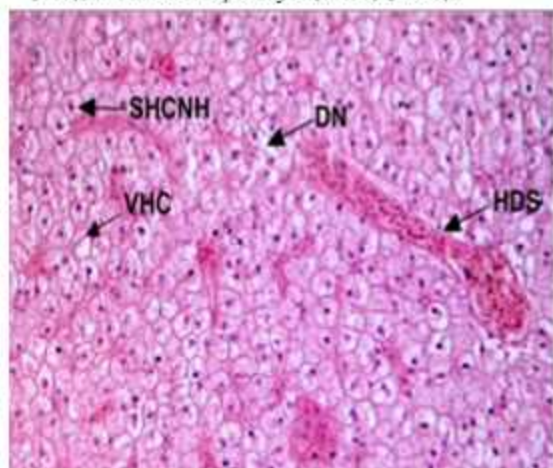


Fig. 3 : After exposure sub-lethal concentration at 0.95% (1/10) of paper mill effluent for 30 days, liver showing swollen hepatocyte with nuclear hypertrophy (SHCNH), degeneration of nucleus (DN), vacuolated hepatocyte (VHC), hemorrhage with destruction of sinusoid (HDS) (400x).

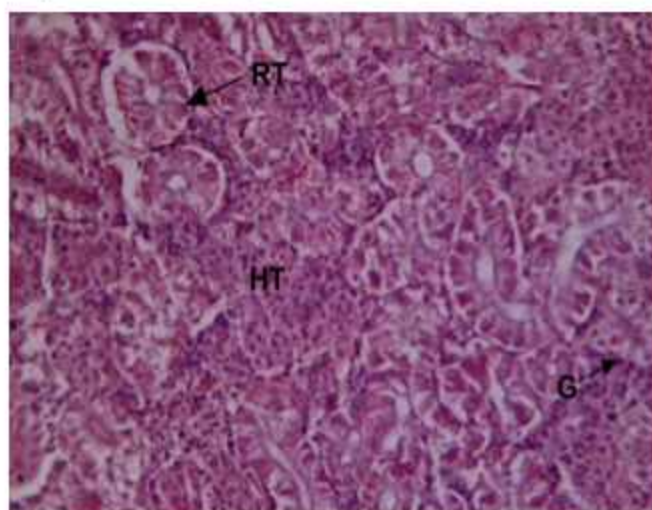


Fig. 4 : Transverse section of the kidney of control fish, *Rasbora daniconius* showing Glomerulus (G), renal tubule (RT), hematopoietic tissue (HT) (400x).

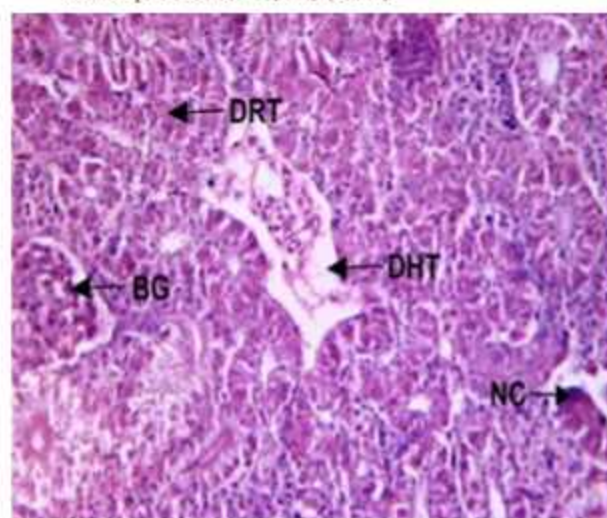


Fig. 5 : After exposure to sub-lethal concentration at 1.9% (1/5) of paper mill effluent for 30 days, kidney showing Blocking of Glomerulus (BG), dilation of renal tubule (DRT), damaged hematopoietic tissue (DHT), necrosis (NC) (400x).

observed (Plate 4, Fig. b).

Fish exposed to sublethal concentration (0.95%) of paper mill effluent for 30 days showed marked pathological changes. Severe swelling of hepatocytes with nuclear hypertrophy in the hepatic cells is observed. The sinusoid found to rupture and hemorrhages were observed frequently in the tissue. At some places degeneration of nuclei of hepatocytes were also observed (Plate 4, Fig. a).

#### Kidney

The kidney of the species examined had a pattern similar as found in other vertebrates. They were composed of nephrons consisting mainly of a Malpighian corpuscle of a tubule and of a collecting duct system to which the filtrate was led. The Malpighian corpuscle had



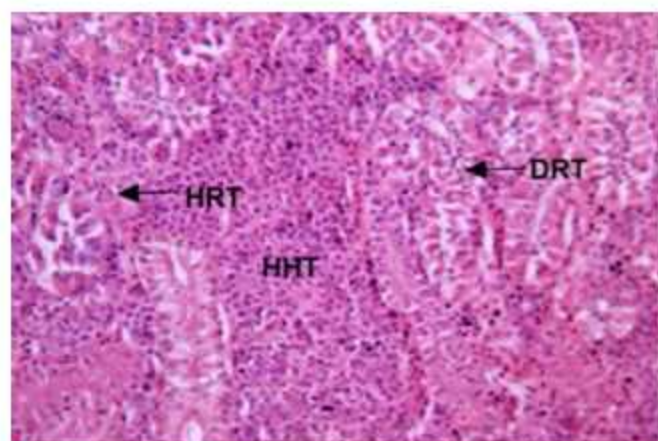


Fig. 6 : After exposure to sub-lethal concentration at 0.95% (1/10) of paper mill effluent for 30 days, kidney showing hypertrophy of renal tubule (HHT), dilated renal tubule (DRT), hypertrophy hematopoietic tissue (HHT) (400x).

Table 1 : Showing physico-chemical parameters.

S. No.	Parameters	Tap water (Mean values)	Paper mill effluent (Mean values)
1	Temperature (°C)	28±2°C	29±2°C
2	pH	7.2	6
3	Dissolved oxygen(DO)	6.9	0.92
4	Alkalinity	27	110
5	Total hardness	116	470
6	Biological Oxygen Demand (BOD)	10	285
7	Chemical Oxygen Demand (COD)	2.6	1190

\*Except Temperature and pH, values expressed in mg/lit.

a capillary network that forms the Glomerulus (Fig. 3). In contrast, the kidney of treated fish with lethal concentration for 96 hrs at 9.5% ( $LC_{50}$ ) exhibited marked pathological changes such as at sublethal concentration (1.9%) of paper mill effluent for 30 days exposure, the hemopoietic tissue was found disintegrated with cell necrosis. Glomerulus was found completely blocked with full of blood stain. Renal tubules were found dilated with pyknotic nuclei. Blood capillaries were found broken at many places (Plate 6, Fig. b).

At 0.95% sublethal concentration of paper mill effluent for 30 days exposure, it was observed that the hypertrophy of hemopoietic tissue with cell necrosis. Renal tubules found dilated with pyknotic nuclei. At this concentration tubular atrophy of dilated nature was observed (Plate 6, Fig. a).

## DISCUSSION

The impact of untreated effluent discharged by pulp and paper mills hinge not only on the toxic components, but also on other variables such as oxygen demand, pH, colour and suspended solids, which singly or collectively might produced a variety of biological effects (McLeay

*et al*, 1987).

The liver is the primary organ for metabolism, detoxification of xenobiotics and excretion of harmful substances. The liver has the ability to degrade toxic compounds, but its regulating mechanism can be overwhelmed by elevated concentrations of these compounds, which could subsequently result in structural damage (Brusle *et al*, 1996).

The histopathological lesions observed in the liver were mildly swelling of hepatocytes, rupture of sinusoid with hemorrhages at several places and broken central vein. The cellular degeneration in the liver might be due to oxygen deficiency as a result of gill degeneration (Mohamed, 2001). The above results correlate with the findings of Sonawane (1992), Nirmala *et al* (1988), Das and Mukherjee (2000).

Rana (2007) observed disintegration of hepatic cells, separation of the hepatic cells from the blood vessel and proliferation in the pancreatic tissues. Broken hepatic cells and clear atrophy was also seen in the nucleus of hepatic cells in urea exposed fish, *Ababas testudineus*. Narayan and Singh (1991) observed extensive degeneration of cytoplasm with pyknosis of nuclei, loss of glycogen in liver tissue of *Heteropneustes fossilis* while subjecting them to acute thiodon toxicity. Nassr-Allah (2007) observed inflammation, central necrosis and cell degeneration in liver tissue of *Oreochromis aureus* juveniles while subjecting them to phenol. Fernandes *et al* (2007) reported that the hepatic parenchyma of fish exposed to copper showed cytoplasmic vacuolation and hepatocellular necrosis.

Mazher and Boja (2007) observed hepatic lesion with necrosis, vacuolation, damaged blood vessels and accumulation of cytoplasmic granules in the liver of *Tilapia mossambica* due to the toxicity of copper sulphate, lead nitrate and zinc sulphate. Peebua *et al* (2008) studied alteration in the liver of Nile tilapia, *Oreochromis niloticus* exposed to 38.19 (acute), 35  $\mu\text{g l}^{-1}$  subchronic of alachlor for 24, 48, 71 and 96 hrs and 90 days respectively, found hydropic swelling of hepatocytes, vacuolation and lipid vacuoles were observed in hepatocytes in the second and third month of sub chronic exposure. Fatma (2008) studied bioaccumulation of selected metals in water and liver, gills, intestine, testis, heart and muscle of *Oreochromis niloticus* and *Late niloticus* from Lake Nasser-Egypt and observed a number of histopathological alterations like vacuolar



degeneration with focal areas of necrosis in liver.

The kidney of fish receives the largest proportion of postbranchial blood and therefore renal lesions might be expected to be good indicators of environmental pollution (Ortiz *et al.*, 2003).

In this study, hypertrophy of hematopoietic tissue with cell necrosis, blocking of Glomerulus, dilated renal tubules with pyknotic nuclei and tubular necrosis were observed in kidney tissues of fish. The above results correlate with the findings of Sonawane (1992), Das *et al.* (1996), Thorat (1999).

Davane (1991) studied histopathological changes in kidney of *T. sandkhhol* after acute and chronic exposure to thiodon, dimethoate and carbaryl. On acute exposure to thiodon he observed pathological lesions in the texture of the tissues as, enlargement of hematopoietic tissue, cells necrosis in the renal tubules, nuclear displacement in cells of renal tubules and hematopoietic tissue. Due to dimethoate there was cell necrosis in renal tubule and degeneration of the hematopoietic tissue were observed.

Chronic exposure resulted in degeneration of the glomerules and enlargement of hematopoietic tissue. Due to dimethoate degeneration in the renal tubules, cell necrosis and vacuolation at some places are observed after the treatment of pesticides.

Mourad and Wahby (1999) observed tubular destruction and epithelial oedema, detachment of the epithelial cells from the underlying basement membrane, pycnosis of nuclei in effluent of the Egyptian copper work treated fish, *Tilapia zillii*. Veiga *et al.* (2002) studied the histopathological alteration in the kidney of *Prochilodus lineatus* exposed to trichlorofan. The kidney tissue collected after 24 hours exposure showed enlargement of intercapsular space with glomerular atrophy, hypertrophy of the kidney tubule cells with small granules on its cytoplasm and little nuclear alteration. Blood overflowing from capillaries with pyknotic nuclei and vacuoles in the cytoplasm was noticed. After 48 hrs, the kidney tissue showed glomerular expansion, impossibly to visualize the intercapsular space as well as cytoplasm limit of many cells. The parietal capsular epithelium and the base membrane present loss of cell content, the tubular cells appeared swollen vacuolated and within thin and thick cytoplasmic granulation. Some of the cell nuclei kept relatively regular form with a condensed chromatin at its central region, while others showed themselves relatively small and pyknotic. Peebua *et al.* (2008) observed hydropic swelling of tubular cells, lipid vacuole accumulation in many tubules and nuclear pyknosis of *Oreochromis niloticus* exposed to alachlor.

All the histopathological observations indicated that exposure to lethal concentration of paper mill effluent caused deleterious effect in liver and kidney of *Rashora daniconius*. Histopathological effect in these tissues may results in severe physiological problem, ultimately leading to the death of fish. It can be conclude that the findings of the present histological investigation shows a direct correlation between paper mill effluent exposure and histopathological changes observed in liver and kidney of target fish, *Rashora daniconius* in this study.

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# QUALITY MANAGEMENT IN HIGHER EDUCATION

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**Abstract:** Quality management systems in Higher Education have been developed for a number of years to improve professional standards. Several attempts have been made to develop methods that would be modeled on and but some of these models were developed to evaluate a business process in the quality field. Education is looking for a management concept that would direct the collective efforts of all managers and employers toward satisfying customer expectations by continually improving activities. A quality assurance system in higher education has to incorporate several elements to be harmonized with the higher education system. These are: the formation of an independent agency; internal evaluations on the level of institutions or programmes; external evaluations from experts' commissions; involvement of students in internal and external evaluations; publishing of the results of evaluations; and international cooperation and networking of the agency.

**Key words:** higher education, quality management, assurance, education

## Introduction:

Education quality is a key factor for improving the business quality, and therefore strengthening competitive advantage. Access to education and quality education are to be regarded as mutually dependent and indivisible needs and rights. Quality management is a part of management aimed at achieving quality goals through planning, monitoring, assuring and improving quality. Education quality is a dynamic, multi-dimensional concept that refers not only to the educational model, but also to the institutional mission and its goals, as well as to the specific standards of the system, facility, program or event. The pedagogical theory and practice has been trying to determine what the quality of education is. In education it is only possible to determine the quality by comparing the results with the given goal, or by comparing it with previously established standards. Any human activity is identified by the quality of its product. The same rule applies to education. The quality of education is therefore responsible for the quality of its "product": students. Various forms of education are present in different places, at various times, under different circumstances and terms, intentional and unintentional, organized



and unorganized, with or without a program. One of the key problems is the unification of standards and quality evaluation criteria. The key components of the evaluation process are the methodological approach in applying good methods and procedures of data collection, and the definition of key concepts and their relations with the concept of quality. Education quality is to be understood as the most important asset for strengthening market competitiveness, and thus as the accelerator of the total economic growth and development of Croatia.<sup>(1)</sup>

Total Quality Management used together is usually meant to recognize that real quality requires all elements of the institution to work together towards achieving the end. The concept of TQM is applicable to academics. Many educators believe that it provides guiding principles for needed educational reform. Students take classes, consume meals, sleep in residence halls, buy books and use many services for which they pay tuition other fees. The student certainly fits the definition of the word customer. Quality is an achievable measurable, profitable unit that can be achieved when one has the commitment and understanding and is prepared for the hard work. It is a participative process involving various units of the institution, at all levels is likely to bring new strains together with unprecedented possibilities. Life in the coming decades in educational institutions at all levels is likely to bring new strains together with unprecedented possibilities. To enable the people to benefit in the new environment will require new designs of human resource development. Many of the strategies of quality improvement in education are derived from industrial setting. Challenges to the adoption and implementation of management concepts in educational institutions are several. One has to overcome the challenges to be able to take the best from industrial experiences and combine this in a holistic framework, with the methods more suited to the educational milieu.<sup>(2)</sup>

### **Quality teaching:**

A distinctive feature for institutions. Institutional support to quality teaching might help institutions to face upcoming challenges regarding teaching. Quality teaching might be considered as a distinctive feature contributing to the overall quality of the institution, along with scientific reputation and the quality of learning environment. The students and employers are undeniably paying attention to learning outcomes, the inclusion rate in the job market and the acquisition of flexible skills. To compensate for the lack of instruments that measure learning outcomes objectively, some institutions have embraced a wide range of actions meant to enhance quality teaching, whatever the difficulty of evaluating the results. The combination of professional development courses, pedagogy counseling and programme evaluation, all anchored in a conceptual framework, is perceived as a promising set of tools to enhance the teaching process. These institutions assume that a robust policy to encourage quality teaching is likely to strengthen learning outcomes. For example, the Istanbul Technical University hired foreign





accreditation companies to examine the quality of programmes. When leaders then committed to institutional evaluation by the European University Association in search of coherence and filling gaps at institutional level, quality teaching aspects were a key element of the institutional overview. 102. A specific concern is that institutions are facing a shortage of top-notch academics in specific disciplines. These institutions are keen to support quality teaching to ensure the best quality of teachers for the programmes.<sup>(3)</sup>

### **Management for Quality:**

Management can be defined as a process that gives the necessary direction to an enterprise's resources so that its objectives can be achieved as productively as possible in the environment in which it functions". Basic resources for organizations are identified as: Human Physical Financial Information. The above definitions share common characteristics which are fundamental principles of management, namely planning, organizing, leading and controlling. These principles refer to the following aspects Planning is a management function that determines the enterprise's mission, goals and ways of attaining the goals. Leading focuses on the leadership of the organization and the most important resource, namely its people. It is about motivating people in such a way that their actions are directed towards the goals and plans. Controlling refers to checking that performance and action conforms to plans. These principles of management are also applicable to schools and school management. In a school environment these tasks are to be performed by School Management Teams (SMTs), principals, deputy principals and heads of department (HODs). In education this management structure is known as the school-based management structure or system.<sup>(4)</sup>

### **Role of teachers' quality enhancement in higher education:**

Quality management in education is a vital milestone in the development of the modern and future European society. Regarded as 'one of the most conservative systems' education has reacted relatively slowly to changes 'in the outside life'. Nevertheless it has proved to be a must in the progress of any nation. The cohesion of the requirements of students, society and university staff is the foundation of a sustainable knowledge spiral to quality education. In order to examine the problem thoroughly one should study the motivation of the parties involved in the process.

Quality control - processes are monitored to ensure that all quality requirements are being met and performance problems are solved; quality assurance covers all activities from design, development, production, installation, servicing and documentation. It includes the regulation



of the quality of raw materials, assemblies, products and components; services related to production; and management, production, and inspection processes; quality management includes all the activities that managers carry out in an effort to implement their quality policy. These activities include quality planning, quality control, quality assurance, and quality improvement; total quality management (TQM) is defined as a management approach that aims to achieve and sustain long-term organizational success by encouraging employee feedback and participation, satisfying customer needs and expectations, respecting societal values and beliefs, and obeying governmental statutes and regulations Quality management in education is a vital milestone in the development of the modern and future European society. Regarded as 'one of the most conservative systems' education has reacted relatively slowly to changes 'in the outside life'. Nevertheless it has proved to be a must in the progress of any nation. The cohesion of the requirements of students, society and university staff is the foundation of a sustainable knowledge spiral to quality education. In order to examine the problem thoroughly one should study the motivation of the parties involved in the process. For better understanding of quality one should be familiar with its definition.

#### **Total quality management:**

(TQM) is defined as a management approach that aims to achieve and sustain long-term organizational success by encouraging employee feedback and participation, satisfying customer needs and expectations, respecting societal values and beliefs, and obeying governmental statutes and regulations Present Scenario of Higher Education in India It has been found that only 10 % of Indian youth go to college. This percentage is 40-50% in developed countries. As per the available reports, two third of the Indian universities are providing sub-standard education while 90 % colleges in India are below average. Today, most of the institutions have become factory of degrees only. Students / teachers are running after attaining or providing degrees and not towards the gaining knowledge and wisdom. Attendance in the institution has dropped drastically and class room teaching is becoming only a ritual, to be followed mechanically. Though, it is said that the destiny of nation is shaped only in the class rooms, very little importance is being given to class room teaching. The overall scenario of higher education in India does not match with the global quality standards. It does not foster the global competencies and even does not make significant contribution to the national development. The present education system does not match with the needs and expectations of the employment sector. The role of the teacher assumes greater significance in this deteriorating scenario of higher education. It is a daunting task for the teachers to improve the quantity, quality and equality in higher education. It is said that a good teacher can bring the entire world to the class room <sup>(5)</sup>





### Conclusion:

Quality management in education is rather complex topic. What makes such is the number of the parties involved as well as the intensity of changes in modern life. The reports include a series of quantitative and qualitative data regarding quality assessment: regular questionnaires of students' assessment (candidates informing, inscription policy, mechanisms of selection, average duration of study, fluctuation, mentoring, monitoring students and help them solving problems, mobility of students, employment of graduates), employees surveys (employment, advancing, mobility of professors, bibliographical publications), study schemes and programmes, research and scientific work, work on international, national and internal projects, programmes description and goals, methods for lecturing, teaching and knowledge testing, international cooperation, cooperation with industry and public services etc. But self-evaluation, certification and accreditation only, cannot improve the quality of the higher education institution.

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## Role of some important stakeholders for quality sustenance and enhancement in higher education

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### Abstract:

The aim of this paper is to present a general view and a brief literature review of the main aspects related to quality sustenance and enhancement in higher education through some important stakeholders of institutions. The management, principal, teaching Staff, non-teaching staff, students, parents, alumni are the internal stakeholders play a significant role for the assessment and accreditation process of the higher education institutions. Quality has become indispensable in the framework of up to date demand made on education account of world-wide challenges. The post-accreditation activity of the institutions is shift from quality assurance towards quality sustenance and enhancement. Every stakeholder of higher education has to play a vital role in the quality sustenance and enhancement process.

**Keywords:** Quality education, NAAC, Stakeholders, Quality sustenance and Enhancement

### Introduction:

India has the second largest educational system in the world. A focus on quality, access and relevance of higher education to achieve the required social transformation for sustainable economic development of the country has been the national priority. Qualitative improvement in higher education, to realize the desired dimensions of human resource development necessitated the establishment of the premier Quality Assurance Agency i.e. NAAC by the UGC, in 1994, to assess and accredit the country's HEIs. Quality assurance is not an event. It is a continuous process and a relentless pursuit to do academic excellence. It is an ongoing, dynamic and life-long attempt of any institution. As the primary goal of institutional accreditation by NAAC is to offer the information needed to improve the experience of the learning communities, it is envisaged that NAAC plays a larger role in internalizing and institutionalizing quality assurance.





Towards achieving this goal, vision and mission of the institutions in higher education the participation of all stakeholders is essential in future (NAAC Manual).

Quality Education has become a very important need as well as a matter of concern in the last one decade. The uneasiness prevails among the various stakeholders of education viz parents, employers, staff, students, management etc. In recent time the numbers of institutions are engaged in providing higher education in India and numbers of students are enrolled for the same but now the quality in education in comparison to the 'quantity' has become the defining element in the 21st century. Quality and excellence should be the vision of every higher education institution. Acquisition and enhancement of quality is the great challenge faced by almost all higher education institutions (Manish R. Raval, 2014).

For the quality sustenance and enhancement of higher education most of the important stakeholders like management, principal, teaching staff, non-teaching staff, students, parents, and alumni play a vital role in the assessment process of the institution. As we have been observed in the peer team visit of various institutes, both at state and national levels, the contributions by all the stakeholders have been reflected and thus assessment and accreditation parameters has resulted in the higher grades of the institutions, and thus help in up gradation of quality level, however quality sustenance has been always a challenge to the institutions. The detailed roles of the internal stakeholders of the institutions of higher education are discussed in this paper.

**Role of the Management:** The Management of the institution is one among the important stakeholders of education. The role of the management is crucial, prominent and necessary for quality sustenance and enhancement of higher education in overall activities of institution. They play role of governance and leadership towards the future plans, development and innovation. Quality Policy of an academic institution is to be prepared by all the stakeholders sitting together. It cannot come only from the management or governing body since it is implemented by all the important stakeholders. Quality is linked with the relevance and requirements of the students. For example, the students need to have good placements after completing their courses; hence the teaching-learning process, the evaluation process, the administrative process, services to the students such as a hostel, canteen, health, cleanliness, drinking water facility etc. need to be taken care of by the management. The statement defining these quality norms become the Quality Policy of an institution. The Quality Policy is the promise on behalf of the management to its stakeholders. The role of management in designing and implementing policy should never be ignored. They are the leaders who can enhance and sustain quality in higher education. Hence, formulations of action plans through proper and effective strategies can certainly attain the mission and vision of any institution. The management should welcome all kind of suggestions and feedbacks. There is every chance that they might be severely criticized on several accounts, but such criticisms only give them an opportunity to reconsider about the strategies evolved. Good governance believes in decentralization of power. The management should provide well equipped infrastructural facilities as well as financial support.





**Role of the principal:** All the higher education institutions principal is the pivot role. The principals is the instructional leaders for supervise, monitor, assess, evaluate and disseminate current information on educational issues and modern teaching techniques to teachers in order to stimulate them for scholarship and best practices in effectively curriculum delivery. Effective implementation of clearly defined vision and mission of institution for academic achievement, and they concentrated their available resources and their operations on attaining them, provide adequate time-table for teaching, routine check of lesson plans and observation of classroom instruction, continuously monitor students progress to decide whether their instructional goals are being met, provide feed-back on student performance, motivation of teachers for improved performance, reinforcement of students for excellent performance, maintenance and appropriate usage of physical facilities, enforcement of discipline to make sure peaceful atmosphere, capacity building of teachers for effective service delivery and provision of instructional facilities and materials to enhance quality teaching-learning processes. Through the principal's sincere effort is required to improve the creative mechanism of institutions in higher education.

The pivot role of principal's in higher education towards the quality sustenance and enhancement due to the challenging global scenario as follows

- The principal should define the exact meaning of quality in the institution
- Efforts should be made for the achievement of vision, mission and goals of institutions
- The staff and students should be motivated and energies
- The required training and guidance should be provided to staff and students
- Implementation of innovation and best practices in teaching, learning and evaluation, research and extension activities, curricular aspects, student progression and support, environmental consciousness.

**Role of the teachers:** Among the other stakeholders the teachers have a very important role to play in sustaining and enhancing quality of higher education. It is the competency and commitment of teachers which are the hallmarks of quality education of the four critical internal factors of quality i.e.-student, staff, infrastructure and governance. The quality of teaching staff that basically determines the quality of educational process of higher education. They should actively participate and present their views in faculty development programmes, research activity, innovations should be undertaken. They should also organize state, national and international level seminar, conferences and workshops for teachers and students, invite resource persons from different places, indulge in brain storming and thus expose their minds to newer or creative ideas. They should keep themselves update through latest trends of higher education. They can be done through e-journals and University News, NAAC News, etc. Quality enhancement can be done by publication of articles and books in some recognized UGC care listed journals or books having national or international recognition. Teachers should also make the use of ICT, multimedia, e-content development, creation of model, open educational resources to bring innovation in teaching learning process. Teachers have to shoulder the responsibilities of enhancing quality in the institution.





**Role of the students:** Every stakeholder of higher education has a role to play in quality enhancement. Students have unique role to play in ensuring the quality of higher education. Firstly, students should realize that quality education is their right and that it is the responsibility of higher education institutions to provide quality education to learners. Secondly, students should be equally aware that they have significant learning responsibilities to enable institutions by accepting their responsibilities. Unless students demand quality education and show their commitment to quality education, HEIs will have very little motivation for quality enhancement. The NAAC advocates the public display of the student charter in every institution as an act of promotion of student participation in quality assurance. Students should have a clear knowledge of the programmes, rules and regulations of the institution. They should understand the teaching learning strategies and evaluation systems of institution. They should also give feedback whether they are satisfied or not with these teaching methods and evaluation system. Talk and Chalk are very old or traditional methods. Yet they do have their own merits. In order to sustain and enhance quality of accredited institution, their result-oriented participation is must in other activities like culture programmes, N.S.S., N.C.C. sports etc. Following the rules and regulations of the institutions, they should make greatest use of the learning resources and support services available in the institution and should try their best to sustain and to enhance the quality of NAAC accredited institution. They should give feedback for system improvement and live worthy alumni of the institution. Students also adopt the habit of open educational resources, e-content development by teacher, innovative teaching learning oh higher education.

**Role of Non-teaching staff:** The non-teaching staff working in the institutions of higher education should not be ignored for the quality sustenance and enhancement. They well informed, soft spoken but well versed in communicative skill and dedicated certainly contribute to the quality enhancement. They have responsibility of bringing to the notice of all those concerned all circulars, government orders and the like well in time. Teachers and students should be given respect by them when the former approach the latter in connection with any matter or clarification. Poor recording of documentation, non-availability of required information well in time certainly affect the administration which in turn affects the quality of functioning of the institutions.

**Role of Parents:** Parents influence the implementation of the curriculum by playing a vital role in monitoring the lessons taught at schools, filling the gap between their children and the school administration by providing various resources which are not available in school. Teachers often take help of parents for monitoring the social and behavioral development of a child, especially for special educational needs.

**Role of the Alumni:** As per the NAAC guidelines alumni association should be registered in higher education institutions. The alumni's role is crucial for the development of the higher education institutions. All alumni can provide support in various aspects that are beneficial to the students, graduates, alumni and the society. The alumni's opinion in developing the institutions and proposed solutions to the challenges faced in achieving its goals, vision and mission. The





alumnus is an asset to the contributions and involvement can significantly increase the reputation of the institutions as nationally and internationally. Finally, in the framework to strengthen the development of the state and the nation, successful alumni can be the social model for unity of the society and a factor for economic growth and development. Alumni association members play a vital role in the quality enhancement of the institution. They effective role model and can be easily accepted by students. With the return of the alumni to support the institutions, they bring with them credibility and justification as part of a successful having breathed the same air and encountering similar challenges faced by the students. Experiences that are shared by the alumni with students whether in time management, financial management, development of self-discipline and character, or in career management can be more easily accepted as guidance and inspiration by students. Through this way, alumni can assist in strengthening confidence, improve motivation and inculcate the right culture in line with what the institutions intends to convey to its students

## Conclusion

It is an observed fact that the growth of the institution in higher education's, UGC and NAAC has played a very significant role in streamlining the proper development through the assessment and accreditation process by involving internal and external stakeholders. In last two decades the institutions have initiated and constantly deliberating on the issues of quality sustenance and enhancement. The procedure has changed the mindset of all stakeholders towards quality sustenance and enhancement has involved them to contribute for its achievement. Quality is a product of intensive investment of capital, talented and hard work. There is no shortcut way to achieve quality.

