

3.2.1.1 - Number of research papers in the Journals notified on UGC website during the year

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Peroxy titanium complex derived Fe-doped TiO <sub>2</sub> Nanoparticles: Synthesis, properties and antibacterial activity	R.J. Kamble , P.V. Gaikwad	Physics	Materials Today: Proceedings Elsevier	2021	2214-7853	<a href="https://www.sciencedirect.com/science/article/pii/S2214785321003710">https://www.sciencedirect.com/science/article/pii/S2214785321003710</a>
Photocatalytic degradation of malachite green using hydrothermally synthesized cobalt-doped TiO <sub>2</sub> nanoparticles	R. J. Kamble, · P. V. Gaikwad, · K. M. Garadkar, S. R. Sabale, V. R. Puri, · S. S. Mahajan	Physics	Journal of the Iranian Chemical Society springer	2021	1735-2428	<a href="https://link.springer.com/article/10.1007/s13738-021-02303-y">https://link.springer.com/article/10.1007/s13738-021-02303-y</a>
Relativistic self-focusing of finite Airy-Gaussian laser beams in cold	V. S. Pawar, P. P. Nikam, S. R. Kokare, S. D. Patil and M. V. Takale	Physics	Journal of Optics	2021	2040-8986	<a href="https://www.springer.com/journal/12596">https://www.springer.com/journal/12596</a>

Effect of Asymmetry in the Modulation Parameters on Self-Focusing of Asymmetric Finite Airy-Gaussian Laser Beam in Collisionless Plasma	P PNikam , V S Pawar, P T Takale, K Y Khandale, S S Patil, M B Mane, S D Patil, M V Takale	Physics	Indian Journal of Pure & Applied Physics	2022	0975-0959 (Online); 0301-1208 (Print)	<a href="http://nopr.niscpr.res.in/handle/123456789/59987">http://nopr.niscpr.res.in/handle/123456789/59987</a>
Effect of lead acetate on the lipid peroxidation in brain of Catla catla-A compressive study of antistress property of <i>Withania somnifera</i> .	N. H. Shaikh	Zoology	Paripex - Indian Journal of Research	2021	2250 - 1991	<a href="http://www.worldwidejournals.com">www.worldwidejournals.com</a>
Zinc chloride induced histopathology Of dart gland and ovotesties in Terrestrial slug <i>Semperula maculata</i>	V.Y. Kadam , R. A. Patil, Y. S. Khot, P. A. Devkule, N. H. Shaikh, S.R. Londhe	Zoology	Paripex - Indian Journal of Research	2021	2250 - 1992	<a href="http://www.worldwidejournals.com">www.worldwidejournals.com</a>
“Effect of Biofertilizers on chlorophyll contents of Maize ( <i>Zea mays</i> L.) Variety African Tall”	Shinde Madhumati, Shankar Khade, Patil Vijaykumar A.	Botany	World Journal of current Scientific Research	2021	2354-0987	<a href="https://idosi.org/wjsr/wjsr.htm">https://idosi.org/wjsr/wjsr.htm</a>

<i>Meliola parlensis</i> sp.Nova as a new species of black mildew from western ghats II	Dopare B.S and Patil C.R	Botany	Kalyan Bharati	2021	0976-0822	<a href="https://academic-accelerator.com/Journal-Abbreviation/Kalyan-Bharati-Journal-Of-Indian-History-And-Culture">https://academic-accelerator.com/Journal-Abbreviation/Kalyan-Bharati-Journal-Of-Indian-History-And-Culture</a>
Physiology of Resistant Isolates of Fusarium Udim, Causal Organism of Wilt of Pigeon Pea	Dr. Desai. U.A., Dr. S. Tingle	Botany	Aayushi International Interdisciplinary Research Journal (AIIRJ)	2022	2349-638x	<a href="https://www.aiirjournal.com/index.php">https://www.aiirjournal.com/index.php</a>
Advantage and Disadvantage of Rainwater Harvesting	Mrs.Dr.V.R.Shinde	Economics	Aayushi International Interdisciplinary Research Journal (AIIRJ)	2021-22	2349-638x	<a href="https://www.aiirjournal.com/index.php">https://www.aiirjournal.com/index.php</a>
Important Factors Influencing Consumer Behaviour	Mrs.Dr.V.R.Shinde	Economics	Embracing change and Transformation: Vision 2025	2021-22	0976-2132	<a href="https://www.dalmialionscollege.ac.in/books-chapters-papers-published-in-conference-proceedings/">https://www.dalmialionscollege.ac.in/books-chapters-papers-published-in-conference-proceedings/</a>

Competence In Using Post-predicator "Sentence Structures of Teachers Teaching in Professional Colleges	Dr. Sunita J.Velhal	English	YRA International Journal of Advance and Applied Research	2021-22	2347-7075	<a href="https://ijaar.co.in/vol-9/">https://ijaar.co.in/vol-9/</a>
Geographical Analysis of Demographical Characteristics of Shegaon, Dist-Buldhana	Atish Patil, Ashok Patil	Geography	Aayushi International Interdisciplinary Research Journal	2021	2349-638x	<a href="https://www.aiirjournal.com/index.php">https://www.aiirjournal.com/index.php</a>
Gram Vikas Ek Kalachi Garaj	A. S. Katkole	History	Ayushi International Interdisciplinary Research Journal	2021	2349-638X	<a href="https://www.aiirjournal.com/index.php">https://www.aiirjournal.com/index.php</a>
Manavi Hakk Ani Vikasachya Sandhi Ek Chiksthak Abhyas	A. S. Katkole	History	Journal Of Research And Development	2021	2230-9578	<a href="https://jrdrvb.com/">https://jrdrvb.com/</a>

Applications of Five Laws of Library Science for Users with Disabilities	D. B. Sutar, Shalini R. Lihitkar & V. P. Yadav	Library	Indian Journal of Information, Library and Society	2021	0971-4286	<a href="http://library.unigoa.ac.in/cgi-bin/koha/opac-detail.pl?biblionumber=87426">http://library.unigoa.ac.in/cgi-bin/koha/opac-detail.pl?biblionumber=87426</a>
Evaluation of NIRF Ranking Parameters for Quality Enhancement of Libraries to Provide Accessible Facilities to Students with Disabilities	Mr. Vijay P. Yadav & Dr. D. B. Sutar	Library	International Journal of Advance and Applied Research	2022	2347-7075	<a href="https://ijaar.co.in/">https://ijaar.co.in/</a>

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## Peroxy titanium complex derived Fe-doped TiO<sub>2</sub> Nanoparticles: Synthesis, properties and antibacterial activity

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### ABSTRACT

The synthesis of Fe<sup>3+</sup>-TiO<sub>2</sub> nanoparticles (NPs) derived from peroxytitanium complex carried out using hydrothermal method. Pure TiO<sub>2</sub> and Fe<sup>3+</sup> doped TiO<sub>2</sub> powders were characterized to study their structural, compositional, morphological and optical properties. The X-ray diffraction patterns shows crystalline pure anatase TiO<sub>2</sub> and crystallite size decreases from 10.17 to 8.25 nm with addition of Fe<sup>3+</sup> ion. FE-SEM micrographs reveal well diffused aggregates with nanograin morphology. The efficiency of antibacterial activity against *E. coli* was studied under different physicochemical parameters. The antibacterial activity varies with concentration of Fe<sup>3+</sup> in TiO<sub>2</sub> matrix against *E. coli* bacteria. The antibacterial activity was increased with increasing Fe<sup>3+</sup> content in TiO<sub>2</sub> NPs and the highest antibacterial activity was observed for 2.15 wt.% Fe<sup>3+</sup>-TiO<sub>2</sub>.

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### 1. Introduction

Millions of illnesses and injuries are reported annually due to the effects of microorganisms on human health. Among these microorganisms, *E. coli* is a gram-negative bacteria that has a negative effect on human health. This causes inflammation, urinary tract infections and also leads to food poisoning. Therefore, it is necessary to fight against such microorganisms or destroy them. Many organizations working in the sector of health care, food, water treatment and military are waiting for strategies to destroy the resources of these organisms [1].

