

Forming of Room Ambient PSS Cell Using F-127 With PVA Blend as a Hole Transport Material

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Abstract :

In the present work we have focused on the synthesis and characterization of perovskite material using solid polymer electrolyte, based on PVA and F-127 blend. We studied detail information about perovskite material, methods as well as its characteristics detail in this paper. We revealed the data by XRD, SEM and UV absorption spectroscopy which was closely connected with the dielectric parameters. We successfully synthesized and tested $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite material. The XRD pattern confirms that the pure perovskite material is formed. From SEM image we defiantly say that the formed material is crystalline structure. The find out the perovskite material band gap was 2.36 eV using UV.

Keywords: PVA; KI and I2; solid polymer.

Introduction

Solar cells, also called photovoltaic (PV) cells are devices which transfer sunlight into electricity using the photovoltaic effect and supply a clean energy generation option. The modern era of photovoltaic began, when the first solar cell was developed by Chapin et al in 1954 which was based on silicon wafers form crystals, he denoted that under sunlight, p-n junction diodes generated some voltage . The solar cell action begins by the lighting of the sunlight, on a p-n junction by which the electron-hole pairs are produced, which are detached by the built-in electric area across the p-n junction's depletion region. This separation of the charges generates a PV across the p-n junction leading to electrical current when connected externally by a load. Photovoltaic power can be produced using solar panel fabricated with large amount of solar cells which are composed of photovoltaic material. Mono-amorphous silicon, crystalline silicon, polycrystalline silicon, cadmium telluride, Number of solar cells when joint together it forms solar module, by merging these module the photovoltaic panel or array can be produced. Generally these photovoltaic panels gives direct current (DC) which can be transfer to alternating current (AC) by connecting photovoltaic array to inverter, also for practical purposes many instruments need alternating current. Space satellites and smaller items like streetlight and battery are powered by solar cells. Also these days lots of people use PV at their homes and businesses. Some companies also use photovoltaic technologies for their power stations.

2. MATERIALS AND METHODS

2.1 Materials

We are using distinct materials for reparation of perovskite solar cell i.e. DMF which is used as solvent for PbI_2 , while Ti(IV) used as a blocking layer solution, lead iodide (PbI_2) and $\text{H}_2\text{-PtCl}_6$. Methylamine and Hydro iodic acid (HI, 57 wt% in water) used directly, ethanol used as solvent for F-127 and I_2 and diethyl ether used for remove impurities from precursor material. TiO_2 pest. The FTO and platinum used as working electrode and counter electrode with dimension 20 mm * 20 mm resistivity near about 8 to 9 Ωsq .

2.2 Composition of perovskite material

CH_3NH_2 put into round bottom flask, and this flask placed into the ice bath for 0°C , then add HI (hydro iodic acid) drop by drop into the Methylamine. Maintain temperature of methylamine at 0°C while mixing HI. While doing this, stir the mixture continuously for 2 hours. After that keep the prepared mixture in an oil bath for 1 hour to heat at 80°C . after keeping in oil bath for 1 hour, its white colour powder is formed. After getting the white colour powder, wash the powder in diethyl ether 2 to 3 times. Then next put this powder into the vacuum oven at 120°C for 20 min for drying. After all this process we get the final product of $\text{CH}_3\text{NH}_3\text{I}$. $\text{CH}_3\text{NH}_3\text{I}$ powder and PbI_2 were mixed in 2ml of DMF liquid as 1:1 molar ratio and sterilized for 2 hours so we get the $\text{CH}_3\text{NH}_3\text{PbI}_3$ final product. Then, the tincture was dredged on the substrate, with a spin coater and make it warm up to 90° for 10 minutes.

2.3 Making processes of solid polymer electrolyte :

To make a solid polymer, PVA, F-127 and I_2 were initially measured and mixed together using a magnetic stirrer. Initially we take 60:40 ratio for the f-127 and PVA. initially three beaker were taken, one beaker contained PVA, second beaker f-127 and in the third beaker I_2 . Put PVA direct into the oven at 130°C for 20 to 25 minutes to melt. Also both f-127 and iodine were dissolved in methanol at room temperature. After melting the PVA take it out from oven and place it on magnetic stirrer and add F-127 and I_2 one after another. All the three mixture were properly and preserved stirring for 1 hour. Then it was poured into a petri dish and dried for 24 hours, thus in 24 hours we got solid polymer film.

2.4 Making processes of perovskite sensitized solar cell

FTO was used as a substrate to make perovskite sensitized solar cell. We started depositing chemical Ti(IV) bis(acetoacetato)-diisopropoxide used as blocking layer of on FTO and it was put it an oven at 500°C for 20 min to be annealed. Mesoporous TiO_2 paste is layered on FTO substrate over Ti(IV) bis(acetoacetato)-diisopropoxide layer. The coated substrate TiO_2 was sintered for 45 mins at 510°C and cool down at normal temperature. To deposit the TiO_2 paste on substrate used doctor blade method. To maintaining the $\sim 10\mu\text{m}$ thickness of TiO_2 layer using adhesive blade [6]. The WE was used as sensitized with $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite material using spin coating method. To removing impurity washed with acetone. For preparing counter electrode another FTO coat with H_2PtCl_6 solution, followed by heating at 420°C for 20 minutes. Counter electrode have a coating with solid polymer electrolyte solution, which consisting of PVA : KI (f-127 is 10% of PVA) and I_2 (10% of KI). Methanol was used as solvent for this preparation. PSSC made up of sandwich of working electrode and counter electrode and the performance of PSSC analysed at normal temperature.

3. Result and discussions

3.1 UV absorption

Band gap of perovskite material observed and studied by using UV – visible spectroscopy. $\text{CH}_3\text{NH}_3\text{PbI}_3$ UV-visible absorption was measured by UV spectrometer. As shown in fig1 we clearly seen that band gap (E_g) is 2.36eV. Transform Kubelka-Munk function formula (i) which is related to the optical band gap energy.

$$[F(R)/\text{hu}]^{1/p} = A(\text{hu} - E_g) \quad (1)$$

Here, A and P are the constant and index respectively related with optical absorption.

Probably P equals to two or $\frac{1}{2}$. For transfers approved indirectly or directly. As shown in the graph, we found the band gap of $\text{CH}_3\text{NH}_3\text{PbI}_3$ to be 2.36eV, this Band gap has been reported in the previous work [7, 8].

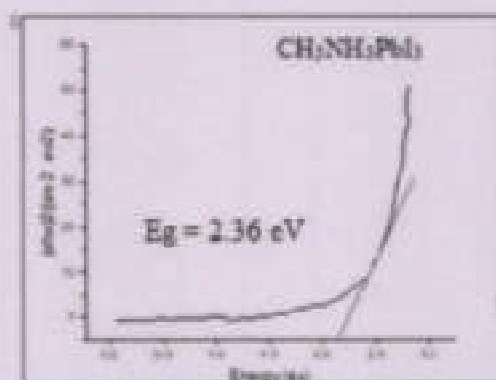


Fig. (1). Graphical presentation of Band gap analysis of $\text{CH}_3\text{NH}_3\text{PbI}_3$.

3.2 SEM Analysis :

We studied the surface morphology of the perovskite material ($\text{CH}_3\text{NH}_3\text{PbI}_3$) using scanning electron microscopy as shown in fig 2. From fig. 2 we clearly seen that photo is not a homogeneous in nature. The collection of PbI_2 and $\text{CH}_3\text{NH}_3\text{I}$ material on the surface, So we can say that the structure clearly reveals the crystalline nature of that material[8, 9].



Fig. (2). SEM image of the perovskite material with grain size.

3.3 X-ray diffraction (XRD)

We looked at the XRD characteristics of the powder perovskite material from which we understand that the material is crystalline. XRD characteristics will be seen through XRD machine and grain size of material will be calculated according to bragg's formula.

$$2d\sin\theta = n\lambda \quad (ii)$$

Here all parameters are equal as per braggs formula,

n = positive integer

λ = wavelength of incident wave

θ = scattering angle

d = inter planer distance

XRD data range were took from 20° to 80° scanning speed 2° per min.

From XRD pattern we say that prepared synthesized material of perovskite is orthorhombic ($a \neq b \neq c$, $\alpha = \beta = \gamma = 90^\circ$). The grain size of perovskite material calculated by formula given in equation (ii) is 48nm. As per literature our results are near about similar with this [8-11].

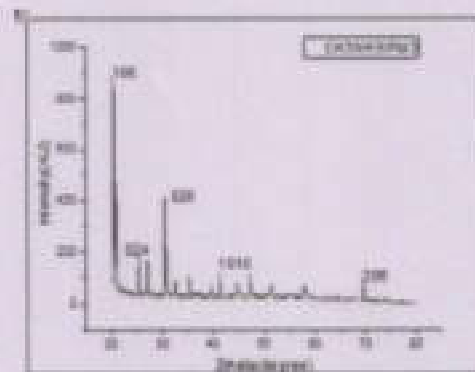


Fig. (3). XRD analysis of perovskite material.

4. Conclusion

We successfully synthesized and tested $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite material. The XRD pattern conforms that the pure perovskite material is formed. From SEM image we defiantly say that the formed material is crystalline structure. The find out the perovskite material bandgap was 2.36 eV using UV.

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ANALYSIS OF MILK PARAMETERS USING ELECTRONIC SENSORS

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ABSTRACT- Food is an important basic need of life. Milk is an essential part of food in India, as milk has high food value because it comprises a wide variety of nutrients needed for proper growth of the human body. Ultimately leads to high demand of milk and milk products in the market in India. Due to adverse demand-supply ratio in the food supply chain, food adulteration is a major problem in India. Major food adulteration occurs with milk and dairy products. This paper tries to present the design and development of sensor based model to detect the milk parameters. The parameters like milk quantity, fat measurement, pH, CLR, SNF. The Ultrasonic sensor, pH sensor, lactometer are used to measure the quantity, pH and CLR of the milk respectively. Calculating FAT and CLR value, we can get SNF value. The sensors are interfaced with the ESP-32 controller which enables it to read the parameters on the LCD. This is a cost efficient, power efficient tool to analyze the quality of milk.

Key words: - Milk; Milk adulteration; Sensor; Lactometer; Controller; pH meter, SNF.

I. Introduction

Milk adulteration is a common food fraud and it is a socio-economic problem in the densely populated developing countries. Adulterated food is a potential cause of serious health issues in today's world. Many research articles have been published on food adulteration and detection. Food adulteration is a sensitive issue which has come under increased focused as part of a food safety and public health mission in recent times [1]. All components of the food supply chain have an interest in safeguarding food and eatables, ensuring them to keep safe, genuine, and of good quality. Though food fraud has been an ancient activity, e.g. wine adulteration was done, through the addition of various adulterants like sweeteners, coloring agents, water etc. but the amount of adulteration was quite less and limited to a specific geographical area only [1, 2]. With socio-economic development and rising population, the scale of food adulteration increased tremendously showing spatio-temporal variation in adulteration patterns. Ultimately increased food adulteration adversely affects the health of a large number of human beings [3].

Milk and milk product adulteration is a major food fraud that occurs widely because of its large demand. As we know that the nutritional importance of milk to human health from new born baby to eldest people is very high; and it is one of the most favourite food items in Indian food list. Thus it leads to a large gap between demand and supply milk, thus to manipulate this adverse ratio many vendors adulterate it with water, urea, starch, detergents, caustic soda, formalin, ammonium sulphate, sodium carbonate etc. [4,5]. Milk is an ideal high nutritive food and it supplies body building proteins, bone forming minerals and health giving vitamins and furnishes energy giving lactose, milk fat and also supplying certain essential fatty acids. According to PFA-1954 (prevention of food adulteration act) definition, "Milk is the normal mammary secretion derived from complete milking of healthy milch animal without either addition thereto or extraction there from [6]. Adulterated milk is one which may be spoiled or intentionally altered by illegal addition of a foreign chemical substance. It is a cause of public

health risk which increases risk of giant killer disease like cancer. The adulteration is defined as "the fraudulent, intentional substitution or addition of a substance in a product for the purpose of increasing the apparent value of the product or reducing the cost of its production" [2]. "Adulteration" is a legal term meaning that a milk product fails to meet federal or state standards.