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# **JOURNAL OF GLOBAL RESOURCES**



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## ROGOR INDUCED HISTOPATHOLOGICAL CHANGES IN THE GILLS OF FRESHWATER FISH *PUNTIUS STIGMA* FROM SUKHANA RIVER, AURANGABAD (M.S) INDIA

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### ABSTRACT:

Histological biomarkers of toxicity in fish organs are a useful indicator of environmental pollution. The histological effects of rogor, an organophosphate insecticide, on the gill tissues in *Puntius stigma* were determined. The fishes *Puntius stigma* were exposed to lethal concentrations at 96 hrs LC<sub>50</sub> and sub lethal concentrations at (1/5, 1/10 and 1/15 ppm) of rogor for 30 days. The fishes shows severe histological changes in the gill lamellae such as bulging, epithelial hypertrophy, fusion of secondary lamellae, hemorrhage, curling of lamellae, swelling of pillar cells, swelling of chloride cells.

**Key word:** Histopathology, Rogor, LC<sub>50</sub>, Sub-lethal Concentration, Gills, *Puntius stigma*.

### Introduction:

Fish species were recently suggested as environmental biomarkers (Tom *et al.*, 2003). Quantification of fish metallothionein transcript levels in absolute units has only recently been presented (Evans *et al.*, 2000). It also, considered as early warning for degradation of environmental quality, but also specific measures of the toxic, carcinogenic and mutagenic compounds in the biological materials (Verlecar *et al.*, 2006).

Fish are very susceptible to bioaccumulation in their fatty tissues, as they take up linden residues from the water through the gills and skin (Ortiz *et al.*, 2002). The exposure to chemical contaminants can induce a number of lesions and injuries to different fish organs suitable for histopathological examination in searching for damages to tissue and cells (Rabitto *et al.*, 2005).

In fish, gills are critical organs for respiratory and osmoregulatory functions. Respiratory distress is one of the early symptoms of pesticide poisoning. In the gills these toxicants appear to break down the adhesion between epithelial branchial cells and the underlying pillar cells; this is accompanied by a collapse of the structural integrity of the secondary lamellae and subsequent failure of the respiratory functioning of the gills.

A review of literature shows that no much more efforts were made to study the histopathological changes caused by rogor (dimethoate) in the different tissues of the freshwater fishes, *Puntius stigma*. The present investigation was undertaken to study in detail the histopathological changes in the gills of the freshwater fishes, *Puntius stigma* after acute and chronic exposure to the rogor.

### MATERIAL AND METHODS

The live specimens of *Puntius stigma* were collected from Sukhana River flowing near Nipani, 25 km away from Aurangabad (M.S.) and brought to the laboratory. The fishes were maintained in glass aquaria and were acclimatized for four weeks. During the acclimatization healthy fishes showing normal activities were selected for histopathological studies.

The fishes were maintained in sufficiently large aquaria so to prevent overcrowding, the acclimatized fishes were given artificial air by aerator. Glass aquaria of size (3' 1' 1' feet) were used as test container.

The *Puntius stigma* ranged from 7.5 to 8.5 cm in length and 4.5 to 5.5 gm in weight were selected for the test. The fish, *Puntius stigma* exposed to lethal concentrations for 96 hr at 7.1 ppm ( $LC_{50}$ ) of rogor. Simultaneously a control aquarium was also maintained. At the end of acute exposure for 96 hrs the survived fishes were killed by decapitation and gill were removed and fixed in Bouins fluid for 24 hrs, and histopathology was studied.

In the second set of experiment, the test fishes, *Puntius stigma* and were exposed to three sublethal concentrations of rogor for 30 days such as 1/5, 1/10 and 1/15 ppm were prepared. Simultaneously, a control aquarium was maintained. At the end of experiment, surviving fishes were utilized for histopathological study. All the tissues were immediately fixed in Bouins fluid for 24 hrs and processed according to standard procedure of routine micro technique.

## RESULTS

The remarkable histopathological changes due to exposure to rogor in the gill of *Puntius stigma* are depicted in microphotographs. In the controlled set no histopathological changes were observed.

### Histology of Gill (control):

Gills were situated in branchial chamber on either side of the body in fishes. Each gill has a gill arch with double row of elongated, laterally projecting gill filaments. These filaments were flat and leaf like and joint at the base on gill rakers by a gill septum. Numerous semicircular, leaf like projections were lined up along both sides of the primary lamellae (PL) called as secondary gill lamellae (SL). The primary gill lamellae consist of centrally placed rod like supporting axis with blood vessels on either side. The secondary lamellae termed as respiratory lamellae were highly vascularised and covered with thin layer of epithelial cells. Blood vessels were extended into each of the secondary gill filaments provided with pillar cells (PC) and chloride cells (CC).

The secondary lamella was supplied with marginal blood sinus lined by an endothelium. In between the secondary gill lamellae and the primary filament, lined by thick stratified epithelium (ILR). This region between two adjacent secondary gill lamellae was known as interlamellar region (Fig 1a).

### Histopathology of gill:

The fish exposed to lethal concentration for 96 hrs at 7.1 ppm ( $LC_{50}$  of 96 hrs) of rogor showed noticeable degenerative changes in the architecture of gill, fusion of secondary lamellae (FSL), curling of secondary lamellae (CSL), swelling of chloride cells (SCC), swelling of pillar cells (SPC) and degeneration of secondary lamellae (DSL) have been noticed ( Fig.2 b).

Fish was exposed to sublethal concentration at 1.41 ppm (1/5) of rogor (dimethoate), for 30 days displayed marked histopathological changes. In the gills, the most common symptoms of toxic exposure were haemorrhage (HR), curling of secondary lamellae (CSL), swelling of chloride cells (SCC) and swelling of pillar cells (SPC). (Fig.3 a).

Fish was exposed to sublethal concentration at 0.70 ppm (1/10) of rogor for 30days exhibited noticeable pathological changes. The most common symptom was hemorrhage (HR), curling of secondary lamellae (CSL), swelling of chloride cells (SCC) and widening of primary gill lamellae (WPL). (Fig.4 b).

The fish exposed to sublethal concentration at 0.46 ppm (1/15) of rogor for 30 days showed pathological changes such as bulging tip of primary lamellae (BPL), fusion of secondary lamellae (FSL) hemorrhage (HR) and reduction in secondary lamellae (RSL) have been noticed (Fig.5 a).

## DISCUSSION

In the present study it has been observed that increased exposure period, though exposed to a lower concentration, leads to increased damage to the tissue of the freshwater fishe *Puntius stigma* respectively.



The main objective of the histological assessment of the gill is to verify the possible damages caused to the organism by rogor, evidencing alterations resulted from the acute and chronic toxicity. The gills have a large superficial area through which gaseous exchanges between the blood and the external medium take place (Newstead, 1987). Beside the respiratory function, this organ performs other vital functions such as osmoregulation and excretion (Mallat, 1985). The direct contact between this organ and water promotes the interaction with toxic substances present in the water as they are sites of ionic link to perform normal functions. Adsorption of metal and other pollutant with charges may eventually occur; bring about toxic effect on the organism (Hollis and Playle, 1997).

Many investigators have reported the histopathological changes in gills of different fish species exposed due to pesticides. Mucus extrusion, lamellar swelling, fused and reduced microridges were observed in bluegill sunfish, *Lepomis macrochirus* to different sublethal concentrations of diazinon (Dutta *et al.*, 1997).

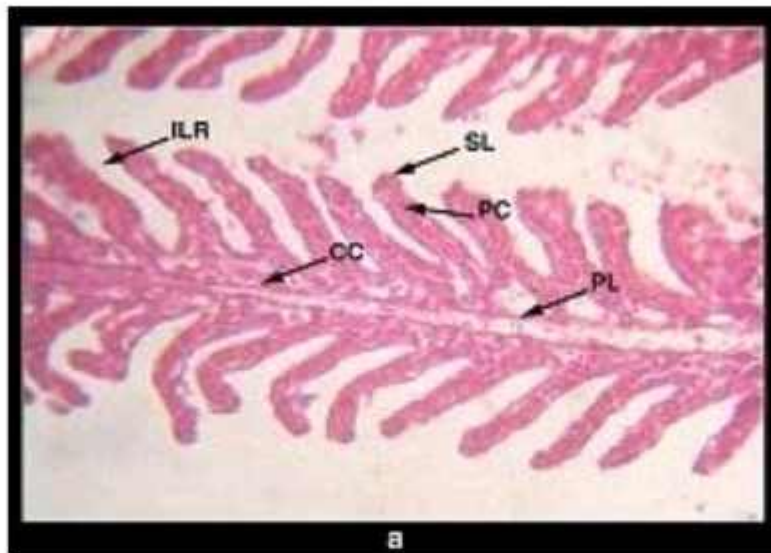
In another study, cloudy swelling, bile stagnation, focal necrosis, atrophy and vacuolization have been reported in the *Corydoras paleatus* exposed to methyl parathion (Fanta *et al.*, 2003). Hyperplasia, vacuolation, disintegrated blood vessels, disrupted hepatocytes, focal coagulative necrosis, disorganized hepatic canaliculi were observed by (Sarkar *et al.*, 2005) in *Labeo rohita* exposed to cypermethrin.

Herbicide atrazine was administered to *Labeo rohita* fingerlings in 120 hours. The used dose of atrazine was 0.18 mg/l for 120 hours. The histopathological changes in the gill tissue like epithelial hyperplasia, curling of secondary lamellae and changes in chloride cells, besides these changes pyknotic nuclei, vacuolization, degradation of epithelial cells and pillar cells, were noticed (Jayachandran and Pugazhend 2009).

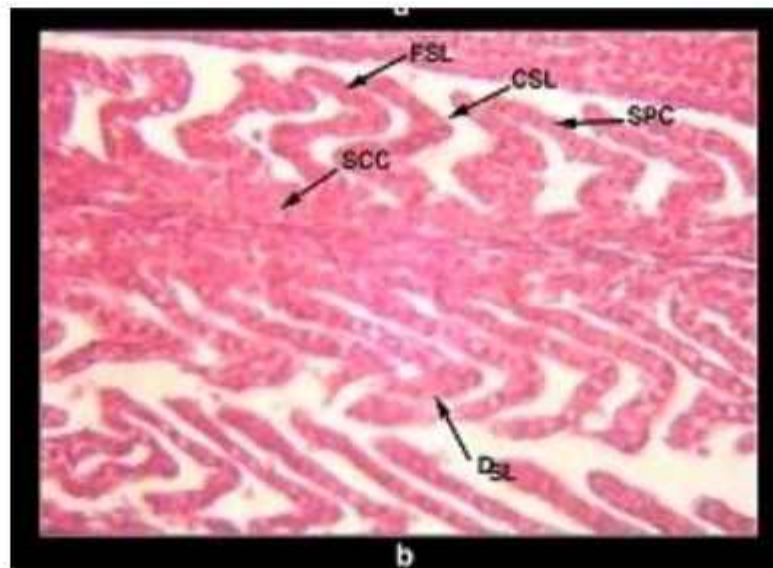
The present study reveals extensive damage to the gill architecture of treated fishes compared to gill of control fish. In the present investigation, *Puntius stigma* subjected to rogor showed marked histopathological changes in gill like, bulging tip of primary lamellae, Fusion and curling of secondary gill lamellae, widening of interlamellae distance, swelling in pillar and chloride cells and their nuclei appear swollen and pyknotic. Hemorrhage at primary in the rogor treated fishes in contract to control fish. The pathological changes in the gills might have resulted due to shifting from aerobic to anaerobic pathway in tissue respiration of fish under stress.

Histopathological evidences in the present study have been correlated to some extent with the work of ( Paithane, 2010; Butachiram, *et al.*, 2009; Daksh and Capoor; 2011 and Subburaj A *et al.*, 2018).

In the present study an attempts have been made to evaluate the intensity of the damage done to different organs of fishe *Puntius stigma* subjected to its lethal and sublethal concentrations of rogor. Histological changes induced due to the rogor in the gills of the freshwater fishes *Puntius stigma* were studied.

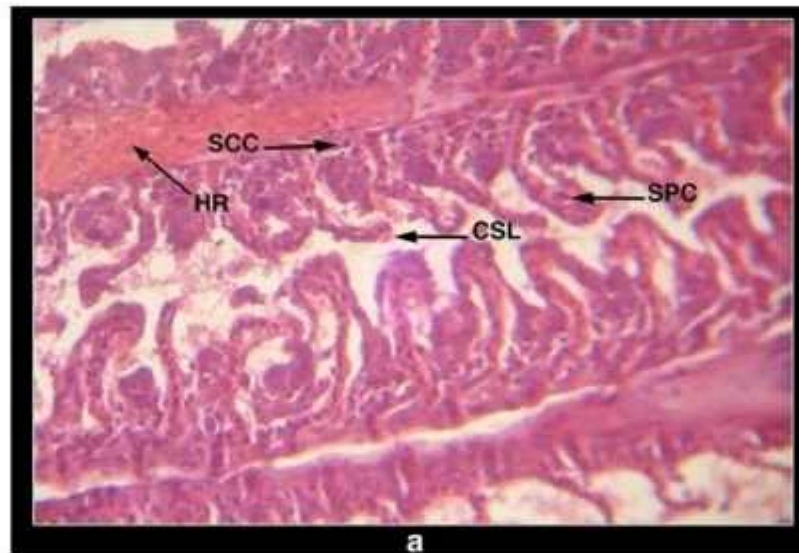


**Fig 1(a) L.S. of Gill of *Puntius stigma* (Control). H/E 100X:** ILR (Inter Lamellar Region), P (Primary gill Lamellae), CC (Chloride Cell), SL (Secondary Gill Lamellae), PC (Pillar Cell)

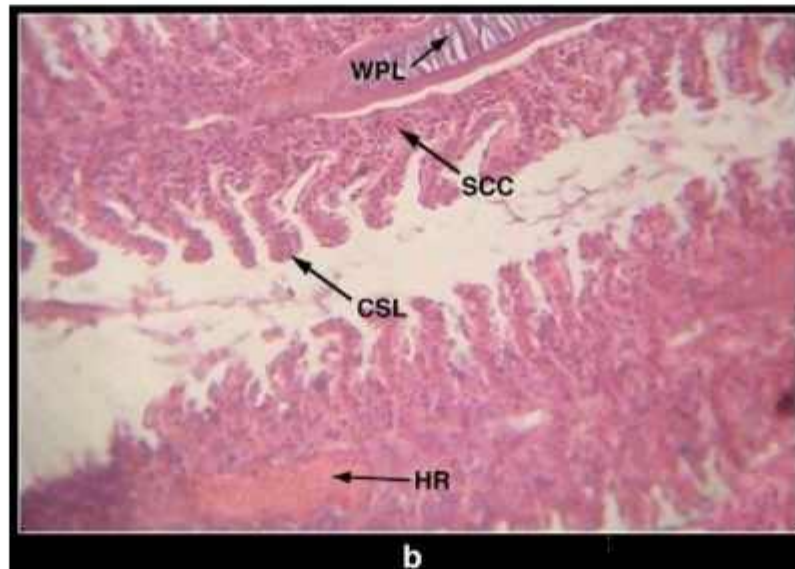


**Fig 2 b) L.S. of gill of *Puntius stigma* after 7.1 ppm ( $LC_{50}$  of 96 hrs) exposure to rogor. H/E 400 x:** DSL (Degenerated Secondary Lamellae), SPC (Swelling of Pillar Cell), CSL (Curling of Secondary Lamellae), SCC (Swelling of Chloride Cells), FSL (Fusion of Secondary Lamellae)

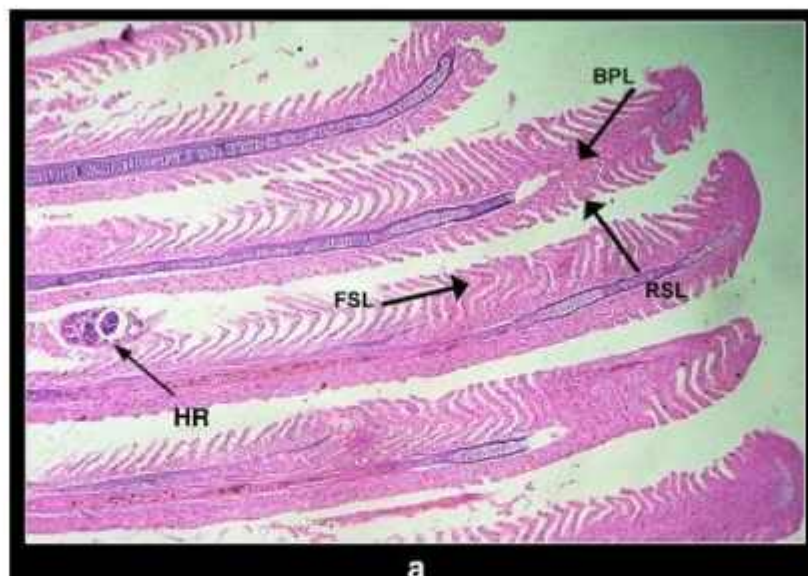




**Fig 3 a) L.S. of gill of *Puntius stigma* after 1.70 ppm (1/5) exposure to rogor. H/E 400 x.** HR (Haemorrhage), CSL (Curling of Secondary Lamellae), SCC (Swelling of Chloride Cells) and SPC (Swelling of Pillar Cells).



**Fig 4 b) L.S. of gill of *Puntius stigma* after 0.70 ppm (1/10) exposure to rogor. H/E 400 x.** SCC (Swelling of Chloride Cells), WPL (Widening of Primary Lamellae), HR (Haemorrhage), CSL (Curling of Secondary Lamellae).



**Fig 5 a) L.S. of gill of *Puntius stigma* after 0.46 ppm (1/15) exposure to rogor. H/E 100 x.** BPL (Bulging tip at the Primary Lamellae), FSL (Fusion of Secondary Lamellae), RSL (Reduced Secondary Lamellae), HR (Haemorrhage).

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# **JOURNAL OF GLOBAL RESOURCES**



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## INDUCED BREEDING OF FRESH WATER FISH CATLA CATLA BY THE APPLICATION OF CARP PITUITARY EXTRACT AND OVAPRIM, AT FISH BREEDING CENTER JAIKWADI, PAITHAN, DIST. AURANGABAD (M.S.) INDIA.

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### Abstract

In present study, June - August 2009 and June-August 2010. (breeding season) spawning response of ovaprim compared with pituitary extract in *Catla catla*, at fish breeding center at Jaikwadi, Paithan Dist. Aurangabad (M.S.) India. Total ten trial doses of ovaprim were and ten trial doses of Carp Pituitary Extract (CPE) were used for induced breeding in Indian major carps i.e *Catla catla*,. The overall fertilization 77.12% was found with CPE treatment. and 94.20% with ovaprim treatment. The overall hatching 68.25% with CPE treatment and 92.08% with Ovaprim.

**Key words:** Induced breeding , *Catla Catla*, Synthetic hormone, Carp pituitary extract, Fertilization rate, hatchling rate etc.

### INTRODUCTION

Fish serves as an important source of human diet as they provide proteins, fats and especially vitamins A and D. A special feature of fish is content of vitamins - B, which is absent in plant food. Fish is a good source of calcium. Polyunsaturated fatty acids (PUFA) belonging to linolenic acid series (18:3) are normally present in fish. Fish oil is essential for the prevention of coronary heart diseases. Balanced ratios of  $\omega$ 3 linolenic acid (18:3) and  $\omega$ 2 linoleic acid (18:2) in fish flesh are found to be useful for maintaining a healthy heart. The most important fatty acid for human diet is linoleic acid (18:2n6) and linolenic acid (18:3n3), because they cannot be endogenously synthesized (George *et al.*, 2000).

In order to provide food to the ever increasing population, agricultural production alone may not be sufficient to fulfill the demand of the country. As fish food is cheap, rich in protein can possibly be used as an alternative. For this the production of fish on a commercial basis has to be increased, for which all efforts both from research point of view as well as government needed support. The fish eating population is about 56% with a per capita consumption of 9.5 kg/annum. (Jagtap, 2002).

Due to heavy population growth, severely facing the problem of malnutrition and health hazards in common people. For the increasing demand of nutritious food and to get rid off malnutrition, scientists are busy to explore the aquatic resource to the maximum to tide over the problem of people. In the present investigation comparative study of ovaprim and CPE was carried out and finding out an effective substitute for CPE.

### MATERIAL AND METHODS

The experiments were carried out during June - August 2009 and June-August 2010. (breeding season) at fish breeding center Jayakwadi, Paithan, Dist. Aurangabad in Maharashtra state 55 km away from Aurangabad. Brooders were collected from the stocking pond of fish breeding center at

Jayakwadi. Healthy males and females were selected: by the external morphological characteristics males and females were identified for the experiments.

After selection of males and females of *Catla catla* in the ratio 2:1 (male: female) were brought to circular hatchery. Pituitary extract was injected intramuscularly in the dorsolateral region. The first dose 0.2 - 0.4 ml/kg body weight was administered to the females for promoting maturation and second dose 0.6 - 0.8 ml/kg body weight was administered to the females at the same time, the first dose 0.2 - 0.4 ml/kg body weight was administered to the males. At the same time for inducing spawning a single dose of ovaprim 0.4-0.6 ml/kg body weight were administered to the both males and females.

Injected brooders were released in a breeding pool. Experimental brooders were observed for 72 hrs after injection; at interval of 4 to 6 hrs the fishes gave responses as a behavioral changes, regarding, maturation, ovulation and spawning.

#### Preparation of pituitary extract:

The pituitary glands were collected from Indian major carp in the month of June to August. To procure the pituitary, the top of the skull was removed with the help of a knife. Collected pituitaries were homogenized in 0.6% salt solution or distilled water. The solution was centrifuged and the clear supernatants were used for injection.

#### OVAPRIM:

Ovaprim is a synthetic drug (spawning hormone for fish) manufactured by M/s Syndel Laboratories Ltd., Canada, containing 20 µg sGnRH (salmon gonadotropin releasing hormone) and 10 mg domperidone in 1 ml solution. It was used for final maturation spawning of *Catla catla* and effectiveness is compared with CPE.

#### Counting of egg:

Total number of eggs laid can be calculated by using following formula

$$\text{Total no. of eggs Laid (approx)} = \frac{\text{Average number of eggs}}{\text{each sample beaker}} \times \text{Number of beakers of eggs}$$

#### Percentage of Fertilization:

The fertilization rate was calculated through random sampling by examining 2-3 samples from each breeding tank by using following formula

$$\text{Fertilization rate (\%)} = \frac{\text{Average no. of fertilized Eggs in a sample}}{\text{Average no. of eggs in a sample}} \times 100$$

#### Percentage of Hatchling:

Percentage of hatchling were calculated by following formula

$$\text{Hatchling \%} = \frac{\text{Total no. of spawn}}{\text{Total no of fertilized eggs}} \times 100$$

**Table no. 1:- Spawning response of female *Catla catla* with Pituitary extract. (Year 2009)**

Mon	No. of female treated	Total wt of female (kg)	Average no. of eggs obtained	Dose of Pituitary extract ml/kg body weight		Average no. of fertilized eggs	Total no. of hatchling	Average no. eggs Kg <sup>-1</sup> (Fecundity)	Average no. fertilized eggs Kg <sup>-1</sup>	Average no. Hatchling eggs Kg <sup>-1</sup>	Fertilization rate (%)	Hatchling rate (%)
				I st	II nd							
Jun	4	12.0	9800	0.	0.	6800	40000	7906	5666	33333	69.38	58.82



e 09			00	2- 0. 4	6- 0. 8	00	0	9	6			
July 09	4	16.5	1300 000	0. 2- 0. 4	0. 6- 0. 8	1000 000	69000 0	7878 7	6060 6	41818	76.92	69
July 09	4	16.5	1200 000	0. 2- 0. 4	0. 6- 0. 8	9300 00	63500 0	7272 7	5636 3	38484	77.5	68.27
Aug .09	4	17.5	1300 000	0. 2- 0. 4	0. 6- 0. 8	9700 00	63000 0	7428 5	5542 8	36000	74.61	64.94
Aug .09	4	21.5	1700 000	0. 2- 0. 4	0. 6- 0. 8	1450 000	11350 00	8166 6	6744 1	52790	85.29	78.82

**Table no. 2:- Spawning response of female *Catla catla* with Ovaprim (Year 2009)**

Mon ths	No. of fem ale treat ed	Tot al wt of fem ale (kg)	Aver age no. of eggs obtai ned	Dose of ovap rim ml/k g body weig ht	Aver age no. of fertili zed eggs	Total no. of hatch ling	Aver age no. eggs Kg-1 <small>Fecundi ty</small>	Aver age no. fertili zed eggs Kg-1	Avera ge no. Hatch ling eggs Kg-1	Fertiliz ation rate (%)	Hatch ling rate (%)
June 09	4	19.0	2000 000	0.4 - 0.6	1900 000	17900 00	1210 52	9268 2	87317	92.00	89.31
July 09	4	12.0	1450 000	0.4 - 0.6	1370 000	12300 00	9529 4	1141 66	10250 0	94.48	89.78
July 09	4	16.0	1760 000	0.4 - 0.6	1690 000	15600 00	1208 33	1056 25	97500	96.02	92.30
Aug. 09	4	17.0	1620 000	0.4 - 0.6	1500 000	13500 00	1400 00	8823 5	79411	92.59	90
Aug. 09	4	20.5	2300 000	0.4 - 0.6	2116 000	18900 00	1100 00	1113 68	99473	95.00	94.21

Mont	No. of fem ale trea ted	Tot al wei ght of fem ale	Aver age no. of eggs obtai ned	Dose of Pitutar y extrac t ml/kg	Aver age no. of fertili zed eggs	Total no. of hatch ling	Aver age no. eggs Kg-1 <small>Fecundi ty</small>	Aver age no. fertili zed eggs Kg-1	Avera ge no. Hatch ling eggs Kg-1	Fertiliz ation rate (%)	Hatch ling rate (%)
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		(kg)		body weight								
				I st	II nd							
June 10	4	10.5	<b>7800 00</b>	0. 2- 0. 4	0. 6- 0. 8	5700 00	38000 0	7428 5	5428 5	36190	73.07	66.66
July 10	4	7.0	5350 00	0. 2- 0. 4	0. 6- 0. 8	4200 00	30000 0	7642 8	6000 0	42857	78.50	70.42
July 10	4	13.0	9000 00	0. 2- 0. 4	0. 6- 0. 8	7200 00	51000 0	6923 0	5538 4	39230	<b>77.64</b>	<b>68.18</b>
Aug .10	4	10.5	8300 00	0. 2- 0. 4	0. 6- 0. 8	6500 00	43000 0	7904 7	6190 4	40952	78.31	66.15
Aug .10	4	12.0	<b>8500 00</b>	0. 2- 0. 4	0. 6- 0. 8	<b>6600 00</b>	<b>45000 0</b>	<b>7083 3</b>	<b>5500 0</b>	<b>37500</b>	<b>80</b>	<b>71.83</b>

Table no. 3:- Spawning response of female *Catla catla* with Pituitary extract. (Year 2010)

Table no. 4:- Spawning response of female *Catla catla* with Ovaprim (Year 2010)

Mon ths	No. of fem ale treat ed	Tot al wei ght of fem ale (kg)	Aver age no. of eggs obtai ned	Dose of ovap rim ml/kg body weig ht	Aver age no. of fertili zed eggs	Total no. of hatchl ing	Aver age no. eggs Kg-1 <small>Fecundi ty</small>	Aver age no. fertili zed eggs Kg-1	Avera ge no. Hatch ling eggs Kg-1	Fertiliz ation rate (%)	Hatch ling rate (%)
June 10	4	18.0	1700 000	0.4 - 0.6	1595 000	14400 00	9756 0	8861 1	80000	93.82	90.28
July 10	4	17.5	2015 000	0.4 - 0.6	1914 000	18000 00	9444 4	1093 71.	10285 7	94.98	94.04
July 10	4	19.5	2200 000	0.4 - 0.6	2112 000	19640 00	1225 00	1083 07	10071 7	<b>93.06</b>	92.99
Aug. 10	4	20.0	2450 000	0.4 - 0.6	2280 000	21700 00	1151 42	1140 00	10850 0	<b>96</b>	95.17
Aug. 10	4	20.5	2210 000	0.4 - 0.6	2080 000	19300 00	1128 20	1014 63	94146	94.11	<b>92.78</b>



**Table no. 5: Overall effect of Pituitary extract and ovaprim on spawning, *Catla catla*. (2009-2010)**

Pituitary extract		Ovaprim	
Parameters	Results	Parameters	Results
No. of females treated	40	No. of females treated	40
Total weight of females	137	Total weight of females	180
Total no. of eggs obtained	1037500	Total no. of eggs obtained	1970500
Total no. of fertilized eggs	805000	Total no. of fertilized eggs	1855700
Total no. of hatchlings	556000	Total no. of hatchlings	1712400
Average no. eggs per kg.	75636	Average no. eggs per kg.	112964
Average no. of fertilized eggs per kg.	58307	Average no. of fertilized eggs per kg.	103383
Average no. of hatchlings per kg.	39915	Average no. of hatchlings per kg.	95242
Overall fertilization %	77.12	Overall fertilization %	94.20
Overall hatchlings %	68.25	Overall hatchlings %	92.08

## RESULTS

In the present study we have practiced intramuscular injections in each trial during June-August 2009 to June- August 2010 applying appropriate doses of the hormones. Aggressiveness in the brooders was noticed after 4-6 hrs, of the second dose (0.6 - 0.8 ml/kg body weight) of pituitary extract to female and first dose (0.2 - 0.4 ml/kg body weight) of pituitary extract to male. Whereas the single dose of ovaprim were administrated to both male and female *C. catla*.

The ratio of the male:female (2:1) were selected for each trial. In the present study, 80 males and 40 females which were healthy and disease free brooders selected for the experiments. The average results during study period i.e June-August 2009 and June-August 2010 have been tabulated (Table nos. 1, 2, 3 & 4).