The TiO<sub>2</sub> exist in three crystalline phases namely anatase, brookite and rutile with bandgap of 3.2, 3.3 and 3.0 eV respectively [2–4]. It has been extensively used in solar cells, sensors, photocatalysis, water treatments, coatings, antibacterial activity etc [5–6]. The bactericidal effect of sunlight has been known for a long time, the disinfection of water can be improved by advanced oxidative processes. This process is characterized by the formation of OH• radicals upon irradiation with near UV light. These generated rad-

icals kill microorganisms; they are very reactive in the oxidation of organic substances. This process is effective against a wide variety of organisms, such as bacteria, algae, viruses, etc. [7–8]. Photocatalytic inactivation of microorganisms has been studied over recent years. Complex reaction pathways involved in photocatalytic process in anatase TiO<sub>2</sub> particles have been reported. This process results in photo generated reactive oxygen species which are able to oxidize the complex proteins interfere enzymes of bacteria finally leading to its death [9–13]. An improvement in photocatalytic activity has been reported with doping of Pt, Fe, Cu, Ni, Co, etc. Some reports were available on inactivation of Fe<sup>3+</sup>-TiO<sub>2</sub> bacteria under ultraviolet ray influence. The Fe-doped electrodes prepared using spin coating of titanium mesh has been reported; that requires ultraviolet radiation to kill *E. coli* [14–16].

The present works deals with synthesis of TiO<sub>2</sub> and Fe<sup>3+</sup>-TiO<sub>2</sub> NPs by a hydrothermal method using peroxytitanium complex [17]. Further, powders of pure TiO<sub>2</sub> (T<sub>1</sub>), 1.30 wt.% (T<sub>2</sub>) and 2.15 wt.% Fe<sup>3+</sup>-TiO<sub>2</sub> (T<sub>3</sub>) NPs were characterized by X-ray diffraction (XRD), field emission scanning electron microscope (FE-SEM), energy dispersive absorption spectroscopy (EDAX), Raman and UV-Visible diffuse reflectance spectroscopy (UV-Vis-DRS).

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## Photocatalytic degradation of malachite green using hydrothermally synthesized cobalt-doped TiO<sub>2</sub> nanoparticles

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### Abstract

Simple and time efficient hydrothermal method was employed to obtain phase pure anatase TiO<sub>2</sub> and Co<sup>2+</sup>-TiO<sub>2</sub> nanoparticles (NPs) as an efficient visible light active photocatalyst. The phase purity, morphology, optical property, and compositions were confirmed by various characterization techniques. The XRD analysis confirms the polycrystalline nature for Co<sup>2+</sup>-TiO<sub>2</sub> photocatalyst. Raman peaks at 398, 516.89 and 640 cm<sup>-1</sup> affirmed anatase Co<sup>2+</sup>-TiO<sub>2</sub> NPs and XPS analysis reveals substitution of Ti<sup>4+</sup> with Co<sup>2+</sup> ions in TiO<sub>2</sub> NPs. The 1.61 wt.% Co<sup>2+</sup>-TiO<sub>2</sub> NPs has bandgap value of 2.95 eV which specifies the efficiency of material for the absorption of visible light. The obtained TiO<sub>2</sub> and Co<sup>2+</sup>-TiO<sub>2</sub> materials were explored for photocatalytic degradation of MG under UV, visible and direct sunlight. The removal of MG was confirmed using COD analysis. The obtained visible light active (1.61 wt.%) Co<sup>2+</sup>-TiO<sub>2</sub> showed 82% removal of MG under direct sunlight.

**Keywords** Co<sup>2+</sup>-TiO<sub>2</sub> · Hydrothermal method · Nanomaterials · Photocatalysis · Malachite green

### Introduction

Currently, TiO<sub>2</sub> semiconductor photocatalyst is effectively utilized for the photocatalytic decolorization of various organic pollutants especially dyes under solar light. This technique founds as a perfect solution for environmental remediation as it neither requires any expensive facility nor consumes a lot of conventional energy resources. In all

semiconductors, TiO<sub>2</sub> comes out as a potential photocatalyst because of its properties like abundance, chemical inertness, low cost, non-toxic and good photostability [1–4]. Textile industry wastewater contains a large amount of wastes containing azo-dyes which come out as one of the promising pollutants among all industrial sectors. This produces bulk quantities of coloring effluents, which are hazardous to human beings as it is non-biodegradable [5]. The photocatalytic degradation of the dye using TiO<sub>2</sub> involves the formation of electrons (e<sup>-</sup>) and holes (h<sup>+</sup>) on the surface of the catalyst, their serving as redox sources which react with adsorbed reactants, leading to the destruction of pollutants. Hence nowadays, the photocatalytic removal of such dye pollutants using TiO<sub>2</sub> photocatalyst is a prominent and efficient technique which is applied by various researchers [6].

Among various metal oxides, TiO<sub>2</sub> NPs attracted an attention due to its tailored structural, optical and electronic properties, which covers an extensive area of applications such as photocatalysis, spintronics, solar energy cells and wastewater treatment [7–9]. The doping of various cations such as Co<sup>2+</sup> [10, 11], Ni<sup>2+</sup> [12], Cr<sup>3+</sup> [13], Fe<sup>3+</sup> [14], and Ag<sup>2+</sup> [15, 16] and anions like nitrogen [17, 18], sulfur [19] into TiO<sub>2</sub> material will increase the visible response. The sol-gel synthesized Co<sup>2+</sup>-TiO<sub>2</sub> nanoparticles worked as promising candidate for decolorization of methyl orange (MO) under direct daylight, i.e., up to 92% [20]. It is clear that

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RESEARCH ARTICLE

## Relativistic self-focusing of finite Airy-Gaussian laser beams in cold quantum plasma

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**Abstract** In the present theoretical investigation, the phenomenon of relativistic self-focusing of finite Airy-Gaussian (AiG) laser beams in cold quantum plasma has been explored under standard Wentzel–Kramers–Brillouin (WKB) and paraxial approximations. It is worth and interesting to note at the beginning that AiG laser beams are invariant under paraxial transformation. Thus, the paraxial approximation adopted herein is naturally justified. The added interest to investigate finite AiG laser beams is due to their unique features of propagation. This leads them to be potential candidate beams to travel several Rayleigh lengths through plasma. Based on these vital characteristic, it would be interesting to study the propagation dynamics of finite AiG laser beams in cold quantum plasma. At the end, the effect of modulation parameter, critical initial beam radius and critical intensity parameter on the phenomenon of self-focusing is studied. The results are presented graphically and discussed.

**Keywords** Airy-Gaussian · Self-focusing · Relativistic · Quantum plasma

### Introduction

In the near future, quantum effects in plasmas tend to be obvious, especially in high-density scenarios, such as in the next-generation intense laser-solid density plasma experiment or in compact astrophysical objects. Moreover, quantum effects in plasmas are in the forefront of many intriguing questions around the frontiers of plasma science, in general [1]. Recently, investigating new aspects of dense quantum plasmas became a fascinating field of research. Quantum plasmas have been achieved in high-energy-density plasma interaction experiments driven by laser and particle beams, in metallic and semiconductor nanostructured materials, thin films, metal clusters and nanoparticles, nanoscale plasmonic devices, quantum diodes, quantum-free electron laser schemes, as well as in high-density plasmas of astrophysical objects and planetary interiors [2], in general. Quantum features in plasmas are characterized by the dimension of the system which is comparable to the thermal de Broglie wavelength,  $\lambda_B = \hbar/mv_T$  where  $\hbar$  is reduced Planck's constant,  $m$  is the mass of the charge carrier and  $v_T = (k_B T/m)^{1/2}$  is the thermal velocity,  $k_B$  is Boltzmann's constant and  $T$  is the thermodynamic temperature. Hence, if  $l_0$  is a typical length scale of the plasma, quantum effects should be taken into account whenever  $\lambda_B \sim l_0$ . Such value of  $\lambda_B$  is so small in classical regime so that particles can be considered as point like, therefore there is no overlapping of the wave functions and no quantum interferences. Also, it is well-known from the statistical mechanics of ordinary gases that quantum effects become important when the temperature is lower than so called Fermi temperature  $T_F$ . It is also observed that quantum effects in plasmas would be more remarkable at low temperature and high density [3]. In recent years, the

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## Effect of Asymmetry in the Modulation Parameters on Self-Focusing of Asymmetric Finite Airy-Gaussian Laser Beam in Collisionless Plasma

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The self-focusing/defocusing of asymmetric finite Airy-Gaussian (AiG) laser beam has been investigated by employing standard Wentzel-Kramers-Brillouin (WKB) and paraxial-ray approximations in a nonrelativistic regime for underdense plasma. The second-order non-linear coupled differential equations have been solved numerically by using the fourth-order Runge-Kutta method. The effect of asymmetry in the modulation parameters on the self-focusing/defocusing of the asymmetric finite AiG laser beam in collisionless plasma has been studied. It is observed that the self-focusing/defocusing of asymmetric finite AiG laser beam is strongly connected with the initial values of the laser and plasma parameters such as modulation parameters and plasma frequency.