Milk adulteration is mostly done for economic benefits, at the same time it can also be adulterated because of poor hygienic conditions in the milk supply chain like processing, packaging, transportation, distribution etc. Most common milk adulterant is water, which lowers the nutritional value of milk and it affects the milk quality. Many analytical techniques have been developed to measure the percentage of the adulterants present in milk [1]. Milk producers and vendors can increase their economic gain through milk dilution, extraction of valuable components such as fat, which is removed as a cream, and the addition of hazardous additives such as low quality flour to increase the value of total solids. The milk adulteration is mainly tested and detected using various chemical methods and these methods are tedious, time consuming and costly. To analyse results of these methods expert human resource is required. Strict vigilance by consumers at primary level takes time. There is a lack of cost-effective alternative available to check the adulteration at initial level in the milk supply chain. Hence this model discusses the simple, cost-effective user-friendly and handy tool to test milk parameters using a sensor network.

This model development is based on the principle of detection of milk parameters using various electronic sensors. Important features such as size, accuracy, speed, user friendliness, cost efficiency, power efficiency can be achieved by using this model. This model describes the development of ESP-32 controller based sensor network that will measure and display the milk parameters;

II. Material and Method

This model discusses the development of the ESP-32 controller based system that measures as well as displays the milk parameters; model block diagram is as below-

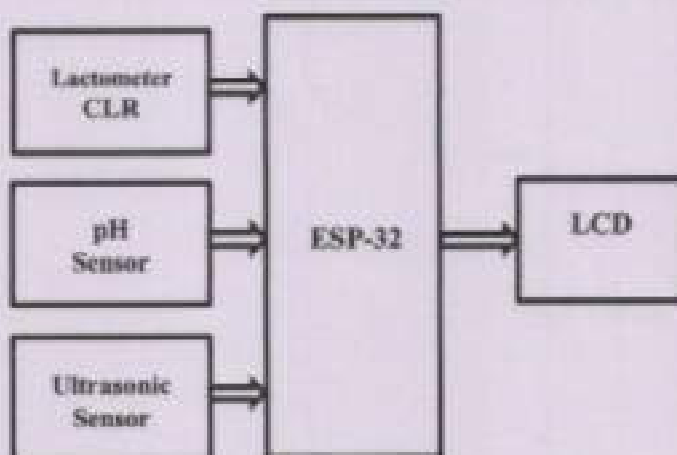


Fig 1: Block diagram of milk parameter measurement model

As shown in the block diagram of the model, function of model is divided as follows:

- Ultrasonic sensor: for quantity & quality factor measurement.
- pH sensor: for quality factor measurement
- Lactometer: for quality factor measurement

- ESP-32: Processing the milk parameter values and using ESP-32 microcontroller display them on LCD.

2.1 Model discussion:

2.1.1. ESP-32:

ESP-32 is a single 2.4 GHz Wi-Fi and Bluetooth combo chip designed with the TSMC ultra low power 40nm technology. It is designed to achieve the best power and RF-performance showing robustness, versatility and reliability in a wide variety of applications. ESP-32 is a highly integrated solution for Wi-Fi, Bluetooth IOT applications. It is having 32-bit single/dual core LX6 microprocessor with 448KB ROM, 520KB SRAM, 16KB SRAM in RTC, 34-programmable GPIOs. ESP-32 has magnificent features thus it has been selected for model development [10].

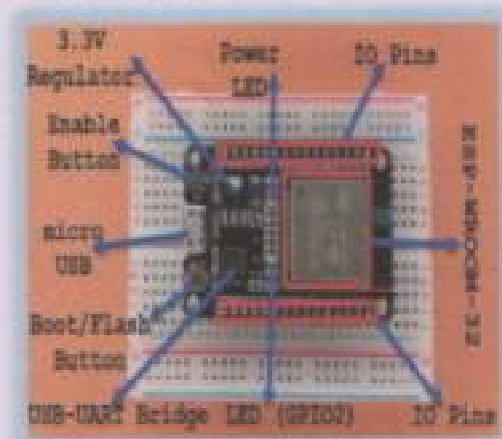


Fig 2: ESP-32 pin description

2.1.2. Ultrasonic sensor:

Ultrasonic sensor HC-SR04 has been selected for measurement of water content in the milk as well as milk quantity measurement in litres. It works on the SONAR principle of distance measurement. It offers non-contact range detection with high accurate readings in a simple package. Its working voltage is 5V DC and working current is 15mA. Distance between 2cm to 400 cm can be calibrated into litres using an algorithm. The distance measurement formula is expressed as: $L = C * T$, where L is the distance measured, C is ultrasonic velocity in air and T is Time [7, 8]. The distance of reference varies w.r.t. the change in specific gravity of the milk and the output of the Ultrasonic sensor changes. From noted observations we can conclude that the output voltage of the ultrasonic sensor is proportional to the specific gravity i.e. water content present in the milk. The experimental setup for ultrasonic sensor is as shown in fig. 3. Thus by implementing an algorithm we can calibrate sensors to measure water added in the milk. The ultrasonic sensor is first calibrated using pure milk. Then by adding a known amount of water the output voltages are noted down.

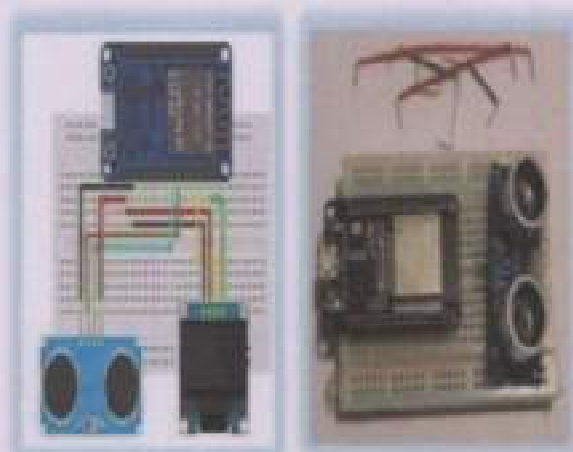


Fig 3: Ultrasonic Sensor calibration with ESP-32

2.1.3. Lactometer:

The lactometer mainly contains a glass tube containing mercury/lead shots at the bottom side. It works on the Archimedes' principle. Pure milk has a specific gravity of 1.026 to 1.032 grams per ml. The water content in the milk can be determined by measuring the specific gravity. The Solids-Not-Fat (SNF) means the total solid content minus the fat content. The total milk solids are the sum of Fat and SNF. The SNF can be calculated using following formula [7];

$$\text{SNF} = (\text{CLR reading}/4) + (\text{Fat} \times 0.21) + 0.36$$

The CLR is measured using the usual lactometer based on the principle of specific gravity [9]. The experimental setup consists of a lactometer immersed in milk with a circular plate mounted on its neck as a reference. Lactometer scale is calibrated by using IR pairs, which are mounted with respective scale readings on the lactometer. Finally the SNF is calculated by using values of standard FAT and CLR reading of the Lactometer using a given formula and observations are noted down.

2.1.4.pH Sensor:

Milk is a liquid food consist of water, fat, protein, lactose, vitamin, minerals etc. and thus to analyse milk parameters using pH value is important step [1]. The pH sensor MS pH 07 is implemented for pH measurement. The output voltage of the sensor is proportional to the pH value of the milk. The sensor is calibrated using distilled water. The response time of pH sensor is <10 sec for 95% response for pH 7.00 to pH 4.01. Stability of selected pH sensor is also good < 3mv/drift for 24 hours at pH 7.00. The algorithm allows reading the pH value and displaying it on the LCD. The experimental setup for pH measurement is as shown in fig. 4. By homogenizing the sample with a stirrer is important step to get precise observations.

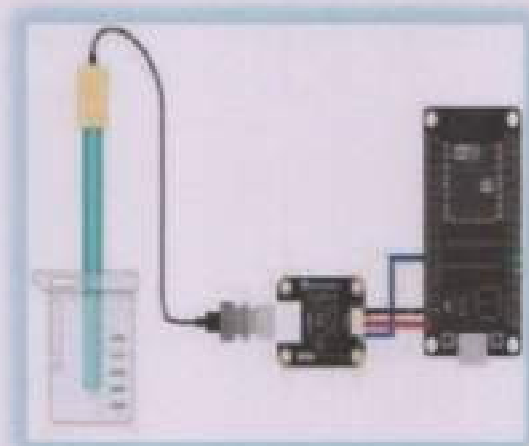


Fig 4: pH Sensor calibration with ESP-32

III. Results and Discussions

Milk's physio-chemical nature makes this biomolecule complex, thus to analyse milk parameters accurately using an electronic sensor needs much effort for calibration and implementation. The water content measurement in milk was found to be accurate and precise within acceptable limits. However some fluctuations in measurement are found due to variation in sensor position and change in shape of the container. Thus to make accurate measurements, perfect set-up is required.

The SNF measurement was found to be accurate and precise within a specific range of measurement values. Due to the complex reading mechanism and structure of the lactometer it was prone to any small variation in the measurement. Thus more suitable calibrated designed set up is needed for accurate measurement. The calibration of the lactometer electronically was found to be the most challenging part in this model development.

The measurement of pH value is most important in milk parameter analysis, as it shows instant variation with small changes in milk composition. The pH measurement is found accurate and precise. However, stirring or homogenizing the sample with a stirrer is important to get accurate readings and sensor cleaning using buffer solution helps to maintain accuracy of the sensor.

IV. Conclusion

The development of an efficient electronic sensor network for milk parameter detection and analysing models using ESP-32 controller has been discussed in this paper. The model tries to provide an electronic user-friendly solution for milk parameter analysis. The developed model is accurate, precise, small size, cost effective solution with fast response. Most importantly user-friendliness and power efficiency is a significant feature of this model. Future work will be focused on increasing the number of sensors for more precise and accurate analysis. Also inclusion of artificial intelligence might make the model more reliable and accurate.

Acknowledgement: The author is thankful to Research Centre, Department of Electronic Science, L.V.H College, Panchvati, Nashik, Maharashtra, India.

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Synthesis techniques and applications of rare earth metal oxides semiconductors: A review

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ARTICLE INFO

Keywords

Rare earth metal oxides

Lanthanide series

Vitrium Oxide

Semiconductors

High-tech industries

ABSTRACT

Rare earth elements have seen a rise in demand in recent years due to their distinctive properties and diverse applications. Rare earth-based nanomaterials can be synthesized using techniques such as hydrothermal, solvothermal, electrodeposition, and atomic layer deposition methods. REMOs nanoparticles have found use in trace gas sensors, batteries, magnetic storage devices, photovoltaic cells, catalysis, energy conversion, engineering, medicine, food, agriculture, cosmetics, textiles, and antennas. This review elaborates the various synthetic pathways, applications and future prospects of rare earth metal oxides.

1. Introduction

Rare earth elements (REEs) are the lanthanide series of the periodic table, which includes atomic numbers 57 to 71 and contains lanthanum (La) to lutetium (Lu) along with scandium (Sc), and yttrium (Y). Promethium (Pm) is a radioactive and extremely rare element of the lanthanide family. Nuclear transformations are the most common source of promethium (Pm). The difference between the unpaired and paired electrons in the 4f shell divides rare-earth into light rare earth elements (LREE) and heavy rare earth elements (HREE). Rare earth elements are divided into two categories: heavy rare earth elements and light rare earth elements. The heavy rare earth elements include europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, and yttrium. The light rare earth elements include lanthanum, cerium, praseodymium, neodymium, promethium, and samarium as shown in Fig. 1.