### Spawning response due to pituitary extract (2009):

In the month of June 2009 the number of treated females fish were four, total weight of fish was recorded 12 kg. The minimum response was recorded the average number of eggs obtained

980000, average number of fertilized eggs were 680000, average number of hatchlings were 400000, average number of eggs per kg body weight of the fish was 79069, average number of fertilized eggs per kg body weight of the fish was 56666, average number of hatchlings per kg body weight of the fish was 33333, fertilization rate (%) was 69.38% and hatchlings rate (%) was 58.82% of *C. catla* presented (Table no. 1).

While in the month of August 2009 the number of treated females fish were four, total weight of fish recorded was 21.5 kg. maximum response was recorded such as the average number of eggs obtained 1700000, average number of fertilized eggs were 1450000 average number of hatchlings were 1135000, average number of eggs per kg body weight of the fish was 81666, average number of fertilized eggs per kg body weight of fish was 67441, average number of hatchling per kg body weight of the fish was 52790, fertilization rate (%) was 85.29% and hatchling rate (%) was 78.82 % of *C. catla* presented (Table no. 1).

#### **Spawning response due to ovaprim ( 2009):**

During June, 2009 the number of treated female fish were four, total weight of fish recorded was 19.0 kg. the minimum response was observed such as the average number of eggs obtained 2000000, average number of fertilized eggs were 1900000, average number of hatchlings were 1790000, average number of eggs per kg body weight of fish was 121052, average number of fertilized eggs per kg body weight of fish was 92682, average number of hatchling per kg body weight of fish was 87317, fertilization rate (%) was 92.00% and hatchling rate (%) was 89.31% of *C. catla* presented (Table no. 2).

In the month August, 2009 the number of treated females fish were four, total weight of fish recorded was 20.5 kg. the maximum response was noticed such as the average number of eggs obtained 2300000, average number of fertilized eggs were 2116000, average number of hatchling were 1890000, average number of eggs per kg body weight of fish was 110000, average number of fertilized eggs per kg body weight of fish was 111368, average number of hatchling per kg body weight of fish was 99473, fertilization rate (%) was 95.00% and hatchling rate (%) was 94.21% of *C. catla* presented (Table no. 2). Fertilization and hatchling rate (%) which were observed due to pituitary extract and ovaprim are presented in (Fig no. 1& 2).

#### **Spawning response due to pituitary extract (2010):**

During June, 2010 the number of treated female fish were four, total weight of fish recorded was 10.5 kg. minimum spawning response was found such the average number of eggs obtained were 780000, average number of fertilized eggs were 570000, average number of hatchling were 380000, average number of eggs per kg body weight of fish was 74285, average number of fertilized eggs per kg body weight of fish was 54285, average number of hatchling per kg body weight of fish was 36190, fertilization rate (%) was 73.07% and hatchling rate (%) was 66.66 % of *C. catla* presented (Table no. 3).

In the month August, 2010 the number of treated female fish were four, total weight of fish recorded 12.0 kg. maximum response was found such as the average number of eggs obtained were 850000 average number of fertilized eggs were 660000 average number of hatchling were 450000, average number of eggs per kg body weight of fish was 70833 average number of fertilized eggs per kg body weight of fish was 55000, average number of hatchlings per kg body weight of fish was 37500, fertilization rate (%) was 80.00% and hatchling rate (%) was 71.83 % of *C. catla* presented (Table no. 3).

#### **Spawning response due to ovaprim ( 2010):**

During the month of June 2010 the numbers of treated female fish were four, total weight of fish recorded was 18.0 kg. minimum spawning response was found such as the average number of eggs obtained were 1700000, average number of fertilized eggs were 1595000, average number of hatchling were 1440000, average number of eggs per kg body weight of fish was 97560, average number of fertilized eggs per kg body weight of fish was 88611, average number of hatchling per kg body weight of fish was 80000, fertilization rate (%) was 93.82% and hatchling rate (%) was 90.28 % of *C. catla* presented (Table no. 4) and fertilization and hatchling rate (%) which were observed due to pituitary extract and ovaprim are presented in (Fig no. 3 & 4).

During month August, 2010 the number of treated female fish were four, total weight of fish recorded 20.5 kg. the maximum response was observed such as the average number of eggs obtained 2210000, average number of fertilized eggs were 2080000, average number of hatchling were 1930000, average number of eggs per kg body weight of fish was 112820, average number of fertilized eggs per kg body weight of fish was 101463, average number of hatchling per kg per



kg body weight of fish was 94146, fertilization rate (%) was 94.11% and hatchling rate (%) was 92.78% of *C. catla* presented (Table no. 4).

The overall effect of pituitary extract such as average number of eggs per kg body weight of fish was 75636, average number of fertilized eggs per kg body weight of fish 58307, average number of hatchling per kg body weight of fish 39915 overall fertilization rate (%) 77.12% hatchling rate (%) 68.25% of *C. catla* presented in (Table no. 5).

While the overall effect due to ovaprim such as average number of eggs per kg was 112964, average number of fertilized eggs per kg was 103383 average number of hatchling per kg 95242, overall fertilization rate (%) 94.20%, hatchling rate (%) 92.08% of *C. catla* presented in (Table no. 5). The effect of ovaprim on spawning response was noticed such as average number of eggs obtained, average number of fertilized eggs, total number of hatchling, average number of eggs per kg body weight of fish, average number of fertilized eggs per kg body weight of fish, average number of hatchling, per kg body weight of fish, fertilization rate (%), hatchling rate (%) of *C. catla* was higher as compared with pituitary extract in every trial. The fertilization and hatchlings percentage were graphically presented (Fig. nos. 1, 2, 3 & 4). The overall response due ovaprim was found better than response due to pituitary extract.

#### **FERTILIZATION (%) RATES:**

In the present study due to the pituitary extract the overall average number of fertilized eggs per kg body weight was 58307, Overall fertilization 77.12% while due to the ovaprim the overall average number of fertilized eggs per kg body weight of fish was 103383 and Overall fertilization rate 94.20%.

Fertilization rate was analyzed by T- test, the average number of fertilized eggs per kg body weight of treated fish with pituitary extract as well as ovaprim t- value 1.72 recorded was showed non- significant difference. However, due to ovaprim treatment 17% better results towards fertilization rate (%) as compared with the pituitary extract treatment had been recorded.

#### **HATCHLING (%) RATES:**

In the present study due to the pituitary extract the overall average number of hatchling eggs per kg body weight of fish was obtained 39915 and the overall hatchling rate 68.25% while due to the ovaprim the overall average number of hatchling eggs per kg body weight of fish was obtained 95242 and overall hatchling rates 92.08% (Table no. 5)

Hatchling rate was analyzed by T- test, the average number of fertilized eggs per kg body weight of fish treated with pituitary extract as well as ovaprim t- value 1.27 recorded was showed non- significant difference. However, due to ovaprim treatment 24% better results were noticed towards hatchling rate as compared with the pituitary extract treatment.

### **DISCUSSION**

During the present study, a single intramuscular dose of pituitary extract administered to the male and double dose to the female. Whereas due to a single dose of synthetic hormone ovaprim to both male and female were resulted in successful spawning in Indian major carp, *C. catla*. The results of the hormonal stimulation in the present study are quite similar to the earlier findings using ovaprim-C (Muhammad *et al.*, 2005; Basaran *et al.*, 2008).

Results of the present study indicate that ovaprim had the better results as compared with the pituitary extract. Due to pituitary extract ovulation, fertilization and hatchlings values in *C. catla* were recorded such as, total number of eggs 1037500, fertilization percentage 69.38-78.50 %, hatchlings percentage 58.82-78.82%.

Due to ovaprim ovulation, fertilization percentage and hatchlings percentage in *C. catla* were recorded such as total number of eggs 1970500, fertilization percentage 92 - 96.02 %, hatchlings percentage 89.31 - 94.98 %.

In the present study from June-August 2009 – 2010 (breeding seasons), every trial shows that the number of eggs per Kg body weight are higher in ovaprim treated fishes as compared with the pituitary extract treated fishes. Due to the pituitary extract administration, the number of eggs obtained per kg body weight of fish were 79069 – 81666 and due to the ovaprim administration the number of eggs obtained per kg body weight of fish recorded were 94444 – 140000.

Earlier workers have been reported that ovaprim has better results in induced spawning, fertilization and hatchling rate compared with pituitary extract are more or less similar to the present findings regarding induced breeding (Nandeeshia *et al.*, 1990); (Azad *et al.*, 1991); (Khan *et al.*, 1992); (Alok *et al.* 1993); (Chauhan *et al.*1999); (Reddy *et al.*, 2000); (Ragade, 2000);

(Dhabe, 2002); (Dhawan *et al.*, 2004); (Das, 2004); (Muhammad *et al.* 2005); (Naeem *et al.*, 2005a, b, c); (Rokade *et al.* 2006); (Sahoo *et al.*, 2007); (More *et al.*, 2010); (Sayed *et al.*, 2010); (Indira *et al.*, 2012); (Abdulraheem *et al.*, 2012) and (Indira, 2012). (More *et al.*, 2016)

## Conclusions

Present result indicates that ovaprim might be considered best substitute over pituitary extract during induced breeding.

Based on present study it is consequently concluded that the rate of fertilization and hatchling are higher in ovaprim because reduced handlings of brood fish due to the single dose administrated to both the sexes at the same time which decrease post spawning mortality of fish and increase spawning response in ovaprim dose compared with pituitary extract treatment.

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## SEASONAL VARIATION OF GROUND WATER PARAMETERS IN A DUMPING SITE AT BEED, DISTRICT BEED (M.S.), INDIA.

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### Abstract:

The groundwater is considered as less polluted as compared to the surface water, due to the reduced exposure to the external environment. But lack of sanitation, improper waste management, have a potential to spoil the purity of the ground water leading to increased pollution levels. Groundwater is the water located beneath the earth's surface in soil pore spaces and in the fractures of rock formations. A unit of rock or an unconsolidated deposit is called an aquifer when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table. Groundwater is recharged from, and eventually flows to, the surface naturally; natural discharge often occurs at springs and seeps, and can form oases or wetlands. The present investigation deals with assessment of the water quality of ground water analysis in the vicinity of a dumping site at Beed. The physico-chemical characteristics were studied and analyzed during January 2012 - December 2012. Seasonal variations at eight different vicinity of a dumping site at Beed [M.S] India were observed. The results revealed that the condition of different vicinity of a dumping site at Beed in different seasons showed fluctuations in physico-chemical parameters.

**Key words:** seasonal variations, ground water, quality and vicinity of a dumping site.

### INTRODUCTION

In the recent time, it's standard that what's the worth or importance of fresh to the all quite animals, plant and mortals, as a result of fresh relates to their health. As water is of course occurring water on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers and streams, and underground as groundwater in aquifers and underground streams. water is mostly characterised by having low concentrations of dissolved salts and different total dissolved solids. the quantity of water on the world earth is calculable to be close to 1388 million billion cube-shaped meters. Of this total quantity, major half 1348 million billion cube-shaped meters (97.3%) is entrenched by the salt water within the oceans. Only 37.5 billion metric capacity unit (2.7%) water happens within the kind of water. Of this total water, 28200 thousand billion metric capacity unit (2.04%) is within the kind of polar ice and glaciers, 8450 thousand billion metric capacity unit (0.61%) as well water and 127 thousand billion cube-shaped meters within the kind of lakes, rivers, etc. (Tyagi et al., 2017).

Open dumps- sadly still principally determined in developing countries – wherever the waste is drop in uncontrolled manner, are often prejudicial to the urban setting. These wastes return from a varied vary of sources from domestic, agricultural and industrial. In Beed town, the solid waste is drop within the most unscientific manner not like in several developed countries, wherever the waste is drop on the premise of their nature, like perishable and non-biodegradable. The solid waste collected and drop in Beed town is heterogeneous in nature. The municipal solid waste, additionally to perishable waste like polysaccharide, hemicelluloses, lignin, pectin, starch, protein, lipids additionally possesses range of chemicals like detergents, inorganic chemicals, complicated organic chemicals and metals. These parts square measure

themselves greatly virulent for the setting and to boot uncontrolled microbic action could lead to unleash of a lot of virulent components, that weren't gift in an exceedingly free or reactive type within the waste. just in case of unplanned selling of the MSW, the longer degradation time leads to the longer retention of the waste, thereby, increasing the possibilities of movement of leachate down the bottom to succeed in the bottom water sources and contaminating them. This solid waste harbors a large kind of microorganisms. In an open uncontrolled lowland, these micro organisms underneath favorable growth conditions, such as, temperature, wet and accessibility and non

These organic chemistry reactions lead to the degradation of the organic chemicals and formation of a liquid "leachate". This leachate being made in organic content additionally solubilize several serious metals like lead, copper, zinc, manganese, cadmium, etc. The fast increase industry results in increase in urbanization and population, thus the degradation of air, water and soil quality. The effluents of those industries gave a good deal of influence on the pollution of the water bodies, these effluents will alter the physical, chemical and biological nature of the receiving water body (Chaturvedi et al., 2003).

The determination of the concentration levels of serious metals in these waters, moreover because the elucidation of the chemical forms within which they seem could be a prime target in environmental analysis these days. Intensive studies on groundwater quality are distributed by varied staff [Joshi and Seth (2011); Majolagbe et al., (2011); Memon et al., (2011); Jameel et al., (2011); Raju et al., (2009); Gupta et al., (2009); Reddy et al., (2011)]. Review on the literature showed that no studies are undertaken within the study space in relevancy physico-chemical characteristics of water nonetheless. The current investigation has been undertaken to assess the water quality of well water analysis within the section of a selling website at Beed, [M.S] India.

## **MATERIAL AND METHODS**

Water samples were collected from the dug wells and bore wells, around the dumping site. The sampling stations were at a minimum of 500 meters distance from each other. The area selected was of about 1 Km radius from the dumping ground at Jirewadi. The sampling stations were divided in core zone (approximately 1km.) and buffer zone (area after the core zone). The sampling was carried out in the mid of every season i.e. Summer (in the month of May), Monsoon (in the month of August) and Winter (in the month of December) for two years. The water samples were collected in the sterile polythene bottles of 1 liter capacity between 8.00 am to 11.00 am from January 2012 to December 2012. During sampling all the precautions were taken as per the standard guidelines to avoid any possible contamination. In case of dug wells, the water samples were collected by lowering the bottle at depth of about 1 foot below the surface and then opening the cap to collect the water. For bore wells, the tap was fully opened and allowed to run to waste for about 5 minutes and then the water sample was collected in the sterile sampling bottles. Separate samples were collected for dissolve oxygen in 250 ml bottles and dissolved oxygen was fixed in the field by adding alkaline iodide-azide solution immediately after collection. The samples were analyzed immediately in the laboratory. The different analysis was carried out within five hours after collecting the water samples. Water was stored at 5°C in the refrigerator for any delayed analysis.

The physico-chemical characteristics water like Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Calcium Hardness, Magnesium Hardness, and Total Hardness were analyzed in the laboratory. The samples were transported to laboratory in the ice boxes and kept in refrigerator until all the analysis was performed according to standard methods APHA, (1998); Trivedi and Goel, (1987).

## **RESULT AND DISCUSSION**

The season wise physico-chemical parameters data of ground water analysis in the vicinity of a dumping site at Beed [M.S] India have been presented in table. No. 1 to 3.

### **Dissolved Oxygen (DO):**

Dissolved oxygen is one of the most important abiotic factors influencing life of an aquatic ecosystem. Its depletion perhaps is the most critical manifestation of pollution and effects of low level of dissolved oxygen. The dissolved oxygen level in natural water depends on physical,



chemical and biological activities of the water body. Concentration of dissolved oxygen decreases with increase in temperature. A healthy stream or lakes should have adequate dissolved oxygen. The oxygen rich water, bacteria and protozoan and microorganisms multiply rapidly and then become food for advanced aquatic animals. The presence of dissolved oxygen is essential to maintain variety of forms of biological life in water.

In the study area Winter-2012 Dissolved Oxygen in groundwater ranged between 2.8 mg/l to 4.9 mg/l, the highest value was recorded for sampling station W1 and lowest was at N1. During Summer-2012 it ranged between 2.3 to 4.6 mg/l, the highest value was recorded at W1 and lowest was at N1. During Monsoon-2012 it ranged between 2.1 to 4.1 mg/l, the highest value was recorded at W1 whereas lowest was found at N2. (Table No. 1, 2 and 3).

#### **Biological Oxygen Demand (BOD):**

BOD is an important parameter indicates the magnitude of water pollution by oxidizable organic matter. The main sources of organic pollution untreated domestic sewage, agricultural runoff, containing residual fertilizers and certain industrial effluents. The components of oxidizable matter include carbonaceous organic matter, nitrogenous compounds and chemically reducing compounds. In natural course the organic matters on oxidation enters into bio-geo-chemical cycles. However, when an aquatic ecosystem receives excessive organic pollution load due to low availability of dissolved oxygen, net biological oxygen demand generates. BOD thus can be defined as the quantity of dissolved oxygen in mg/l required under test condition (aerobic bacteria) for the organic matter for test sample.

In the study area Winter-2012 Biological Oxygen Demand in groundwater ranged between 6.9 mg/l to 8.8 mg/l, the highest value was recorded for sampling station N1 and lowest was at W1. During Summer-2012 it ranged between 6.9 to 9.0 mg/l, the highest value was recorded at N1 whereas lowest was found at W1. During Monsoon-2012 it ranged between 7.6 to 9.8 mg/l, the highest value was recorded at N1 whereas lowest was found at W1. (Table No. 1, 2 and 3).

#### **Calcium Hardness (CaH):**

Calcium, magnesium and total hardness in the groundwater are inter-related. Calcium is an important element to develop proper bone growth. It is found alkaline in nature. The presence of calcium in the groundwater is from silicate mineral group, such as pyroxene and amphibole in the igneous rocks. In addition, the shales, sandstone also contain calcium in the form of carbonate. Calcium content is very common in groundwater, because they are available in most of the rocks, abundantly and also due to its higher solubility. However, the range of its availability depends on the solubility of calcium carbonate and sulphate. The permissible limit of calcium in drinking water is 75 mg/l.

In the study area during Winter-2012 Calcium Hardness in groundwater ranged between 175 mg/l to 235 mg/l, the highest value was recorded for sampling station N1 and lowest was at E2. During Summer-2012 it ranged between 178 to 289 mg/l, the highest value was recorded at S2 whereas lowest was found at E2. During Monsoon-2012 it ranged between 290 to 182 mg/l, the highest value was recorded at S2 whereas lowest was found at E2. (Table No. 1, 2 and 3).

#### **Magnesium Hardness (MgH):**

Magnesium usually occurs in lesser concentration than calcium due to the fact that the dissolution of magnesium rich minerals is slow process and that of calcium is more abundant in the earth's crust. If the concentration of magnesium in drinking water is more than the permissible limit, it causes unpleasant taste to the water. The magnesium derived from dissolution of magnesium calcite, gypsum and dolomite from source rocks. Magnesium is an essential ion for functioning of cells in enzyme activation, but at higher concentration, it is considered as laxative agent, while deficiency may cause structural and functional changes in human beings. The acceptable limit is 30 mg/l as per BIS standards.

In the study area during Winter-2012 Magnesium Hardness in groundwater ranged between 43.67 mg/l to 55.14 mg/l, the highest value was recorded for sampling station E2 and lowest was at N2. During Summer-2012 it ranged between 28.54 to 55.38 mg/l, the highest value was recorded at E2 whereas lowest was found at S2. During Monsoon-2012 it ranged between 28.54 to 54.16 mg/l, the highest value was recorded at E2 whereas lowest was found at S2. (Table No. 1, 2 and 3).

#### **Total Hardness (TH):**

Total hardness is caused primarily by the presence of cations such as calcium and magnesium and anions such as carbonate, bicarbonate, chloride and sulphate in water. Water

hardness has no known adverse effects; however, some evidence indicates its role in heart diseases and hardness of 150-300 mg/l and above may cause kidney problems and kidney stone formation, as it causes unpleasant taste and reduce ability of soap to produce lather. Hard water is unsuitable for domestic use.

In the study area during Winter-2012 Total Hardness in groundwater ranged between 401 mg/l to 425 mg/l, the highest value was recorded for sampling station N1 and lowest was at E2. During Summer-2012 it ranged between 405 to 427 mg/l, the highest value was recorded at N1 whereas lowest was found at E2. During Monsoon-2012 it ranged between 404 to 432 mg/l, the highest value was recorded at E2 whereas lowest was found at N1. (Table No. 1, 2 and 3).

## CONCLUSIONS

The present study show careful physico-chemical characteristics and quality of spring water analysis within the neighborhood of a eight marketing website at Beed (M.S) India.

1) The neighborhood to the dump website, because it is ascertained that the Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Calcium, Hardness Magnesium Hardness, and Total Hardness for the sampling stations showing physico-chemical properties in far more than WHO prescribed limits. The summer, monsoon and winter seasons shows completely different seasonal fluctuations in numerous physico-chemical parameters.

2) N1 station is additional contaminated than different seven stations. it had been conjointly noted that the samples collected from the neighborhood of the marketing space contained higher concentrations of those pollutants as compared to the samples collected at the farther sampling stations.

3) It was ascertained that with the passage of your time the values for numerous parameters tend to extend and reach nearer or on the far side the edge values. This clearly indicates that the continued marketing of the municipal solid waste is slowly and steady moldering the groundwater sources.

4) Although the extent of theses contaminants isn't noticeably harmful to human health, however this investigation will indicates, that there sturdy prospects that different fatal pollutants like metal ions could have reached these water sources at the side of the pollutants studied.

5) To improve quality of water there ought to be continuous watching of pollution level and maintain the favorable conditions essential for increase spring water quality within the neighborhood of a marketing website at Beed (M.S) India.



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## Brønsted Acidic Ionic Liquid: An Efficient and Reusable Catalyst for the Synthesis of Xanthenes Derivatives as Antimicrobial and Antioxidant Agents

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### ABSTRACT

In the present investigation, a mild, efficient and simple procedure has been developed for the synthesis of xanthene derivatives is described via three component condensation of aromatic aldehydes with  $\beta$ -naphthol or dimedone or mixture of  $\beta$ -naphthol and dimedone using Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluene-sulfonate under solvent-free conditions. The synthesized compounds were screened for antimicrobial activities against Gram-positive (*Bacillus subtilis*), Gram-negative (*Pseudomonas aeruginosa*) bacteria and fungus (*Candida albicans*). The antioxidant activities of these compounds were determined by DPPH scavenging free radical method. Present methodology has a number of advantages such as mild reaction condition, inexpensive catalyst, stable at room temperature and it was also found that this catalyst might be recovered quantitatively and reused without much loss of catalytic activity.

### KEYWORDS

Ionic liquid, Xanthenes derivatives, Dimedone,  $\beta$ -naphthol, Recyclable catalyst.

### INTRODUCTION

In the past few decades, heterocyclic chemistry has been played vital role in organic synthesis and pharmaceutical chemistry [1]. Xanthenes and benzoxanthenes are an important constituent in the area of natural and synthetic organic chemistry. The synthesis of xanthenes and its derivatives has received considerable interest due to their wide range of biological and pharmacological activities, such as antiviral [2], antibacterial [3], anti-inflammatory [4], anti-hypertensive [5], anti-tumor [6], anti-HIV infections [7], anti-hyperlipidemic [8], anti-plasmodial [9], activities. Moreover, because of their useful spectroscopic properties these heterocyclic molecules have been widely used as dyes [10] and found applications in laser technologies [11], as sensitizers in photodynamic therapy [12] and in pH-sensitive fluorescent materials [13]. Thus, the synthesis of xanthenes has enormous significance in organic transformation.

Multi-component reactions (MCRs) have emerged as an efficient and powerful tools to build the products in organic and medicinal chemistry, in which more than two reactant molecules react to form a product for their high degree of atom economy, eco-friendly, minimize cost, saving time and appli-

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cation in the several of convergent synthesis of complex organic molecules from simple and readily available substrates in a single synthetic operation [14,15]. Furthermore, MCRs offer the benefits of simplicity and synthetic efficiency over conventional chemical reactions [16]. Additionally, solvent-free conditions construct simpler synthesis, save energy and avoid solvent waste hazards and toxicity [17-19]. Hence, it remains a challenge to develop multi-component reactions with suitable various catalysts.

In recent literature, various methods have been developed for the synthesis of xanthenes derivatives such as acetic acid [20], sulfamic acid [21], succinamide-N-sulphonic acid [22], silica sulfuric acid [23], citric acid [24], lactic acid [25], tartaric acid [26], niobium pentachloride [27], *p*-TSA [28], Ln(III) chloride/chloroacetic acid [29], phosphosulfonic acid [30],  $\text{InCl}_3$  and  $(\text{HPO}_3)_n$  [31],  $\text{SiO}_2\text{-Pr-SO}_3\text{H}$  [32], montmorillonite K10 [33], poly(4-vinylpyridinium)perchlorate [34], iodine [35], etc.

However, some of these above mentioned catalysts have significant advantages but yet it has certain limitation such as drastic reaction conditions, longer reaction time, high temperature, expensive and toxic catalyst and low yields. Therefore, the need of development of new procedure to accomplish a simple, efficient, inexpensive, non-toxic and greener approach is desirable. In current literature, researchers are more interest to use of ionic liquids for the organic transformation because of their a number of properties like easy recoverability, reusability, high thermal stability and non-inflammability, negligible vapour pressure and solvating ability [36,37]. Because of such noteworthy advantages of ionic liquid here, we report the use of efficient and reusable Brønsted acidic ionic liquid triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate to perform a dual role as solvent and catalyst for the synthesis of xanthenes derivatives. In literature, reusable Brønsted acidic ionic liquid has been used for different organic transformations such as  $\beta$ -amino carbonyl compounds [38], synthesis of ethyl acetate [39], substituted imidazoles [40], coumarin derivatives [41] and synthesis of 2,3-dihydroquinazolin-4(1H)-ones [42].

## EXPERIMENTAL

The reagents and solvents were purchased from Merck, S.D. fine and Aldrich chemical companies. Melting points of

all compounds were recorded by open tube capillary method and are uncorrected. The development of reaction and the purity of synthesized compounds were monitored by thin-layer chromatography (TLC), using analytical silica gel plates (Merck 60 F<sub>254</sub>).  $^1\text{H}$  &  $^{13}\text{C}$  NMR spectra were recorded on Bruker spectrometer 500 and 125 MHz, respectively in  $\text{CDCl}_3$  solvent with tetramethylsilane (TMS) as internal standard. Mass spectra were recorded on a macro mass spectrometer, applying electro spray ionization (ESI) method.

**Synthesis of ionic liquid triphenyl(propyl-3-sulphonyl)-phosphonium toluenesulfonate:** Triphenyl(propyl-3-sulphonyl)-phosphonium toluenesulfonate as a stable reagent was easily synthesized by the reaction of triphenylphosphine and 1,3-propane sultone [39] (Scheme-I).

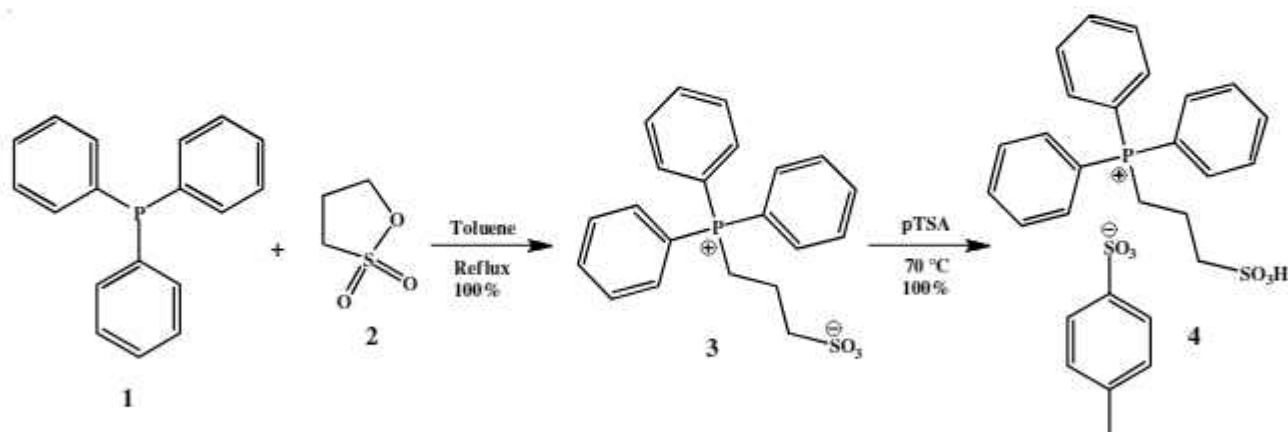
**General procedure for the synthesis of xanthene derivatives:** A mixture of triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate (0.04 g), aromatic aldehyde (1.0 mmol) and the desired substrate (1.0 mmol) was heated at 80 °C under solvent-free conditions. The development of the reaction was monitored by TLC (Scheme-II). After the completion of reaction, ice cold water (10 mL) was poured into the reaction mixture and stirred for 10 min. The catalyst was decanted and the crude product was recrystallized from ethanol.