**Keywords:** Airy-Gaussian; Asymmetry; Plasma; Self-focusing

### 1 Introduction

An interaction of high-intense laser beams with the plasmas gives various non-linear optical effects. The phenomenon of self-focusing is one of the important optical effects because it considerably influences other nonlinear effects. Self-focusing of the laser beam was firstly studied by G. Askaryan in 1962<sup>1</sup>. Its theoretical analysis in nonlinear media was introduced by Akhmanov *et al.*<sup>2</sup> and later extended to plasmas by Sodha *et al.*<sup>3</sup>. Self-focusing of laser beams in plasmas has many applications like high harmonic generation<sup>4</sup>, laser-driven plasma accelerators<sup>5</sup>, laser-driven inertial confinement fusion<sup>6</sup>, X-ray lasers<sup>7</sup>, *etc.* A review of the literature highlights the fact that most of the work on the self-focusing of laser beams in plasmas has been done for Gaussian beams due to their specific characteristics. In the last six decades, most of the work has been done on the self-focusing of non-Gaussian laser beams such as Hermite-Gaussian beams<sup>8</sup>, cosh-Gaussian beams<sup>9</sup>, Hermite-cosh-Gaussian beams<sup>10</sup>, elliptical-Gaussian beams<sup>11</sup>, Bessel-Gaussian beams<sup>12</sup>, *etc.* Apart from these beams, Airy-Gaussian (AiG) beams have their specific properties such as high penetration<sup>13</sup>, Airy beams retain their shape<sup>14</sup>, invariant under small-

angle approximation. Hence, it is very suitable to study the finite AiG laser beam under paraxial approximations. Due to these silent features, AiG beams are useful in various applications such as plasma guidance<sup>15</sup>, optically clearing particles<sup>16</sup>, trapping and guiding microparticles<sup>17</sup>, vacuum electron acceleration<sup>18</sup>, *etc.*

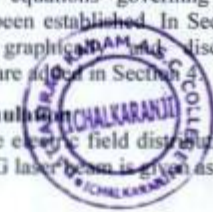
Belafhal *et al.*<sup>19,20</sup> presented the self-focusing of the finite Airy-Gaussian (AiG) beam in collisionless-plasma. They have reported that the self-focusing of the finite AiG beam can be controlled by varying the modulation parameter. Recently, Pawar *et al.*<sup>21,22</sup> explored the domains of modulation parameters in the interaction of finite AiG laser beams in plasmas. They found that the extent of self-focusing of AiG beams depends on a range of modulation parameters.

In the present paper, asymmetry in the modulation parameter of finite AiG beams has been introduced. Such asymmetry in modulation parameters is due to the two transverse dimensions of the beam. In Section 2, coupled differential equations governing beam width parameters have been established. In Section 3, results are presented graphically and discussed. Some brief conclusions are given in Section 4.

### 2 Basic theoretical formulation

The expression for the electric field distribution of the asymmetric finite AiG laser beam is given as<sup>19</sup>,

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**ORIGINAL RESEARCH PAPER**

**Zoology**

**EFFECT OF LEAD ACETATE ON THE LIPID PEROXIDATION IN BRAIN OF CATLA CATLA- A COMPREHENSIVE STUDY OF ANTI-STRESS PROPERTY OF WITHANIA SOMNIFERA**

**KEY WORDS:** *W. Somnifera*, Lead acetate, Lipid peroxidation (LPO), Fluorescence product, Antioxidant

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**ABSTRACT**

*Withania somnifera*, belonging to the Solanaceae family. According to Indian Herbal System (Ayurveda), *Withania somnifera* is considered one of the most important herbs for its medicinal properties. In the present investigation, antioxidant activity of *Withania somnifera* administered through feed was tested against lead acetate induced oxidative stress in brain of fresh water fish *Catla catla*. For the present investigation fresh water fish *Catla catla* were used. They were grouped in to Group I (control), Group II (fishes treated with lead acetate 0.43 ppm), Group III (*W.somnifera* fed at 1%, 2% and 3% of feed) and Group IV (lead acetate +feed with 1%, 2% and 3% *W.somnifera* leaves powder). All the four groups are continued for 48 and 96 hours. Antioxidant effect of plant extract was studied in brain of oxidative stressed fish on Lipid peroxidation (LPO) and fluorescence product.

In the present study, both total as well as mitochondrial lipid peroxidation and fluorescence product in brain was increased in lead acetate exposed fish. After the treatment of 3% ashwagandha feed, there was a significantly reduction in total as well as mitochondrial Lipid Peroxidation (LPO) and fluorescence product in group IV as compared with the oxidative stressed fish Group(II). The result of the present study shows that lead acetate induced oxidative stress and alteration in total and mitochondrial LPO and fluorescence products of the brain region were significantly protected with co-treatment of lead and *W.somnifera*. This could be due to its strong antioxidant potential property.

**INTRODUCTION:**

The increase in population, increased human activities, indiscriminate use of natural resources and dumping of wastes cause water pollution (Vasantharaja et al;2012). Increasing environmental pollution throughout the world, particularly aquatic pollution, has become one of the global problems of various toxins, such as heavy metals and toxic chemicals, when released into water bodies without proper treatment is most prevalent in developing countries. Such toxic metals and chemicals and their indiscriminate use resulted in problems with contaminants and polluted the aquatic environment. A toxicant is an agent that can produce an adverse response in an organism, seriously damaging its structure or function and resulting in death (Chavan et al;2014). A pollutant or foreign substance may be introduced deliberately or accidentally in to the aquatic ecosystem, ruin the quality of the water and making it adverse for aquatic life. Heavy metals are extremely toxic and ubiquitous in natural environments and they occur in soil, surface water and plants, which readily mobilized by human activities such as mining and dumping of industrial waste in natural habitats such as forests, rivers, lakes and ocean (Larison et al., 2000). As a result, heavy metals pose a potential threat to terrestrial biota. They are known to cause profound reproductive loss in animals (Eeva and Lehtikoinen, 1997).

Lead is a ubiquitous heavy metal that exists in the environment due to its natural origin and as a result of industrial uses. Lead toxicity is currently one of the serious problems worldwide, there is still no specific, reliable and safe treatment (Barhouni et al;2012). Impact of contaminants on aquatic ecosystems can be evaluated by using fishes (Begum G,2004). Fishes are considered as one of the most significant indicators in freshwater systems for the evaluation of environmental pollution (Farombi et al ;2007, Aruldoss Indra K,Sankar Sampillai,2014, Jirungkoorskul et al 2002).

*Withania somnifera* also called as 'Ashwagandha' belonging to Solanaceae family. It is one of the important herbs used in Ayurvedic medicine. It is used as general tonic to increase energy, improve all over health and longevity and prevent the diseases in athletes, the elderly, and during pregnancy. It may prevent tumour growth patient with cancer (Chatterjee and Pakrashi ,1995; Jayaprakasam;2003). Glycowithanolides (Withaferin A) chemically characterized as 4b, 27-dihydroxy 8b-6b-epoxy-1 oxawitha-2, 24-dienolide, is one of the main withanolides active principles isolated from plant. *Withania somnifera* showed chemogenetic variation and so for three

chemotype I, II, III had been reported (Abrahamet al;1988). Keeping this perspective in view, present in study was intended with the objective to elucidate the underlying deleterious mechanism of oxidative stress resulted due to lead intoxication through alterations in lipid peroxidation in fish brain. Therefore the aim of the present investigation was to investigate the possible ameliorative potential of *W. Somnifera* as a novel neuroprotective agent against lead toxicity induced oxidative stress in fish brain.

**MATERIALS AND METHODS:**

**Plant:**

Plant material in this experimental study, fresh leaves of *Withania somnifera* were collected from Town Hall Garden Kolhapur. The plant was identified by Taxonomist from Botany Department, Shivaji University Kolhapur. Plant extraction were extracted from of *Withania somnifera* plant as described by Bhattacharya et al (35).

**Animal:**

Experimental animal Healthy fingerlings (size of 4 to 6 cm in length and 6 ± 0.5 g in weight) of *Catla catla* were obtained from a Government fish seed production center, Dhoni, Tal-Wai, Dist-Satara, Maharashtra, India. They were supplied in an aerated polythene bag to the laboratory.

The fish tanks were kept free from fungal infections by washing with potassium permanganate solution. The fishes were disinfected with 0.1% potassium permanganate solution and were maintained for three weeks in well aerated tap water. They were acclimatization before commencement of the experiment in laboratory condition for a week and fed daily on a commercially formulated feed.