REE's global situation, from their applications in high-tech products to their occurrence in diverse types of economic deposits on land and in the water, their behaviour in various geological systems, state-of-the-art chemical characterization techniques, and recycling. Other topics, such as their usage in agriculture and medicine, as well as their environmental implications, REMOs are very important in technologies like television, wind turbines, LED light bulbs, and cell phones. REE and their alloys have seen a surge in use in a variety of technological devices

in the last three decades, including computer memory, DVDs, rechargeable batteries, autocatalytic converters, super magnets, mobile phones, LED lighting, superconductors, glass additives, fluorescent materials, phosphate binding agents, solar panels, and MRI agents. These elements are crucial components in all high-tech devices. For example, Nd is widely used in super magnets for disc drives, Ce is an important component of autocatalysts, and all REE are used in flat-panel televisions. Several REE compounds may be found in smart-batteries, which are used to power all electric and hybrid vehicles. These elements contribute to various technical advantages, such as lower energy consumption, higher efficiency, downsizing, speed, durability, and thermal stability, due to their unique physical, chemical, magnetic, and luminescent properties. Their demand has risen in recent years, especially for energy saving gadgets (green technology) that are faster, lighter, smaller, and more efficient. These technologies are also assisting in the reduction of the size and efficiency of analytical instruments [1].

Environmental consequences such as radioactive potential, acidification, eutrophication, solid waste creation, water use, grow primary energy footprint, toxicity, and any other regional or global impact should all be considered. The majority of REEs, on the other hand, are likely to be utilized in energy conservation, efficiency, and renewable energy technologies. Rare earths with large volumes, low reserves, and significant dispersion are the rare earths most at risk. Rare earth elements are essentially concentrated at extremely low levels in the ground

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<https://doi.org/10.1016/j.cpl.2022.139555>

Received 25 November 2021; Received in revised form 28 February 2022; Accepted 11 March 2022

Available online 15 March 2022

0009-2614/© 2022 Published by Elsevier B.V.

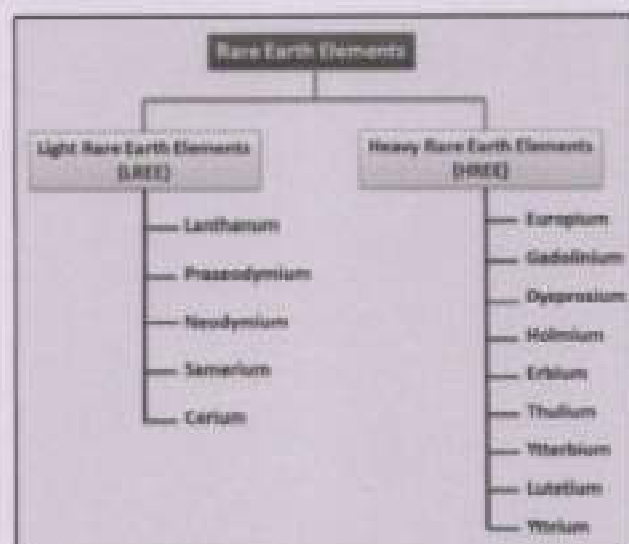


Fig. 1. Classification of rare earth elements.

and then disseminated in small amounts into various devices. As a result, unless the materials are retrieved, they are more likely to be lost when the equipment is disposed of. Rare earth recycling and recovery is difficult because it takes a lot of energy to collect, reprocess, and make new products that can be used to replace the parent metals at the right price [2].

The Engineering Demonstration System (EDS) experiments only use rare-earth elements from the lanthanide class that are not radioactive. Many rare-earth elements are found in greater abundance in the earth's crust than conventional commercial elements. Thus, the earth's crust has more yttrium, cerium, lanthanum, and neodymium than lead [1,2]. Carl Axel Arfvenius discovered rare earth elements in Sweden in 1797 when he discovered ytterbite, a black stone containing yttrium. All 15 lanthanides, as well as yttrium and scandium, were classified as rare earth elements by the 1920 s. Rare earth elements are a set of 17 chemical elements that are present in the earth's crust and are therefore rare. The lanthanides, as well as scandium and yttrium, make up this group of elements [2].

The physicochemical properties of all rare-earth elements are similar, making separation challenging in the past. Their atomic structure determines their common properties. Each outer electron has two, while the next inner shell has eight or nine electrons. Many physical and chemical properties are unchanged when electrons are added to the inner shells. Rare earth metals are all soft and malleable, with a striking silver shine. When metal powders are finely split and exposed to the air, they oxidise quickly. The metal will not spontaneously burn when present in solid lumps but will oxidise slowly, similar to how other metals rust [3,4]. Rare earth metals and compounds are in high demand, and their chemical, catalytic, electromagnetic, magnetic, and optical properties are vital in a wide range of applications. Metallurgy, petrochemicals, fabrics, and agriculture are just a few of the classic industries that use rare earth. In several high-tech industries, such as hybrid automobiles, wind turbines, compact fluorescent lamps, flat-screen televisions, cell phones, hard disks, and defence technologies, they are also becoming increasingly essential. Rare earth elements are used a lot because they have high transition numbers, which cover a wide range of wavelengths from near-ultraviolet to infrared [4,5].

Yttrium is a significant rare earth element, and ensuring a supply for future generations is necessary. Because of the strong similarities in the outer electronic layers between yttrium and lanthanides, yttrium oxide is classified as a rare earth oxide. It has a high melting point (2450 °C), a high free energy formation, good dielectric properties, and good optical properties, including a high refractive index. These materials' physical

and mechanical properties can be dramatically altered by varying their composition or introducing imperfections. One thing is certain: yttrium will never be found in nature as a free element. On the Ellingham chart, yttrium oxide has a free energy of formation of 1817 kJ/mole, which is exceptionally low. Yttrium can be found in bastnaesite, monazite, zirconite, and ion-absorption clays. It can also be found in uranium ores, samarskite, and fergusonite, but yttrium is rarely recovered from these materials. It can also be found in nearly every other rare earth mineral. Yttrium has a wide range of applications, like as an electrolyte in solid oxide fuel cells (SOFCs) for distributed power generation, as well as in gas turbines for stationary power generation, where it is employed for thermal barrier coatings on the turbine blades, efficient microwave filters, and to make the high-temperature superconductor yttrium barium copper oxide (YBCO), commonly used in alloys that enhance the hardness of aluminium and magnesium alloys, and as a catalyst in ethylene polymerization [6–10].

Oxides are increasingly essential as future electronic materials in information and communication technology, with applications in data storage and processing, optics, magnetic energy conversion, and power converters. Rare-earth metal oxide semiconductor (REMOSs) films have recently received increased interest as gate dielectrics in metal-oxide-semiconductor (MOS) devices, owing to their high dielectric constant (k value), wide band gap (Eg), and excellent physical and chemical stability in contact with silicon substrates. Three methodologies are reported in recent articles, namely doping modification, nitriding treatment, and composites, which can provide some insights for the long-term growth of MOS devices in integrated circuits [11–13].

Rare earth metal oxide semiconductors (REMOSs), rare earth sulphides, rare earth hydrides, and their composites are currently the most investigated rare earth based nanomaterials. Environmentally safe, cost-effective, and scalable synthetic techniques can be used to make rare-earth based nanomaterials with substantial electrochemical characteristics [14].

Rare-earth based nanomaterials have a low specific capacitance when compared to other transition metal oxides. Furthermore, the properties of rare-earth based nanomaterials, such as inferior conductivity, small specific surface area, and weak cycle stability, restrict their use in superconductors. Fortunately, the electronic conductivity of rare-earth based nanomaterials may be increased simply by altering their form and size, whereas other metal oxides require a conductive phase to couple with. Furthermore, a nanostructuring rare-earth-based material increases the surface area to volume ratio, allowing for the exposure of additional active areas. The active sites and high-energy crystal planes are exposed in a particular shape, allowing the material to be easily reduced and oxidised, resulting in a longer cycle life. There are also ways to improve the pseudocapacitance and cycle efficiency of nanomaterials made from rare earths by mixing them with other transition metal oxides.

To the best of our knowledge, publications on rare-earth metal oxide semiconductor-based nanomaterials are quite rare and are being used in a wide range of applications. In order to encourage future advances in this field, this review thoroughly covers the many synthesis techniques and applications of REMOS nanoparticles, as well as the obstacles and possibilities that will face the material's future development.

2. Types of rare earth metal oxides semiconductors

Now a day's, rare earth metals are used in the form of nanomaterials in many diverse applications. Rare-earth based nanomaterials are categorized in three types such as rare earth sulphides, rare earth hydrides and composites of sulphides and hydride [14–18].

2.1. (REOs)

The rare earth elements broadly divided into two types. Fig. 1 shows

that the classification of rare earth elements. Many researchers now days are work on listed rare earth elements by using various synthesis techniques and also prepared their oxide for the study of different applications. Rare-earth oxide surfaces are important for catalysis, and it was recently shown that they have inherent hydrophobicity. The surface chemistry of these oxides at low temperatures, on the other hand, is largely unknown [19–21]. Rare earth oxides like CeO_2 and La_2O_3 are pseudocapacitive materials. CeO_2 is a new electrode material that presents a number of challenges. REOs surfaces play a significant role in catalysis and are used to catalyze a wide range of on-surface reactions, such as the conversion of syngas ($\text{CO} + \text{H}_2$) to alcohol, CO oxidation, NO to N_2 conversion, and the water-gas shift reaction, as well as the oxidation of alcohols [21,22]. Sato, Satochi, et al. (2009) investigated the fundamental properties of REOs calcined at various temperatures. It has been reported with increasing calcination temperature, the crystal structures of La, Yb, Tm, Er, Y, Ho, and Dy oxides changed from monoclinic to cubic, but those of Sc, Ce, La, Pr, Nd, Sm, Eu, Gd, and Tb oxides remained unchanged. In the measurement of NH_3 adsorbed on the REOs at 25 °C, no acidic sites were found. CO_2 was adsorbed on the REOs, with CO_2 desorption peaks varying with the strength of the basic sites. Surface basic sites in light REOs like La_2O_3 , Pr_2O_3 , Nd_2O_3 , and Sm_2O_3 desorbed CO_2 at temperatures below 500 °C, whereas structural carbonate degraded above 500 °C. Heavy REOs with weak basic sites include Dy_2O_3 , Ho_2O_3 , Y_2O_3 , Er_2O_3 , Tm_2O_3 , Tb_2O_3 , and Lu_2O_3 . The basic characteristics of REOs are due to lanthanide contraction, which means that the strength of the basic sites reduces as the radius of the rare earth cation reduces [23].

2.2. Rare earth sulfides

The most extensively explored and widely utilized rare earth sulfide in research is rare earth sesquioxide, which can be denoted as RE_2S_3 . It is a wide band gap semiconductor material with tunable band gap via doping. RE_2S_3 has a complicated structure and a variety of crystal shapes. It has a complex structures and a variety of crystal shapes. Light rare earth RE_2S_3 has three distinct crystal forms, such as α , β , and γ but heavy rare earth RE_2S_3 has many crystal forms, including δ , ϵ , and ζ . By varying the temperature, the three crystal forms of RE_2S_3 α , β , and γ can be changed [14,24]. Rare earth sulphides (RES) have attracted attention in recent decades due to their intriguing physicochemical properties. RES been used as paints, photonic materials, and thermoelectric candidate materials. Rare earth sesquioxides can be found in a variety of crystal forms, including structures of α , β , γ , δ , and ϵ . By sulfurizing rare earth compounds with H_2S or CS_2 gas at a lower temperature, rare earth sulphides could be synthesized at a lower temperature. To decrease the sulfurization time and examine the optimum sulfuration conditions of rare earth sulphides, YUAN Hailin et al. (2009) synthesized rare earth sulphides powders by sulfurizing their oxide powders with CS_2 gas.