### Spectral data

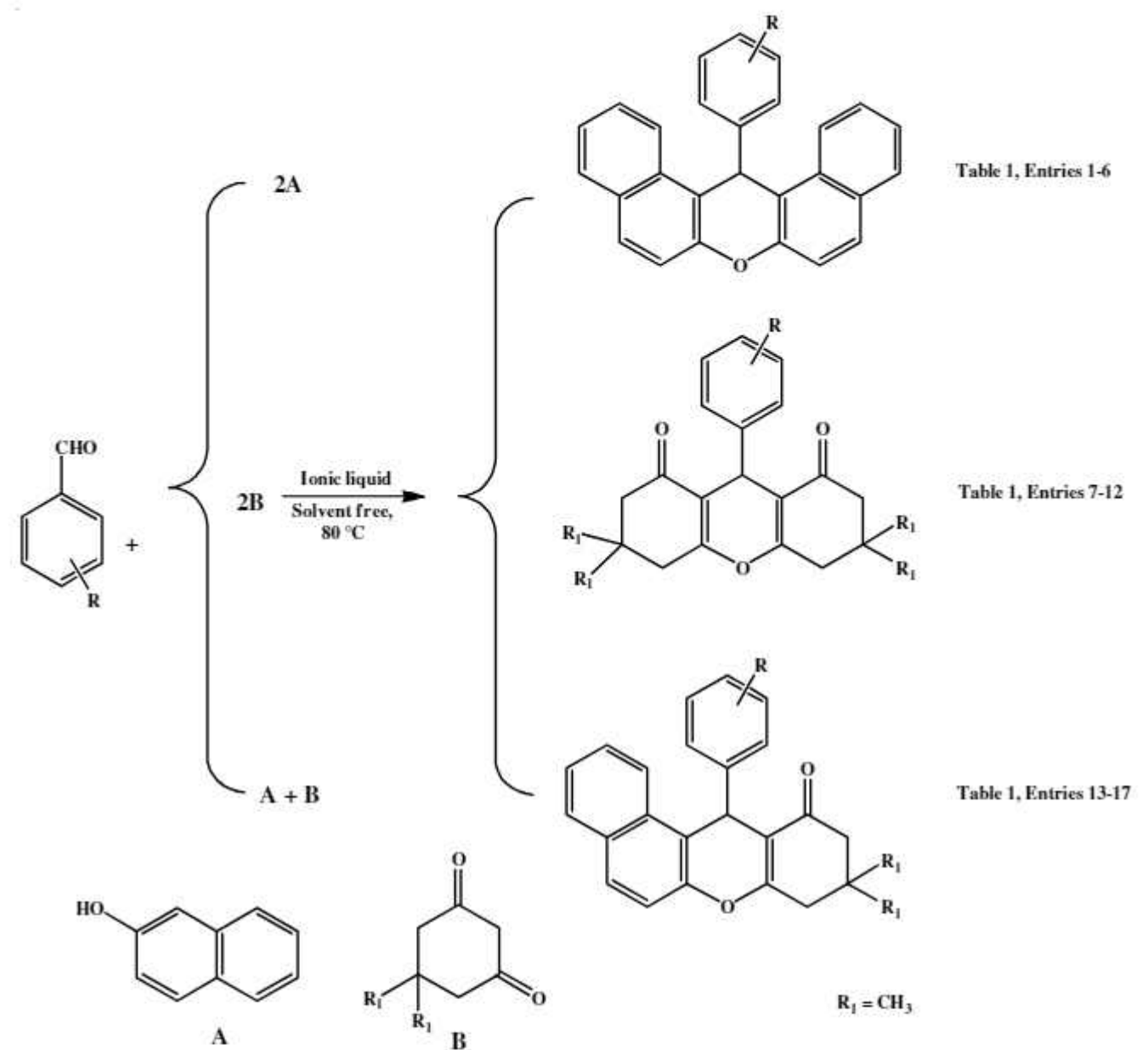
**14-(4-Chlorophenyl)-14H-dibenzo[*a,j*]xanthenes** (Table-1, entry 2):  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 6.45 (s, 1H, CH), 7.07-7.09 (d,  $J$  = 9.3 Hz, 2H, ArH), 7.39-7.83 (m, 14H, ArH), 8.29-8.31 (d,  $J$  = 9.5 Hz, 2H, ArH);  $^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 37.3, 116.7, 118.0, 122.4, 124.3, 126.9, 128.6, 128.9, 129.0, 129.4, 131.0, 131.2, 132.0, 143.4, 148.7; MS:  $m/z$  = 393 (M + H).

**14-(4-Hydroxyphenyl)-14H-dibenzo[*a,j*]xanthenes** (Table-1, entry 3):  $^1\text{H}$  NMR: (500 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 4.73 (1H, br s, OH), 6.42 (s, 1H, CH), 6.56-6.58 (d,  $J$  = 8.8 Hz, 2H, Ar-H), 7.35-7.58 (m, 8H, Ar-H), 7.76-7.82 (m, 4H, Ar-H), 8.34-8.36 (d,  $J$  = 8.4 Hz, 2H, Ar-H);  $^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 37.0, 115.2, 117.4, 118.0, 122.6, 124.2, 126.7, 128.8, 129.3, 131.0, 131.3, 137.4, 148.6, 153.8 ppm MS:  $m/z$  = 375 (M + H).

**14-(3,4-Dimethoxy phenyl)-14H-dibenzo[*a,j*]xanthenes** (Table-1, entry 4):  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 3.68 (s, 3H,  $\text{OCH}_3$ ), 3.72 (s, 3H,  $\text{OCH}_3$ ), 6.44 (s, 1H, CH), 6.65 (d,  $J$  =



Scheme-I: Synthesis of ionic liquid triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate



**Scheme-II: Synthesis of xanthenes derivatives**

8.3 Hz, 1H, ArH), 6.91 (d,  $J = 1.7$  Hz, 1H, ArH), 7.11-7.13 (dd,  $J = 8.3$  Hz,  $J = 1.8$  Hz, 1H, ArH), 7.39-7.58 (m, 6H, ArH), 7.77-7.83 (m, 4H, ArH), 8.40 (d,  $J = 8.4$  Hz, 2H, ArH). <sup>13</sup>C NMR (125 MHz, CDCl<sub>3</sub>):  $\delta = 37.4, 55.7, 110.7, 111.6, 117.4, 117.9, 120.3, 122.7, 124.2, 126.7, 128.7, 128.8, 131.1, 131.4, 137.6, 147.5, 148.7, 149.0$  ppm; MS:  $m/z = 419$  (M + H).

**14-(3-Nitrophenyl)-14*H*-dibenzo[*a,j*]xanthenes** (Table 1, entry 6):  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 6.58 (s, 1H, CH), 7.25–7.85 (m, 13H, ArH), 8.28–8.29 (d,  $J$  = 7.5 Hz, 2H, ArH), 8.40 (s, 1H, ArH) ppm.  $^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 148.8, 148.2, 146.9, 134.2, 131.0, 129.5, 129.0, 127.2, 124.5, 122.7, 122.0, 121.7, 118.1, 115.8, 37.7 ppm; MS:  $m/z$  = 404 ( $M + \text{H}$ ).

**9-(4-Nitrophenyl)-1,8-dioxo-octahydroxanthene** (Table-1, entry 9):  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 0.99 (s, 6H,  $2\text{CH}_3$ ), 1.12 (s, 6H,  $2\text{CH}_3$ ), 2.15-2.27 (m, 4H,  $\text{CH}_2$ ), 2.49 (s, 4H,  $\text{CH}_2$ ), 4.82 (s, 1H, CH), 7.46-7.48 (d,  $J = 8.6$  Hz,

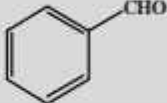
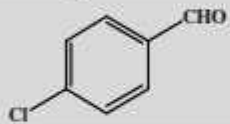
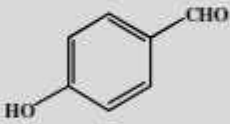
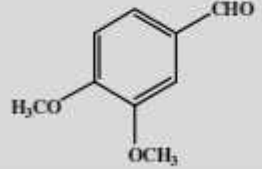
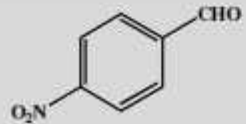
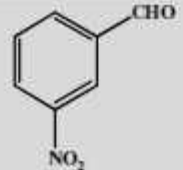
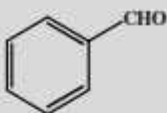
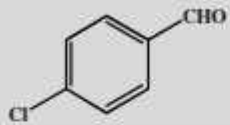
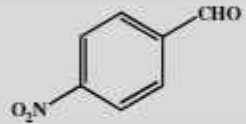
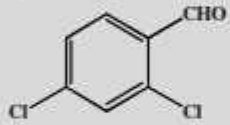
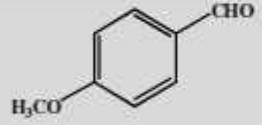
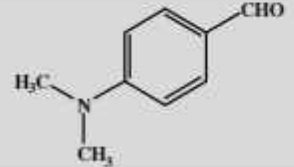
2H, ArH), 8.08–8.10 (d,  $J = 8.8$  Hz, 2H, Ar-H),  $^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 27.2, 29.2, 32.2, 32.3, 40.8, 50.6, 114.5, 123.4, 129.3, 146.4, 151.5, 162.9, 196.2; MS:  $m/z = 396$  (M + H).

**9-(2, 4-Dichlorophenyl)-1,8-dioxo-octahydroxanthene**  
(Table-1, entry 10):  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 1.01 (s, 6H,  $2\text{CH}_3$ ), 1.10 (s, 6H,  $2\text{CH}_3$ ), 2.17 (d, 2H,  $\text{CH}_2$ ), 2.24 (d, 2H,  $\text{CH}_2$ ), 2.44 (d, 2H,  $\text{CH}_2$ ), 2.48 (d, 2H,  $\text{CH}_2$ ), 4.94 (s, 1H, CH), 7.13-7.15 (dd,  $J = 8.3$  Hz,  $J = 1.8$  Hz, 1H, ArH), 7.24 (d,  $J = 1.8$  Hz, 1H, Ar-H), 7.38 (d,  $J = 8.3$  Hz, 1H, ArH);  $^{13}\text{C}$  NMR (125 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 27.3, 29.2, 32.0, 40.7, 50.6, 113.3, 126.7, 129.8, 132.7, 133.7, 134.0, 138.6, 163.2, 196.5; MS:  $m/z = 419$  ( $\text{M} + \text{H}$ ).

**9-(4-Methoxyphenyl)-1,8-dioxo-octahydroxanthene**  
(Table-1, entry 11): <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>): δ = 0.99 (s, 6H, 2CH<sub>3</sub>), 1.09 (s, 6H, 2CH<sub>3</sub>), 2.18-2.24 (d, *J* = 16.4 Hz, 4H, 2CH<sub>2</sub>), 2.45 (s, 4H, 2CH<sub>2</sub>), 3.73 (s, 3H, OCH<sub>3</sub>), 4.69 (s,



TABLE-I  
BRØNSTED ACIDIC IONIC LIQUID, TRIPHENYL(PROPYL-3-SULPHONYL) PHOSPHONIUM  
TOLUENESULFONATE CATALYZED SYNTHESIS OF XANTHENES DERIVATIVES\*

Entry	Aryl aldehyde	Time (min)	Yield <sup>b</sup> (%)	m.p. (°C)		Ref.
				Found	Reported	
1		12	94	180-182	182-183	[19]
2		10	96	286-288	288-289	[19]
3		15	88	138-140	139-141	[19]
4		12	90	170-172	–	–
5		10	96	311-313	311-312	[19]
6		11	92	210-211	210-212	[19]
7		12	90	203-205	204-206	[12]
8		10	94	232-234	230-231	[9]
9		10	94	226-227	226-228	[12]
10		12	92	178-180	177-179	[12]
11		12	90	247-249	248-249	[12]
12		15	85	218-220	219-221	[11]

13		15	90	150-151	149-151	[13]
14		10	92	173-175	174-176	[13]
15		12	89	202-204	202-204	[13]
16		10	94	178-180	178-180	[13]
17		11	92	164-166	166-168	[13]

\*Reaction conditions: A mixture of triphenyl(propyl-3-sulfonyl)phosphonium toluenesulfonate (0.04 g), aromatic aldehyde (1 mmol), and the desired substrate (1, mmol, according to Scheme-II) was heated at 80 °C under solvent-free conditions. <sup>b</sup>Isolated yield.

1H, CH), 6.76 (d,  $J$  = 8.8 Hz, 2H, Ar-H), 7.20 (d,  $J$  = 8.8 Hz, 2H, Ar-H), ppm; <sup>13</sup>C NMR (125 MHz, CDCl<sub>3</sub>):  $\delta$  = 27.3, 29.2, 30.9, 32.2, 40.8, 50.7, 55.1, 113.4, 115.8, 129.3, 136.5, 157.9, 162.0, 196.5 ppm; MS:  $m/z$  = 381 (M + H).

**12-(4-Chlorophenyl)-9,9-dimethyl-8,9,10,12-octahydrobenzo[a]xanthenes-11-one** (Table-1, entry 16): <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>):  $\delta$  = 0.96 (s, 3H, CH<sub>3</sub>), 1.12 (s, 3H, CH<sub>3</sub>), 2.25 (d,  $J$  = 16.3 Hz, 1H, CH<sub>2</sub>), 2.32 (d,  $J$  = 16.3 Hz, 1H, CH<sub>2</sub>), 2.56 (s, 2H, CH<sub>2</sub>), 5.68 (s, 1H, CH), 7.08-7.14 (d,  $J$  = 8.4 Hz, 2H, ArH), 7.25-7.59 (m, 5H, ArH), 7.76-7.90 (m, 2H, ArH), 8.31 (d,  $J$  = 8.4 Hz, 1H, ArH); <sup>13</sup>C NMR (125 MHz, CDCl<sub>3</sub>): 27.1, 29.3, 32.2, 34.1, 37.3, 41.4, 50.8, 113.8, 116.7, 117.0, 118.0, 122.4, 123.4, 124.3, 125.0, 126.9, 127.1, 128.4, 128.9, 129.4, 129.8, 131.2, 131.9, 132.0, 143.4, 148.7, 164.0, 196.9 ppm; MS ( $m/z$ ): 389 (M + H).

**Antimicrobial activity:** The antimicrobial activity of synthesized compound was determined by turbidometric method [43-45]. A sample was prepared in DMSO solvent as per the required concentration of solvent for microbial culture (Luria Bertani broth and potato dextrose Luria Bertani). Incubated microbial cultures were grown in media for 24 h. Before use of microbial culture for antimicrobial activity count of micro-organism was carried out. Microbial culture for activity taken as 10<sup>5</sup> in freshly prepared Luria Bertani broth (bacteria) and potato dextrose Luria Bertani (*Candida albicans*) to active final volume 200  $\mu$ L in 96 well plate and concentration of newly synthesized compound added in seeded culture of 96 well plate. Control was taken as culture and respective media. For this assay, penicillin is used as standard in same plate with culture and media. Microbial plate was incubated for 24 h at 37 °C and OD was measured at 600 nm by using 96 well plate reader. Assay was conducted in triplicates for same concentration and experimental conditions. From obtained OD antimicrobial activity of compound was calculated as follows:

$$\text{Inhibition (\%)} = \frac{\text{OD}_{\text{control}} - \text{OD}_{\text{sample}}}{\text{OD}_{\text{control}}} \times 100$$

**Antioxidant activity:** The antioxidant activity of synthesized compounds was determined by using DPPH stable free radical method [46-48] and ascorbic acid was used as a standard. Stock solution of the DPPH radicals was prepared by dissolving in methanol to obtain 0.1 mM concentration. The assay was carried out in a 96 well plate. A 500  $\mu$ g of compound was added in 200  $\mu$ L of methanolic 0.1 mM of DPPH. The mixture was shaken and kept in the dark at 37 °C for 10 min. After 10 min, the absorbance values were measured at 517 nm and converted into the percentage antioxidant activity (%) using the following equation [45]. All the experiments were performed in triplicate.

## RESULTS AND DISCUSSION

In the present investigation, a condensation of  $\beta$ -naphthol and variety of aromatic aldehydes in the presence of Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate as a catalyst for the synthesis of 14*H*-dibenzo-*[a,j]*xanthenes was carried out.

Further, to study the effect of Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate as catalyst, we have used as a model reaction 4-chlorobenzaldehyde and  $\beta$ -naphthol which leads to formation of 14*H*-dibenzo-*[a,j]*xanthenes derivatives (Table-1, entry 2). During this study, the optimized temperature, time and amount of Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate for the reaction was found to be 80 °C, 10 min and (0.04 g, 8 mol %, 0.08 mmol) of catalyst to carry out the reaction smoothly (Table-2, entry 6). Encouraged by this, experiment was extended to a variety of aromatic aldehydes possessing both electron donating and electron with-



TABLE-2  
OPTIMIZATION OF REACTION CONDITION BETWEEN  
4-CHLOROBENZALDEHYDE (1.0 mmol) AND  $\beta$ -NAPHTHOL  
(2.0 mmol) IN THE PRESENCE OF TRIPHENYL (PROPYL-3-  
SULFONYL) PHOSPHONIUM TOLUENESULFONATE  
UNDER SOLVENT-FREE CONDITIONS

Entry	Ionic liquid (g)	Temp. (°C)	Time (min)	Yield* (%)
1	–	120	360	Trace
2	0.04	50	60	45
3	0.04	60	50	65
4	0.04	65	40	75
5	0.04	70	25	89
6	0.04	80	10	94
7	0.01	80	60	45
8	0.02	80	40	68
9	0.03	80	30	82
10	0.05	80	10	94

\*Isolated yield.

drawing substituent, which were converted into their corresponding xanthenes derivatives yielding excellent yields (Table-1).

**Effect of catalyst:** A mixture of 4-chlorobenzaldehyde and  $\beta$ -naphthol was stirred at 120 °C for 6 h in absence of catalyst (Table-2, entry 1). It was found that the reaction did not give any desired product, indicating that catalyst to be must for this transformation. With this successful synthesis of 14*H*-dibenzo[*a,j*]xanthene derivatives from the reactions of 4-chlorobenzaldehyde and  $\beta$ -naphthol react with greater ease under these reaction conditions. Furthermore, one pot efficient synthesis of 1,8-dioxooctahydroxanthene derivatives with excellent yields by replacing  $\beta$ -naphthol with dimedone under same reaction conditions (Table-1, entries 7-12).

It is well documented both above conversion, we finally turned our attention towards the one pot efficient synthesis of 12-aryl-tetrahydrobenzo[*a*]xanthenes-11-ones by condensation of aryl aldehydes with  $\beta$ -naphthol and dimedone under solvent free condition (Table-1, Entries 13-17). In order to understand efficiency and non-toxicity of the catalyst, a comparison to other reported catalyst is shown in Table-3, revealing that more prominent catalytic activity of Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate than the other reported method.

We also studied, recycling of the catalyst under solvent free condition in the reaction of 4-chlorobenzaldehyde and  $\beta$ -naphthol. After completion of the reaction, ice cold water poured into the reaction mixture and the solid precipitate was filtered off for separation of crude product. After complete washing of solid products with water, water soluble ionic liquid had evaporated under reduced pressure and the ionic liquid was recovered and reused. The recoverable catalyst reused for further four times without loss of its significant activity Table-4.

TABLE-4  
RECYCLING OF THE CATALYST UNDER  
SOLVENT FREE CONDITION IN THE REACTION OF  
4-CHLOROBENZALDEHYDE AND  $\beta$ -NAPHTHOL

Entry	Time (min)	Isolated yield (%)
1	10	94
2	10	93
3	11	92
4	12	90
5	13	89

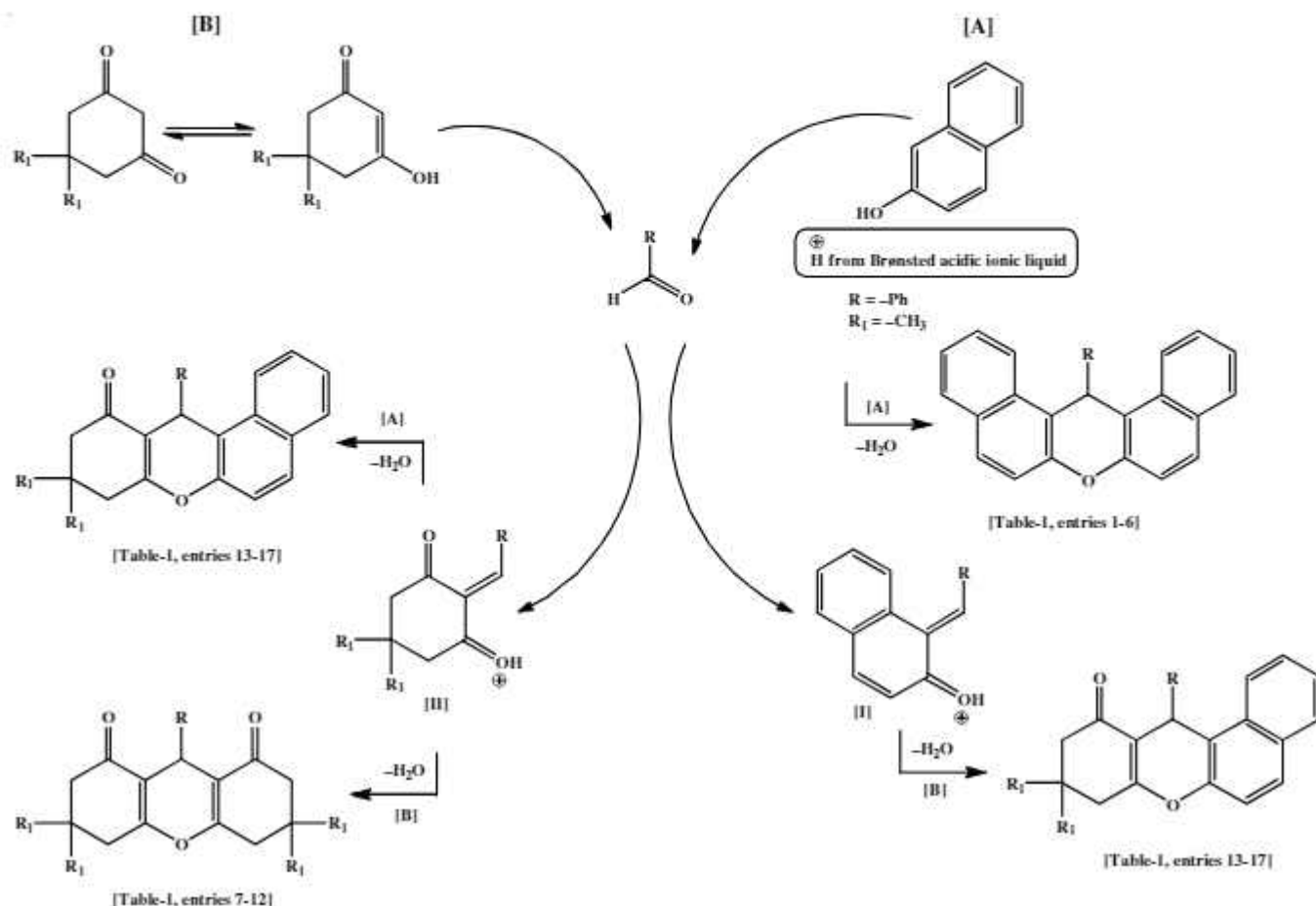
The mechanism pathway for the synthesis of xanthenes derivatives is proposed in Scheme-III. Initially, activation of carbonyl group of aromatic aldehydes by triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate (acidic proton), facilitates to nucleophilic attack of 2-naphthol [A] or dimedone [B] to form the Knoevenagel products [I or II]. Then subsequent addition of [I or II] to [A] or [B] gives the acyclic adduct intermediates, followed by intramolecular cyclisation with the participation of two hydroxyl groups to gives xanthenes derivatives (Scheme-III).

**Microbial activity:** The antimicrobial activity of heterocyclic compound studied by turbidometric methods results demonstrate that most of the compounds exhibited promising activity. Standard microbial culture antimicrobial activity profile was studied with respect to standard antibiotic penicillin. The synthesized scaffolds were evaluated for their *in vitro* antibacterial activity. Among the synthesized compounds, only compounds **6**, **10** and **16** shows moderate to less active against Gram-negative bacteria (*Pseudomonas aeruginosa*) at 100  $\mu$ g sample remaining were less or no active against Gram-negative bacteria and compound **16** showed less to moderate activity against Gram-positive bacteria (*Bacillus subtilis*) at 100  $\mu$ g sample remaining were less or no active against Gram-positive bacteria compared to standard penicillin (Table-5).

The maximum antifungal activity was observed for compound **9**, while compound **11** shows a moderate activity and remaining compounds showed less or no activity at 100  $\mu$ g sample against *Candida albicans* compared to standard penicillin (Table-5). These results showed that the nature of substituent groups plays a significant role in the activity of substrate. Electron withdrawing substituent shows a moderate to maximum and electron donating substituent shows less to moderate activity.

TABLE-3  
COMPARISON OF EFFICIENCY OF VARIOUS CATALYSTS IN SYNTHESIS OF 14-ARYL-14*H*-DIBENZO [a,j]XANTHENES

Entry	Catalyst	Conditions	Time	Yield (%)	Ref.
1	Molecular iodine	Solvent-free/90-95 °C	20 min	90	[22]
2	Sulfamic acid	Solvent-free/125 °C	8 h	93	[8]
3	SiO <sub>2</sub> -Pr-SO <sub>3</sub> H	Solvent-free/125 °C	20 min	98	[19]
4	Phosphosulfonic acid	Solvent-free/110 °C	35 min	93	[17]
5	Succinimide-N-sulfonic acid	Solvent-free/80 °C	35 min	92	[9]
6	Niobium pentachloride	CH <sub>2</sub> Cl <sub>2</sub> /RT	48 h	90	[14]
7	Montmorillonite K10	Solvent-free/120 °C	3 h	75	[20]
8	Poly(4-vinylpyridinium)perchlorate	Solvent-free, grinding/60 °C	30 min	92	[21]
9	Triphenyl(propyl-3-sulphonyl)phosphonium toluenesulfonate	Solvent-free/80 °C	12 min	94	Present work



**Scheme-III:** A plausible mechanism for the synthesis of xanthenes derivatives in the presence of Brønsted acidic ionic liquid under solvent free conditions

**TABLE-5**  
INHIBITION OF ANTIBACTERIAL AND ANTIFUNGAL  
ACTIVITY OF SYNTHESIZED SCAFFOLDS

Compound	Inhibition (%)		
	<i>Pseudomonas aeruginosa</i>	<i>Bacillus subtilis</i>	<i>Candida albicans</i>
2	26.69	Nil kare	28.22
3	24.22	23.12	18.55
4	Nil kare	2.27	0.024
6	48.39	22.20	4.30
9	30.17	9.22	70.18
10	40.53	1.07	26.74
11	28.86	Nil kare	33.30
16	47.99	33.58	Nil kare
Penicillin	91.78	93.71	97.74

**Antioxidant activity:** The newly synthesized xanthenes derivatives was examined for their antioxidant activity against standard free radical like DPPH. Table-6 indicates that most of the xanthenes derivatives show free radical scavenging activity. Maximum free radical scavenging capacity was found for compounds 4 and 11. Variation in activity might be observed

because of the functional groups and electron donating capacity of compound for scavenging free radicals.

### Conclusion

In summary, an efficient and environmentally benign method for the synthesis of xanthene derivatives *via* condensation of aromatic aldehydes with  $\beta$ -naphthol or dimedone and/or a mixture of  $\beta$ -naphthol and dimedone in the presence of Brønsted acidic ionic liquid, triphenyl(propyl-3-sulphonyl)phosphonium toluene-sulfonate under solvent-free conditions. Compared with the reported methodologies, present protocol features operational simplicity, inexpensive catalyst, high reaction rates and excellent yields, environmentally benign and no side reactions. In addition, determination of antimicrobial and antioxidant activities of synthesized xanthene derivatives and catalyst can be reused in four successive runs without loss of catalytic activity.

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**TABLE 6**  
SCREENING OF ANTIOXIDANT ACTIVITY OF SYNTHESIZED COMPOUNDS BY DPPH METHOD

Compound	2	3	4	6	9	10	11	16	Ascorbic acid
Inhibition (%) DPPH assay	12.17	17.98	30.88	13.76	2.99	9.72	53.70	3.11	95.22



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## SUCCINIMIDE-N-SULPHONIC ACID CATALYZED SYNTHESIS OF [1,2,4]- TRIAZOLO-QUINAZOLINONE DERIVATIVES UNDER SOLVENT FREE CONDITIONS

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**Abstract:** Herein, we report succinimide-N-sulphonic acid (SuSA) as an efficient, low cost, reusable and environmentally benign protocol for the synthesis of 1,2,4-triazoloquinazolinone derivatives from the reaction of aromatic aldehydes and dimedone with 3-amino-1,2,4 triazole as a amine source under solvent free reaction conditions. The synthesized compounds were confirmed by IR, <sup>1</sup>HNMR, <sup>13</sup>CNMR and Mass spectral analysis.

**Keywords:** SuSA, Aromatic aldehydes, dimedone, 3-amino-1,2,4 triazole, Solvent free.

### Introduction

Nitrogen containing heterocyclic compounds played important role in the pharmaceutical and agrochemical industries due to their frequently massive physiological properties which have results several applications<sup>i</sup>. Among these quinazoline derivatives have important pharmacological activities such as anti-HIV<sup>ii</sup>, anticancer<sup>iii</sup>, anticonvulsant<sup>iv</sup>, antifertility<sup>v</sup>, anti-inflammatory<sup>vi</sup>, antidiabetics<sup>vii</sup>, antihypertensive<sup>viii</sup>. In addition, triazoles are the important structural parts in the skeleton of some bioactive compounds<sup>ix-xi</sup>.

In recent years chemist more attention to the synthesis of 1,2,4-triazoloquinazolinone derivatives due to their wide range of synthetic and pharmacological application. Hence, several synthetic methodologies have been developed for the synthesis of 1,2,4-triazoloquinazolinone derivatives in the literature. Among these methods are the condensation of dimedone, aldehydes with 3-amino-1,2,4-triazole in the presence of sulfamic acid<sup>xii</sup>, molecular iodine<sup>xiii</sup> and anthranilic acid<sup>xiv</sup>, reusable DABCO-based ionic liquids<sup>xv</sup>.