Fishes were randomly divided into four groups and simultaneous treatment was given to all 10 animals in each group as follows:

**Group I:** Fishes were treated with distilled water (vehicle), which serves as control for 48 and 96 hours.

**Group II:** Fishes were treated with lead acetate 0.43 ppm for 48 and 96 hours (Shaikh, 2020).

**Group III:** Fishes were feed with 1%, 2% and 3% *W. Somnifera* leaves powder for 48 and 96 hours (Sharma et al, 2010)

**Group IV:** Fishes were treated with lead acetate 0.43 ppm + 1%, 2% and 3% *W. Somnifera* leaves powder for 48 and 96 hours.





**ORIGINAL RESEARCH PAPER**

**Zoology**

**ZINC CHLORIDE INDUCED HISTOPATHOLOGY OF DART GLAND AND OVOTESTIES IN TERRESTRIAL SLUG SEMPERULA MACULATA**

**KEY WORDS:** Zinc chloride; slug *Semperula maculata*; histopathology; gametogenic cells

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**ABSTRACT**

Now a day, the increased contamination of heavy metal due to industrial discharge. This study enlightens on terrestrial Mollusc slug, *Semperula maculata*, against lethal concentrations of Zinc chloride (ZnCl<sub>2</sub>). Histopathological changes were observed in the cellular arrangement of dart gland and ovotestis. ZnCl<sub>2</sub> included alterations found in the dart gland and ovotestis. Ovotestis showed depleted number of gametocytes. Vacuolized pre-vitellogenic oocytes with early vitellogenic oocytes were noted under light microscopy. Secretory functions found altered in the ZnCl<sub>2</sub> induced slugs. Evidence indicates that Zn produced gamete degeneration and impact over the normal function and structure of reproductive organ.

**Introduction**

Molluscs have more varied forms than any other animal phylum. They include snails, slugs and other gastropods, clams and other bivalves; squids and other cephalopods; and other lesser-known but similarly distinctive subgroups. The majority of species still live in the oceans, from the seashores to the abyssal zone, but some form a significant part of the freshwater fauna and the terrestrial ecosystems freshwater and terrestrial molluscs appear exceptionally vulnerable to extinction. Estimates of the numbers of many regions have not been thoroughly surveyed. There is also a shortage of specialists who can identify all the animals in any one area to species. However, in 2004 the IUCN Red List of threatened species included nearly 2000 endangered non-marine molluscs.

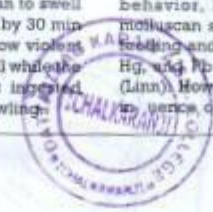
Along with other terrestrial fauna, invertebrate molluscs are recognized as important animals principally involved in food chain and agricultural pests. Terrestrial gastropods are sensitive to toxic chemicals producing alterations at the cellular level<sup>1,2</sup>, for the mussel *Elliptio complanata*, exposure to Cu had a significant effect on the mean percentage of destabilized lysosomes for both the 7-day exposure. They also studied the exposure on gametes and embryos of oyster to environmental concentrations of pesticides and copper increased developmental abnormalities and DNA damage and reduced fertilization success and affected offspring quality significant changes in transcription of genes involved in antioxidant defence were observed for oyster larvae exposed to metalachor and metalachlor.

One effect of the extruded mucus is to form a protective barrier preventing direct contact between the toxic and the epithelia of the skin or digestive tract, so reducing the toxicity of the chemicals<sup>3,4</sup>. Within the first 24 hr, snails in this study fed higher concentrations of 400 and 800 mg/ml began to swell around the anterior region. This agrees with<sup>5</sup>, that by 30 min after ingestion of carbonate, the *D. reticulatum* show violent muscle convulsion, the anterior body began to swell while the posterior flattens. Most snails in this study that ingested contaminated baits ceased feeding and ceased crawling.

According to<sup>6</sup> in the environment, chronic exposure conditions could have a significant effect on an entire ecosystem. Since in order to compensate for a condition of permanent chemical stress, many organisms may have to keep repair and defense mechanism continually in activities, and invest a large amount of energy into limiting cell damage, with little or no energy left for other activities<sup>7</sup>. A mollusc is known to possess mechanisms to deal with the bioaccumulation of several chemicals in their tissues<sup>8</sup>. Several investigators reported that terrestrial snails and slugs displayed capacity of the bioaccumulation and biomagnification of heavy metals<sup>9, 10</sup>. Hence terrestrial molluscs were considered suitable to monitor the bioavailability of metallic components in soils as compared to other invertebrates<sup>11, 12</sup>. At excessive concentrations, heavy metals affect numerous biological processes involved in the development and maintenance of molluscan fauna including feeding, growth, reproduction, general physiological activities and maturity<sup>13, 14</sup>.

Toxicity with heavy metals leads to the production of reactive oxygen species (ROS) in the biological system, which disrupts normal cellular processes<sup>15</sup>. Duruibe, Ogcouegbu and Egesurugbo (2007)<sup>16</sup> reported heavy metal effects on the nervous system and the behaviour of terrestrial animals,<sup>17</sup> noted behavioural changes representing it as a biomarker and correlated this to biochemical and physiological processes.<sup>18</sup> found the accumulation of copper (Cu), zinc (Zn), lead (Pb), and cadmium (Cd) in the digestive gland, gills, and reproductive organs of gastropod snail *Levantis hierosylima*.<sup>19</sup> examined the histopathological effect of heavy metal like Cu and Pb on the hepatopancreas and ovotesties of giant land snail, *Archachatina marginata* (Swainson).

Swalch and Ezzughayyar (2000) found an effect of Cd and Cu on the mortality, growth impairment, altered feeding behavior, bioconcentration, and biomagnification in molluscan species *Helix engaddensis*.<sup>20</sup> reported depleted feeding and growth responses following exposure to Cu, Zn, Hg, and Pb toxicity in the terrestrial gastropod *Arion ater* (Linn). However, there seem to be insufficient data on the in vitro effects of Zinc chloride (ZnCl<sub>2</sub>) on various physiological



Effect of Biofertilizers on Chlorophyll Contents in Maize (*Zea Mays* L.) Variety African TallShinde M.Y.<sup>1</sup>, Khade, S.K.<sup>2</sup>, Patil, V.A.<sup>1</sup><sup>1</sup>P.G. Department of Botany, Dattajirao Kadam Arts, Science and Commerce College, Ichalkaranji Dist. Kolhapur-416115, Maharashtra, India<sup>2</sup>Padmabhushan Dr Vasantraodada Patil Mahavidyalaya, Targoon, Maharashtra, India

## ARTICLE INFO

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## ABSTRACT

An attempt has been made to study the effect of different biofertilizers such as *Azotobacter* and phosphate solubilizing bacteria (PSB) on chlorophyll content of maize variety African Tall. The experiments were carried out in a randomized complete block design with three replications. The biofertilizers used were *Azotobacter* (A), phosphate solubilizing bacteria (P) and combine treatment *Azotobacter* + phosphate solubilizing bacteria (A + P), without treatment was control. The comparative extraction of chlorophylls (Chlorophyll a, chlorophyll b and total chlorophyll) and carotenoids from maize was studied by using 80% acetone as extraction method. The studies relate to the amount of concentration of chlorophyll and carotenoids between the control and treated of maize crop. Investigation revealed that method of Acetone is simple method for extracting the pigment molecules along with other methods used for extraction and results showed higher content of chlorophyll-a, Chlorophyll-b, total chlorophyll and Carotenoids in the treated plants in comparison with the control plants. By the application of biofertilizers treatment levels were corresponding to (TA), (TP), (TA+P) respectively to the treated fodder. Little amount of differences were observed in the concentrations of pigments between treated and control plants selected for present study.

## 1. Introduction

Maize is an important staple food crop, occupies a prominent place among cereals and first rank in terms of productivity and third in total area and production after wheat and rice while in India it stands fourth ranks next to rice, wheat and jowar in terms of area and production (IITA, 2006). Total pigment molecules present in the leaf are chlorophyll-a, chlorophyll-b and total chlorophyll, carotenoids which are essential for photosynthesis. Follet et al. (1981) reported that the chlorophyll coloration is related to the amount of nutrients absorbed by the plant from soil. Biofertilizers applied to the soil, supply plant nutrients for crop growth and serve as important instruments in yield development and physiological processes. Most plants possess chlorophyll a and chlorophyll b as the main photosynthetic pigments (Young and Britton, 1993).