2.3. Rare earth hydroxides

Hexagonal crystal structures are common in rare earth hydroxides, such as $\text{La}(\text{OH})_3$ and $\text{Nd}(\text{OH})_3$. $\text{Gd}(\text{OH})_3$. Hexagonal $\text{RE}(\text{OH})_3$ (h-RE $(\text{OH})_3$) nanostructures, a rare earth hydroxide, have been synthesized using a variety of techniques, including precipitation, microemulsion, and hydrothermal procedures. Metal hydroxides have larger theoretical specific capacitances than their oxide equivalents, according to recent research. Due to the strong attraction between the interlayer anions and the host layer, h- $\text{RE}(\text{OH})_3$ is difficult to delaminate, unlike other hydroxides. Pre-intercalation with a long-chain surfactant (such as dodecyl sulphate) is necessary to facilitate the delamination of h- $\text{RE}(\text{OH})_3$. Due to its unusual structure, h-RE $(\text{OH})_3$ is more likely to develop a two-dimensional (2D) layered structure than rare earth oxides and rare earth sulphides, allowing it to increase active sites for electrochemical processes. With the inclusion of OH in the electrolyte, h- $\text{RE}(\text{OH})_3$ stores

charge by deprotonation (i.e. O-H bond breaking) processes [14,16,24]. Rare earth hydroxides, like other hydroxides, can form a 2D layered structure, which improves the movement of electrolyte ions, and as a result, they have steadily drawn the interest of researchers in recent years.

2.4. Thick and thin films of rare earth Oxides/Materials

Rare earth materials as thin and thick films are an interesting research topic. A great number of articles on thick and thin films of rare earth-transition element alloys suited for various applications have been published. Because of the high reactivity, producing pure rare earth metal thin films has proven to be extremely difficult. Thin films of rare earth hydrides and rare earth oxides were created instead of pure rare earth metal thin films, and they were occasionally mistaken for metals. When the chemical problem was solved, however, it became clear that the actual materials generated, hydrides and oxides, were highly interesting research subjects in and of themselves. Because these materials have so many intriguing features, the majority of the results in the literature are focused on them.

Thin films of hydride and oxide are ideal for electron diffraction and electron microscopy studies. The oxides, in particular, provided a lot of new facts on topics like phase transitions, defects, and twinning mechanisms due to their polymorphism. The exceptional quality of these refractory materials' thin films, as well as their stability, regular thickness, and well-defined features, as well as the ability to heat them with an electron beam and produce phase transitions directly within the electron microscope via pulse annealing or other methods, allowed for a number of direct observations not possible with other materials. With the advent of high-resolution electron microscopes, it was possible to obtain lattice images that directly project the crystal potential in these materials at resolutions as low as 2 Å⁻¹, revealing details such as grain boundaries, twin planes, defect mechanisms, and coherent intergrowth of different phases or chemical compounds. As a result of the early attempts to manufacture and study pure rare earth metal thin films failing, fundamental crystallography has benefited the most. With the advent of even more powerful instruments like the high resolution scanning transmission electron microscope (STEM), it has become possible to use even raw thin films containing metallic parts, hydrided parts, and oxidized parts, to distinguish their components through chemical analysis and interpretation of electron loss spectra, and finally to get on the metals. In this way, some progress has been made. Even when the most modern tools are utilized, it is still essential to be aware of all the pitfalls that a researcher may fall into while working with thin films containing rare earth materials [25,26].

3. Synthesis techniques of rare earth metal oxides semiconductors

Over the last decade, significant progress has been achieved in the controlled manufacturing of rare earth oxide nanoparticles. The design of size and form controlled nanoparticles, such as nanorods, nanoplates, nanopolyhedrons, and other nanostructures, has been the subject of numerous studies. Rare earth elements have a unique electrical layer structure and atomic radius, as well as chemical properties that are distinct from those of conventional elements. As a result, nano-rare earth oxide powder synthesis and post-processing techniques differ from those of other elements. The problems in synthesizing high-quality materials with controlled size and shape, as well as finding - robust pathways in many systems, continue to make the preparation of rare earth oxide nanoparticles with suitable features a major task.

Rare earth elements have a distinct structure and properties. Due to their excellent redox capabilities and environmentally acceptable qualities, rare earth-based nanomaterials, particularly rare earth oxides, hydroxides, and sulphides, have attracted a lot of interest.

Hydrothermal, sol gel, CVD, electrodeposition, atomic layer deposition, micro-emulsion method, thermal decomposition, sonication, and electrochemistry physical vapour deposition, sputtering, thermal oxidation, and combustion methods are ecologically benign, easy, and low-cost techniques that can be used to synthesize rare earth-based nanomaterials [14].

3.1. Hydrothermal

The hydrothermal process uses water or an alcohol-water mixed solution as a solvent in a highly sealed autoclave, which is then heated to a certain temperature to create a high temperature and high pressure environment. Under normal conditions, it is insoluble or insoluble at this time. The reactants dissolve and react, and then intense convection is generated, driven by the temperature differential of the solution in the autoclave, to form a supersaturated solution that then crystallizes out. The process can produce nanopowders with uniform dispersion, narrow particle size distribution, good crystal shape, and controllable appearance, but it necessitates high temperature and high pressure equipment, which is costly, inefficient, and dangerous to use. One of the most essential and well-established processes for nonmaterial synthesis is hydrothermal synthesis. It deals with aqueous chemical processes in a closed, heated device, such as an autoclave or a bomb calorimeter.

Rare earth oxides can be synthesized using a simple hydrothermal process by precipitating rare earth hydroxide gels in basic solutions like NaOH, KOH, etc., at room temperature or at high temperatures. A simple hydrothermal approach, unlike vapor-liquid-solid or template-confined methods, can absorb specific reactant molecules or enhance nanoparticle growth in a certain direction. Consequently, hydrothermal methods have been found to be useful for making low-dimensional materials such as nanorods, nanowires, nanotubes, and nanoparticles [27].

Mai et al. devised a hydrothermal method for the synthesis of ceria nanorods, nanocubes, and nanopolyhedra by varying the temperature and NaOH content from 0.01 to 9 mol/L. Ceria nanorods were made at a high base concentration (8–9 mol/L) at a low temperature of 100 °C, while ceria nanopolyhedra were made at a very low NaOH solution (0.01 mol/L) at temperatures ranging from 100 to 180 °C. High temperatures (140–180 °C) and a high NaOH content were used to create ceria cubes. Hydrothermal treatment was carried out for 24 h in a very representative hydrothermal reactor, a stainless steel autoclave with a Teflon liner. Centrifugation was used to collect the white precipitates, which were then washed with deionized water and ethanol. After drying in the air at 60 °C overnight, yellow powders were obtained. At 1000 °C, the final calcination phase took 4 h [28]. Xu et al. demonstrated a simple hydrothermal synthesis technique for dysprosium and holmium hydroxide nanotubes [29]. These hydroxides must be separated, washed, dried, and calcined at high temperatures of 300–600 °C to obtain the final rare earth oxides. Wang and Li wrote about how to make single-crystal lanthanide hydroxide nanowires (RE = Y, La, Nd, Sm-Tm) [30].

Yang and colleagues reported a PVP-assisted easy hydrothermal process technique for making monodispersed CeO_2 hollow spheres from nano-octahedron building blocks. The synthesis technique included intense magnetic swirling of 0.099 g $\text{CeCl}_3 \cdot 7\text{H}_2\text{O}$ and 0.176 g PVP in 19 mL of deionized water, followed by adding 1 mL of formamide and 0.1 mL of H_2O_2 and stirring for 30 min. The yellow solution was transferred to a Teflon-lined autoclave and heated for 24 h at 180 °C. The collected light brown products were cleaned with distilled water and ethanol after cooling to ambient temperature, and then dried in an oven at 70 °C for 6 h to obtain CeO_2 hollow spheres. The hollow spheres have a pore size distribution of 3 to 15 nm and a diameter of 120–140 nm. The Oswald ripening method was used to create unique shaped hollow spheres from a nano-octahedron composite with an average edge length of 20 nm. The smaller crystallites in the centre disintegrated slowly, while the larger ones acted as growth seeds and continued to expand. After a long time and a lot of mass transfer, the hollow spheres finally formed [31]. The

hydrothermal synthesis of rare-earth oxide nanocatalysts containing Ce, Pr, and Tb are depicted in Fig. 2 [32].

3.2. Precipitation

The precipitation method involves adding a precipitation agent to a rare earth salt solution, or hydrolyzing the solution at a specific temperature to generate insoluble hydroxides, hydrated oxides, or salts that precipitate out of the solution, and then removing the solvents. The original ions in the solution are then washed away, and the necessary oxide powder is formed by roasting, decomposing, or dehydrating. Oxalic acid precipitation, carbonic acid precipitation, hydroxide precipitation, homogeneous precipitation, complex precipitation, and other techniques of precipitation are used. For research and industrial production, the precipitation method is the most widely utilized technique. The benefits of this technique are inexpensive raw material costs, low equipment requirements, a simple process, simple operation, precise chemical composition control, and easy preparation of ultrafine powders with homogeneous components. It is convenient in particle shape and size, and it can make high-purity products, but it is difficult to filter and agglomerate [33,34]. The flow of the precipitation synthesis method is shown in Fig. 3.

3.3. Co-precipitation

The co-precipitation technique has a strong history in the synthesis techniques of different materials. Two salt precursors, such as oxalates, carbonates, and hydroxides, are commonly dissolved in a common medium and precipitated out with a precipitant after pH adjustment. The precipitates are then calcined at high temperatures to obtain the final product [35]. The procedure of co-precipitation is quick and straightforward. However, in order to produce high-quality nanoparticles, the essential factors such as feed solution and precipitant content, temperature, mixing duration and medium pH must all be carefully monitored. The majority of rare earth nano-oxides generated via co-precipitation are nanoparticles, and only a handful has been reported for the production of other specific shaped nanostructures.

Higashi, Kenji, et al. Synthesis and sintering of rare-earth-doped ceria powder by the oxalate co-precipitation method. By mixing rare earth/cerium nitrate solution and an oxalic solution, rare earth/cerium doped ceria powders with a composition of $\text{Ce}_{0.4}\text{RE}_{0.2}\text{O}_{1.5}$ (RE = Y, Yb, Gd, Sm, Nd, and La) were synthesized. The oxalate solid solution were generated by dropping the mixed 0.20 M nitrate solution into oxalic acid solutions ranging from 0.025 to 0.75 M, for example, in the $\text{Ce}_{0.4}\text{Y}_{0.2}\text{O}_2$ sample. Plate like particles with an average aspect ratio of 2.3–2.4 was produced from the oxalate. The oxalate converted into fine polycrystalline oxides with a particle size of 10 nm after being heated for 1 h at 600 °C [36]. The example of co-precipitation method is shown in Fig. 4.

3.4. Micro-emulsion

Another low-temperature method of producing mono-dispersed rare earth oxide nanoparticles in the range of 1 to 100 nm is the micro-emulsion method. Micro-emulsion is liquid systems made up of water, oil, and surfactant that are homogeneous, transparent, and thermodynamically stable. Although oil and water are incompatible, surfactant molecules can form an interfacial film between the water and oil phases, resulting in spontaneous mixing of the two phases. Co-surfactant is frequently used to ensure the interfacial layer's flexibility. This approach has the potential to develop micro-emulsion carriers that can improve drug loading capacity, solubility, and bioavailability, and hence could have an impact on the pharmaceutical sector [37,38].