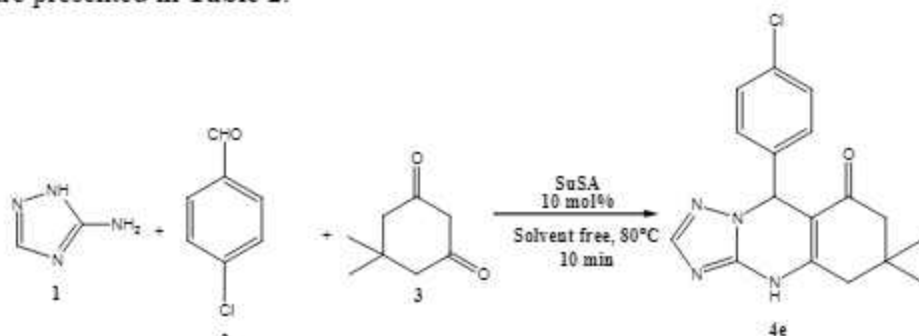
However, some of these methods are suffered from one or more disadvantages such as harsh reaction conditions, use of expensive and hazardous catalyst or solvent, longer reaction time and unsatisfactory yield. Therefore, for the synthesis of 1,2,4-triazolo-quinazolinone derivatives is a need to develop a rapid, efficient, and environmentally benign synthetic protocol.

Based on the previous studies the use of catalysts bearing sulfonic acid functionality for carrying synthesis of 1,2,4-triazolo-quinazolinone derivatives, our efforts were directed for finding out sulphonic acid based organocatalysts, which should be mild in nature. In this endeavor, succinimide -*N*- sulphonic acid perfectly stood out as a mild acid catalyst. Due to the experimental simplicity in recent years, succinimide-*N*-sulfonic acid (SuSA) has drawn much interest in different organic synthesis<sup>xvi-xx</sup>.

## Results and Discussion

To explore the use of succinimide-*N*-sulfonic acid as a catalyst for the reaction of 4-chlorobenzaldehyde and dimedone with 3-amino-1,2,4 triazole for 10–15 min under solvent free condition to give the formation of 6,6-dimethyl-9-(4-chlorophenyl)-5,6,7,9-tetrahydro-[1,2,4]triazolo[5,1-*b*]quinazolin-8(4H)-one in 94 % yield (Table 1 Entries 5). Interestingly, when we carried out same reaction with absence of catalyst did not give any desired product. It means initiation of the reaction was must to intervention of catalyst. We find out exact requirement of catalyst and concentration of catalyst in the reaction. During this study, 10 mol% succinimide-*N*-sulfonic acids proved to be an efficient catalyst for the reaction transformation smoothly (Table 1 Entries 5). All the [1,2,4]triazolo-quinazolinone derivatives were obtained in excellent yields with good purity.

Encouraged by this result, in further set of experiments, in order to build the generality of the reaction, variety of aromatic aldehydes with either electron-withdrawing or electron-donating groups were converted into 6,6-dimethyl-9-(4-chlorophenyl)-5,6,7,9-tetrahydro-[1,2,4]triazolo[5,1-*b*]quinazolin-8(4H)-one derivatives in good to excellent yields. All the results are presented in Table 2.



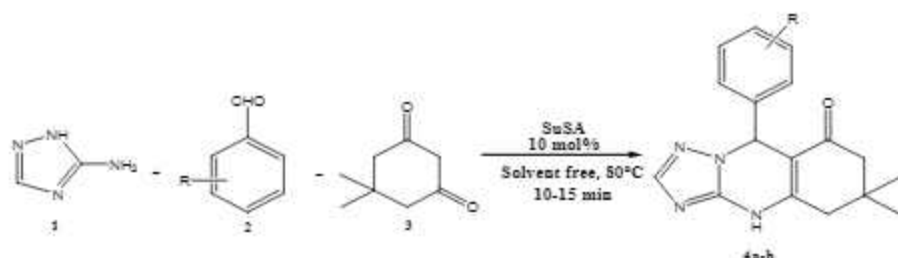
Scheme-1

Table-1 Optimization of catalyst

Entry	Amount of catalyst	Time (min)	Yield (%) <sup>b</sup>
1	-	120	Trace
2	2	60	35
3	5	45	70
4	7	25	82
5	10	10	94
6	15	10	94

<sup>a</sup>Reaction conditions: Dimedone (1 mmol), 4-chlorobenzaldehydes (1 mmol), 3-amino-1,2,4-triazole (1 mmol), SuSA (10 mol%) at 80 °C. <sup>b</sup>Isolated yield.





**Table-2** synthesis of 1,2,4-triazoloquinazolinone derivatives using SuSA under solvent free conditions<sup>a</sup>

Entry	Aldehydes	Time (min)	Yield (%) <sup>b</sup>	Melting point °C
4a		12	90	284-286
4b		10	92	225-227
4c		12	93	264-266
4d		10	94	302-304
4e		10	94	301-303
4f		12	92	265-268
4g		15	85	322-324
4h		15	92	250-252

<sup>a</sup>Reaction conditions: Dimedone (1 mmol), Aromatic aldehydes (1 mmol), 3-amino-1,2,4 triazole (1 mmol), SuSA (10 mol%) at 80 °C. <sup>b</sup>Isolated yield.

The reusability of the catalyst is one of the main advantages and makes it useful for practicable applications. Therefore the, recovery and reusability of SuSA were investigated. In order to explore the reusability of SuSA, the reaction of 4-chloro benzaldehyde and dimedone with 3-amino-1,2,4 triazole under solvent free condition was selected as a model reaction. After completion of the reaction, the SuSA was washed with ethyl acetate dried and

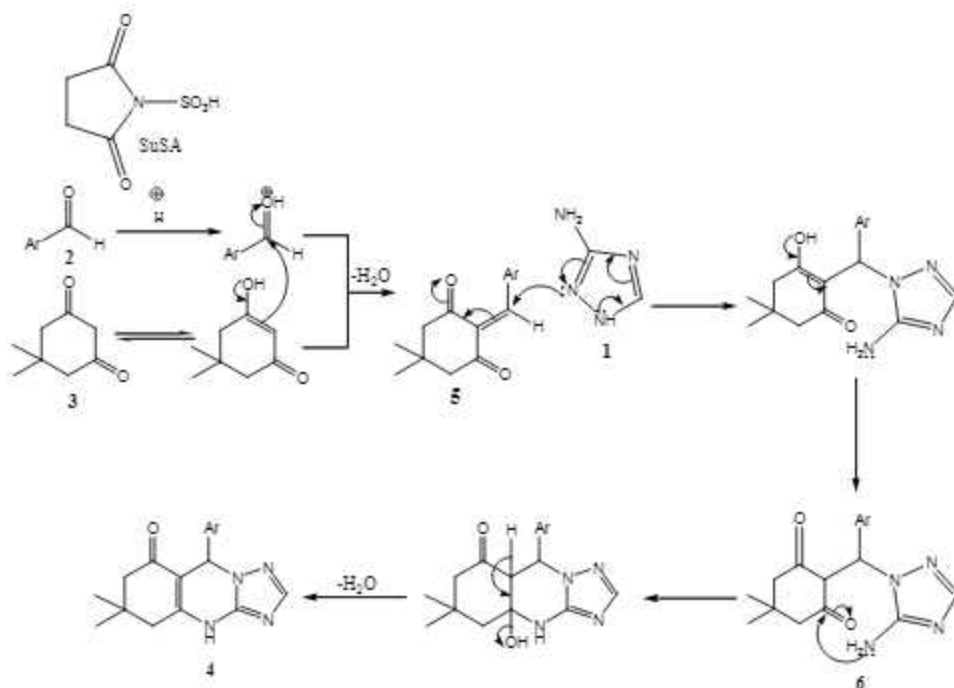
store for another consecutive reaction. This process repeatedly for next three runs. It means SuSA is stable and reused without significant loss of catalytic activity (**Table 3**)

**Table-3** Reusability of the SuSA

No. of Runs	Fresh	Run 1	Run 2	Run 3
Yield (%) <sup>b</sup>	94	94	92	91

<sup>b</sup>Isolated Yield

The possible mechanism for the SuSA catalyzed transformation is shown in following **Schemes 3**. In regard to reaction mechanism, we suggest that initially, the solid acid catalyst protonates the carbonyl group of aromatic aldehyde, which then condenses with dimedone to produce the intermediate product **5**. Michael addition reaction takes place undergoing more nucleophilic endocyclic nitrogen attack in the 3-amino-1,2,4-triazole **1** to  $\alpha$ ,  $\beta$ -unsaturated carbonyl compound **5** creates acyclic intermediate **6**. Due to, the endocyclic nitrogen is more nucleophilic than the primary amino group<sup>xxxi-xxxi</sup>. Further intermediate **6** undergoes intramolecular cyclisation followed by loss of water molecule giving rise to corresponding triazolo-quinazolinones derivatives **4**.



**Scheme-3**

## Experimental

All chemicals and solvents obtained from S. D. Fine, Spectrochem and Loba chemical companies. Formation of products monitored by thin layer chromatography (TLC) and melting points determined by open capillary and are uncorrected. <sup>1</sup>HNMR and <sup>13</sup>CNMR spectra were characterized by using Bruker Avance spectrometer 500 MHz and 125 MHz respectively in CDCl<sub>3</sub> solvent. Chemical shift ( $\delta$ ) values expressed in parts per million (ppm) and tetramethylsilane (TMS) used as internal standard. Mass spectra were recorded on a macro mass spectrometer, applying electrospray ionization (ESI) method.



**General Procedure for the Preparation of Succinimide-N-sulfonic acid**

Succinimide-N-sulphonic acid as a stable reagent is easily prepared as reported by the reaction of succinamide with chlorosulphonic acid (Yield 94%).<sup>xxiii</sup>

**General procedure for the synthesis of [1,2,4] triazolo-quinazolin-8(4H)-ones**

A mixture of the aromatic aldehyde (1 mmol), 3-amino-1,2,4 triazole (1 mmol), dimedone (1 mmol), SuSA (10 mol %) was heated at 80 °C under solvent-free conditions for the appropriate time. Progress of the reaction was monitored by TLC (*n*-hexane: ethyl acetate, 75:25). After completion of reaction, it was cooled to room temperature and 5 mL of cold water was added to the mixture. The SuSA was dissolved in water and filtered for separation of the crude product and the separated product was washed twice with ethanol (2 × 5 mL) to afford the title compounds (4a–4h) with excellent yield and good purity.

Selected Spectral data:

**6,6-dimethyl-9-(4-bromophenyl)-5,6,7,9-tetrahydro[1,2,4]-triazolo[5,1b] quinazolin-8(4H)-one (Table 2, 4a)**

Pale yellow solid; Yield 90%; mp 284–286 °C; IR(KBr): 3082, 2956, 2886, 1642, 1580, 1364, 1252, 835, 765 cm<sup>-1</sup>; <sup>1</sup>H NMR (500 MHz, DMSO-d<sub>6</sub>): δ 0.96 (s, 3H, CH<sub>3</sub>), 1.09 (s, 3H, CH<sub>3</sub>), 2.20 (q, J = 10.38, 16.43 Hz, 2H, –CH<sub>2</sub>), 2.55 (s, 2H, –CH<sub>2</sub>), 6.21 (s, 1H, –CH), 7.14–7.16 (d, J = 8.30 Hz, 2H, Ar-H), 7.48–7.50 (d, J = 8.30 Hz, 2H, Ar-H), 7.71 (s, 1H, Ar-H), 11.19 (s, 1H, NH); <sup>13</sup>C NMR (125 MHz, DMSO-d<sub>6</sub>): δ 27.40, 28.86, 32.69, 50.24, 57.94, 105.64, 121.33, 129.73, 131.69, 141.43, 147.29, 150.69, 151.07, 193.49; MS m/z (ESI): 373 [M+H]<sup>+</sup>.

**6,6-dimethyl-9-(4-methoxyphenyl)-5,6,7,9-tetrahydro[1,2,4]triazolo[5,1b]quinazolin-8(4H)-one (Table 2, 4b)**

Colourless solid; Yield 92%; mp 225–227 °C; IR (KBr): 765, 829, 1252, 1364, 1580, 1635, 2950, 3095 cm<sup>-1</sup>; <sup>1</sup>H NMR (DMSO-D<sub>6</sub>, 500 MHz): δ 0.75 (s, 3H), 0.82 (s, 3H), 2.07 (d, J = 16 Hz, 1H), 1.83 (d, J = 16 Hz, 1H), 1.98 (d, J = 16 Hz, 1H), 2.28–2.37 (m, 2H), 3.47 (s, 3H), 5.93 (s, 1H), 6.60 (d, J = 8 Hz, 2H), 6.87 (d, J = 8 Hz, 2H), 7.45 (s, 1H), 10.87 (s, 1H), <sup>13</sup>C NMR (DMSO-D<sub>6</sub>, 125 MHz): δ 26.79, 28.49, 32.15, 49.78, 54.99, 57.30, 105.71, 113.54, 128.09, 133.82, 146.72, 150.14, 158.66, 192.94; ESI-MS: m/z 325 [M+H]<sup>+</sup>.

**6,6-dimethyl-9-(4-nitrophenyl)-5,6,7,9-tetrahydro[1,2,4]triazolo[5,1b]quinazolin-8(4H)-one (Table 2, 4d)**

Pale yellow solid; Yield 94%; mp 302–304 °C; IR (KBr): 852, 1252, 1346, 1593, 1643, 2961, 3080, 3105 cm<sup>-1</sup>; <sup>1</sup>H NMR (DMSO-D<sub>6</sub>, 500 MHz): δ 0.96 (s, 3H), 1.05 (s, 3H), 2.07 (d, J = 16 Hz, 1H), 2.21 (d, J = 16 Hz, 1H), 2.57 (d, J = 16 Hz, 1H), 2.50 (d, J = 16 Hz, 1H), 6.37 (s, 1H), 7.50 (d, J = 8 Hz, 2H), 7.74 (s, 1H), 8.17 (d, J = 8 Hz, 2H), 11.31 (s, 1H), <sup>13</sup>C NMR (DMSO-D<sub>6</sub>, 125 MHz): δ 27.45, 28.78, 32.72, 50.17, 58.01, 105.24, 124.06, 128.97, 147.33, 147.43, 148.90, 150.92, 151.48, 193.52; ESI-MS: m/z 340 [M+H]<sup>+</sup>.

**6,6-dimethyl-9-(3-nitrophenyl)-5,6,7,9-tetrahydro[1,2,4]-triazolo[5,1b]quinazolin-8(4H)-one (Table 2, 4f)**

Yellow solid; Yield 92%; mp 265–268 °C; IR(KBr): 3082, 2956, 1649, 1580, 1344, 1252, 807 cm<sup>-1</sup>; <sup>1</sup>H NMR (500 MHz, DMSO-d<sub>6</sub>): δ 0.75 (s, 3H, CH<sub>3</sub>), 0.829 (s, 3H, CH<sub>3</sub>), 1.86 (d, J = 16 Hz, 1H, –CH<sub>2</sub>), 1.99 (d, J = 16 Hz, 1H, –CH<sub>2</sub>), 2.28–2.40 (m, 2H, –CH<sub>2</sub>), 6.20 (s, 1H, –CH), 7.37–7.44 (m, 2H, Ar-H), 7.52 (s, 1H, Ar-H), 7.84–7.90 (m, 2H, Ar-H), 11.09 (s, 1H, NH); <sup>13</sup>C NMR (125 MHz, DMSO-d<sub>6</sub>): δ 26.85, 28.31, 32.23, 49.65, 57.39, 104.5, 121.66,

122.81, 130.04, 133.71, 143.45, 146.77, 147.58, 150.42, 151.13, 193.09; MS m/z (ESI): 340 [M+H]<sup>+</sup>.

### Conclusion

In summary, in this protocol we report the synthesis of [1,2,4] triazolo-quinazolin-8(4H)-ones derivatives from the condensation of aromatic aldehydes and dimedone with 3-amino-1,2,4 triazole by using succinimide-*N*-sulfonic acid as a catalyst under solvent-free conditions. This protocol offers several noteworthy advantages such as mildness of the reaction conditions, short reaction times, and high to excellent yields, simple procedure and reusability of the catalyst.

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## The Bipartite Zero-Divisor Graphs With Horn

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### Abstract :-

A complete bipartite graph together with some vertices all adjacent to a common vertex is called a complete bipartite graph with a horn.

For any bipartite graph  $G$  we show that  $G$  is the graph of commutative semi group with 0. If and only if one of the graphs star graph, two star graph. Complete bipartite graph. Complete bipartite graph with a horn.

We also that a zero divisor graph is bipartite. If and only contains no triangles.

In addition corresponding zero-divisor semi groups of a class of complete bipartite graphs with a horn and determine which complete  $r$ -partite graphs a horn a corresponding semi group.

### Keywords :-

Zero divisor graph, Bipartite graph full vertex, A complete bipartite graph with a horn, zero-divisor semi group.

### Introduction :-

The Zero – divisor graph of a commutative ring, since then, the concept of zero divisor graphs has been studied extensively by many non-commutative rings.

The study of the zero divisor graph of a commutative semi group 0.

Let  $s$  be a commutative semi group with 0

$0x = 0$  for all  $x \in s$  and  $Z(s)$  be the set of non zero. Zero divisors of  $S$ .





The zero divisor graph of  $S$  denoted by  $T(S)$  is an undirected graph with vertex set  $Z(S)$  in which  $x$  and  $y$  are adjacent.

If and only if  $xy = 0$  for distance  $x, y \in Z(S)$  some fundamental features and possible structure of  $T(S)$  is always connected with diameter at most contains a cycle then its core is a union of triangles and rectangles.

The graph  $T(S)$  was studied further and extended to a simplicial complex.

An  $r$ -partite graph is one whose vertex set can be partitioned into  $r$  sub sets so that no edge has both ends in any same sub set.

A complete  $r$ -partite graphs is an  $r$ -partite graph in which each vertex is adjacent to every vertex that is not in the same part.

We are particularly interested in bipartite graphs because a zero-divisor graph  $T(S)$  is bipartite. If and only contains no triangles.

A natural question is when is a bipartite graph a zero-divisor graph of a commutative ring or a commutative semi group with  $0$ ? Note that every bipartite graph is complemented.

**Theorem : 1.1** A Zero divisor graph  $T(S)$  is bipartite if and only if contains no Triangles.

**Proof :-** This direction immediately from the fact that any bipartite graph contains no cycles of odd length.

If  $T(S)$  is not bipartite the  $T(S)$  contains a cycle  $a_0 - a_1 - a_2 - \dots - a_{2n} - a_0$  of length  $2n+1$  for some  $n \geq 1$ .

We claim that if  $n \geq 2$  then  $T(S)$  contains a cycle of length  $2n_1 + 1$  for some  $1 \leq n_1 < n$ .

**Case I :** Suppose there exist an edge joining  $a_i$  &  $a_j$  which is not in the cycle  $A$ .

A loss of generality assume  $a_0$  is adjacent to  $a_k$  for some  $k \neq 1, k \neq 2n$ .

Then one of the cycles  $a_0 - a_1 - \dots - a_k - a_0$  OR

$a_k - a_{k+1} - \dots - a_{2n} - a_0 - a_k$  is of length  $2n_1 + 1$  for some  $n_1 < n$ .



## Case II :

Suppose that any edge joining  $a_i$  is in the cycle  $A$ .

set  $x = a_0 a_2$

Then  $x \neq 0$ , and  $x \in \{a_0 - a_1 \dots a_{2n}\}$

Since  $x \in N(a_{2n}) \cap N(a_3) \cap N(a_1)$

Thus we obtain a cycle  $a_{2n} - x - a_3 - a_4 \dots a_{2n}$

Whose length is  $2(n-1) + 1$ .

Thus our claim holds in both cases a triangle, a contradiction.

In what determine which bipartite graphs can be realized as the zero-divisor graph of a semi group with 0.

**Lemma 1.2 :** Assume that  $T(S)$  is a bipartite graph with parts  $V_1, V_2$

If  $a \in V_1$  is not adjacent to  $b \in V_2$  then either  $\deg(a) = 1$  or  $\deg(b) = 1$ .

**Proof :** Let set  $x = ab$

Then  $x \neq 0$  and  $N(a) \cup N(b) \subseteq N(x)$

If  $x \in V_1$  then  $N(b) = N(b)/v_2 \subseteq N(x)/v_2 = \{x\}$

And thus  $\deg(b) = 1$ .

If  $x \in V_2$

$N(a) = N(a)/v_1 \subseteq N(x)$

**Corollary 1.3 :** If  $T(S)$  is a bipartite graph containing no isolated vertices then  $T(S)$  is a complete bipartite graph.

**Example 1.4 :** The graph is not the zero-divisor graph of a semi group with 0.





$\Rightarrow$  Let  $G$  be a bipartite graph with parts  $V_1, V_2$ .

We define a vertex  $x$  in  $V(G)$  to be full

If  $N(x) = V_i$  for some  $i \in \{1, 2\}$

**Lemma 1.5** Assume that  $T(S)$  is bipartite graph with parts  $V_1, V_2$ .

If there exists  $a \in V_1$  such that  $\deg(a) = 1$  then the unique element in  $N(a)$  is a full vertex.

**Proof :** Let  $x \in N(a)$ .

If  $x$  is not full then there is a  $a = a_1 \in V_1$

Such that  $a_1 \in N(x)$  and the shortest one of the possible paths linking  $a_1$  and  $a$  is as which is impossible.

**Proposition : 1.6** If  $T(S)$  is a bipartite graph with each part containing more than one vertex. The  $T(S)$  is a generalized two-star graph as shown in her  $A, B, U, V$  ( $s, t$ ) are pairwise disjoint subsets of  $S$ .

$\Rightarrow$  Assume that  $s, t$  are full vertices from distinct parts of  $T(S)$ . It is not hard to see that  $T(S)$  is a generalized two-star graph with  $s, t$  being two sub-centers.

Set

$$A = \{a \in V(T(s)) / a \text{ is adjacent to } s \text{ and } \deg(a) > 1\}$$

$$U = \{a \in V(T(s)) / a \text{ is adjacent to } s \text{ and } \deg(a) = 1\}$$

$$B = \{b \in V(T(t)) / b \text{ is adjacent to } t \text{ and } \deg(b) > 1\}$$

$$V = \{b \in V(T(t)) / b \text{ is adjacent to } t \text{ and } \deg(b) = 1\}$$

$$\text{Then } V(T(S)) = A \cup B \cup U \cup V \cup \{s, t\}$$

We show that the induced sub graph on  $A \cup B$  is a complete bipartite graph.

Let  $a \in A$  and  $b \in B$



If  $a$  is not adjacent to  $b$ ,

Then  $\deg(a) = 1$  or  $\deg(b) = 1$

The induced sub graph on  $A \cup B$  is a complete bipartite graph and the result.

**Proposition 1.7** Let  $T(S)$  be a partite graph of the type in. If  $A$  is non empty then either  $U$  or  $V$  is empty.

**Proposition 1.7 :** Let  $T(S)$  be a bipartite graph of the type in. If  $A$  is non empty, then either  $U$  or  $V$  is empty.

$\Rightarrow$  Assume that both  $U$  and  $V$  are non empty fix vertices

$$u_0 \in U, v_0 \in V, a_0 \in A \text{ and } b_0 \in B$$

Let  $a \in A$

Since  $N(a) = \{a\} \cup B \cup \{s\}$  and  $0 = u_0 b_0 \in N(s)$

$$N(a) \cap N(t) = \{s\}$$

We obtain  $u_0 b_0 = s$

$$v_0 a_0 = t$$

Consider the element  $u_0 v_0$

The fact that  $u_0 v_0 N(s) \cap N(t)$

We have  $u_0 v_0 = s$  or  $u_0 v_0 = t$

$$u_0 v_0 a_0 = 0 \text{ or } u_0 v_0 b_0 = 0$$

However,  $u_0 v_0 a_0 = u_0 (v_0 a_0) = u_0 t = 0$



$$u_0 v_0 b_0 = v_0 (u_0 b_0) = v_0 s = 0 \text{ contradiction.}$$

### Definition 1.8 A complete - Partite Graph with a horn

Let  $r$  be an integer with  $r \geq 2$

We call a complete  $r$ -partite graph, together with some vertices all adjacent to a common vertex, a complete  $r$ -partite graph with a horn.

**Theorem 1.9** If  $T(S)$  is a bipartite graph the  $T(S)$  is one of the following graphs star graph two star graph complete bipartite graph or complete bipartite graph with a horn.

(I) Every graph of the type of given in is the zero-divisor graph of a semi group with 0.

**Proof :** This statement follows directly from proposition 1.6 and proposition 1.7

Any complete bipartite graph is the zero-divisor graph of a semi group with 0. A graph and a two-star graph are zero-divisor graphs of semi groups with 0.

The complete bipartite graph with a horn is a zero-divisor graph of a

Semi group with 0.

Let  $G$  be the graph

$$\text{Set } S = \{0, s, t\} \cup A \cup B \cup U$$

$$\text{Where } s = 0, t = 0, 0 = A \cup B \cup U$$

$$\text{Fix } a_0 \in A \text{ and } b_0 \in B$$

$$0S = 0, S^2 = s \cup 0$$

$$U^2 = \{a_0\}$$

$$U(A \cup \{t\}) = \{a_0\} \cup B = \{S\}$$





$$xy = \begin{cases} a_0 & \text{If } x, y \in AU\{t\} \\ b_0 & \text{If } x, y \in B \\ 0 & \text{If } x \in BU\{s\}, y \in AU\{t\} \\ S & \text{if } x = s, y \in B \end{cases}$$

The associativity holds since the operation is commutative we only need to  $(xy)z = (xz)y$

$Y = (yz)$  For any  $\{x, y, z\} \subseteq S$

Hence  $S$  is a zero-divisor semi group with 0.

### Open Question

- I) How can one characterize the zero-divisor graphs which contain no rectangles?
- II) Which complemented graphs can be realized as the zero-divisor graph of a semi group with 0?

**The corresponding zero-divisor semi groups of a class of complete bipartite graphs with a horn :**

The zero-divisor semi group whose zero-divisor graphs are as shown the binary operation.

Suppose that  $S = \{0, s, t, a, b\} \cup U$  is a zero-divisor semi group with  $T(S)$  facts for any  $u, v \in U$

- 1)  $ub = s$  since  $ub \in N(a) \cap N(t) \cap N(s) = \{s\}$
- 2)  $S^2 = sub = 0$
- 3)  $S^b = s$  since  $sb \in N(u) \cap N(a) \cap N(t) = \{s\}$
- 4)  $\{a^2, t^2, at\} \subset N(s) \cap N(b) \cup \{0\} = \{a, t, 0\}$  and  $at = 0$
- 5)  $\{ua, vt\} \subset N(s) \cap N(b) = \{a, t\}$
- 6)  $uv \in N(b) \cap N(s) = \{a, t\}$  since  $(uv)b = us = 0$ .



- 7)  $b^2 = b$  since  $u(b^2) = (ub)b = sb = s$  for any  $u \in U$  and this implies  $b^2 = \{0, a, t, s\} \cup U$

We assume that  $a \neq 0$  without loss of generality.

$$at^2 = (at)t = at = a$$

Thus  $t^2$  is not 0.

Also, If,  $t_2 = a$ , then  $a^2 = a(t^2) = (at) = t = at = a$

Multiplication Tables on  $(0, a, t)$

	a	t
a	a	a
t	a	a

Table 1

	a	t
a	0	a
t	a	t

Table 2

	a	t
a	a	a
t	a	t

Table 3

	a	t
a	t	a
t	a	t

Table 4

Condition If  $S^2 = 0, sb = s, ub = s, b^2 = b, us = st = ab = sa = tb = 0$  all  $u \in U$

**Corollary 1.10** If  $U = \{u\}$  then the graph has the following seven corresponding zero-divisor semi groups.

	s	u	b	a	t
s	0	0	s	0	0
u	0	a	s	a	a
b	s	s	b	0	0
a	0	a	0	a	0
t	0	a	0	a	a

Table 1

	s	u	b	a	t
s	0	0	s	0	0
u	0	t	s	a	a
b	s	s	b	0	0
a	0	a	0	a	a
t	0	a	0	a	a

Table 2

	s	u	b	a	t
s	0	0	s	0	0
u	0	t	s	a	t
b	s	s	b	0	0
a	0	a	0	0	a
t	0	t	0	a	t

Table 3

	s	u	b	a	t
s	0	0	s	0	0
u	0	a	s	a	a
b	s	s	b	0	0
a	0	a	0	a	a
t	0	a	0	a	t

Table 4



	s	u	b	a	t
s	0	0	s	0	0
u	0	t	s	a	t
b	s	s	b	0	0
a	0	a	0	a	a
t	0	t	0	a	t

Table 5

	s	u	b	a	t
s	0	0	s	0	0
u	0	t	s	t	a
b	s	s	b	0	0
a	0	t	0	t	a
t	0	a	0	a	t

Table 6

	s	u	b	a	t
0	0	0	s	0	0
0	0	t	s	a	t
s	s	s	b	0	0
0	0	a	0	t	a
0	0	t	0	a	t

Table 7

**Theorem 1. 11** Let  $G$  be a complete  $r$ -partite graph with a horn for some  $r \geq 3$ . If at least one part of the complete  $r$ -partite sub graph of  $G$  contains exactly one vertex, then  $G$  has a corresponding smei group with 0.

**Proof :** Let  $G = (U'_{i=1} = A_i) \cup U$  be a complete  $r$ -partite graph with parts  $A_i$  a horn  $U$  and each vertex in  $U$  adjacent to  $s \in A_i$ .

Assume that at least one of  $\{A_1, A_2, \dots, A_r\}$

Contains exactly one vertex.

Set  $S = \{0\} \cup V(G)$

Case I:  $A_i A_j = 0 (j \neq i), U = 0$

$$xy = \begin{cases} 0 & \text{if } x = y = s \\ a_i & \text{If } x, y \in A_i \text{ for some } i \geq 2 \end{cases}$$





For any  $V \in U$  Define

$$v_y = \begin{cases} a_i & \text{If } y \in A_i \text{ for some } i \geq 2 \\ u & \text{if } y \in U \end{cases}$$

**Case II :** Suppose  $|A_1| > 1$

$$\text{Set } B = A_1 / \{s\}$$

Assume without loss of generality that  $|A_2| = 1$

Fix elements  $a_i \in A_i$  for all  $i \geq 2$  and fix an element  $u$  in  $U$  that  $A_2 = \{a_2\}$

Define in  $S$  a commutative binary operation by the

$${}_0S = 0, A_i A_j = 0 \ (i \neq j)$$

$$(A_1)^2 = s, (A_2)^2 = (a_2)^2 = 0, (A_i)^2 = a_i \ (i \geq 3)$$

$$U^2 = u, U A_i \{a_i\} \ (i \geq 2) U B = \{a_2\}, U = 0.$$

An argument similar to the proof of theorem that  $S$  is a commutative semi group whose zero divisor graph  $T(S) = G$ .