Chlorophylls and carotenoids are essential pigments of higher plant assimilatory tissues and responsible for variations of color from dark-green to yellow. Moreover, they play important roles in photosynthesis capturing light energy which is converted into chemical energy (Bauernfeind, 1981). Carotenoids provide bright coloration, serve as antioxidants, and can be a source for vitamin A activity (Britton et al., 1995).

Nitrogen (N) is a key element in chlorophyll, therefore there is usually a high correlation between them (Schepers et al., 2005). Positive correlation of nitrogen and chlorophyll is previously reported by some researchers (Ding et al., 2005; DaMatta et al., 2002). The distribution of chlorophyll is the key indicator of crop photosynthesis within maize leaves is quite homogenous at a specific growth stage indicator. Chlorophyll content of leaf tissue is a good index of photosynthetic activity (Chowdhury and Kaler, 2003) and timing of fertilizer application (Haboudane et al., 2002; Wu et al. 2008) of crop. This crucial pigment also plays role as an index of plant growth and production of organic matter (Lahai et al. 2003). Chlorophyll content is an indicator for crop growth and development, therefore accurate determining and assessing of chlorophyll concentration is essential (Ramaraj et al., 2007).

The quantification of chlorophyll and carotenoids provides important information about the effects of environments on plant growth (Schlemmer et al., 2005). Chlorophyll concentration usually is a good indicator of plant nutrient stress, photosynthesis and growing periods; the content of chlorophyll in the plant leaves indicates the growth status of the crops, also it is the important condition for exchange of mass and energy from the outside world and therefore real-time monitoring of the content of chlorophyll is a key step to complete crop monitoring and yield estimation [Canfield et al., 1993; Rao et al. 2007].

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## *Meliola parlensis* sp. NOVA AS A NEW SPECIES OF BLACK MILDEW FROM WESTERN GHATS-II

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### **Abstract**

An attempt has been made to survey black mildew micro fungi from Kolhapur district. Presently a new species of a black mildew fungal taxa order meliolales has been collected from sateri sacred grove, Parle near Chandgad (Dist Kolhapur) and identified as species new to science as *Meliola parlensis* Dopare and Patil.

**Keywords:** *Meliola parlensis*, Western Ghat, Micro fungi.

### **Introduction:**

Parle is a small village placed in south most taluka Chandgad in Kolhapur district and situated between 15°51'56"N and 74°12'14"E. Sacred grove at parle is reserved for goddess Sateri and spread over in two hector of forest land receiving annual rainfall of about 3000mm at an elevation of 715m from MSL. Being a part of western ghat, it is surrounded with rich forest. The climatic conditions within the sacred grove at parle favors the growth of black mildew micro fungi, being commonly occurs in tropical and sub tropical and also temperate regions of the world. These are moisture loving and grow on wide range of host plants, showing high degree of host adaptation. These are predominantly follicolous and tend to grow best in humid and wet conditions in shaded habitats (Toro 1952, Goos.1978), these black mildew micro fungi belongs to different taxonomic groups viz. meliolaceous, schiffnerulaceous, asterinaceous and hyphomycetous fungi.

Meliolaceous fungi characterized by presence of two celled appressoria born on mycelium, mycelial setae, phialides and 3-4 septate ascospores.

During the exploration of black mildews from study area, the present species is found to be new to science and hence described as a new species on hitherto, new host.

### **Material and Methods:**

The infected leaves of *Flaconeria insignis* Royle (Syn= *Sapium insigne*(Royle)Trimen) from angiospermic Family Euphorbiaceae were collected from sacred grove near parle, chandgad village of Kolhapur district, during winter season(2018-2019). Host plant is identified using relevant literature (Sardesai and Yadav 2002). The specimen was collected in sterilized polythene bags brought to the laboratory; dried and preserved in herbarium form for further investigation. The macro- and micro-morphological characters are used for taxonomical description. The slides were prepared using technique of (Patil and Patil 2017) and stained by using cotton blue (in lactopheno1). Using taxonomical



Physiology of Resistant Isolates of *Fusarium Udum*, Causal Organism of Wilt of Pigeon Pea

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Datajirao Kadam Arts, Science and Commerce college,  
Ichalkaranji, Dist., Kolhapur.**Abstract:**

Effect of various sources of carbon, nitrogen, phosphorus, sulphate, salts, micronutrients, vitamins and amino acids on the growth of *Fusarium udum* was carried out by incorporating them in Czapek Dox Agar medium. Resistant isolate of *Fusarium udum* which was determined by taking the sensitivity test of *Fusarium udum* collected from various localities of Maharashtra and Karnataka were selected for this experiment. Plants without any source served as control.

**Key words:** Amino acids, Czapek Dox Agar medium, carbon, *Fusarium udum*, micronutrients, nitrogen, phosphorus, sulphate, salts, vitamins.

**Introduction:**

Pigeon pea (*Cajanus cajan* (L.) Hutch. a member belonging to family Fabaceae is one of the most essential leguminous food crop cultivated in tropical and subtropical countries like, Madagascar, India, Myanmar, Philippines, Australia, India, Myanmar, Malawi, Tanzania and Kenya are the top 5 producers of this crop. Amongst them India holds a major contribution of 90% of total world production. India engages an area of 3.85 million hectare with an annual production of 2.68 million tonnes (Anonymous, 2010). The plant helps in re-establishing soil productivity by atmospheric nitrogen fixation (Reddy et al., 1993).

Pigeon pea is a commercially important nutraceutical crop as it contains high level of amino acids like methionine, lysine, tryptophan, vitamin B and proteins. The content of protein in seeds is almost similar to Soybean (*Glycine max*) which ranges from 21-28 % (Phatak et al., 1993). In spite of this, *Cajanus cajan* is affected by various serious diseases and leads to heavy destruction. Pigeon pea is bombarded by numerous bacteria, viruses, fungi but amongst them just a few of them cause a negative impact on the plant. The wilt caused by *Fusarium udum* Butler, is the most destructive disease (Kannaiyan et al., 1985). Genus *Fusarium* account to the most significant group of ascomycetous fungi, whose members are liable for enormous economic loss due to depletion in yield, quality and quantity of pea (Nelson et al., 1983; Leslie and Summerell,

2006). Many members of *Fusarium* produce type A and B trichothecene mycotoxins that cause toxicosis in humans and animals (Mali et al., 2015). Several *Fusarium* species cause catastrophic diseases on cereal grains (White, 1980; Parry et al., 1995; Nyvall et al., 1999; Govwami and Kistler, 2004), some are responsible for vascular wilts or root rots on many important vegetable, ornamental and field crops (Kraft et al., 1981; Linderman, 1981) while cankers are produced by others on soft and hardwood trees (Bloembergen, 1981; Dwinell et al., 1981, 2001; Wingfield et al., 2006).

**Material and Method:**

Fifteen isolates of infected pigeon pea plants were collected from Kolhapur, Sangli districts of Maharashtra and Dharwad, Vijapur (Bijapur) and Belgavi (Belgaum) districts of Karnataka. The infected plant materials were brought to the laboratory in clean polythene bags, they were cut into small pieces (0.5-1.0cm length) along the symptomatic region of stem, root and leaves, they were subsequently surface sterilized by sequential dipping in 70% ethanol for 30 sec and in 0.1% HgCl<sub>2</sub> for 1 min and were later rinsed in sterilized distilled water, and then cultured on Czapek Dox agar (CDA) amended with 25 mg/l of streptomycin.

Plates were incubated at 25± 2°C for 6 days. The plates were observed for fungal outgrowth through the symptomatic parts of plants. After a period of 5-6 days white cottony fungal mass was observed. On the basis of visual morphological and microscopic characters the fungal isolate was identified as

## Advantage & Disadvantage of Rainwater Harvesting

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### Abstract:

*Rainwater harvesting is the process of Rainwater harvesting collecting rainwater and putting it to good use. There are different ways in which this task can be accomplished. Rainwater harvesting refers to the trapping and storing of rainwater so that it can be used at a later time when the need arises. As the rain falls, water is directed to a suitable collection point. It can also mean collecting rainwater before it infiltrates into the ground and becomes underground water. Harvesting mainly entails gathering something from its natural source. Rainwater harvesting, from the common definition of harvesting, is a process that involves collecting rainwater and increasing its value by eliminating impurities or directing it to places where its use is highly required. It's a practice that has been around for a long time.*

*Rainwater harvesting is beneficial because it provides a source of water for domestic use. Industries can also for use in some of their processes. Many areas experience water shortages during summer due to lack of rain and as a result of the high rate of evaporation. This saves you money by cutting down your monthly expenditure on water bills. Harvesting rainwater plays a key role in mitigate. Collected rainwater can be used for building and construction, Helps In Preventing Water Pollution, Irrigation etc. Disadvantages of Harvesting Rainwater Treating rainwater to make it fit for human consumption will see you incurring additional expenses. Huge Efforts and Resources Required. Limited Storage, Dependent on Rainfall, Risk of Contamination Cleaning and Maintenance Acidic Rain etc.*

### Key words

1. Mitigates: Reduces the Impacts of Floods
2. Trenches: When it rains, the water is directed to the farm using trenches. It is one of the traditional methods of rainwater harvesting.