Banagjird et al. [39] reported the formation of ceria nanopowders from heptane-micro emulsified aqueous solutions of CeCl_3 or $\text{Ce}(\text{NO}_3)_3$ utilizing several surfactants such as AOT, DDAB, DDAB, and BRG) 35. In

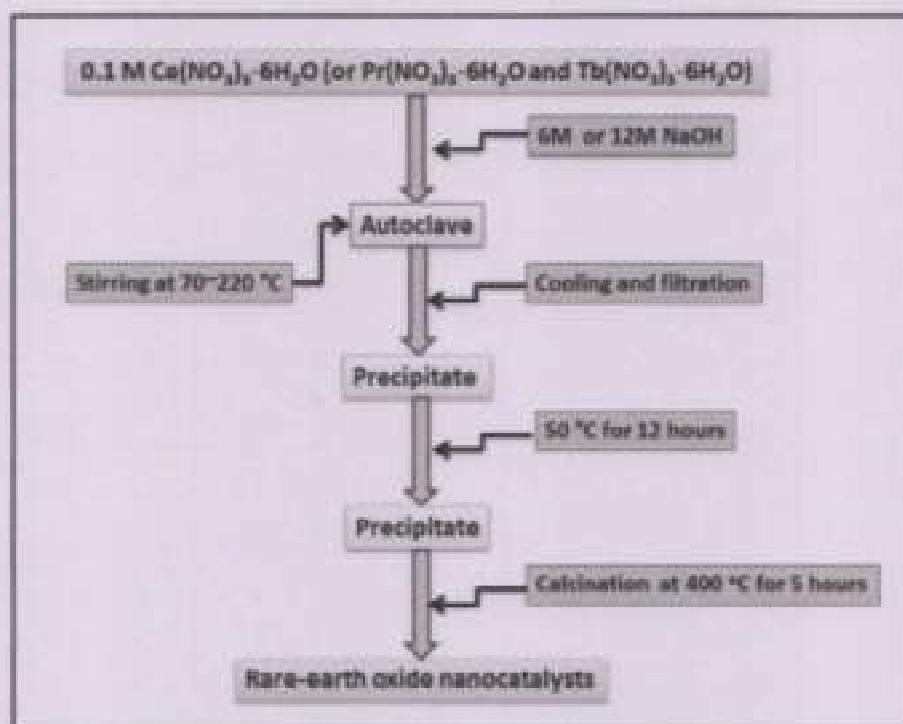


Fig. 2. Flowchart of hydrothermal synthesis technique for CeO_2 , PrO_2 and TbO_2 .

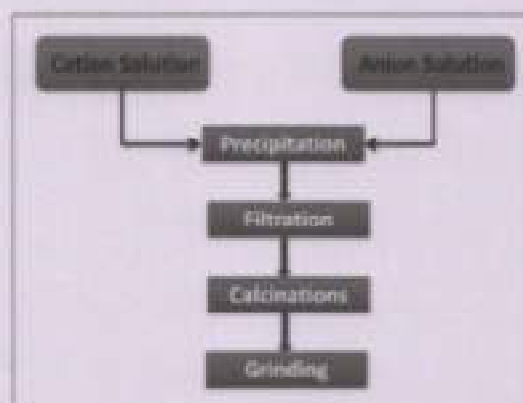


Fig. 3. Flowchart of the precipitation synthesis technique.

the presence of surfactants, they discovered nearly agglomerate-free nanosized ceria crystallites with a size range of 6–13 nm. Ceria with large specific areas (ca. $250 \text{ m}^2/\text{g}$) were seen in batches containing AOT or (DDAB + Brj 35)-stabilized microemulsions, but they agglomerated heavily when calcined at 800°C ($13\text{--}39 \text{ m}^2/\text{g}$). The double-calcined DDAB was able to create ceria with a high initial surface area ($144 \text{ m}^2/\text{g}$) and good thermal stability ($45\text{--}55 \text{ m}^2/\text{g}$ at 800°C). The Example of micro emulsion method as shown in Fig. 5.

3.5. Microwave assisted synthesis

Microwave assisted synthesis technique has several advantages, including time savings, cost savings, and environmental friendliness. Because of these advantages, microwave-assisted synthesis has piqued the interest of synthetic chemists and researchers. Microwave irradiation interacts with compounds selectively based on their microwave absorbing capability, allowing microwave energy transfer on specific molecules directly without thermal gradient effects, and causing

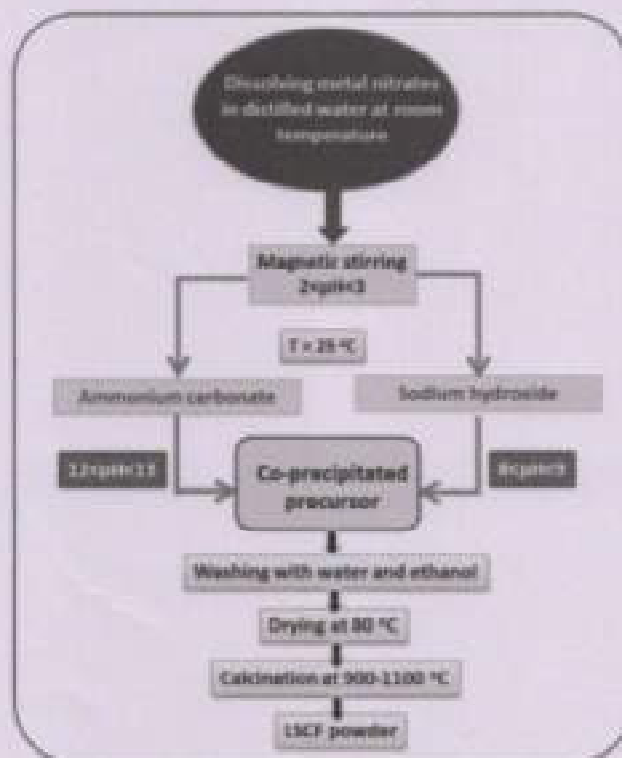


Fig. 4. Graphical flow of co-precipitation technique.

superheating of solvents and super saturation of reactants. The quick heating has an impact on molecular mobility and collision, which could lead to an increase in chemical reaction rate and, as a result, a reduction in reaction time. It has been coupled with several traditional methods for creating inorganic nanomaterials, including as hydrothermal, sol-gel,

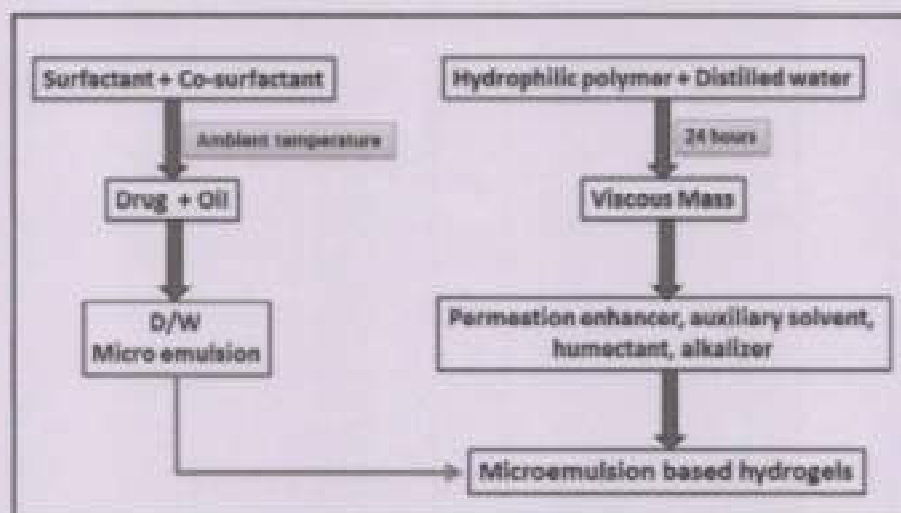


Fig. 5. Formulation of micro-emulsion based hydrogel.

solvothermal, and combustion processes, to speed up the reaction and save time [40–42].

Gao et al. [43] used a programmable microwave oven to develop a template-free microwave aided hydrothermal technique for synthesis of ceria hollow spheres. In terms of temperature control, reaction time, and experiment feasibility and reproducibility, the programmable microwave outperforms the ordinary microwave. The ceria precursor was made by heating a mixture of $\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$, urea, and water to 170°C in 2 min and keeping it there for 30 min. After that, the precursor was cooled, separated, and ethanol washed. The nanomaterial precursor was transformed to required ceria nanostructures by calcination at 500°C for 2 h. Microwave heating was also thought to distribute heat consistently, resulting in ceria nanoparticles with uniform shapes and sizes. The development of hollow structures has been proposed as a self-templated, self-assembly process with an Ostwald ripening growth mechanism. Microwave synthesis and optical properties of uniform nanorods and nanoplates of rare earth oxides is shown in Fig. 6.

3.5. Sol-gel

Sol-gel is a critical process for producing inorganic materials and plays a vital role in inorganic synthesis. Organometallic compounds or organic complexes produce a sol at low temperatures, then form a gel



Fig. 6. Flow chart of microwave assisted synthesis technique.

under certain conditions, and then undergo heat treatment. That is, the ultrafine nanopowder with bigger specific surface and better dispersion may be obtained by preparing the homogeneous solution, the sol, the gelation process, the drying of the gel, and the heat treatment process of the aerogel. The procedure may be performed in mild conditions, and the resulting powder is larger than the surface and has strong dispersibility; however, the reaction time is longer, taking several days to complete, and it is difficult to meet the criteria of large-scale manufacturing [44]. Another typical soft chemical technique for synthesizing solid materials like metal oxide from solution state precursors is the sol-gel process. It usually entails converting liquid precursors to a colloidal suspension known as a sol and subsequently, at low temperatures, to a multiphase network structure known as a gel. The size of a sol particle is determined by the solution composition, temperature, pH, and other factors, whereas the quality of a gel is primarily determined by the hydrolysis and condensation processes, which are influenced by metal ion electronegativity, precursor types, pH, solvent, and temperature. Calcinations at high temperatures are frequently required to generate high-purity and high-crystalline nanostructures. In fact, depending on the qualities of the final products, sol-gel chemistry can form materials such as films, powder, thick ceramics, bulk and nanoparticles, and so on [45–47].

The non-aqueous sol-gel technique has been used to synthesis rare earth mesoporous structures in recent years. Sol-gel chemistry has the advantage of producing metal oxides from homogeneous precursors, as opposed to furnace-based techniques such as hydrothermal, co-precipitation, or solvothermal methods, which are primarily based on inhomogeneous reacting materials. This allows for good control of complex inorganic metal oxides involving three or four metal precursors. Creating a homogeneous precursor at room temperature, on the other hand, does not ensure a homogeneous end result. Moreover, phase segregation occurs during the synthesis of several sol-gel methods shown in Fig. 7 [27,47].