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### A Study of Impact of Goods and Services Tax (GST) on the Indian Economy

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#### **Abstract:-**

Goods and Services Tax is defined as the giant indirect tax structure designed to support and enhances the economic growth of a country. More than 150 countries have implemented GST so far. However, the idea of GST in India was mooted by Vajpayee government in 2000 and the constitutional amendment for the same was passed by the Lok Sabha on 6th May 2015 but is yet to be ratified by the Rajyasabha. However, there is a huge hue and cry against its implementation. It would be interesting to understand why this proposed GST regime may hamper the growth and development of the country. This paper focus on Benefits, Objective, Limitations, Positive Impact and Negative Impact of Goods and Services Tax.

**Keywords:-** Lok Sabha, Rajyasabha, Constitutional, Indian Economy, Goods and Services Tax.

#### **Introduction:-**

On 1st July 2017 launched Goods and Services Tax all State in India. However, there are many changes made to the rates of products and Services Tax, the newest being on 18th January 2018. The biggest tax reform in India founded on the notion of "one nation, one market, and one tax" is finally here. The instant that the Indian government was expecting a decade has finally arrived. The only biggest tax regime has kicked into force, dismantling all the inter-state barriers with reference to trade. The GST rollout, with one stroke, has converted India into a unified market of citizens. Fundamentally, economy is attempting to rework itself by doing away with the interior tariff barriers and subsuming central, state and native taxes into a unified GST. Important of The tax has renewed the hope of India's fiscal reform program regaining momentum and widening the economy. Will the hopes conquer uncertainty would be determined by how our government works towards making GST a "good and straightforward tax". The thought behind implementing GST across the country is that it might offer a win-win situation for everybody. Manufacturers and traders would enjoy fewer tax filings, transparent rules, and straightforward bookkeeping; consumers would be paying less for the products and services, and therefore the government would generate more revenues as revenue leaks would be plugged. Ground realities, as we all know, vary. So, will have GST well really impacted on India.

#### **Benefits of Goods and Services Tax:-**

- Goods and Services Tax eliminates the cascading effect of tax
- Higher threshold for registration
- Composition scheme for little businesses
- Simple and straightforward online procedure
- The number of compliances is lesser
- Upcoming of Common National Market
- Elimination of Cascading Effect of Taxes
- Increased Exemption Limit for little traders or Service Providers





- Small Businesses enjoy the Composition Scheme
- Reduced Tax Compliances as Number of Tax Returns to be filed under Goods and Services Tax Has Come Down
- Registration and Filing Returns under Goods and Services Tax Made Simple as everything is completed Online
- Regulated Unorganized Businesses

Reduces tax burden on producers and fosters growth through more production. The present taxation structure, pumped with myriad tax clauses, prevents manufacturers from producing to their optimum capacity and retards growth. GST will look out of this problem by providing decrease to the manufacturers. Different tax barriers, like check posts and toll plazas, because wastage of unpreserved items is transported. This penalty transforms into major costs thanks to higher needs of buffer stock and warehousing costs. One taxation system will eliminate this roadblock. There'll be more transparency within the system because the customers will know exactly what proportion taxes they're being charged and on what base. Goods and Services Tax will increase the Govt. revenues by extending the assets. Goods and Services Tax will provide credit for the taxes paid by producers within the goods or services chain. This is often expected to encourage producers to shop for staple from different registered dealers and is hoped to usher in more vendors and suppliers under the purview of taxation. GST will remove the custom duties applicable on exports. The nation's competitiveness in foreign markets will increase on account of lower costs of transaction.

#### **Objective of Goods and Services Tax:-**

- No flowing of any taxes
- Reduced compliance other cost
- Seamless flow of credit
- Less wastage of your time and energy to comply
- Transparent and corruption free in country
- Supportive to compete at Local and International Market
- Buoyancy in collection both for over all India
- Tax impact on increase should be minimal

#### **A Higher Indian Economy:-**

The introduction of the products and Services Tax are going to be a really important step within the field of tax reforms in India. By merging an outsized number of Central and State taxes into one tax, GST is predicted to significantly ease double taxation and make taxation overall easy for the industries. For the top customer, the foremost beneficial are going to be in terms of reduction within the overall tax burden on goods and services. Introduction of GST also will make Indian products competitive within the national and international markets. Last but not least, the GST, due to its transparent character, is going to be easier to administer. Once applied, the proposed taxation system holds great promise in terms of supporting growth for the Indian economy.

#### **Limitations of products and Services Tax in India:-**

- Improved costs of software purchase which will assist in Goods and Services Tax filing process results in advanced operational costs for several industries.
- Goods and Services Tax has received criticism for being called a 'Disability Tax' because it now taxes articles like braille paper, wheelchairs, hearing aid etc.
- The difficulties in taxation for products have seen industrialists suspend their reward programs, which are bound to affect consumers.





- The Goods and Services Tax transaction fees within the financial sector became costlier increasing from 15% to 18%.
- With Goods and Services Tax, insurance payments became costlier.
- The impact of products and Services Tax on the important estate market caused an 8% rise on land price resulting in 12% fall in demand closely after it had been taken into action in June, 2017. This however, could also be a short-term trend.
- Petrol isn't under Goods and Services Tax, which matches against the morals of unification of commodities

### **Positive Impact of Goods and Services Tax:**

- After Goods and Services Tax, Information Technology industries can have several delivery centers and offices working together to service one contract. With Goods and Services Tax, industries might require each center to supply a separate invoice to every constricting party.
- The Goods and Services Tax will advance the provide chain mechanism which might make sure the reduction in wastage and price for the farmers/retailers. Under the model Goods and Services law, dairy agricultural, poultry agricultural, and stock breeding are kept out of the meaning of agriculture. Therefore these are going to be taxable under the products and Services Tax.
- With Goods and Services Tax, India is now a united market and therefore the foreign investment has increased in India. the products that are manufactured within India due to their compact costs became more competitive in international market resulting in development in export. The completion of products and Services Tax puts India within the line of intercontinental tax standards, making it easier for Indian businesses to sell within the international market.
- The central Goods and Services Tax and therefore the State Goods and Services Tax. The Central Goods and Services Tax will replace - Service Tax, Central Excise Duty, and Custom Duty etc. The State GST will replace - State VAT, Central nuisance tax, Tax on advertisement, Luxury Tax, acquire Tax, Entertainment Tax etc. Before Goods and Services Tax, there be numerous taxes and at the present they need replace everyone these taxes and duty with Central Goods and Services Tax and State Goods and Services Tax.
- Goods and Services Tax has changed VAT everywhere India. Now we don't got to pay different amounts of taxes in several states. It's one tax scheme for all states of India then we've already got obviate different taxes and duty on our business.
- The tax administration has started working corruption free. Also enable sales invoice to point out the tax useful has resulted in clearness.

### **Negative Impact of Goods and Services Tax:**

- Businesses need to also inform their existing accounting or ERP software to Goods and Services Tax compliant one or buy a Goods and Services Tax software in order that they will keep their business going. But both the choices guide to raise cost of software get and preparation of employees for an efficient operation of the new billing software.
- Tiny and medium-sized enterprises who haven't yet signed for Goods and Services Tax need to fast grasp the nuances of the products and Services Tax regime. They're going to need to issue Goods and Services Tax complaint invoices, be compliant to digital record-keeping, and within fact, file timely returns. This suggests that the products and Services Tax complaint invoice issue need to mandatory details like Goods and Services Tax, place of supply, HSN codes, et al.
- Big business, particularly within the manufacturing sector will face difficulty under Goods and Services Tax. Previous, only business whose income exceeds Rs 1.5 crore had to pay



- excise duty. But now any business whose income exceeds Rs 20 lakh will need to pay Goods and Services Tax.
- Goods and Services Tax is being mentioned as only taxation scheme but in realism it's a double tax as both the state and center both will collect separate tax on a lone transaction of sale and repair.
  - Incumbent of the worth of some commodities the rate has been improved for various products, so raising their costs.
  - Dairy Products, Pharma, Media, Sectors like Textile, IT and Telecom are bearing the impact of a complicated tax. Also the value of commodities has increased like jewellery, mobile phones and credit cards.
  - Brilliant people are of the view that Goods and Services Tax in India has already had a negative impact on the important estate marketplace. it's additional up to eight percent toward the value of latest home and reduced order by about 12 percent.

### Conclusion:-

Goods and Services Tax will usher in clear and corruption-free tax management, removing the present limitations in tax structure. Goods and Services Tax is business friendly also as consumer friendly. Goods and Services Tax in India is poised to significantly advance the positions of every of those stakeholders. Goods and Services Tax will allow India to raised allocation its terms within the universal trade forums. Goods and Services Tax aimed toward increasing the taxpayer base by getting SMEs and therefore the unorganized sector under its compliance. This may make the Indian market more stable than before and Indian businesses can compete with foreign businesses. Well like a change within the taxation system which is best than previous taxation. This need for change leads us to 'need for Goods and Services Tax.

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### Technological Entrepreneurship in India

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#### *Abstract:*

Technology entrepreneurship lies at the heart of many important debates, including those around launching and growing firms, regional economic development, selecting the appropriate stakeholders to take ideas to markets, and educating managers, engineers, and scientists. Unless a generally accepted definition of technology entrepreneurship is established, however, these debates lose their focus. The purpose of this article is to identify the themes that dominate the technology entrepreneurship literature, provide a definition of technology entrepreneurship, and identify its distinguishing aspects relative to economics, entrepreneurship, and management.

The author argues that technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets to create and capture value for the firm. What distinguishes technology entrepreneurship from other entrepreneurship types (e.g., social entrepreneurship, small business management, and self-employment) is the collaborative experimentation and production of new products, assets, and their attributes, which are intricately related to advances in scientific and technological knowledge and the firm's asset ownership rights.

**Keywords:** Technology, Entrepreneurship, Knowledge, Investment, Heterogeneous.





### Introduction:

Technology, has given individuals the tools to directly shape their environment in dramatic ways. Technology and product life cycles are getting progressively shorter due to acceleration in technological improvements. Therefore understanding and addressing local market conditions is critical to disseminate the appropriate technology where it is needed most. The significance of implementing modern and practical technologies in organizations is critical given the complex and dynamic conditions of today's environment. In other words, it is not only the scientific breakthroughs, inventions and technological development that are essential for value creation and competitiveness, but it is the discovery of technological opportunities and their commercial exploitation that makes the difference. The process of technology commercialization encompasses all activities from generating an idea, designing, testing the prototype, and manufacturing to marketing the technology-derived products to capitalize market opportunities. (Mitchell and Singh 1996).

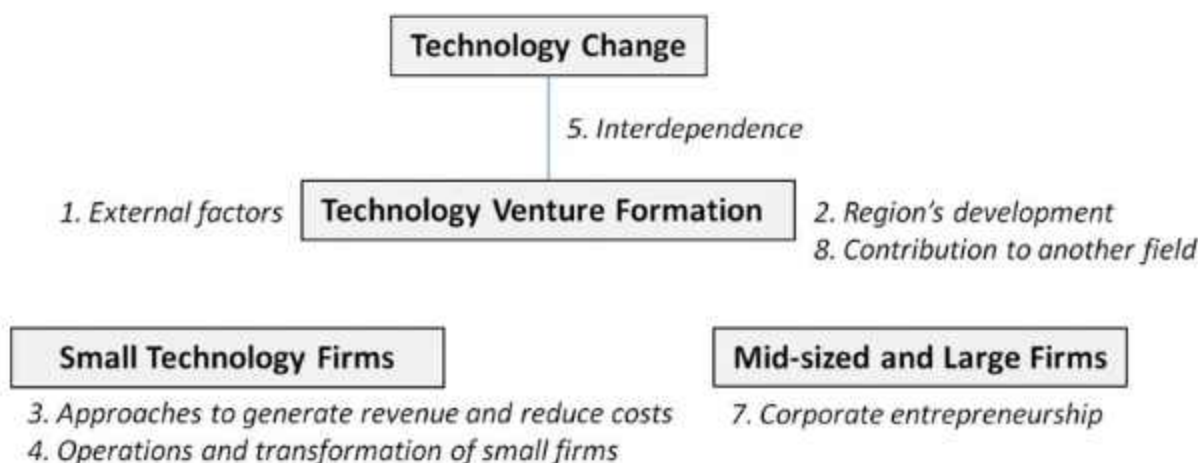
Technology has given individuals the tools to directly shape their environment in many ways. Technology entrepreneurship is a vehicle that facilitates prosperity in individuals, firms, regions, and nations. The definitions from the literature do not explore and identify the ultimate outcome of technology entrepreneurship; the target of the ultimate outcomes; the mechanism used to deliver the ultimate outcomes; or the nature of the interdependence between technology entrepreneurship and scientific and technological advances. Technology and product life cycles are getting progressively shorter, due to acceleration in technological improvements. Technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm. The definition of technology entrepreneurship is based on four elements:

- **Ultimate Outcomes:** Value creation and capture are identified as two outcomes of technology entrepreneurship because the sources that create value and the sources that capture value may not be the same over the long run.





- **Target of the Ultimate Outcomes:** The firm is identified as the target organization for which value is created and captured.
- **Mechanism Used To Deliver The Ultimate Outcomes:** Investment in a project is the mechanism mobilized to create and capture value. A project is a stock of resources committed to deliver the two ultimate outcome types for a period of time.
- **Interdependence of this mechanism with scientific and technological advances:** The individuals involved in a project influence and are influenced by advances in relevant scientific and technology knowledge. In other words, it is not only the scientific breakthroughs, inventions and technological development that are essential for value creation and competitiveness, but it is the discovery of technological opportunities and their commercial exploitation that makes the difference. The process of technology commercialization encompasses all activities from generating an idea, designing, testing the prototype, and manufacturing to marketing the technology-derived products to capitalize market opportunities.



Technological entrepreneurship (TE) is an important way to commercialize technological innovations and offers unique development opportunities for societies to educate and grow. Much of the interest and early research in technology-based entrepreneurship has its roots in the development in the USA and Europe. However, TE is still a relatively less explored topic in developing countries like India and China. Countries like US, China have created conducive



environment to support TE. However, TE in India has been a challenging task. Growth of TE is hampered due to traditional perception of people, inadequate infrastructure, limited venture capitalist, angel investors, and financial institutions which appreciate the specific nature of entrepreneur's needs. Recently, Indian Government has taken initiatives, like incubation centers and various funding mechanisms to create a TE ecosystem. Despite a combination of social structures and cultural values within India that historically constrained entrepreneurship, the efforts in recent years, along with the economic growth and political changes have significantly shifted the national mindset regarding entrepreneurship, particularly among India's youth. Thus, objective of the paper is to identify key success factors driving entrepreneurship in technology based firms in India. This paper is organized as follows. First, a review of the relevant literature on definitions and importance of TE is presented, followed by review on the factors affecting TE. TE overview in India is then presented in the following subsection. Next, the research methodology adopted in the study along with data collection techniques is presented. In the subsequent section, analysis along with the results is presented. The final section offers conclusions

### **Objectives of the Study:**

1. To study about Technology entrepreneurship
2. To study about Importance of Technology entrepreneurship
3. To review about the challenges faced by Technology entrepreneurship in India

### **Methodology:**

This study is descriptive and uses the exploratory technique. The data for the study data was collected from secondary sources like magazines, articles published online and offline on various newspapers and websites.

### **Defining Technology Entrepreneurship:**

The field of technology entrepreneurship is in its infancy when compared to other fields such as economics, entrepreneurship, and management. However, we are at a point where we





can leverage the insights contributed by previous work to create a clearer working definition of technology entrepreneurship.

This article proposes a general definition that identifies the distinctive characteristics of technology entrepreneurship and describes its links with the fields of economics, entrepreneurship, and management. The proposed formal definition of technology entrepreneurship should prove valuable in adding to our understanding of how entrepreneurship functions in a firm that invests in projects that are interdependent with advances in science and technology.

**The following definition of technology entrepreneurship is proposed:**

Technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm.

**The proposed definition of technology entrepreneurship is based on four elements:**

**Ultimate outcomes:** Value creation and capture are identified as two outcomes of technology entrepreneurship because the sources that create value and the sources that capture value may not be the same over the long run.

- **Target of the ultimate outcomes:** The firm is identified as the target organization for which value is created and captured.
- **Mechanism used to deliver the ultimate outcomes:** Investment in a project is the mechanism mobilized to create and capture value. A project is a stock of resources (i.e., specialized individuals and heterogeneous assets) committed to deliver the two ultimate outcome types for a period of time.
- **Interdependence of this mechanism with scientific and technological advances:** The individuals involved in a project influence and are influenced by advances in relevant scientific and technology knowledge. The project exploits or explores scientific and technology knowledge. External and internal individuals and organizations co-produce the project's outputs.





### The Importance of Technology in Entrepreneurship:

It is evident that the impact of technology on our day to day lives has grown exponentially over the past decade. Whether it be laptops or cell phones, technology helps us connected with the world around us and acts as a portal to vests amounts of knowledge which can be accessed with ease. However, many new entrepreneurs do not utilize technology to its full extent to propel themselves to new heights. Following is a list of reasons of why entrepreneurs should incorporate technology in their businesses:

- **Communication:** Good communication is necessary to allow efficient flow of information in a business. Technology provides multiple channels for businesses to communicate both internally and externally. Whether it's setting up virtual workspaces where employees can interact and develop ideas, or connecting to international businesses through the use of video conferencing, technology can be used as an outlet which allows businesses to collect feedback from their customers, which can used to improve or alter a product to suit the needs of the customers better.
- **Research and Development:** Through the use of technology, businesses can research the market through the use of secondary data. This is extremely useful as it provides businesses with in-depth knowledge about markets before penetrating them. Along with secondary research, businesses can use technology to conduct primary research in addition to using online surveys and customer feedback. Through the use of technology, businesses can research the market through the use of secondary data. This is extremely useful as it provides businesses with in-depth knowledge about markets before penetrating them. Along with secondary research, businesses can use technology to conduct primary research in addition to using online surveys and customer feedback.
- **Web Based Advertising:** One the most beneficial use of technology is advertising to millions of people around the globe just at a click of a button. Web based advertising consists of websites and social media. Websites can be built using DIY tools such as Word Press or Square Space or professional web developers can be hired to create them. Unlike websites, social media accounts are very easy to build for your business and provide exposure on a wide variety of platforms such as Face book, Twitter and YouTube.



### The challenges faced by Technology entrepreneurship in India:

- **Ecosystem management:** When building a tech startup, this might be the first challenge that the entrepreneur faces. An ecosystem may comprise of various things such as infrastructure management, maintenance of culture, meeting the day-to-day requirements of the employees, partnership decision making, and a lot more. Managing the ecosystem is likely to be the biggest challenge at the startup level. The entrepreneur may lack guidance regarding having well-defined cultures, clear goals, measurable performance expectations, along with maximizing employee skills and optimizing performance. The lack of guidance may lead the organization to begin the startup journey without a definitive culture that may bring the employees to face internal challenges, conflicts, and disappointments.
- **Fierce competition:** Startup culture has become a trend that every graduate thinks of, making it strongly competitive for all of them. Whether giants or startups, competition is always going on in the corporate world. This competitive environment lets the startup entrepreneurs stay focused and dedicated to perfection in order to stay ahead. The competition is steady for both, the B2B and B2C startups out there. Competition is a challenge that startups can turn into an opportunity in a very easy as well as smart way. The startups just need to play smartly and creatively to build up brand recognition among a large number of businesses expanding rapidly.
- **Globalization:** Globalization and entrepreneurship can go hand-in-hand to achieve incredible results. Globalization can have a large number of challenges for tech startups, majorly as it is a difficult necessity. Globalization is the key to success, but for startups, it can be difficult to globalize their business. Cross-border collaboration can be an easy way for startups to overcome the challenge of globalization in an easier and simpler manner than by other methods. Coming up with more options for investment can also help them expand their business globally.
- **Innovation:** Advancement in technology has been happening a day the speed of innovations can make startup ideas outdated in only each day or a month this will create difficulty for the entrepreneur to survive amidst the competition. The innovative





expansion of technology may lead the startups to failure if they lack proper strategy also as planning for the longer term.

- **Finance Management:** Money begets money. Some startups have enough of it but lack ideas whereas a number of them have enough ideas but lack when it involves funds. You will know the very fact that when income increases, expenditure also increases; therefore, finance management is extremely important for the entrepreneurs. Managing finances is one among the majorly faced challenges seen among the startups lately. So as to beat such challenges, they have to possess a secure and cautious backup. They will even take help from financial consulting firms.
- **Talent acquisition:** Hiring the proper candidate is like getting 40 percent of the work done. For the startups, it's an excellent challenge to seek out the acceptable candidate. It's one among the foremost important factors to define organizational culture within the startup also. The entrepreneur must know that the team must comprise of the experts with similar capabilities and identical focus. While hiring, always remember – great vision without great people is irrelevant. Hiring the proper one from the ample choices available out there's of paramount importance. Beyond these six, tech entrepreneurs may face myriad other challenges while building their startups. But it's important to stay one's vision and goal in mind, and use that for inspiration to stay moving forward.

### Conclusion:

Over the last four decades, technology entrepreneurship has become an increasingly important global phenomenon. It is perceived as necessary for growth, differentiation, and competitive advantage at the firm, regional, and national levels. Technology entrepreneurship appeals mainly to leaders and top management teams of small and large firms who use technology to make, deliver, and capture value for his or her stakeholders. Technology entrepreneurship also appeals to personnel of regional economic development agencies that attract investments in productive technologies and talent to a specific geography. The primary function of technology entrepreneurship is to assemble a combination of specialized individuals and heterogeneous assets in order to create and capture value for the firm through collaborative exploration and experimentation.



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### स्त्रीयांच्या उद्धाराचा पहिला उद्घोष -- सत्याार

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महात्मा ज्योतिराव फुले यांनी सत्सार नंबर एक व नंबर दोन असे अंक लिहिले. ते छापून आणले. अक्टोबर १९८१ मध्ये प्रसिद्ध झालेल्या सत्सार दुसऱ्या अंकात पंडिता रमाबाई, 'ताणबाई' शिंदे या पारंपारिक समाज व्यवस्थेला छेद देणाऱ्या स्त्रीयांच्या विरोधात 'इंद्रप्रकाश' ज्ञानप्रकाश या सारख्या समाजसुधारणेची तरफदारी करणाऱ्या वृत्तपत्रांनी जेव्हा पंडिता रमाबाई या २९ सप्टेंबर १८८३ रोजी लंडन येथे हिंदू धर्माचा त्याग करून ख्रिस्तन धर्म स्वीकारला त्यानंतर तिन वर्षे अमेरिकेत राहिल्या व फेब्रुवारी १८८९ मध्ये त्या मावदेशा परतल्या व परदेशी राहिल्यानंतर वरील वृत्तपत्रांना समजलेली परदेशात पंडिता रमाबाईं ख्रिस्ती झाल्या तेव्हा त्यांच्यावर या आघाडीच्या वर्तमान पत्रांनी आगपाखड केली 'रमाई बाटली' 'रमाबाईंनी शेवटी फर्माविले' अशी आरडाओरड करण्यास सुरुवात केली. 'ज्ञानचक्षू' पुणे वैभव, वार्ता वृत्तपत्रांनी रमाबाई बदल अपशब्द वापरले केंसरीच्या संपादकाने गोपाळराव आगरकरांनी यांच्या बुद्धी व धैर्याची प्रशंसा केली. मग जेव्हा पंडिता रमाबाईंनी धर्म बदलला तेव्हा केंसरीत छापून आले 'पंडितेने सगळ्यांनाच उत्कृष्ट रीतीने खासे चकविले (केंसरी ६ नोव्हेंबर १८८३) या सर्वच वृत्तपत्र व पंडिता रमाबाई यांच्या याच विरोधात लिहिले तेव्हा पंडिता रमाबाईंची कड घेऊन महात्माफुले यांनी सत्सार अंक १ व सत्सार अंक २ असे प्रकाशित करून पंडिता रमाबाईंच्या टीकाकारांवर टिकेची झोड उठवली."

स्त्री उद्धारकर्त्या महात्माफुले यांनी उच्चवर्णीय ब्रम्हण वर्गातील स्त्रियांच्या उद्धारासाठी कार्य केले. त्याच फुल्यांचे साहित्य दीडशे वर्षांपर्यंत प्रथित यश लेखक समीक्षकांनी सोयीस्कर अडगळीस टाकले याचे नवल वाटल्यावाचून राहत नाही. 'उपोद्घात' यामध्ये महात्मा फुले लिहितात, "हल्ली या देशातील इंग्रज बहादुरांनी राज्याच्या प्रतापाने गांजलेल्या स्त्रियांस तुरळक तुरळक लिहिता वाचता येऊ लागले आणि तेणे करून आज हजारो वर्गापासुन आर्यधूर्त जनाकडून एकंदर सर्व सिंग्या सर्वोपरो लळ झाला व हल्ली होत आहे. हा सर्व पुरुषांची ठग्याजी, स्त्रिया डोळ्यापुढे आणून मांडावी म्हणून या अंकात थोडासा प्रयत्न केला आहे."

इंग्रजांच्या विरोधात तात्कालिक समाजात आवाज उठत असतांना इंग्रजांच्या शिक्षणप्रसाराचे समर्थन ज्योतिराव फुले करतात. तर स्त्रियां जेव्हा सुशिक्षित होतात तेव्हा त्या स्वतंत्र विचार करू शकतात व धर्मांध समाजाने लादलेली जोखंडे उद्धवस्त करून फेकू शकतात असा आशावाद फुल्यांनी दिंडशे वर्षांपूर्वी बाळगलेला होता.

स्त्रीपासुनच उपजुनियां त्यांची जातीच निंदसील जरी॥

उपटावे कान तुझे त्वन्मातेनेचि व्यर्थ इतर करी॥ १॥

रचनेच्या दृष्टीने मोंरोपंताच्या आर्यांनी महात्माफुले यांच्या लेखनाचे साधर्म्य आहे तर आशयाच्या दृष्टीने सत तुकारामाच्या क्रांतीकारी विचारगोष्टी एकरूप झालेले विचार नव समाज निर्मितीची पायाभरणी करणारे उरतात. सत्सार या अंकाची निर्मिती प्रश्न आणि उत्तर स्वरूपात आहे. यशवंत जोतीराव फुले हे प्रश्न विचारलात आणि 'तात्या' हे पात्र उत्तर देते. एकूण सहा प्रश्न आणि सहा उत्तरे आलेली आहेत. तर पाच विचार दिलेले आहेत

स्त्री जाती विषयी लिहिलेल्या लेखांचा समाचार घेताना फुले अर्थात तात्या उत्तर देतात, "वाळा तुशी विज्ञाना काही अंशा खरी असुन स्तुत्य आहे. कारण हल्ली ईंग्लिश राज्याचे प्रतापाने पंडिता जाडया विद्वानांस लज्जा प्राप्त होऊन त्यांनी आपल्या ऋषिचर्य पूर्वजास टोपमुक्त करण्याकारता आपल्या अज्ञानां न्यंदल स्त्रियास आपल्यासारख्या विद्वान करण्याचे कानो मुरूवात केली आहे. परंतु पूर्वी त्यांच्यातील निर्दय आर्य प्रवृत्तीने स्त्रियांविषयी केलेल्या जुलूम लेखाविषयी आगर्भाच आपण वाटावट करून लिहू गेल्यास त्यापासुन अनेक तोंडे होतात."



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पुढे ते विविधता समोर तीन हजार वर्षांपूर्वी या देशातील भारी इश्टकांशी आपल्या प्रगत विज्ञानाविषयी तुलना करून घेऊन, त्यातील पाचपेच आपल्या जुन्या समजूतीच्या भेद शोधण्यास काढून घेऊन (अन्वयार्थ) भारी धर्मशास्त्री विज्ञानात आपण पहिला समाज स्थापक ग्रीक उद्गाता कर्ता म्हणून फुल्यांकडे पाहिले जाणे तात्कालिक विवेचने पुरेसे समजण्या योग्यांच्या धर्मग्रंथ अनादौगिद असून इश्टा व्रणित आहेत असा समज करून घ्यायला आले. पुढे ते तयार करणे, वृत्तपत्रात लिहून घेऊन करणाऱ्यांना नवा विचार करणारा नाही अंमती फुले म्हणतात.

पंडित रमाबाई यांनी इंग्रजी ज्ञानाच्या व धर्माच्या संपर्कात येऊन जुलमी पद्धतीतील हिंदू धर्म नाकारला व त्यांना धिक्कार करून ख्रिस्तीधर्माचा स्वीकार केला. "मो पटनाच मूळी तत्वाककविता हिंदू म्हणून घेणाऱ्यांना म्हाजरी नव्हती. नेहमी मर्गित स्वरुतून पंडिता रमाबाई यांच्या विरोधात सुरू निघत असतांना याचे समर्थन करून धर्मांधा आपल्या अगवारा घेणारे म्हाजरी फुले घाडसो स्वरुप दिसून येते तर नव्याने रिक्कार केला पाहिजे हा विचार त्यांनी मांडला.