### Introduction:

Living creatures of the universe are made of five basic elements, viz., Earth, Water, Fire, Air and Sky, Obviously, water is one of the most important elements and no creature can survive without it. Despite having a great regard for water, we seem to have failed to address this sector seriously. Human being could not save and conserve water and its sources, probably because of its availability in abundance. But this irresponsible attitude resulted in deterioration of water bodies with respect to quantity and quality both. Now, situation has arrived when even a single drop of water matters. However "better late than never", we have not realized the seriousness of this issue and initiated efforts to overcome those problems.

Rainwater harvesting as the name suggests is the harvesting of rainwater in the sense it is a process involving collection and the storage of rain water using the help of artificially designed systems that runs off natural or man-made catchment areas like the roof top, compounds, rock surface, hill slopes, artificially repaired impervious or semi-pervious land surface. Quite obviously a number of factors play a vital role in the amount of water harvested, some of these factors are the frequency and the quantity of rainfall, catchments characteristics, water demands and the quantum of runoff and above all else the speed and ease with which the rainwater percolates through the subsoil to recharge the ground water.

### Need for rainwater harvesting:

It makes use of natural resources and reduces flooding, storm water runoff, erosion and contamination of surface water with pesticides, sediment, metals and fertilizers. Reduces the need for imported water. Happens to be an excellent source of water for landscape irrigation with no chemicals such as fluoride and chlorine and no dissolved salts and minerals from the soil. Home systems can be relatively



## IMPORTANT FACTORS INFLUENCING CONSUMER BEHAVIOR

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### Abstract:

Consumer behavior entails "all activities associated with the purchase, use and disposal of goods and services, including the consumer's emotional, mental and behavioral responses that precede or follow these activities." The term, consumer can refer to individual consumers as well as organizational consumers, and more specifically, "an end user, and not necessarily a purchaser, in the distribution chain of a good or service." Consumer behavior is the study of individuals and organizations and how they select and use products and services. It is mainly concerned with psychology, motivations, and behavior. Some of the most important factors influencing consumer behavior. Marketing Mix Factors, Personal Factors, Psychological Factors, Social Factors, Cultural Factors. The study of consumer behavior indicates how individuals, groups and organizations select, buy, use and dispose goods, services, ideas, or experiences to satisfy their needs and desires.

Consumer behavior is concerned with, the purchase of goods or services; how consumers acquire products and services, and all the activities leading up to a purchase decision, including information search, evaluating goods and services and payment methods including the purchase experience, use or consumption activities concerns the who, where, when and how of consumption and the usage experience, including the symbolic associations and the way that goods are distributed within families or consumption units. Disposal activities concerns the way that consumers dispose of products and packaging; may also include reselling activities such as e Buy and second-hand markets.

**Keywords:** Consumer Buying Behavior, Marketing Mix Factors.

### Important Factors Influencing Consumer Behavior.

#### Introduction

Consumer behavior is the study of consumers and the processes they use to choose, use (consume), and dispose of products and services, including consumers' emotional, mental responses. Consumer behavior incorporates ideas from several sciences including psychology, biology, chemistry, and economics. Consumer behavior is the study of how individual customers, groups or organizations select, buy, use, and dispose ideas, goods, and services to satisfy their needs and wants. It refers to the actions of the consumers in the marketplace and the underlying motives for those actions. Consumer behavior is the study of individuals and organizations and how they select and use products and services. It is mainly concerned with psychology, motivations, and behavior.

How consumers think and feel about different alternatives (brands, products, services, and retailers) how consumers reason and select between different alternatives. The behavior of consumers while researching and shopping. How consumer behavior is influenced by their environment (peers, culture, media) how marketing campaigns can be adapted and improved to more effectively influence the consumer. Consumer responses may be emotional responses: refer to emotions such as feelings or moods, mental responses: refer to the consumer's thought processes, their behavioral responses: refer to the consumer's observable responses in relation to the purchase and disposal of goods or services.

#### Objectives of the Study

1. To understand what consumer behavior is and the different types of consumers.
2. To understand the relationship between consumer behavior and the marketing concept, the societal marketing concept, as well as segmentation, targeting and positioning.







**COMPETENCE IN USING 'POST-PREDICATOR' SENTENCE  
STRUCTURES OF TEACHERS TEACHING IN PROFESSIONAL  
COLLEGES**

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**Abstract:**

*There have been many studies conducted on teacher talk and classroom situations. Research in Teacher Talk is particularly concerned with language teaching. These works are concerned with English language teaching in second language classrooms, teaching methods, and students' feedback. They were involved in teacher classroom behaviour and pupil classroom behaviour. The ungrammatical modification should not occur in the teacher's language because teacher talk should be the model for students to imitate. There have been various studies carried out in the field of linguistic on isolated elements of sentences. These studies were especially intended to find out the characteristics of Indian English. They were based on either corpus or written texts of Indian English. The use of proper sentence structure or syntax is one of the indicators that shows the competence of the person in using the language. It has been assumed that the teachers teaching in professional colleges have problems in using the post-predicator sentence structure elements. This paper brings forth some problems of the content subject teachers in using the English language as the language of instruction by analysing the recorded data.*

**Keywords:** English Communication, Competence, Teachers teaching in English at professional Colleges and their use of sentence structures, the problems.

**Introduction:**

In today's world, competence in English language is essential. An appropriate use of language can make a positive change in the attitude of the listener. So, it is vital to know what problems hinder English language proficiency. The speakers who don't have this understanding produce problem sentences. The part of the sentence which becomes problematic is the post predicator structure that may be a word, a phrase or a dependent clause, only technical and job-related skills are not enough to reach the higher positions. It is the language involved in the linguistic globalization. Syntax and vocabulary are essential to be able to communicate and interact successfully. The professional communication needs proper grammar. English skills have become a basic requirement for almost any professional dealing with the globalized business world. In fact, English in business is increasingly being used as a shared language among speakers of different mother tongues, a so-called *lingua franca*. A lack of language skills becomes an important barrier to the expansion of global markets. The growing trend of the recruiters in engineering

today is to look for skilled/global engineers who possess excellent English communication and presentation skills.

**English Communication and Competence**

The syntax is the study of the rules and patterns used to form a number of new sentences. The focus of the present paper is related to the problems in using syntactic structures. The study of sentence structures especially sentence structures used by teachers in their lectures while they are teaching in English. English skills have become a basic requirement for almost any professional dealing with the globalized business world. In fact, English in business is increasingly being used as a shared language among speakers of different mother tongues, a so-called *lingua franca*. A lack of language skills becomes an important barrier to the expansion of global markets. The growing trend of the recruiters today is to look for skilled/global employee who possess excellent English communication and presentation skills.

Chomsky's concept of 'competence' is concerned with the grammaticality and the concept of 'performance' is concerned with the use of competence in actual situation i.e.



### Geographical Analysis Of Demographical Characteristics Of Shegaon, Dist-Buldhana

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#### Abstract

*Dimensions of population occupy the central position in geographical study of an area because these form the foundation upon which other aspects of geography largely depend. Demographic properties are an imperative concern which impedes management and development planning of a region. This study is examined in the context of various components of population in Shegaon, which is famous for religious tourism. Shegaon is situated in the Buldhana district, this district located in the Amravati division of Maharashtra, India. It is situated at the western border of Vidarbha region of Maharashtra. Population of Shegaon is increased in assessment period i.e. 100 years. Here category wise, various casts had observed at the time of study. Also literacy is showing little bit well in number i.e. 78.80. And occupational structure is showing complex composition of the society.*

*Keywords: Demographic properties, Development planning, Religious tourism, Literacy*

#### Introduction:

Traditionally, Geography has been concerned with man-environment relationship. Population is a demographic factor which directly made influence on the development. Population is the best resource playing vital role in the development. The changing trend and pattern of population characteristics serve as a convenient tool to the planners and help them in determining, establishing and formulating plans and policies for balanced development of the region in general and for the development of community, institutions and services for the development, utilization and supply of human resources etc. in particular.