Yuan and colleagues used Pluronic P123 as the template and ceric nitrate and zirconium oxide chloride as the precursors to make ordered mesoporous ceria-zirconia solid solutions using a sol-gel technique combined with evaporation-induced self-assembly in ethanol. Under optimal temperature and humidity conditions, a series of mesoporous $\text{Ce}_{1-x}\text{Zr}_x\text{O}_2$ with various Ce/Zr ratios was produced. The TEM revealed a vast area of $\text{Ce}_{1-x}\text{Zr}_x\text{O}_2$, implying a long-range organised mesostructure. High-crystalline pore walls formed of multiple nanocrystallites with well-defined lattice planes were seen in the $\text{Ce}_{1-x}\text{Zr}_x\text{O}_2$ structure. The nanocrystalline was about 3–4 nm in size. $\text{Ce}_{1-x}\text{Zr}_x\text{O}_2$ solid solutions, which are highly ordered and porous, have demonstrated to be

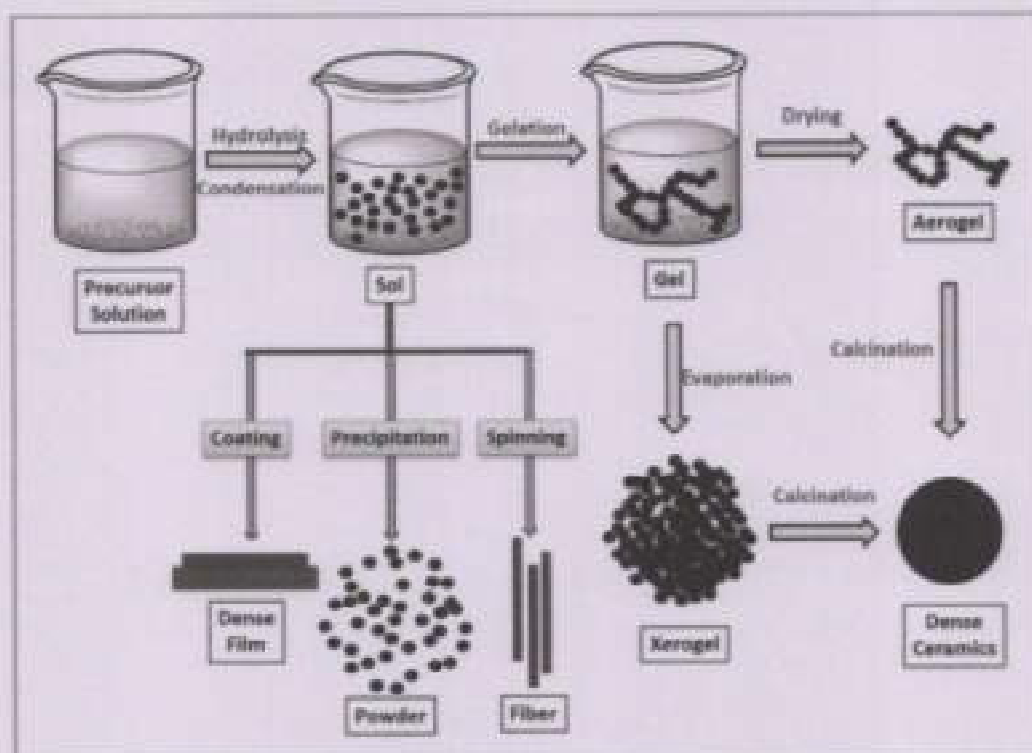


Fig. 7. Schematic of sol-gel technique.

excellent catalytic supports for Pt in CO oxidation and cyclohexene hydrogenation [48].

Ito et al. proposed a sol-gel method for fabricating ceria hollow microspheres from cerium nitrate using polymeric templates on a large scale. PSAA colloids were spread equally in water to electrostatically adsorb Ce^{3+} ions onto the surface. After precipitating $\text{Ce}(\text{OH})_3$ with NaOH, cerium hollow spheres were calcined at 773 K for 3 h to obtain cerium hollow spheres [49].

Reddy and his team synthesized Yttrium Trioxide (Y_2O_3) by sol-gel technique [50]. Author reported the cubic phase crystalline structure of Y_2O_3 has been confirmed by X-ray diffraction. The creation of an uneven plate-like structure with variable grain orientation has been confirmed by SEM pictures of Y_2O_3 . In the range of 10–97 percent RH , the humidity sensing characteristics of Y_2O_3 were investigated. The humidity sensor device made of Y_2O_3 pellets is subjected to various RH levels. At normal temperature, the Y_2O_3 exhibits a 60-second response time and an 80-second recovery time. Y_2O_3 nanostructure humidity sensor is a promising device for industrial applications.

Richard, Diego, et al. reported the Pechini-type sol-gel (PSG) technique was used to successfully manufacture fine-grained nanocrystalline In-doped yttria powders [51]. The resulting materials crystalline in a cubic bixbyite structure, according to our findings by authors, and the In impurities are substituted at the cationic sites. The EIS tests revealed that the PSG samples had greater conductivities at grain interiors than the reference pellet made from Y_2O_3 commercial powder, and that the resistivity of the PSG samples is unaffected by In doping. These findings are supported by PAC spectroscopy of $^{111}\text{In}(^{111}\text{Cd})$ -doped yttria crystals. The analysis of dynamic hyperfine interactions as a function of temperature revealed that the electron availability near the impurities responds differently depending on the sample fabrication process. These findings pave the way for a better understanding of the structural and electrical aspects of sol-gel processing.

3.7. Solvothermal

The solvothermal technique is similar to the hydrothermal method in terms of nanomaterial synthesis, has been widely used in the production of accurate metal oxide nanostructures and microstructures. The composition of the reagents and solvents, as well as temperature and pressure, are key factors in solvothermal reactions. The reaction medium is the distinction between hydrothermal and solvothermal processes. Organic solvents like ethanol, CCl_4 , or mixed solvents are used in solvothermal synthesis, whereas aqueous solutions are used in hydrothermal processes. Many scholars prefer to combine these two methods and refer to them as the hydro/solvothermal method for discussion because they have comparable synthetic rules and principles. Hydrothermal methods, on the other hand, are typically employed to make hydroxides, oxides, or oxyhydroxides, whilst solvothermal methods can be used to make non-oxide compounds like nitrides, chalcogenides, and so on. Solvothermal synthesis is important for the production of novel materials, especially those with unique structures and characteristics [52–55].

Chen and his team also focused on solvothermal synthesis for single-crystalline-like hollow nanostructures. Cerium chloride heptahydrate was dissolved in anhydrous ethanol, then propionic acid was added as the oxidant in the manufacture of CeO_2 hollow nanocubes. The resulting slurry was placed in a Teflon-lined steel autoclave and cooked in the oven at 160 °C for 9 h. The white-brown goods were collected and cleaned after cooling. The final product, ceria hollow nanocubes, was made under vacuum for 24 h at 60 °Celsius. The same cerium precursor $\text{CeCl}_3 \cdot 7\text{H}_2\text{O}$ was used in the CeO_2 hollow nanocrystals production. The capping agent was PVP, the solvent was a water-ethanol combination, and no oxidant was used. The resultant mixture was also sealed in a Teflon-lined steel autoclave with a capacity of 20 ml, and heated at 160 °C for 24 h. The rest of the washing and drying procedures were identical to those used with the ceria hollow nanocubes. The catalytic activity of the final CeO_2 hollow nanocubes and nanostructures for CO oxidation was higher than that of commercial CeO_2 powder. A

combination mechanism of directed attachment and Ostwald ripening was proposed for the synthesis of hollow nanocubes. A dissolution followed by a recrystallization process was hypothesized as the mechanism for the latter nanostructure creation [53,54].

Yang, Jun, et al. has described a solvothermal method for generating homogeneous $\text{Y}_2\text{O}_3\text{:Eu}^{3+}$ microspheres on a large scale and with ease. The spheres were made up of nanoparticles that were randomly aggregated. Their development was thought to be the result of an isotropic growth mechanism. Temperature, ethylene glycol, and CH_3COONa all had a role in the creation of such structures. Instead of acting as a solvent, ethylene glycol served as a capping agent to limit the rate at which nanoparticles grew in different directions. Without the presence of CH_3COONa , no solid product was produced [55]. Example of solvothermal synthesis method is depicted in Fig. 8 [56].

3.8. Thermal decomposition

Thermal decomposition of rare earth complexes such acetate, oleate, carbonate, and acetonate has been demonstrated to be a viable method for producing monodisperse, single crystalline, and high-dimension rare earth oxide nanocrystals. It's also the most effective approach to make high-quality nanoparticles smaller than 10 nm, which is useful for core-shell architectures. Organic surfactants were thought to serve a vital function in shape and size management. They operate as a capping agent, preventing nanoparticle development and aggregation while also controlling nanocrystal growth through a selective absorption action. This method is relatively new compared to the methods previously covered, however it is gaining popularity due to its excellent control over nanocrystalline characteristics. Despite its many benefits, thermal decomposition has a number of disadvantages, including a high operating temperature (usually between 250 and 330 °C), a high cost of metal precursors, different surfactants, and potentially hazardous byproducts [57–59].

Cao was the first to use a thermal decomposition approach technique to synthesize rare earth nano-oxides. He described the colloidal synthesis of square Gd_2O_3 nanoplates using oleylamine, oleic acid, and octadecene as solvents for the thermolysis of gadolinium acetate. 0.75 mmol gadolinium nitrate hydrate was dissolved in a solution containing oleylamine, oleic acid, and octadecene at 100 °C with stirring under a pressure of 20 mTorr in a conventional synthesis. The resultant solution was then heated to 320 °C for 5 min and then cooled to room temperature under Ar flow for 1 h. The precipitant adopted was a 1:1 combination of hexane and acetone. Under an Ar flow, the nanocrystals crystallized and dried. These single-crystalline nanoplates had consistent shape and size and could self-assemble into superlattice structures [60]. The typical thermal decomposition method for the synthesis of lanthanum oxide is portrayed in Fig. 9 [61].

3.9. Sonochemical method

Sonochemical synthesis is a synthetic method that uses ultrasonic radiation (20 KHz–10 MHz). This approach allows for the creation of unique materials at room temperature, under low pressure, and with a quick reaction time. The strong ultrasound interacts with molecules to cause chemical changes in this approach. Ultrasound irradiation cannot directly interact with chemical bonds and break them because of the lower frequencies. Sonochemistry is caused by a physical phenomenon known as acoustic cavitation, which is connected to the development, growth, and implosive collapse of bubbles. Acoustic cavitation creates intense, transitory circumstances that allow chemical processes to take place and new materials to be synthesized. Metal nanoparticles, metal sulphides, metal alloys, and metal oxides, among other nanomaterials, have all been produced using the sonochemical approach. In sonochemical synthesis, the regulating parameters are sonication time, pH, temperature, ultrasound power, solvent, and gas pressure [62–64].

Zhong et al. adopted a simple sonochemical technique to synthesize

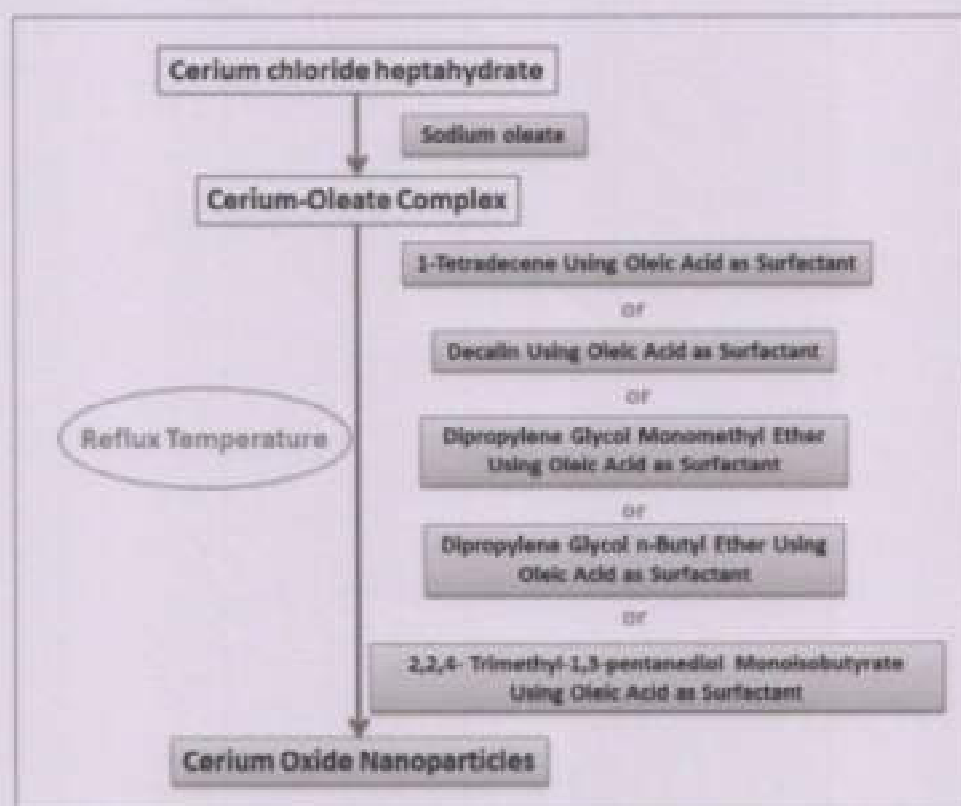


Fig. 8. Solvothermal synthesis technique.