तसेच ताराबाई शिंदे यांच्या स्त्री पुरूष तुलना या ग्रंथाची पाठगुलन ही फुल्यांनी केली आहे. शिव पुरूष यांच्या सवधारे परखड भाष्य करणाऱ्या गिथाला सर्वाने स्वरुतून विरोध होत असतांना त्यांनी त्याची पाठगुलन केली आहे. तमन त्या काळातील वर्तमानपत्राला सत्यतेची उपरती झाली परंतु व त्यातील योग्य सोयीस्कर दूरलक्ष करून त्या दोघांचे शोषणे आपल्या गळ्यात पडेल व आपले वर्तमानपत्र खपनार नाही म्हणून लोकांसाठी त्यावर टिका करण्यात धन्यता मानली.

यशवंत हे तात्या यांना प्रश्न विचारतात की "कुलीन सभ्य विद्वान वर्तमानपत्रकर्ते भलत्या एखाद्या स्त्रीची लांछनादी निंदा करून एकंदर स्त्री जातीस मलिनत्व आणत नाहीत, परंतु फारच थोडे हेकड वर्तमानपत्रकर्त्यांसहित कित्येक लोक असे म्हणतात की, सर्व प्रकारचे साहसा हि दूर्जन स्त्रियांचेच आगो वसतात त्या विषयी आपला अभिप्राय कळवावा तर त्या पासून कित्येकांचे डोळे उघडून उत्तम परिणाम होणार आहे."

यावर उत्तर देतांना तात्या म्हणतात की, "बाळा तू सांगसार विचार करून पहिल्याबरोबर स्त्रियांविषय पुरूषांचे अधिक पक्षपाती दगेबाज, ठक आळसो, क्रूर व नित्य नवीन ज्यास्ती भयंकर घाडसो दुष्ट कर्मे आचरणारे आहेत म्हणून तुझी सुडा खात्री होईल. तथापि तू विचारातोसच त्या आधी त्याविषयी थोडेसे सांगतो."

या प्रसंगा म.फुले क्रांतीकारी विचार मांडतात जे एखाद्या व्यक्तीला मूळ लग्नाची पहिली स्त्री दादलोलीला आवडली नाही तर त्या वर त्याने दूसरी, तिसरी चौथी स्त्री पत्नी म्हणून करावी परंतु आपला नवरा दुर्वर्तनी निघाल्यास त्याच्या उघावर दुसरा नवरा करून त्याच्या बरोबर संसार केला असे कुठेही आर्यपुरुषांनी केलेल्या ग्रंथात कोठेही लिहिले नाही. यावरून पुरूषांचे जास्त पक्षपाती आहेत.

त्याच बरोबर पूर्वी नवाय बादशाह, राज्या यांच्या जनान लाण्यात शेंपनास लालची स्त्रिया ठेवतात "जर आपल्या मोहोपाशात सापडलेल्या पत्न्या बरोबर इमाने इतबारे सत्य स्मरून नाटणूक केली तर या साहेबांची महिन्यातून दर तिन स्त्रियांचे परी एक दिवस वस्तीत राहण्याची पाळी येणार तेथे त्यांच्या बायकांनी आपले पतिव्रत्य कसे व कोणत्या मार्गाने निष्कलंक ठेवावे याचा विचार करणे आपण आपल्या वाचकांकडे सोपवू या."

या वरून स्त्रियांच्या यागणूकीचे समर्थन करतांना फुले दिसतात. तात्कालिक परिस्थितीत स्त्रियांच्या विरोधात बंडखोर स्त्रियांच्या बंडखोरीचे समर्थन करतात.

बंडखोर स्त्रियांच्या बाजूने लेखन करणाऱ्या वृत्तपत्राला उत्तर आणि सत्य परिस्थिती यावर प्रकाश टाकलेला आहे. एकुणच म. फुलेंनी समाज व्यवस्थेच्या दोगोप्रवृत्तीवर हल्ला चढवून स्वतःला उच्च विद्याविभूषित, तत्वज्ञानी आणि स्वतःच्या कोशात समाजालाही गुरफटून ठेऊन स्वतंत्र विचार, आणि खरे ज्ञान या पासून लोकांना दूर ठेवण्यात आपले उद्योग चालवले. फुलेंनी आयुष्यभर दूरलक्षीत, कळीचा मुदा होईल. अशी परिस्थिती महिलांची बाजू मांडली. आपल्या विचाराने कुणी बागत असेल तर त्याचे समर्थन केले पाठगुलन केली. अनिष्ट चाली, रिती, रिवाज, भेद ग्रामणांचा कावेवाजपणा या विरोधात आवाज उठवला. समाजाला डाळसविचार करवयास भाग पाडले. त्यासाठी ग्रामणांचे कसब, अरवजदी काव्यारचना, सत्सारा, शेतकऱ्यांचा आसुड, शिवाजी महाराजा पावाडाआदी लेखनातून वृत्तपत्रातून खरी स्तुत्य बाजू मांडण्याचा प्रयत्न केला.

संदर्भ :

महात्मा फुले समग्र बाइमथ - संपा. प्रा. हरी नरके



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## ❧ CONTENTS OF MARATHI PART - I ❧

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१	मराठवाड्यातील महिला पोलीस कर्मचाऱ्यांच्या समस्याचा समाजशास्त्रीय अभ्यास सविता एकनाथ कांबळे डॉ. शंकर लालू गायकवाड	१-५
२	पायाभूत सुविधांचा चिकित्सक अभ्यास (विशेष संदर्भ : नांदेड जिल्हा) डॉ. पी. ई. विभुते राहुल दगडू गच्चे	६-१०
३	मानवी जीवन : एक दृष्टीक्षेप डॉ. सुनील अ. काळमेघ	११-१३
४	देशातील प्रादेशिक असमतोल - एक चिंतन प्रा. डॉ. अनिल बनकर	१४-१७
५	आंबेडकरी स्वकथनातील मूल्यदर्शन प्रा. डॉ. विष्णूजीत कांबळे	१८-२८
६	महात्मा गांधी यांचे धार्मिक विचार डॉ. अशोक पोळवे	२९-३३
७	भारतातील धर्म आणि सामाजिक विकास प्रा. डॉ. मुळे पी. एम.	३४-३६
८	मानवी हक्क आणि महाराष्ट्र शासनाचा महिला विषयक धुमिका प्रा. डॉ. शंभू डी. डी.	३७-४०
९	स्व. पंडीत रामाश्रय शा लेखक, समीक्षक व व्यक्तीत्व यांचे अभ्यास प्रा. प्रितम जनार्दन बेस	४१-४४
१०	का शहर पाटील आणि अजिंक्यतानातिक विचार प्रणाली प्राचार्य डॉ. शारदा गोविंदराव बंडे प्रा. अनिल प्रभाकर निकष	४५-४९
११	महाराष्ट्र राज्य छत्रपती संभाजी महाराज प्रा. डॉ. सोनवणे राजाराम रामदास	५०-५५

६. महात्मा गांधी यांचे धार्मिक विचार

डॉ. अशोक पोळवे

मराठी विभाग प्रमुख, डॉ. अशोक पोळये  
फातिसंकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर

महात्मा गांधी यांच्या धार्मिक विचारांवर कोण्या एका धर्मगुरूचा, भर्माचा, परंपरेचा, संप्रदायाचा प्रभाव पडलेला नाही. त्यांचा विचार सर्वधर्मसमभावाचा विचार आहे. अनेक धर्म ग्रंथांच्या वाचनातून व विचारातून त्यांच्या विचारातून गांधीजींचे धार्मिक विचार घडत गेलेले दिसतात. त्यांनी अर्नोल्डचे गीते व भाषांतर वाचले. कार्लोईलचा 'विभूती आणि विभूतीपूजा' हा पैगंबरांची महत्ती सांगणारा ग्रंथ वाचला. कुराण, बायबल, अर्नोल्डचेच बुद्धचरित्र वाचले. मॅडम ब्लॅव्हॅटस्की यांचे 'की दू थिऑसॉफी', डॉलस्टॉय यांचे, 'वैकुण्ठ गूढ्या हृदयत आहे.' (The Kingdom of God is within you) गॉस्पेल इन ब्रीफ नव्या कराराचा सायंरा, व्हाट दू इ? (तर मग काय करावे बरे?) रस्किनचे Unto this Last (सर्वोदय), एडवर्ड मेटल्ड आणि अर्ना किस्केट यांचे - 'The Perfecet Way' (उत्तम मार्ग), रामचंद्रभाईंनी पाठवलेले - 'पंचवीकरण', मणिरत्नमाला. योग व सिध्दांचे 'मुमुक्षुप्रकरण' हरीभद्रसुरींचे - पद्मदर्शनलत्ते - 'हिंदुस्थान काय शिकवतो' थिऑसॉफिकल सोसायटीने केलेले - उपनिषदांचे भाषांतर वॉशिंग्टन आयर्विंगकृत - महंमद चरित्र कार्लोईलची - महंमद प्रशस्ती, जगतपुट्टची वचने नायक पुस्तक, सॉल्टचे - अन्नद्वाराचे समर्थन नावाचे पुस्तक, हॉबर्ड विल्यमसचे - आहारनीति इत्यादी.

अशी अनेक पुस्तके गांधीजींनी वाचली आणि त्यातून त्यांचे विचार घडले त्यामुळे त्यांच्या धार्मिक विचारांवर एकांगी छाप नाही हे दिसते. जवळजवळ सर्वच प्रमुख धर्मग्रंथांचे वाचन केल्यानंतरच आणि ते समजून घेऊनच त्यांनी आपले धर्म विषयक विचार मांडलेले आहेत. गांधीजींचे धार्मिक विचार मुख्यतः नीतीला भरून होते. नैतिकतेला सर्वात जास्त महत्त्व देतांना गांधीजी दिसतात. ते म्हणतात "माझ्या प्रयोगांमध्ये तरी आध्यात्मिक म्हणजे नैतिक, धर्म म्हणजे नीती, आत्म्याच्या दृष्टीने पाळावयाची नीती तो धर्म" यात ते नीतीला अधिक महत्त्व देतात. जगातील सर्वच धर्म सत्य आहेत त्यात नीतीलाच अधिक महत्त्व दिलेले दिसते. 'याबद्दल गांधीजी म्हणतात "सर्वच धर्म खरे आहेत, अशी माझी श्रद्धा आहे." परमेश्वर सत्यमय असतो, सत्य सुसंगत व न्याय असते, ही गोष्ट उघड आहे. सर्वच धर्मांनी काही विसंगत बाबींचा पुरस्कार केलेला आहे, ही गोष्ट गांधीजींनी मान्य होती. ते म्हणत जोपर्यंत मूलभूत न्याय हा नीती व समात याला विरोधी जाणार नाही, तो पर्यंत धर्माचा असमंजसपणा व विसंगती मो क्षम्य मानावयास तयार आहे" या सर्वच धर्म जरी खरे असले तरी त्यात काही विसंग बाबी शिरल्या आहेत. पण जो पर्यंत न्याय नीतीला व समतेला विरोधी जात नाही तो पर्यंत या सर्व असमंजसपणाला क्षम्य मानायला हरकत नाही. या विसंगत बाबी बद्दल आपल्याला आणखी सांगतायेईल की हिंदू धर्मांमध्ये शूद्रांना अस्पृश्य मानले जाते याबद्दल



गांधीजी म्हणतात ज्या भर्मागळे गांधीला पूज्य मानले जाते त्या भर्मा आपल्याच मानव मंडूत अमूर्तग मानून त्यांना तिरस्कार घेतले जाते हा कटुता न्याय आहे. या अशा गांधी भर्मागळे नंतर कृतीची पुढीलच्या गंगा असाव्यात असेच म्हटले पाहिजे. या अशा आपल्या बुद्धीला न पटणाऱ्या गोष्टी काढून घेऊन त्यांना पाहिले न सर्वांप्रती न्यायाने समता आणि नीती पाळून गाणजे म्हणजे भर्मांना मग अर्थ आहे. तसेच मित्रगण भर्मागळे घेऊ खिस्त हाच एक काय तो ईश्वराना पुत्र, त्याच्यावर मित्रगण ठेवतील तेवढेच तरणाट, यांना काय अर्थ? सर्वच भर्म जर ईश्वर प्रणिता आहेत खरे आहेत तर मग गांधीने इतर मानव हे ईश्वरानेच पुत्र मानवायाम ठेवले. अशा बुद्धीला न पटणाऱ्या विसंगती सर्वच. भर्मांना कमी - अधिक प्रमाणात आहेत. पण मूलभूत न्याय हा नीतीला व समतेला विरोधी जाता कामा नये हे तत्त्व महत्त्वाचे आहे.

मानवी मनाची मूलभूत गरज म्हणून गांधीजी भर्मांना महत्त्वाचे स्थान देतात. त्यांच्या गजक्रीय, सामाजिक, आर्थिक अशा सर्व प्रकारच्या कार्यांची प्रेरणा धार्मिक आहे. विशिष्ट असा संप्रदाय म्हणजे भर्म नव्हे, तर भर्म म्हणजे विश्वाच्या नियमबद्ध नैतिक शासनावरील श्रद्धा श्रद्धे शिवाय या जगाच्या अस्तित्वाला महत्त्व नाही. श्रद्धा म्हणजे माणसाच्या आत्मिक, आध्यात्मिक गरांची पूर्ती आहे. गांधीजींची धर्मकल्पना परंपरागत धर्मकल्पनेतून वेगळी होती. धर्म म्हटलं की आपल्या डोळ्यांसमोर हिंदू, मुस्लिम, ख्रिश्चन, बौद्ध, जैन, पारशी असे अनेक धर्म येतात पण गांधीजींच्या धर्मविषयक कल्पनेत ईश्वर, सृष्टी व मानव या संबंधीचे मूलभूत विचार येतात. गांधीजी कर्मकांडाला महत्त्व देत नाहीत. त्यांच्या मते सर्वच धर्म सारखीच शिकवण देतात. देशकाल परतवे वेगवेगळ्या स्वरूपात अनेक धर्म अस्तित्वात आले असले तरी या सर्व धर्मांची शिकवण एकच आहे. त्यांच्या मूळाशी एकच शाश्वत धर्म आहे आणि तोच विश्वधर्म मानला पाहिजे. सर्व धर्मांमध्ये सत्याची, न्यायाची, नीतीची शिकवण आहे. जगातील सर्वच धर्मात भौतिक सुखसुविधांवर लक्ष केंद्रित न करता आत्मोन्नतीवर लक्ष केंद्रित केले पाहिजे अशी शिकवण देतात. भौतिक सुखांच्या मोहमायेत न फसता त्या बाबतीत उदासीन राहून आध्यात्मिक प्रगती साध्याला प्राधान्य देतात. जगातील बहुतेक सर्वधर्म मग त्यात 'हिंदू, इस्लाम, पारशी, ख्रिश्चन आणि इतरही सर्वधर्म अशी शिकवण देतात की, आपण ऐहिक बाबतीत उदासीन राहिले पाहिजे आणि ईश्वरी साधनेत क्रियाशील राहिले पाहिजे. आपण आपल्या ऐहिक महत्त्वकांक्षेला आवर घातला पाहिजे आणि आपली धार्मिक आकांक्षा मात्र अमर्याद असली पाहिजे.' आपण भौतिक सुखसुविधांमध्ये न गुरफटता आध्यात्मिक उन्नती साधली पाहिजे व मोक्ष प्राप्ती करून घेतली पाहिजे. सतत ईश्वरी चिंतनात राहिले पाहिजे.

गांधीजी स्वतःला सनातनी हिंदू म्हणवून घेत असले तरी त्यांची धर्मकल्पना सनातनी धर्मपंडितांपेक्षा वेगळी होती. हिंदू धर्म हा प्रचंड वटवृक्षसारखा आहे विविध पक्ष व संप्रदाय या त्यांच्या शाखा आहेत असे ते म्हणतात.

### धर्म आणि नीती

पाप - पुण्य, शुभाशुभ या मानवी मनाच्या कल्पना आहेत. मानवाच्या मनातील अहंकार, स्वार्थ, लोभ, दुर्बलता, भीती या सर्वात मानवी दुःखाचे मूळ आहे. म्हणून इद्रियाच्या या प्रवृत्तींना आवरून आपण

निष्काम कर्म पार पाडणे त्यासाठी कोणत्याही फट्याची अपेक्षा न करणे ही नीतीची शिस्तच आहे. ईश्वराने मानवाला दिलेली नैतिक शक्ती अशियाशी झगडा करण्यासाठी आहे व शिवाचे म्हण करण्यासाठी आहे हे विसरता कामा नये. ईश्वर या सर्व प्रकारच्या पापपुण्यापासून पूर्णपणे मुक्त आहे. पण गांधीजींना जिणे - जिणे आर्शिवाचा प्रत्यय आला तेथे-तेथे त्यांना नैतिकतेच्या रक्षणासाठी त्यांना प्रतिकार करू लागला. नीती व समतेचा आधारित-समाजनिर्मितीचा प्रयत्न करून त्यांनी समाजात समानता प्रस्थापित करण्याचा प्रयत्न केला. धर्म आणि नीतीची सांगड त्यांनी सर्वोदयामधून यथार्थपणे घालून दिली आहे. माणसांनी नीतिमत्ता हीच त्यांची खरी संपत्ती आहे. असा त्यांचा एकुण आशय आहे. दुसऱ्यांना फसवणे, त्यांचे शोषण करणे हे मोठे पाप समजले. माणसाच्या भौतिक उत्कर्षपेक्षा आध्यात्मिक व नैतिक विकासाला त्यांनी महत्त्व दिले. स्वभावतःच मानवी मनाला सत्य, अहिंसा, समानता, सामाजिक न्याय यांची ओढ असते पण या सर्वांसाठी मानवाची नैतिकता महत्त्वाची आहे. नीतीमान माणसाला कसल्याही प्रकारचे भय नसते. एखादे शास्त्रवचन बुद्धिला न पटणारे व नीतीला विरोध असेल तर त्याचा त्याग केला पाहिजे. ईश्वरावर अफाट श्रद्धा असल्यास नीती निर्माण होत असते. त्यामुळे 'शास्त्र प्रमाण्य आणि अंतःप्रेरणा यामधील झगड्यात नीतिनिष्ठ अंतःप्रेरणेची तरफदारी करून गांधींनी भारतातील सामाजिक न्यायाच्या चळवळीला एक व्यापक अधिष्ठान मिळवून दिले.'<sup>4</sup> शास्त्रा प्रमाण्यापेक्षाही आपल्या मनाला, बुद्धिला आणि आत्म्याला जर या गोष्टी न पडता नीतीला विरोधी जात असतील तर त्या नाकारल्या पाहिजेत असे गांधीजी सांगतात.

गांधीजींचा धर्मातरास विरोध होता. धर्म हा जगातील सर्व समाजजीवनाचा पाया आहे. माणसाच्या जडण-घडणीस धर्माचेच अधिष्ठान आहे. आपण कुणाचेही धर्मांतर इच्छू नये. सर्व धर्मांनी गुण्यागोविंदाने एकत्र राहावे अशी गांधीजींची इच्छा होती. "आपण जर हिंदू असलो तर एखादया ख्रिश्चनाने हिंदू व्हावे, किंवा आपण मुसलमान असलो तर एखादया हिंदूने किंवा ख्रिश्चनाने मुसलमान व्हावे अशी आपली प्रार्थना नसावी किंवा आपण मनोमन सुद्धा एखादयाचे धर्मांतर व्हावे असे इच्छू नये, तर हिंदू ने अधिक चांगले हिंदू व्हावे, मुसलमानाने अधिक चांगला मुसलमान आणि ख्रिश्चनाने अधिक चांगला ख्रिश्चन बनावे अशी आपली मनापासूनची प्रार्थना असावी"<sup>5</sup> भारता संबंधी माझ्या स्वप्नात कोणत्याही एका धर्माची स्थापना व्हावी अशी माझी इच्छा नाही, तर सर्वधर्म सहिष्णुता असावी. सर्व धर्मांचे लोक गुण्यागोविंदाने एकत्र राहावेत. कोणोही धर्मातराची आवश्यकता नाही मग ते स्वखुशीने असो की सक्तीचे धर्मातराची आवश्यकता नाही. सर्वांनी अधिकाधिक चांगले बनण्याचा प्रयत्न करावा. त्यासाठी "दुसऱ्या धर्मात जे चांगले वाटेल ते मी माझ्या धर्मात घेऊ शकेन - घेतले पाहिजे. माझा धर्म अपूर्ण वाटेल तर तो पूर्ण करणे माझे कर्तव्य आहे. त्यांत जर मला दोष दिसला तर तो दूर करणे सुद्धा माझे कर्तव्य आहे"<sup>6</sup> धर्मातराला विरोधकरून गांधीजी म्हणतात की, दुसऱ्या धर्मातील चांगले वाटेल ते आपल्या धर्मात त्यांचा समावेश करून आपला धर्म अधिकाधिक चांगला आणि पूर्ण करण्याचा प्रयत्न करून सर्वांनीच न्यायाने वागले पाहिजे. जर आपल्या धर्मात काही दोष असतील तर दूर करण्याचा प्रयत्न केला पाहिजे. यासाठी धर्मातराची आवश्यकता नाही असे गांधीजी सांगतात. सत्य आणि सदाचारापेक्षा श्रेष्ठ असा कोणताच धर्म नाही. जगातील निरनिराळे धर्म हे एकच विश्वधर्माचे पैलू आहेत.



प्रत्येक भर्मातून शास्त्रात मर्यादा अविज्ञात होती म्हणून शास्त्राभाषीत हिंदू धर्म, ब्रह्मवाद, निवृत्तता यांचे  
भाग आहेत आणि ते त्यांचे अंगभूत भाग आहेत कारण अशाच प्रकारच्या व शास्त्रात हिंदू  
मर्यादांना आणि निवृत्ततांना ते शास्त्रात लक्षात घ्याव्यात त्या मर्यादा दर्शन होईल म्हणून शास्त्राभाषीत  
मर्यादांना आणि निवृत्ततांना ते शास्त्रात लक्षात घ्याव्यात त्या मर्यादा दर्शन होईल म्हणून शास्त्राभाषीत  
मानता त्या - त्या स्वरूपात त्यांना मर्यादा दर्शन निवृत्तता पातळ करायला हवे मर्यादा आणि निवृत्तता  
शास्त्रात आहे

गीता — एक मार्गदर्शिन ग्रंथ

१८८८-८९ साली गांधीजींच्या गीता या ग्रंथाशी प्रथम परिचय झाला, काही उघट मित्रांच्या आग्रहावरून त्यांनी एडवर्ड अर्नाल्डचे गीतेचे इंग्रजी भाषांतर वाचले. त्यानून त्यांना गांधी स्वतःच्या त्यांच्या आपल्या धर्म समजून घ्यायचा होता म्हणून त्यांनी गीता वाचनास सुरुवात केली. पुढे गीतापाठ हा त्यांच्या जीवनात नित्याचाच भाग झाला. गीता त्यांचा पथदर्शक आणि मार्गदर्शक ग्रंथ झाला. गांधीजींच्या म्हणण्याप्रमाणे महाभारताच्या लेखकाने युद्धाची आवश्यकता दाखवलेली नसून त्याची निरर्थकताच दाखवली आहे. आदर्श मानव कसा असावा याची गीता शिकवण देते. जो पर्यंत माणूस ईश्वरसदृश्य होत नाही तोपर्यंत त्याला शांती लाभत नाही. त्यासाठी तो अधिकाधिक प्रयत्न करतो, तसतसे त्याला आपल्या अपूर्णत्वाने प्रखरपणे जाणिव होते, पण त्यामुळेच तो सत्याच्या आणि ईश्वराच्या अगदी जवळ जाऊन पोहचतो आणि आनंदित होतो. त्याविषयी गांधीजी म्हणतात "भाइया मतानुसार गीतेचा उद्देश आत्मसाक्षात्काराचा सर्वोत्तम मार्ग कोणता आहे, हे दाखवून देण्याचा असावा" आणि तो मार्ग फलत्याग युक्त कर्म हा आहे. कोणत्याही देहधारी माणसाला कर्म हे करावेच लागतात पण ते कर्म फळाची अपेक्ष न धरता करणे महत्त्वाचे आहे. त्यासाठी भक्ती आणि ज्ञानाचा मिलाफ होणे आवश्यक आहे. खरा भक्त तो असतो जो कुणाचाही हेवा करत नाही, ज्याचे हृदय करुण भरलेले असते, त्याला अहंकार नसतो, तो निःस्वार्थी असतो, सुख-दुःख समान मानतो, सदैव क्षमाशिल असतो, निश्चयाचा पक्का असतो, तन-मन ईश्वरासाठी अर्पण करतो, ज्याला कशाचेच भय वाटत नाही, एखाद्याच्या प्रशंसेने फुगत नाही, आणि निंदेने खचत नाही. हे सर्व गुण ज्याच्यात आहेत तो खरा भक्त असतो. एकूणच खरा भक्त होणे म्हणजे स्वतःला अंतर्बाह्य ओळखणे असते गीतेत जो मोक्ष सांगितला आहे तो म्हणजे पूर्णशांती होय. फळाच्या अपेक्षेने केलेल्या कर्मांमुळे माणसाला निराशा हाती लागते व त्याच्या ठिकाणी अनेक विकार निर्माण होतात त्यामुळे त्याला निराशांतीचा प्रत्यय येत नाही. त्यामुळेच तो मोक्षस अपात्र होतो. कोणताही मार्ग पत्करून आपला हेतू साध्यकरण्याकडे त्याचे लक्ष असते. त्यामुळे नैतिक मूल्यांपासून तो तुटत जातो आणि स्वतःचे आणखीन नुकसान करून घेतो.

गीतेत सांगितलेल्या यज्ञ म्हणजे प्राण्यांचा बळी देण्याचा यज्ञ नव्हे तर तो सतत ईश्वरचिंतन करण्याचा आहे. गीतेतील संन्यास म्हणजे सर्व त्याग करून एकांकी डोंगरदऱ्यात जाण्याचा संन्यास नव्हे, तर सतत कर्मकरणे पण तरीही त्यांपासून अल्वित असणे, त्यात अडकून न पडणे असा संन्यास आहे. गीतेतील शब्दांचे अर्थ व्यापक आहेत जो ज्याला पाहिजे तो तसा त्याचा वापर करू शकतो, म्हणून त्यातील मूलभूत महत्त्वाचा

अर्थ समजावून घेतला पाहिजे. "जोजो आपण त्यात खोलवर शिरतो तो तो समृद्ध अर्थ हाती लागत जातो. तो सान्या जनतेसाठी असल्यामुळे त्यात सुखद पुनरावृत्ती आहे. प्रत्येक युगात त्यातील महत्त्वाच्या शब्दांचे नवेनवे व विस्तारित अर्थ हाती येतील. परंतु त्यातील मूळ शिकवणूकीत कदापि बदल होणार नाही." पण त्या सर्व गोष्टींसाठी ज्ञान, भक्ती आणि अहिंसा यांची आवश्यकता असते. गीता हा ग्रंथ सर्व गोष्टींनी परिपूर्ण आहे. त्यात विश्वाचे गहन तत्त्वज्ञान समावलेले आहे. आणि ती माणवाच्या उच्चपदापर्यंत नेऊन पोहचवते. त्यासाठी साधकाला त्या सर्व कसोट्यांचा सामना करावा लागतो तेव्हाच त्याचे सर्वस्वी कल्याण होईल. भगवद्गीतेविषयी सांगताना गांधीजी म्हणतात. "भगवद्गीता हा अमूल्य ग्रंथ आहे अशी त्यावेळी माझी समजूत झाली ही हळूहळू दृढ होत गेली व आज तत्त्वज्ञानाच्या बाबतीत मी तिला सर्वोत्तम ग्रंथ समजतो. मदत दिली आहे." जेव्हा जेव्हा गांधीजींच्या आयुष्यात निरोशेचे प्रसंग आले, त्या त्या वेळी त्यांनी गीतेकडे धाव घेतली आणि त्यातून त्यांना नवनवीन मार्ग सापडले. त्यामुळे त्यांना दिलासा मिळाला. त्यांच्या इच्छा शक्तीला प्रबळ बळ मिळाले. जीवनाच्या अंतकाळी जेव्हा ते शबेतच्या गटका मोजीत असतील तेव्हा केवळ गीताच त्यांचे सांत्वन करू शकेल असे महात्माजी निसंकोचपणे सांगतात. जगातील सर्व धर्मग्रंथांमध्ये सांगितलेले चांगले मार्ग, चांगले अचारण हे त्यांना गीतेमध्ये सापडले. त्यामुळेच त्यांना गीता हा ग्रंथ सर्व गोष्टींनी परिपूर्ण वाटला. नव्हे, तर जीवनभर तो त्यांचा मार्गदर्शक म्हणूनही महत्त्वाचा ठरला.