Population characteristics depend on population density or distribution, Thus change in density or distribution also changes the population characteristics. Again it may be said that population characteristic changes population density or distribution. Thus, the wide regional variation in the patterns of fertility mortality and mobility give rise to regional differences in the magnitude of pressure being exerted by population. This study is examined in the context of various components of population in Shegaon, which is famous for religious tourism. Shegaon is situated in the Buldhana district, this district located in the Amravati division of Maharashtra, India. It is situated at the western border of Vidarbha region of Maharashtra. Shegaon has become a pilgrimage centre due to the influence of Shri sant Gajanan maharaj, who is considered a saint by Hindus.

#### Database:

The study is grounded on primary and secondary data. Primary data is collected at village level from visits, observations, various interviews and also questioners have been prepared. Secondary data had been collected with the help of Primary Census Abstract, Directorate of Census operation, Census of India, Various data and reports collected from local governing bodies for the period of 1911 to 2011.

#### Location of Shegaon:



### ‘ग्रामविकास’ एक काळाची गरज

प्रा. अरुण सदाशिव कटकळे

इतिहास विभाग प्रमुख,

दत्ताजीराव कदम आर्टस्, सायन्स अँड कॉमर्स कॉलेज,

इचलकरंजी.

#### प्रस्तावना :

प्रत्येक देशाचा विकास हा त्या देशातील ग्रामीण जनतेच्या, ग्रामीण भागाच्या विकासावर अवलंबून असतो. त्यातल्या-त्यात भारत हा कृषीप्रधान देश आहे. त्यामुळे ग्रामीण भागाच्या विकासाच्या मुलाने जरा जास्तच महत्त्व आहे. गावातील नागरिकांच्या दैनंदिन गरजा, अडचणी दूर करण्यासाठी, त्यांच्याद्वारे नागरिकांच्या सोयीसाठी, प्रगतीसाठी व विकासासाठी केलेल्या सर्व कार्यांचा समावेश ग्रामविकास कार्यात होतो. ग्रामविकासासाठी शिक्षण, रोजगार, आरोग्य, पाणी सारख्या सुविधा खेड्यात निर्माण होतील, उद्योगांची निर्मिती खेड्यात झाल्यास शेतीमधून निर्माण होणाऱ्या कच्च्या मालावर प्रक्रिया करून वस्तू निर्माण होतील, बाजारपेठ उपलब्ध होईल, युवकांना रोजगार मिळेल. देशाने उत्पन्न वाढण्यास मदत होईल याच संपन्न झाल्याने आर्थिक व सामाजिक कारणांमुळे निर्माण होणारे मतभेद कमी होतील. ग्रामविकासासाठी गावातील सर्व युवकांनी एकत्र येऊन प्रयत्न करणे गरजेचे ठरले आहे. अन्यथा अनेक समस्यांना सामोरे जावे लागेल.

#### उद्दिष्टे :

१. ग्रामविकास ही काळाची गरज आहे, हे अधोरेखित करणे.
२. ग्रामविकासास अडथळी आणणाऱ्या समस्या जाणून घेणे.
३. ग्रामविकासा साध्य करण्यासाठी कोणत्या उपाययोजना करता येतील याचा आढावा घेणे.
४. ग्राम विकासात ग्रामस्थांची, युवकांची साथ मिळाल्यास कशाप्रकारे यश साध्य करता येईल याचा अभ्यास करणे.

आपले गाव स्वयंपूर्ण झाले पाहिजे, गावाच्या गरजा गावातच भागल्या पाहिजेत हे महात्मा गांधींचे स्वप्न होते. आजवर भारताला स्वातंत्र्य मिळून ७० वर्षे झाली. ७० वा प्रजासत्ताक दिन आपण साजरा केला तरी ग्रामविकासाची तसेच अनेक आत्मनांनी ऱरलेल्या आपल्या देश अनेक समस्यांशी लढत आहे. महात्मा गांधींनी पाहिलेले स्वयंपूर्ण गावाचे स्वप्न आज ही पूर्ण झालेले दिसत नाही. भारतामध्ये स्वातंत्र्यानंतर औद्योगिकीकरणाचा वेग वाढला, उद्योग वाढले परंतु हे सर्वच उद्योग मोठ्या शहरात वाढताना आपणास दिसत आहेत, परिणामी गावे अवििकसित राहिलेली दिसतात. आजही अनेक गावामध्ये शिक्षण, पाणी, आरोग्य व रोजगार या किमान सायाभूत गरजा पूर्ण होऊ शकल्या नाहीत. त्यामुळे शिक्षण आणि रोजगारासाठी अनेक गावातील तरुण युवकांचे लॉड पुणे-मुंबईसारख्या मोठ्या शहराकडे वळू लागले. खेडी उजाड पडू लागली. तेथील तरुण शक्तीच संपुष्टात येऊ लागली आहे. यामुळे तेथील विकासमुद्धा खुटीत झाला आहे. शहरामध्ये मात्र अनेक झोपडपट्ट्या निर्माण झालेल्या दिसतात व लोकसंख्या वाढीमुळे नगरविकासावर विपरित परिणाम झालेला दिसून येतो.

आज अखेरीस भारतामध्ये सुमारे ६ लाख ग्रामपंचायती आहेत. जवळपास ६५ टक्के लोक आजही खेड्यात राहतात. खेड्यामध्ये राहिलेले लोक तेथेच राहिले तर ग्रामविकास शक्य आहे. अन्यथा केंद्र सरकार तसेच राज्य सरकार या स्वयंसंस्थांच्या माध्यमातून केले जाणारे सर्व प्रयत्न निरर्थक ठरतील. आज अनेक गावातील समस्या सारख्याच आहेत. त्या सोडविण्यासाठी विविध पातळ्यावर प्रयत्न करणे गरजेचे आहे. पातळीवर येणाऱ्या समस्यांची काही समस्या पुढीलप्रमाणे-



**मानवी हक्क आणि विकासाच्या संधी : एक चिकित्सक अभ्यास**  
**प्रा. अरुण सदाशिव फडकोळे**

इतिहास विभाग प्रमुख, दत्तगिरीराज कानन आर्ट्स, सायन्स अँड कॉमर्स कॉलेज,  
इगलकरणी.

**प्रस्तावना :-**

मानूस म्हणून जीवन जगत असताना आपल्यावर आपल्या राज्यसंस्थेने काही जबाबदाऱ्या सोपवलेल्या असतात. त्या सुलक्षितपणे पार पाडण्याची जबाबदारी प्रत्येक नागरिकाची असते. यानुसार आपला आणि पर्याप्तते आपल्या देशाच्या विकास गतीने सर्वसाधारणपणे विकसनाचा अर्थ हा आर्थिक हा आर्थिक विकास असाच समजला जातो. या योग्य शिक्षणानुसार लोकांच्या सहयोगानेच दर्जा, मिळकत, गुणांचा विकास आणि योग्यते, व्यवसाय करण्याची संधी यामध्ये सुधार असाही विकसनाचा अर्थ होतो. हा विकास साध्य करण्यासाठी समाजातच समतोल राखणे गरजेचे असते. कारण बऱ्याचशा राज्यांमध्ये, कायदे यामध्ये स्त्री-पुरुषांना समान हक्क दिले गेलेले आहेत, परंतु प्रत्यक्ष परिस्थितीत असे होताना दिसत नाही. म्हणून विकास साध्य करताना विकास व मानव हक्क यांचा जवळचा संबंध असलेला दिसून येतो.