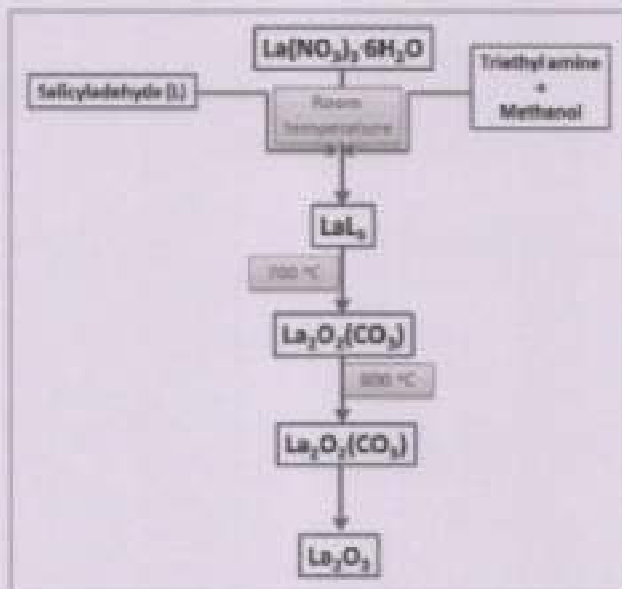


Fig. 9. Example of thermal decomposition of technique.

the flowerlike Y_2O_3 . He reported that various factors might alter the structure growth. Commercial Y_2O_3 was dissolved in diluted HNO_3 (1.0 wt%) to prepare a solution for the synthesis. The mixed solution was sonicated for 30 min at 35–50 °C after evaporation, mixing with H_2O , and agitation. After that, the solution was filtered, washed, and dried, producing the flower like $\text{Y}_2(\text{OH})_9\text{NO}_3 \cdot 1.5\text{H}_2\text{O}$. Calcinations of $\text{Y}_2(\text{OH})_9\text{NO}_3 \cdot 1.5\text{H}_2\text{O}$ at 600 °C produced a Y_2O_3 flowerlike product. Several essential parameters, including time, precursor concentration, pH, and ultrasonication, were used to control the flowerlike structure. The flowerlike structure was retained in the 2 h response time, according with time-dependent experiment. The flower structure had totally changed after 2 h (66). The example of Sonochemical synthesis is shown in Fig. 10 (66).

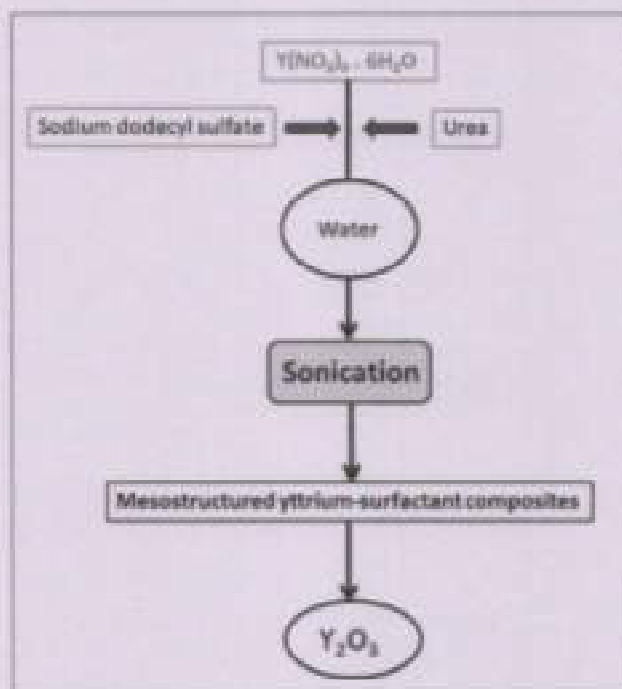


Fig. 10. Sonochemical synthesis of Y_2O_3 .

3.16. Other miscellaneous synthesis

While the methods outlined above are common in lab-scale and industrial-scale synthesis, there are many more traditional and non-traditional methods for creating rare earth oxide nanomaterials that merit our attention. Ball milling, thermal evaporation, spray pyrolysis, electro deposition, chemical vapor deposition (CVD), pulsed laser deposition, and other techniques are among them [67–72]. During the preparation of thin films of REMOs the nanoparticles were synthesized in different ambient conditions. Thin films have a wide range of applications in technological advancements. Physical and chemical thin-film deposition techniques can be split into two parts based on the nature of the deposition process. Physical vapour deposition (PVD), laser ablation, molecular beam epitaxy, and sputtering are examples of physical techniques. Gas-phase deposition methods and solution techniques are among the chemical procedures. Chemical vapour deposition (CVD) and atomic layer epitaxy (ALE) are gas-phase techniques, while spray pyrolysis, sol-gel, spin, and dip-coating use precursor solutions.

Spin coating was used to deposit thin films for decades, and it is now the most used process for producing uniform thin films of photosensitive organic materials for gas sensing applications with thicknesses in the micrometre and nanometer range. Spin coating is a simple and quick way to make thin, uniform organic films from solutions. It's a technique for applying thin films on flat substrates in a consistent manner. In a nutshell, an excess of a solution is applied to the substrate, which is subsequently rotated at a high speed to disseminate the fluid using centrifugal force. A spin coater is a machine that is used for spin coating. Unlike many other film deposition techniques, spin coating is a reasonably simple and cost-effective method of processing (especially with regard to equipment costs). It provides a simple method for creating films of any composition. Repeatability is one of the most significant aspects of spin coating. Changes in the parameters that determine the spin process might cause significant changes in the coated films.

4. Applications of rare earth metal oxides Semiconductors:

Rare earth luminescent materials can be used in a variety of applications. Industrially, they can be used to make metal and glass, but they can also be used for medical imaging, radar or computer screens, and everyday lighting fixtures. The application of rare earth nano-powder modified epoxy resin has significantly improved high temperature resistance, toughness, strength, and other properties in the application of electronic circuit substrates and packaging materials, and overall performance has been significantly improved and improved, with a small amount of material and low price. It can be used to increase the high temperature resistance, anti-ultraviolet, anti-aging, anti-radiation, and other properties of organic silicon materials, allowing them to better fulfill the unique needs of electronic and electrical appliances. The YBCO superconductor, which is made from nanoscale Y_2O_3 , is a unique thin film material with great performance, max hardness, ease of production, application potential, and a wide range of applications. Rare earth luminescent nanomaterials are a new type of material with stable chemical and physical properties that can withstand the effects of high-power electron beams, high temperature resistance, strong ultraviolet light and high-energy radiation, and bright colors, high colour purity, and narrow emission bands; high conversion efficiency, strong light absorption, and fluorescence lifetime can be acquired. The rare earth ion luminescent compounds are also used in biomedicine and the energy sectors. In high-energy ion detectors, rare earth ions are employed. Scintillators are a group of materials that are related. These scintillators can be used in many different ways to detect cosmic rays in biomedical tests [73,74].

REOs such as Yttrium oxide (Y_2O_3), Lanthanum oxide (La_2O_3), Cerium oxide (CeO_2), Praseodymium oxide (Pr_2O_3), Neodymium oxide (Nd_2O_3), Samarium oxide (Sm_2O_3) Europium oxide (Eu_2O_3),

Gadolinium oxide (Gd_2O_3), Terbium oxide (Tb_2O_3), Dysprosium oxide (Dy_2O_3), Holmium oxide (Ho_2O_3), Erbium oxide (Er_2O_3), Ytterbium oxide (Yb_2O_3), Lutetium oxide (Lu_2O_3), Scandium oxide (Sc_2O_3) and Thulium oxide (Tm_2O_3) are employed in a variety of applications, including solar cell, optics, catalysis, ceramics, accuracy investment casting, glass fusing, and glass polishing, photocatalysis and other applications [75–92].

The use of lanthanoid absorptions for the production of photoprotective materials able to selectively attenuate different wavelengths is receiving increasing interest when it comes to the wide variety of uses of RE materials. Light absorption can sometimes result in the controlled conversion or breakdown of organic molecules, allowing RE-based materials to be used as photocatalysts. This section covers photoprotective and photocatalytic systems based on RE ions, with a focus on UV attenuation in biological systems and the ability to perform sunlight-activated processes using customised photocatalysts. The most investigated RE-containing material for photoprotection and UV absorption has been ceria nanoparticles (CeO_2). A variety of techniques are used to get materials with the right particle size, morphology, and structure for certain applications [74,94,95].

Nano-rare earth is being used in high-performance ceramics. Ceramics with electrical components (electronic sensors, PTC materials, microwave materials, capacitors, thermistors, etc.). Y_2O_3 , La_2O_3 , Nd_2O_3 , Sm_2O_3 , etc., are used as ceramic materials. Ceramics doped with nano Y_2O_3 and ZrO_2 at a lower temperature, for example, have high strength and toughness and are used in wear-resistant devices such as bearings and tools; multilayer chip capacitors and microwave devices made of nano Y_2O_3 , Nd_2O_3 , Sm_2O_3 and other materials have significantly improved performance [96]. The various applications of rare earth elements [96–99] have been listed in Table 1.

Food toxin (AFB1) detection using an electrochemical immunosensor modified with Sm_2O_3 nanorods. It has been shown that the electrochemically deposited n- Sm_2O_3 film may be employed to immobilise Ab-AFB1 and BSA, as well as to inhibit non-specific binding sites of Ab-AFB1 in order to detect aflatoxin. This immunoelectrode's exceptional sensing performance has been paired with high thermal stability, good repeatability, and long-term stability [100]. This research has shown a new way to use rare earth metal oxide materials in clinical tests, antibody screening, and proteomics research.

In the neurological and hormonal systems of humans and other mammals, the important neurotransmitter dopamine plays a key function [101]. Due to its specialized position as a neuromodulator in the brain circuit, central and peripheral neuronal systems, dopamine is responsible for the physiological settings for memory, mobility, and attention [102]. Abnormal variations in dopamine levels or concentrations in the body can lead to abnormalities and diseases such as smile dementia, epilepsy, and Parkinson's disease [103]. Hypertension, asthma, and cordial violations during cardiac surgery are all caused by insufficient dopamine levels in the body. With its functional significance in mind, a quantitative approach for the precise measurement of dopamine in the sense of diagnosis and continuing surveillance of neurological imbalances must be established [104]. The numerous analytical estimation approaches for detecting dopamine levels appear to be complicated, expensive, and time consuming. The enzyme-based electrochemical biosensor approach is an excellent technology for rapid detection, ease of use, and simplicity in this regard [105]. Using a solution casting method, a dopamine biosensor was created by immobilizing the enzyme Tyr on the surface of the Au- La_2O_3 /ITO electrode. The constructed electrode Tyr/Au- La_2O_3 /ITO could be an effective bio-interface for biosensors and bioelectronics using rare earth metal oxide nanoparticles [106].

Nanotechnologies have changed the face of science and technology in every discipline. It is concerned with the research and application of extremely small objects on the nanoscale (1–100 nm). Cerium is a common rare earth metal with various surface defects, primarily oxygen vacancies, resulting in the coexistence of two oxidation states: cerium

Table 1

Applications of rare earth elements.