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## CONTENTS OF MARATHI PART - II

अ.क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
१	डॉ. पंजाबराव देशमुख यांच्या राजकीय विचार व भाषांमधील साम्यता प्रा. गोंदकर तुकाराम दत्तात्रय	१-३
२	समाजसुधारकांचे कार्य आणि महिला संश्लेषक भागवत ट. गोरे	४-६
३	महात्मा फुले शुद्धातीशुद्धांच्या उद्धानांचे उद्गारे विशेष संदर्भ : (महात्मा फुलेंनी असांड कात्यायनांमधील) डॉ. अशोक घोळवे	७-१२
४	सावित्रीबाई फुले आणि आजची स्त्री प्रा. ज्योत्सना जी. गायकवाड उत्तम बी. वाघमारे	१३-१५
५	डॉ. बाबासाहेब आंबेडकरांचे स्त्रीविषयक विचार आणि वर्तमान काळातील प्रासंगिकता डॉ. आर. के. पवार	१६-१९
६	वर्तमानकाळात महात्मा फुले यांच्या शैक्षणिक विचारांची प्रासंगिकता प्रा. डॉ. एच. टी. सातपुते	२०-२४
७	डॉ. बाबासाहेब आंबेडकर यांचे राष्ट्रीय एकात्मता व सुरक्षा विषयक विचार प्रा. जि. एन. सोनवणे	२५-२६
८	राजर्षी छत्रपती शाहू महाराजांचे प्रशासन विषयक धोरण प्रा. दिक्षीत एस. डी. प्राचार्य डॉ. पिंपळे बी. एस.	२७-३२
९	वसंतराव नाईक यांचे हरितक्रांती विषयक विचार डॉ. एस. एस. बिरंगणे	३३-३५
१०	लोकमान्य टिळकांच्या राजकीय विचारांची प्रासंगिकता प्रा. गोपालकृष्ण श्रीराम राखोडे	३६-३९
११	वर्तमान काळात महात्मा जोतिबा फुलेंच्या शैक्षणिक विचारांची प्रासंगिकता मिलिंद रघुपती गाडे	४०-४३
१२	महात्मा गांधीजी - राष्ट्रभक्ती आणि आर्थिक विचार डॉ. आर. के. जाधव	४४-४७

### ३. महात्मा फुले शुद्धातीशुद्धांच्या उत्थानाचे उद्गाते विशेष संदर्भ : (महात्मा फुलेंची अखंड काव्यरचना)

डॉ. अशोक घोळवे

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भारतामध्ये इंग्रजांच्या आगमनाने नव्याकांती पर्वाला सुरुवात झाली. सर्वांसाठी शिक्षण हे राजसत्तेचे निकसीत रूप म्हणून शिक्षणाचे द्वार खुले केले. पारंपरिक शिक्षण हे फक्त ग्रामहणांचाच हक्काचे समजल्या जात होते. त्या शिक्षणात भारतीय धर्मग्रंथ आणि पोथी, पुराणे यांचेच आतर्भाव होता. त्याकाळातील शिक्षण व्यावस्थेत तोंडसत्य, ज्ञान नवनिर्मिती याचा अंतर्भाव अभावानेच असावा, त्याचा उपयोग जीवनासाठी फारसा होत नव्हता. परंतु इंग्रजी राजसत्तेने नव्या पर्वाला जन्म दिला पोषक वातावरण निर्माण झाले. शिक्षणाच्या संक्रमणातून महात्मा ज्योतीबा फुले या क्रांतीकारकाबरोबरच त्यांच्या पिढीतील नवविचारवंतांचा उदय झाला.

भारतीय समाज व्यवस्थेमध्ये महात्मा ज्योतीबा फुले हे सामाजिक क्रांतीकारक होते. क्रांती मागून येत नसती तर पूर्वीचे नष्ट करून, नाहिसेकरून नव्या व्यवस्थेची पहाट असतो. ग्रामहणी राजसत्तेच्या दडपणाखाली अस्पृश्यांच्या वाटयाला आलेले हिन जीवन भारतीय स्त्रियांची अप्रतिष्ठा आणि शेतकऱ्यांच्या दारुण स्थिती हे सर्व इश्वराच्या कोपातूनच आम्हाला भोगावे लागते हा समज दृढ झालेल्या समाजात नव्या विचारक्रांतीची विजे रोऊन कृतीची जोड देऊन नवा समाज उभा करण्यासाठी ज्योतीबांनी आयुष्यभर कष्ट घेतले.

महात्मा ज्योतीबा फुले यांचा विचार नव्यासमाज रचनेला पोषक असा होता. पुढे डॉ. बाबासाहेब आंबेडकरांनी मानवी मुल्ये समाजात रुजविण्यासाठी समता, स्वातंत्र्य आणि बंधूभाव ही ध्येय प्रणाली महात्मा ज्योतीबा फुल्यांपासून घेतली आणि ते त्यांना गुरु मानत असा दाखला डॉ. बाबासाहेबांच्या संबंधकार्यावरून जाणवतो.

महात्मा फुले यांचे वाङ्मय हे प्रामुख्याने या देशातल्या सामान्यातल्या सामान्य माणसाला त्यांच्या अस्तित्वाची जाणीव निर्माण करून देणारे होते. त्यासाठी त्यांनी लोकजीवनातील, संकल्पनेचा वापर केला. संकेत आणि लोकभाषा, जाणीवपूर्व आपल्या वाङ्मयात वापरली. लोकपरंपरेत चालत आलेले लोकरंजन आणि लोकप्रबोधनाची माध्यमे नवसमाज रचणेसाठी प्रामुख्याने वापरली. पोवाडा, अभंग इत्यादी बरोबरच वाङ्मयप्रकारांचा आश्रय घेतला. आपले नवविचार लोकापर्यंत पोहोचविण्यासाठी सर्वसामान्यांच्या ओठावर दररोज सकाळी घोळणारा 'अभंग' ह्या वाङ्मय प्रकाराच्या धर्तीवर 'अखंड' हा नवा रचनाप्रकार निर्माण केला.

महाराष्ट्राच्या लोकजीवनावर अधिराज्य असणारा लोककलाप्रकार म्हणजे 'तमाशा' या कलाप्रकारातून सत्यशोधकी तमाशा किंवा सत्यशोधकी जलसा या नावाने नवा प्रकार वास्तवाच्या पातळीवर जन्माला घातला. शाहीरी पोवाडा आणि 'तमाशा' नव्या समाजारचणेसाठी वापरून समाजव्यवस्थेत प्राण फुंकण्याचे उल्लेखनीय कार्य महात्मा फुले यांनी केले आहे.





महात्मा फुले यांचे विचार आणि कृती ही सलग असल्याने त्यांच्या शब्दांसाठी एक धार आहे. विद्यात मोठेमान देवळून नावविचाराची पेरणी करण्याशी आहे. इंग्रजांनी सर्वांना समान अधिकार दिले आहेत. केवळ ब्राह्मणांनाच नोकरीची संधी देणे हे अयोग्य असून संख्येच्या प्रमाणात प्रत्येक जातीसाठी "संस्थान जागा" देवल्या पाहिजेत. आरक्षणाला नाई. महात्मा फुले यांनी या रचनेतून केली आहे.

फुल्यांच्या अभंगरचनेतून त्यांची मानवतावादी दृष्टी दिसून येते. मानवतावादी मुल्ये आपणास इंग्रजी विद्येमुळे मिळाली याचा गौरवपूर्ण उल्लेख त्यांनी आपल्या अभंगातून केला. शिवाय इंग्रजी विद्या ग्रहण करण्यात आपले खरे सुख आहे असे ही त्यांनी सांगितले. माणवी जीवनात आळस, अज्ञान या दोन गोष्टींवरून समाजातील सत्यगोप्यांचा प्रयत्न त्यांनी केला आहे.

साधन जगात मारुनियां गप्पा ॥ देई व्यर्थ थापा ॥ पैसा लुट म्हणून आपण व्यर्थ बडबड अथवा व्यर्थ थापा देऊन आपली प्रगती होत नाही. हे लुटीचे साधन आहे असे ही ते म्हणतात. आळशी माणसे आपल्या जीवनात नवीन उद्योग काय करावा म्हणून मध्यरात्री भिंती फोडून चोरी करणांवर आपल्या अभंगातून परखड कोरडे ओडले आहेत.

चोरी, करणे, या कृती निशिद्ध आहेत. हे सांगितले तर आपल्याला आलेले किंढसावाणे जिने याला इश्वर कारणीभूत नसून त्याला आपणच कारणीभूत आहोत.

"निर्मिकें निर्मलें मानव पवित्र ॥ कमी जास्त सुत्र ॥ बुद्धीमध्ये ॥

पिढीजादा बुद्धिनाही सर्वांमधीं ॥ शोध करा आधीं ॥ पुर्तें पणी

सत्य सेवूनीया चित्त करी स्वच्छ ॥ मग मान तुच्छ ॥ मानवास

मनाची स्वच्छता नाही समजला ॥ भूमीभार झाला ॥ ज्योती म्हणे."

महात्मा फुल्यांनी आपल्या अभंगातून सत्यशोधनावर भर दिलेला आहे. मानव ही इश्वराची देन आहे. जी आपली प्रगती अथवा अधोगती होते. त्यास आपली बुद्धी कारणीभूत असून बुद्धी पिढीजात कधीही असुराकत नाही. तरीही ब्राम्हण पिढ्यांना पिढ्या समाजावर अधिराज्य कसा गाजवतो? हे फुल्यांना न उलगडलेले कोडे आहे. फुल्यांनी आपले मन स्वच्छ ठेवले तर कुठलेही अपयश आपणाला शिवनार नाही असे ही त्यांनी सांगितले.

महात्मा फुले यांच्या अभंगरचनेत असंख्य विषय आलेले आहेत. आपल्या सर्वच अभंग रचनेतून वास्तववादी व परखड विचार मंडले आहेत. त्यामुळे शब्दाला आणि विचाराला धार येते. परंतु त्या शब्दाचा वार मानवी जिवन उद्धस्त करण्यासाठी नसून पारंपरीक विचाराणे मानवी जिवनाला किड लागली आहे. त्या विचारांच्या नाश करण्यासाठी त्यांची लेखनी धारदार होते. भाशा आणि विचार स्पष्ट, परखड, आणि तितकेच स्फोटक बनलेले आहेत. या सर्व विचारांच्या मुळाशी त्यांची मानवाविषयीची आणि विशेषतः शुद्रादी अतिशुद्राविषयीची तळमळ दिसून येते. विचार आणि कृती यांचा समन्वय महात्मा फुल्यांचा महत्वाचा विशेष दिसून येतो. त्यांच्या विचाराचा व कार्याचा गौरव करतांना डॉ. गंगाधर पानतावणे म्हणतात. "आपल्या कार्यावर आणि विचारांवर त्यांची आढळ श्रद्धा होती. निष्ठा होती. ही अनुकंपेतून निर्माण झाली नाही. तर ती कर्तव्य भावणेतून जन्मास आली होती. या कार्यभावनेला नैतिकतेचा भक्कम पाया होता." आणि या पायावर भारतीय समाजाची भक्कम इमारत उभीकरण्यासाठी त्यांनी राबविलेला कार्यक्रम म्हणजे अस्पृश्यांच्या वस्त्यांना भेटी देणे तरुणांना अस्पृश्यता निवारणासाठी उत्तेजित करणे त्यांच्यात विद्येची आवड निर्माण करणे हा फुल्यांच्या जीवनातील वैशिष्ट्यपूर्ण घटनांचे कथन थोर चरीत्रकार धनंजय कीर यांनी केले आहे.



महात्मा फुले यांनी समग्र समाजाला दिलेली ही तालीम अस्मृश्यातील कार्यकर्ते उदयास येण्यासाठी उपकारक ठरली आहे. हे सत्य नाकारता येणार नाही" असे डॉ. कृष्णा किरवले म्हणतात.

**संदर्भ सूची**

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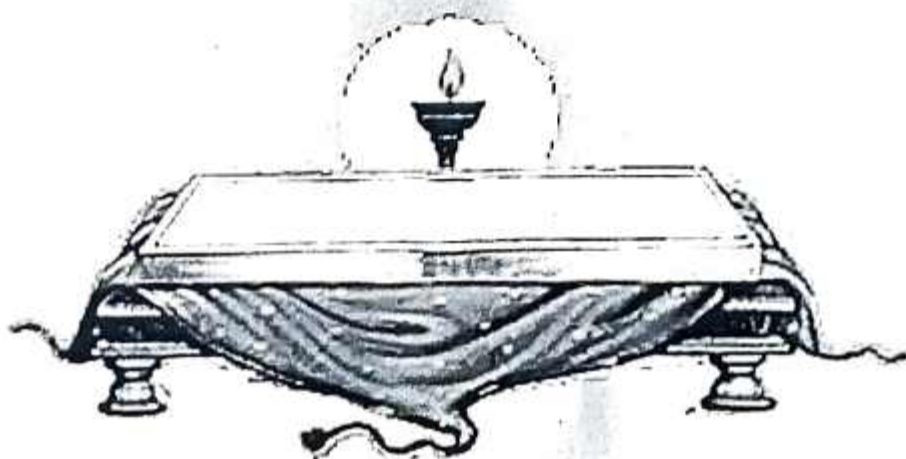
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# तिफुण

भाग - २



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# तिफुण

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❖ संपादक ❖

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अ. क्र.	लेख आणि लेखकाचे नाव	पृष्ठ क्र.
२५	महानुभाव साहित्याचे अध्ययन, अध्यापन आणि संशोधन प्रा. वंदना पाटील	१३२-१३४
२६	महानुभाव साहित्याचे अध्ययन व अध्यापन प्रा. डॉ. हरिश्चंद्र मधुकर गायकवाड	१३५-१३७
२७	महानुभाव साहित्यातील ओवी : एक अभ्यास (अप्रकाशित ओव्या) मंगला पुंजाराम पठाडे	१३८-१४०
२८	महानुभावसाहित्य आणि सामाजिक दृष्टीकोन प्रा. डॉ. आर. आर. मेंडे	१४५-१४८
२९	महानुभाव साहित्याचे अध्ययन, अध्यापन आणि संशोधन प्रा. डॉ. रंजना मधुकर कदम	१४९-१५३
३०	मध्ययुगीन महानुभावीय वाङ्मयाचे संशोधन: स्वरूप व दिशा प्रा. डॉ. रमाकांत कराड	१५४-१५८
३१	महानुभाव साहित्यातील महदंबेचे योगदान प्रा. डॉ. दत्ता रुस्तुमराव शिंदे	१५९-१६१
३२	मराठी भाषेचा अभिमान प्रकट करणारा महानुभाव संप्रदाय डॉ. कैलास सोनू महाले	१६२-१६५
३३	म. बसवेश्वरांचा वीरशैव लिंगायत धर्म : एक अभ्यास प्रा. डॉ. शिवाजी बाबुराव परळे	१६६-१७०
३४	भक्तीचा निर्मळ झरा संत सोयरा व निर्मळा डॉ. अशोक उत्तम घोळवे	१७१-१७५
३५	संत साहित्याचे अध्ययन आणि वैचारिक मतभिन्नता डॉ. नवनाथ गोरे	१७६-१७९



## ३४. भक्तीचा निर्मळ झरा संत सोयरा व निर्मळा

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संशोधक मराठी विभाग, कालिकादेवी कला, वाणिज्य व विज्ञान महाविद्यालय, शिरूर ता.जि. बीड.

### प्रस्ताविक

वारकरी सांप्रदायातील संतांचे साहित्य व त्यातून प्रतीत होणारा त्यांना विनार याने अभ्यायन अभ्यापन करत असतांना आपण प्रमुख महत्वाच्या संतांचा विचार करत असतो. परंतु या संतांबरोबरच अनेक संत स्त्रीयांचेही या वारकरी सांप्रदाय वाढीच्या कामी योगदान असल्याचे दिसून येते. त्यामध्ये प्रामुख्याने मुक्ताबाई, जनाबाई, सोयराबाई, निर्मळा, बहिणाबाई यासारख्या स्त्रियांचा समावेश अप्रक्रमाने होतो. या संत स्त्रियांच्या साहित्य निर्मितीमागील मुख्य प्रेरणा काय असावी असा सहाजीकच अभ्यासक विचारवंतांना प्रश्न पडतो. परंतु त्यांच्या साहित्य निर्मितीमागील मुख्य प्रेरणा ही भक्ती असल्याचे अभ्यासाअंती आपल्या लक्षात येते. या भक्तीचा विचार करत असतांना आपल्याला त्यांच्या तत्कालीन सामाजिक, धार्मिक, राजकीय परिस्थितीचा विचार करणे महत्वाचे ठरते. हा विचार करत असतांना आपल्या शोध निबंधाच्या दृष्टीने महत्वाच्या असलेल्या व तत्कालीन उपेक्षित समाजातून आलेल्या संत चोखामेळयाच्या कुटुंबातील त्यांची पत्नी सोयराबाई व बहिण निर्मळा यांच्या भाव-भावनांचे कागोरे त्यांच्या अभंगातून उलगडता येतात. त्याचा आपण प्रयत्न याठिकाणी करणार आहोत. कारण, "स्वातंत्र्य पूर्वकाळीत झालेल्या भक्ति वाडमयावरील समीक्षेत काळाचा व तत्कालीन विचारांचा पगडा अधिक असल्याने ही समीक्षा कालसापेक्ष झाली आहे." असे मत संत साहित्याचे जेष्ठ अभ्यासक बडवे सतीश यांनी आपल्या ग्रंथात केले आहे. सदरील मताचा आपण साकल्याने विचार केल्यास संत साहित्याची समीक्षा व त्याची मांडणी नव्याने आधुनिक पद्धतीने होणे गरजेचे आहे. त्या दृष्टीने या लघुशोध निबंध लेखनाचा प्रयत्न आहे.

### तत्कालीन सामाजिक, राजकीय, धार्मिक स्थिती

महाराष्ट्राच्या भूभागावर दोन-अडीच हजार वर्षे जुनी मानवी वसाहत असल्याचे पुरावे सापडले असले तरी इसवीसनाच्या सातव्या-आठव्या शतकापासून महाराष्ट्राच्या इतिहासाची जडण-घडण आपल्याला ऐतिहासिक दस्तावेजाच्या आधारे काही प्रमाणात परिचित झाली आहे. इसवीसनाच्या प्रारंभापासून अनुक्रमे सातवाहन, वाकाटक, पूर्व चालूक्य, राष्ट्रकूट, उत्तर चालूक्य आणि यादव यासारखी राजघराणी इथे चौदाव्या शतकापर्यंत नांदली. महाराष्ट्राच्या बहुतेक सर्व प्रदेशावर राज्य करणारे शेंवटचे राजघराणे हे यादवांचे होय. महाराष्ट्रात मराठी राज्याचा उत्कर्ष आणि विस्तार यादवांमुळे झाला तर परकीय आक्रमणाचे भयही याच राजवटीने सोसले.

नवव्या शतकाच्या अखेरीपासून यादव घराणे आपल्या स्वकर्तृत्वाने गाजु लागले. तेजाविले हे त्यांच्या राजधानीचे ठिकाण. नवव्या शतकात हे राजे सत्तेवर आले. तेजाव्या शतकात त्यांच्या मंत्रांनी उदारीत गाजल्या व चौदाव्या शतकाच्या पूर्वार्धात ही सत्ता नाश पावली. भिल्लम, सिंगणदेव, कुण्ठादेव, गमनंददेव असे अनेक प्रसिद्ध राजे या कुळात होऊन गेले. यादव राजांनी भर्मा, कला व नाट्य अशा अनेक क्षेत्रातील विद्वानांना आणि कलावंतांना उदार आश्रय दिला. हेमाद्री पंडित, शोपदेव, खोलेश्वर यासारखे व्यासंगी पंडित कलावंतांनी यादवांच्या आश्रयाने आपल्या कलेद्वारे कर्तृत्व दाखवून दिले. या राजवटीने वर्णन करत असलेला मध्ययुगीन इतिहासाचे अभ्यासक नसिराबादकर ल.रा. मांडतात. "वाढत्या संपन्नते सोबतच या वेळी महाराष्ट्रातील धार्मिक व सामाजिक जीवन मात्र अधःपतित होत चालले होते. वैदिक धर्माच्या उज्ज्वल परंपरेत कर्मठता व पठिक पांडित्य यांनी काळीमा फासला होता." हे मुख्य कारण या राजवटीच्या नाशाला कारण ठरले असावे असे वाटते.

यादवकालीन वेगवेगळ्या प्रकारचे कोरीव लेख व अनेक ग्रंथ यांच्या माध्यमातून यादवकालीन समाजजीवनाची कल्पना आपल्याला येते. हा समाज चतुर्वर्ण्यावर आधारलेला, कर्मकांडाचे प्रभुत्व असलेला व जातिभेदांनी विभागला गेलेला होता. शूद्र लोक गावाबाहेर पशुसारखे जगत होते. स्त्रियांचे जीवनही हालाखीचे होते. लग्नगाठ अल्पवयातच बांधली जाई. बहुपत्निकत्वाची चाल सर्वत्र होती. जात आणि व्यवसाय यांची सांगड असलेली बलुतेदारी पद्धत रूढ होती. जातपंचायतीचे व वतनदारांचे ग्रामीण जीवनावर नियंत्रण असे. या काळातील समाज जीवनावर परमार्थाचा म्हणजे वारकरी सांप्रदायाचा मोठा प्रभाव होता. ऐहिक जीवन आनंदाने जगावे अशी समाजाची प्रवृत्ती नव्हती. घरे सर्वसाधारण मातीचीच असत. राजवाडे आणि गडकोट दिमाखदार असण्यापेक्षा भक्कम अधिक असत. देवळे, मठ, धर्मशाळा यांच्या आश्रयाने जगणारा मोठा वर्ग होता.

समाजात या काळात नाना प्रकारचे धर्मपंथ प्रचलित होते. शैव, शाक्त, वैष्णव, दत्त, महानुभाव, नाथ आदी सांप्रदायांची स्वतंत्र दैवते आणि उपासनापद्धती रूढ होत्या. कर्मकांडाचे अनावश्यक महत्त्व बोकाळले होते. संतांना गरज वाटली ती धर्माचे खरे स्वरूप स्पष्ट करण्याची धर्म रूढी, प्रथांमध्ये नाही की कर्मठ आचारांमध्ये नाही. परमेश्वर एकच आहे आणि तो सर्व प्राणी मात्रांमध्ये भरलेला आहे. म्हणून सर्व माणसे समान आहेत. उत्तम चारित्र्य, शुद्ध मन आणि मानसाविषयीचे प्रेम यांच्या बळावर व्यक्तीची उन्नती होऊ शकते. त्यासाठी पुरोहितांची, यज्ञयागांची पशुहिंसेची जरूरी नाही. संतांनी आपले हे विचार समाजापर्यंत पोहोचविण्याचा प्रयत्न केला. त्यांनी कीर्तन-प्रवचने दिली आणि भाष्य ग्रंथांशिवाय अभंगही रचले. संतांच्या साहित्यामागे एक प्रकारे समानतेची, करुणेची भावना समाजापर्यंत पोहोचविण्याची उत्कट प्रेरणा होती असे दिसते. त्या संत मेळ्यातील उपेक्षित समाजातून आलेले महत्त्वाचे संत म्हणजे चोखामेळा, चोखामेळा यांचा गुरुपदेश होऊन त्यांचे संपूर्ण कुटूंबच वारकरी झाले. पत्नी, बहीण, मेळणा, मुलगा असे सर्वच विद्वत् भक्तीत तल्लीन होऊन अभंग रचना करत. त्यातील महत्त्वाच्या असलेल्या संत सोयराबाई व निर्मळा यांच्या काही अभंगांच्या विचार आपण करणार आहोत.



### संत सोयराबाई

संत सोयराबाई या संत चोखामेळा यांच्या पत्नी पतीच्या आपल्या मूळ मानून त्यांच्याच विद्वत्ता भवतीचा मार्ग त्यांनी अवलंबला. सोयराबाई या चोखामेळांच्या गर्भन श्रमाल म्हणजे संसारातून जेव्हा तर पारमार्थिक जीवनातही एकरूप झाल्या होत्या. 'पुरुष विरक्त झाला तरी स्त्रीला संसाराची व्याभाविका होय असते. पण विरक्त चोखोबाला विरक्त स्त्री मिळायी हे कंठवे भाग्य!'<sup>१</sup> अशी मूनी संत माझिबाबांनी अभ्यासक जोशी स.कृ. यांनी संत सोयराबाई यांनी केलेली आहे. चोखोबा प्रमाणेच सोयराबाईंनीही आपले अध्यात्मिक विरक्त अवस्थेतील अनुभव अभंगाच्या माध्यमातून मांडले आहेत. त्यांनी आपल्या अभंगातून कडे उपदेश आहे. तर कुठे नाममहात्म्य गायिले आहे. कुठे संसार न परमार्थ यामुळे होणारी फजिती व्यक्त केली हे करतांना त्यांची होणारी व्याकूळ अवस्था, हीन हीन म्हणून त्यांना हिनविले असले तरी त्यांनीही त्या विद्वत् भक्तीचा पदर धरून ठेवतात.

'शिणल्या भागल्यांचा तुचि विसावा। भावे तूं केशवा मायबापा।१॥

किती किती मन आवरोनी धरूं। परी न सुचें विचारू काय करूं।२॥

तुम्ही तवें समर्थ आपल्याच भारें। आमुचे खोटे खरे काय जाणा।३॥

मीतो बैसले तुमीचये द्वारी। म्हणतसे महारी चोखियाची।४॥'<sup>२</sup>

संत सोयराबाई या हीन मातीत जन्मल्या असल्यामुळे त्यांनाही उच्चवर्णीयांकडून होणारा छळ सोसावा लागला म्हणून देहाचा विरळ मानणाऱ्या कर्मठ लोकांची त्या कान उघडणीही आपल्या अभंगातून करतात. अशावेळी त्यांचा कोमल स्वरही कडवट कठोर बनतो. वारकरी सांप्रदायाची शिकवण त्यांनी आत्मसात केलेली असल्याने देहाच्याही पलिकडे जाण्याऐवजी त्यांची अध्यात्मिक तयारी झालेली त्यांच्या रचनांमधून दिसून येते.

'देहासी विटाळ म्हणती सकळ। आत्मा तो निर्मळ शुद्धबुद्ध।१॥

देहीचा विरळ देहीच जन्मला। सोबळा तो झाला कवण धर्म।२॥

विरळावांचोनी उत्पत्तीचे स्थान। कोण देह निर्माण नाही जगी।३॥

म्हणुनी पांडुरंगा वणितसे थोरी। विरळ देहांतरी वसतसे।४॥

देहाचा विटाळ देहीच निर्धारी। म्हणतसे महारी चोखियाची।५॥'<sup>३</sup>

संत सोयराबाईंनी संसाराला मृगजळ म्हटले. संसार मोहात टाकणारा असतो म्हटले. जो भ्रामक आहे. म्हणून संसार करता करताच परमार्थ प्राप्तीचा प्रयत्न केला तर या मोहमायारूपी संसारतून आपली सुटकमा होऊ शकते. नाही तर जीवनाची फटफजीती झाल्यावाचून राहणार नाही. असा उपदेशावजा सल्लाही त्या आपल्या अभंगातून देतात.

'किती हे सुख मानिती संसारचें। काय हे सारे मृगजळ।१॥

अभ्रीची छाया काय साच खरी। तैसीच हे परी संसाराची।२॥

मी आणि माझे वगविती भार। पुढील विचार न करतां।३॥

का हे गुंतले स्त्री पुत्रधना। कांही वासना नसुटे यांची।४॥

सोयरा म्हणे अंती कोण सोडतील। फजिती होईल जनमोजनगी॥१॥

संत सोयराबाईंचे सकल संतगाथ्यात एकूण वारसष्ट अभंग आहेत. या सर्व अभंगांचे अभ्यसन केल्यास एक गोष्ट जावते ती म्हणजे त्या अभंगात प्रामुख्याने भक्ती मत्तात्म्य गायिले आहे. भक्तीच्या माध्यमातून आपण परमार्थ प्राप्ती करू शकतो असा विश्वास व्यक्त होतो. बहुतेक अभंगातून नोख्यांनी मनाची-मनाची चोख्याची असा शेवटी अभंगाच्या उल्लेख त्या करतात. एकंदरीतच त्यांच्या अभंगांना अमृतरस्यन्त्याच्या उल्लेखांनी किनार आहे. देहाचा विटाळ माननाच्या कर्मठांची कान उघडणी करताना त्या दिसतात तरकुठे विद्वत्पणाही खडे बोल सुनावतात. ज्यावरून त्यांचा स्पष्टवक्तेपणा दिसून येतो.

संत निर्मळा

संत निर्मळा या चोखोबांच्या धाकट्या बहीण संत चोखोबांनाच त्यांनी आपला गुरुमानले होते. बंका महार हे चोखोबांचे मेव्हणे (सोयराबाईचे भाऊ) चोखोबांची ही धाकटी बहीण निर्मळा त्यांना दिलेली चोखोबा मंगळ वेढ्याचे तर निर्मळा हया मेव्हणपूच्याच्या राहणाऱ्या चोखोबांच्या एकंदरीत संपूर्ण कुटुंबाने अभंगरचना केलेली आहे. संत निर्मळा यांच्याविषयी मध्ययुगीन साहित्याचे अभ्यासक नसिराबादकर ल.रा. म्हणतात, 'निर्मळाच्या साधकावस्थेतील आध्यात्मिक तळमळ प्रकट करणारे अभंग काव्यात्म आहेत.'<sup>१</sup> चोखोबांच्या कुटुंबीयांचे लौकिक आणि परलौकिक विचारांचे प्रतिध्वनी एकमेकांच्या अभंगात उमटलेले आहेत. विद्वल भक्तीशिवाय आपल्या जवळ अन्य साधन नसल्यामुळे तेवढ्याच बळावर विद्वलाने दर्शन द्यावे अशी विनवनी निर्मळा करतात.

"परमार्थ साधावा बोलती या गोष्टी परीन ये हातवटीकाही त्यांची ॥१॥

शुद्ध भक्तीभाव नामाचे चिंतन। हेच मुख्य कारण परमार्था॥२॥"

परमार्थविषयक आपले विचार सदरील अभंगातून निर्मळा व्यक्त करतात. ज्यामधून भक्तीमहात्म्य दिसून येते. वारकरी सांप्रदायाचे भक्ती हेच अधिष्ठान असल्यामुळे सर्व वारकरी संतांच्या अभंगातून भक्तीभाव भक्तीचे तत्त्वज्ञान दिसते.

"चहूंकडे देवा दाटला वणवा। कान ये कनवा तुजलागी॥१॥

सापडलें संधी संसाराचे अंगी। सोडावी लगवगी मायबापा॥२॥"

बहुमज उवग आला असे देवा। धावे तू केशवा लवलाही॥३॥

तुजविणमज कोण गणगोत। तुंचित माझा हितकर्ता देवा॥४॥

निर्मळा म्हणोनी पायी घाली मिठी। परतें न लोटी मायबापा॥५॥"

अशा प्रकारे त्यांच्या विद्वल भक्तीतून आलेली आर्तता, तळमळ काही अभंगांमधून प्रकट होते. तर कुठे निर्मणीचे शब्द प्रकट करताना साधे शब्द ही धारदार बनतात. याशिवाय संत निर्मळांच्या अभंगातून त्यांच्या भावभावनांचे चित्रण झालेले आहे.

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