मानवी हक्कांवरधार्मिक समस्या पुढे आणण्यात, त्या स्पष्ट करण्यात, त्यांच्या संदर्भातील अडथळां मांडण्यात व त्या दूर करण्यात विद्यार्थी, व्यावसायिक, स्वयंसेवी संस्था, विविध प्रकारच्या अर्थीय सुसंस्कृत नागरी समाज यांची भूमिका निर्णायक आहे. कुटुंबाची संरक्षक आणि कार्यक्षम लोकसंघटनांची या संस्था महत्त्वाच्या ठरतात. कारण संविधानातील समाज असत्यागिनाचाय मानवी हक्कांची संस्कृती तयार करणे आवश्यक असते. जसेच १९४७ च्या मानवी हक्कसंदर्भात जागतिक घोषणासाठी तयार करणे ही कठीण असते. म्हणून प्रत्येक नागरिकाने स्वतःची जबाबदारी ओळखून आपला स्वतःचा सहभाग निश्चित करणे इत्यादीत ठरते. मानव म्हणून जन्माला आल्यावर "मानवात्वाचे वैयक्तिक अधिकार" प्राप्त होतात त्यांना मानवी हक्क असे म्हटले जाते. संयुक्त राष्ट्रांच्या आमचनेने १० डिसेंबर, १९४८ रोजी स्वीडनमध्ये मानवाधिकारसंबंधी वैश्विक घोषणापत्राला १९४६ मध्ये संयुक्त राष्ट्रांच्या आमचनेत "मानवी हक्कांचे आंतरराष्ट्रीय विधेयक" म्हणून मान्यता मिळाली. १९७६ मध्ये पुरेशा संख्येच्या सदस्यांवर त्यांना आंतरराष्ट्रीय कायदाचे स्वरूप प्राप्त झाले. या घोषणापत्राला एकूण ३० कलमे आहेत. या कलमातील सर्व हक्क म्हणजे मानवी हक्क आहेत.

**उद्दिष्टे :-**

१. मानवी हक्क आणि मानवाच्या विकासातील संधीचा अभाव व अडथळे यांचा अभ्यास करणे.
२. मानवी हक्कांची पायमल्ली व होण्यासाठी योगक्षेत्राच्या गोष्टींची खबरदारी घ्यावी याविषयी आहवा घेणे.
३. मानवी हक्कांवर येणाऱ्या अडथळांची व त्यावर मानव कार्यवाहीची नियोजित उपाययोजना व कायदे यांच्याविषयी विचार जाणून घेणे.
४. मानव आणि त्यांचे मानवी हक्क यांचा समतोल साधण्यासाठी विविध समस्यांची त्यांच्या निराकरणेसाठी एकत्रित विचारांचा अभ्यास करणे.

**महात्त्व व व्याप्ती :-**

मानवी हक्कांचे संरक्षण आणि अंमलबजावणी हे मानवी हक्कांबाबतचे एकमेकांचा दूरक असे दोन दृष्टिकोण आहेत. मानवी हक्क म्हणजे काय? मानवाचे वैयक्तिक, सार्वभूत असे सर्व हक्क त्यांच्याशिवाय मानव म्हणून जपणे शक्य नाही हे "मानवी हक्क" होत. अर्थात ज्याच्या संयुक्त राष्ट्रसंघाने केलेली आहे. मानवी हक्कांच्या कायदांच्या अंमलबजावणीत अनेक सामाजिक, सांस्कृतिक आणि आर्थिक समस्या येतात. या समस्यांवरून मानवाच्या अन्तःकरणाला, जसे की युद्ध, लष्करी कारावासा इत्यादी, तसेच पोलीस, निरक्षरता, जातीय दंगली, अन्याय, मानवी हक्कांच्या परिस्थितीचा अभाव, औद्योगिकीकरण अशा अनेक समस्यांमुळे अडथळी मानव म्हणून जन्म घेतल्यानंतर त्यांचा वैयक्तिकपणे काही अधिकार प्राप्त होतात. ते अधिकार राज्यशासन अंमल: मानव परिचार यांना देण्यासाठी प्रयत्न करणे गरजेचे असते आणि ते कार्य देखील असते. मानवाला प्राप्त असलेले अधिकार मिळाले की मानवाची प्रगती आपोआपच होते आणि कुठेही विकासाच्या संधीचा अभाव राहत नाही.

**मानवी हक्क व विविध समस्या पुढीलप्रमाणे :-**

**१. स्त्रियांवरील अत्याचार :-**

भारतीय संस्कृतीमध्ये स्त्रियांना मानाचे, आदराचे स्थान दिले आहे. स्त्रीला अर्धांगिणी असे समजले जाते. त्याचप्रमाणे राजपट्टा, कायदे आणि व्यवहाराचे नियम जरी स्त्रियांना समान दर्जा देत असले तरी यानुसार परिस्थिती वेगळेच सापते. स्त्रियांना क्वचितच समान वागणूक मिळते. स्त्रियांना अनेकदा त्यांचे पारिवारिक कलम अधमानित केले जाते, जन्म घेण्यापूर्वीच त्यांची हत्या केली जाते. निर्णय घेताना किंवा विचार करताना दुष्प्रभाव दर्जा दिले जातो. त्यांचा हुंड्यासाठी कळवले जाते. शारीरिक श्रमता कमी म्हणून एखादी गैर करण्यातून वचवले केले जाते. प्राचीन धार्मिक आणि मानवसंस्थेच्या जातिसंस्थे स्त्रियांना शिक्षणाचा हक्क नकारावला जातो. स्त्रियांचा विनयधर्म, बलात्कार आदींसारखे अमानवीय कृत्ये दिवसे-दिवस वाढतच पाहिले आहेत. स्त्रिया आणि मुलींमधील अत्याचार ही जगात मानवी हक्कांच्याची व्यापक समस्या वाढत चालली आहे. वेगळे मानवता परिधर्मांना त्यांच्या संरक्षणाची इन्ही देण्यासाठी पुरेशी नाही. यामाठी कठोर कायदे व अन्य तरतुदी करणे आवश्यक आहे.



## Applications of Five Laws of Library Science for Users with Disabilities

V P Yadav<sup>1</sup>

DB Sutar<sup>2</sup>

Shalini R Lihitkar<sup>3</sup>

### Abstract

*The spirit of the first three laws propounded by Dr. S. R. Ranganathan stressed on equal opportunities to all readers-both normal and abnormal which are taken as the guiding principles for providing library services to all without any discrimination. This includes students with disabilities like visually impaired, hearing impaired and physically disabled and so on. This study makes an attempt to apply the spirit of the five laws of library science and established norms as the guiding principles for providing library services to persons with disabilities (PWDs). Also tried to enumerate the assistive technologies to be used by the libraries for providing effective services to persons with disabilities (PWDs) and tries to unearth the extent to which such principles are put into practice.*

**Keywords:** Five Laws of Library Science, Library services, People with Disabilities

### 1. Introduction

Dr. S. R. Ranganathan is known as "Father of Library Science" in India. He wrote five laws of library science in 1928 and published in 1931 as "Five Laws of Library Science" which are still considered as fundamental laws and are taken into consideration for evaluation criteria of library services, activities and functions. Library users with disabilities have equal opportunity of equal education as Persons with Disabilities Act 2016. Application of five laws of library science to provide equal library services and resources to people with disabilities is essential to streamline them in the process of education. It will help to provide accessible infrastructural facilities as well as accessible library services through use of various adaptive and assistive technologies.

The Five Laws of Library Science can be considered as below for users with disabilities are:

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**EVALUATION OF NIRF RANKING PARAMETERS FOR QUALITY  
ENHANCEMENT OF LIBRARIES TO PROVIDE ACCESSIBLE FACILITIES TO  
STUDENTS WITH DISABILITIES**

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**Abstract**

National Institutional Ranking Framework (NIRF) is evaluating facilities given by higher education institutions to students with disabilities relating to disabled accessible lift or ramp, toilet, walking aid like wheelchair etc. Researchers studied NIRF data of 17 autonomous colleges affiliated to Shivaji University, Kolhapur. Researchers found that 13 colleges are provided more than 80% of the buildings disabled accessible lift or ramp, 15 colleges are provided wheelchair facility and only 9 colleges are provided more than 80% of the buildings accessible toilet facility to students with disabilities. National Education Policy (NEP) 2020 has given more weightage on barrier-free education facilities to all students with disabilities. Libraries should provide accessible lift, ramp, toilet and wheelchair to students with disabilities.

**Keywords:** NIRF, Libraries, Students with disabilities

**Introduction:**

Infrastructural facilities in higher education institutions (HEIs) to students with disabilities plays vital role in providing barrier-free, discrimination-free, and equal education facilities to students with disabilities. In 29<sup>th</sup> September, 2015 Ministry of Education, Government of India is established National Institutional Ranking Framework (NIRF) for the purpose of ranking the HEIs in India.

NIRF has five ranking parameters are as follows: (National Institutional Ranking Framework, 2022)

1. Teaching, Learning and Resources (TLR)

2. Research and Professional Practice (RP)
3. Graduation Outcomes (GO)
4. Outreach and Inclusivity (OI)
5. Peer Perception

Parameter number four further divided in following five sub parameters such as:

- 4.1 Percentage of students from other states / countries (Region Diversity RD)
- 4.2 Percentage of women (Women Diversity WD)
- 4.3 Economically and socially challenged students (ESCS)