Sl. No.	Atomic No.	Rare Earth Element	Applications
1.	57	Lanthanum (La)	Camera lenses and hybrid car batteries, studio lighting, laptop batteries, Electrochromic films.
2.	58	Cerium (Ce)	Condensers, ceramic, glasses, TV tubes, Street fluorescent lighting, Catalytic Converters, Carbon-arc Lighting.
3.	59	Praseodymium (Pr)	Ceramics, glass pigments for glass blowers and welders, motion picture industry for studio lighting and projector lights.
4.	60	Neodymium (Nd)	IR filters, Specialized goggles for glass blowers, VCR magnets (PC, hard phones, medical equipment motors, wind turbines and Audio systems).
5.	61	Promethium (Pm)	Spacecraft and guide modules atomic batteries.
6.	62	Samarium (Sm)	Cancer treatment, carbon arc lighting for studio lighting and projection, Absorbent in nuclear reactors, magnets for headphones, and pickups for electric guitars.
7.	63	Eurpium (Eu)	Control rods for nuclear reactors, Compact fluorescent bulbs, anti-theft marks on car back seats.
8.	64	Gadolinium (Gd)	MRI, Colour TV picture tubes, Microwaves.
9.	65	Terbium (Tb)	Green phosphors in fluorescent lamps and color TV tubes, Speaker UV lights for anti-back seats, Magnet for wind turbines and hybrid car motors.
10.	66	Dysprosium (Dy)	Nuclear reactor control rods, Medium source rare-earth lamps (MRSL) within the film industry, Compact discs and hard discs, Speakers, Used in detectors for measuring ionizing radiation.
11.	67	Holmium (Ho)	Solid state lasers for non-invasive medical applications, Yellow or red coloring for glass, cubic ceramics, nuclear reactor rods, Used in medical, dental, and fiber-optical applications.
12.	68	Erbium (Er)	Fluorographic films, Coloring agent in glass and glasses, laser for skin (remove tattoos) Nuclear reactor control rods.
13.	69	Thulium (Tm)	Portable x-ray machine for medical use, Rare hardwares for its blue fluorescence under light to detect counterfeits.
14.	70	Ytterbium (Yb)	Film laser amplifiers, Catalyst, Stress goggles to monitor ground deformations caused by earthquakes or underground explosions, Source of gamma rays.
15.	71	Lutetium (Lu)	Detects in positron emission tomography, used in magnetic bubble memory devices.
16.	79	Yttrium (Y)	Camera, High temperature superconductor YBCO, microwave filter, provide the red colour in television tubes.

(III) and cerium (IV), allowing for redox catalytic activity. Biosynthesis of nanoparticles has gotten a lot of attention since it is an environmentally beneficial process that uses plant extracts, microorganisms, nutrients, and other natural ingredients to make nanoparticles. Bio-synthesized cerium oxide nanoparticles are thus non-toxic and biocompatible with living cells and tissues [107]. The contemporary context necessitates medical advancement due to an increase in the prevalence of lifestyle diseases, and the desire to provide treatment for life-threatening diseases such as cancer, HIV, and other disorders grows. Because of their unique redox capabilities, cerium oxide nanoparticles have been widely exploited in the field of biomedicine for cancer treatment, antimicrobial agents, bio-scaffolding, and biosensor device construction. These nanoparticles are also employed in solar cells, fuel oxidation catalysis, chemical mechanical polaronisation, and corrosion

prevention, in addition to biomedical fields. These nanoparticles have extraordinary capabilities, allowing them to be used in a wide range of medicinal, agricultural, and environmental applications. Because of its high antimicrobial efficiency, cerium oxide nanoparticles can be used in the production and commercialization of antimicrobial PPE (personal protective equipment), surgery suits, sanitizers, and other products [108–112].

Thulium oxide (Tm_2O_3) nanoparticles have catalytic, electrical, optical, and electrochemical applications. The nanostructured thulium oxide Tm_2O_3 -based electrode provides a cost-effective technique and a novel promising platform for rare earth metal oxide material applications in electrochemistry and bioelectronics. Thulium oxide films have good conductivity and are stable in acidic and alkaline environments. As a result, it can be utilized as a modified electrode. Jay Singh et al. (2013) reported the optical and electro-analytical properties of the hydrothermally produced nanostructure Tm_2O_3 in the presence of AA. This study also demonstrates a very promising platform for the quick and precise quantification of AA in pharmaceutical and clinical samples using rare earth metal oxide material [113,114].

Motor vehicle exhaust is one of the most common sources of pollution in today's world. Catalytic purification is a widely utilized method of purifying car emissions on a global scale. Nano-rare earth catalysts are a novel type of high-efficiency car exhaust purification catalyst created by combining the high surface activity of nanomaterials with the properties of rare earth catalytic promoters in the catalyst. This catalyst combines the benefits of nanomaterials and rare earths into one package. Car exhaust can be properly purified with this device. Table 1 lists many other important applications for rare earth elements.

5. Conclusions and future perspectives

The current research is a review of previous research on rare earth metal and rare earth metal oxide semiconductor (REMOS) synthesis techniques and applications. Rare earth oxide nanoparticles have seen a tremendous increase in the last decade in terms of synthesis methods and uses. These studies show how to synthesise nanoparticles with a variety of properties and complex functions via a variety of synthetic techniques, including physical, chemical, biological, and hybrid methods. Rare earth nanoparticles have a wide spectrum of mono-disperse or well-defined crystalline sizes, as well as sophisticated crystallite morphologies, compositions, and crystal structures. When used in catalysis, optics, sensors, and biological applications, well-controlled nanoparticles usually display good stability and great performance. High volumetric energy density, which can improve pseudo capacitive efficiency, environmentally friendly nature and abundant reserves, excellent redox properties, and rare earth oxides easily produce oxygen vacancies, which are conducive to the transport of electrolyte ions are all advantages of rare-earth-based nanomaterials. These are some of the notable benefits of nanostructures and nanocomposite made of rare-earth elements.

Rare earth nanoparticles are a novel class of material with predictable chemical characteristics and promising applications. They play a critical role in advancing modern society and raising of people living standards both today and in the future. The growth of rare earth elements into technology advancement, the ecology, and economic domains has resulted in a major increase in global demands. Over the next decade, global demand for autos, electronic goods, energy-efficient lighting, and catalysts is predicted to surge. The future of these technologies depends on REMs in future. The need for rare earth magnets is predicted to expand as the requirement for rechargeable batteries rises. Laparoscopic lasers, magnetic resonance imaging, and positron emission tomography scintillation detectors are projected to become more common as medical technology advances. Rapidly green technologies, including as electric car batteries, photovoltaic systems, and wind turbines, as well as others where REE are broadly utilized, are likely to generate great growth and demand for these metals in the near future,

despite rising prices. REMs may be used in future military and naval arsenals to improve efficiency and handling. Modern treatment applications for REMOS nanoparticles are being explored at an exponential speed, and upcoming technologies like nanotechnology may be leveraged in the future to improve their use in medicine.

CRediT authorship contribution statement

Amol S. Patil: Conceptualization, Methodology, Software, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization. **Arun V. Patil:** Supervision, Conceptualization, Methodology, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization. **Chandrakant G. Dighavkar:** Supervision, Conceptualization, Methodology, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization. **Vishnu A. Adole:** Writing – review & editing, Formal analysis, Visualization. **Umesh J. Tape:** Conceptualization, Methodology, Software, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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DETECT THE METAL ION PRESENT IN DEFERENT PART OF CARICA PAPAYA BY ATOMIC ABSORPTION SPECTROSCOPY.

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Abstract: Carica Papaya is well known medicinal plant in the west and Asian countries to cope several diseases. Patient were advised to eat papaya fruit frequently during dengue fever epidemic found in market by physicians. These cariac papaya are ayurvedic plant, there exact element are Cobalt (Co) Zinc (Zn) Calcium (Ca) lead (pb) and Copper are known. There has been deep study of other ayurvedic formulation using techniques such as AAS, AES and other spectroscopic method this is study deals with the detection of heavy metal present in the carica papaya. The work also deals with the effect these heavy metals would have on the women body on the basis of quantity of this metal detected by AAS.

Keywords: extract medicinal plant, human health, anticancer, immunomodulatory, phytochemical, Agrochemical technology.

INTRODUCTION

Ayurvedic medicine have been use as primary health care medicine in India from thousands of year right from the start of vedic periods. This throw light on the fact that ayurveda is not a new technique but has developed through long periods of studies. It is because this long history and the background of ayurveda that has seen in increasingly great demand in other countries as well. There are hundreds of companies and thousand of brands available in the market which sells these ayurvedic products in number of formulations. These are the great demands in Asian countries. ^[1]YardinMR, Kennedy IR, Thies JE (2000) as bio-fertilisers and bio-pesticides. *Radiation Physics and Chemistry* 57:565-568.)

There are report indicating under undesirable side effects due to the long term consumption of these medicine without proper advice the side effect are mainly due to the presence of heavy metal leads in the medicine.

One can attend knowledge about availability of the transition metal which may be present in the given medicine from the knowledge of various ingredients used in the preparation same of the metal. But there exact amount determine by experimental and spectroscopic technique only where as the knowledge about presence of heavy metal can be achieved. Heavy metal are use in medicine due to toxicity and as they not original presence in the ingredients most of the heavy metal get experimental examination and analytical techniques. ^[2](Mahdi SS, Hassan Gil, Sameon SA, Rather HA, Dar SA, et al. (2010). Bio- fertilizers in Organic Agriculture. *Journal of Physiology* 2:42-54)

Most commonly used technique for the detection of heavy metal his atomic absorption spectrophotometer (AAS) Atomic Emission spectrophotometer (AES) For the detection of metal in the sample which is relatively new technique and is not very much in used for the aim of this study so this technique was selected for the same. Cobalt, zinc, calcium, Lead, copper are same of possible heavy metal whose determination is what lies in the centre of this research.

Present study included detection of metals. These sample were then tested for solation prepared was used for detection of metal by inorganic qualitative analysis. Then the sample ware again put through atomic absorption spectrophotometer for detection of metal and the quantity of respective metal present in the sample the project also puts on the role of human on basis of the quality of each metal recorded by the AAS. The observation are recorded in terms of parts per million of the metal are presence in respective sample along with the spectrum obtained by the AAS. Then all sample are compared on the basis of heavy metal detected, and applications in determine possible best medicine of the sample pass the permissible level as by government of India. ^[3](Alam, G., 2000. A Study of Biopesticides and Biofertilizers in Haryana, India, Gatekeeper Series No. 93. IED, London)

RESEARCH METHODOLOGY

Generally different part of the plant material cultivar condition papaya fruit, leaves, bark, and root were collected from from selected harvested area. All part of papaya were washed gently with distilled water followed by drying (under shade) and grinding. The drying method was also used to dry peel and pulp.

Deficiency and Excess Health in human body of metal

There are reports on the deficiency in the U.S, one review indicate approximately 25% as the adolescents, adult and people over 65, do not meet the Recommended Dietary allowance for copper a federal survey of food consumption determined that for women and men over the age of 19, average consumption from foods and beverages was 1.11 and 1.54 mg/day respectively. For women 10% consumed less than the Estimated average requirement, for men fewer than 3%

copper deficiency has recently been implicated in adult-onset progressive myeloneuropathy and in the development of severe blood disorder including myelodysplastic syndrome. Copper deficiency can be confirmed by very low serum metal ceruloplasmin concentration in the blood. ¹⁹(Kumar S (2012) Biopesticides: a need for food and environmental safety. IJFertilPestic3(1):107.)

Population susceptible to copper deficiency include those with genetic defects for Menkes disease, low-birth-weight infants, infant fed cow's milk instead of breast milk or fortified formula, pregnant and lactating mother, patient receiving total parenteral nutrition, individuals with "malabsorption syndrome" (impaired dietary absorption), diabetics, individuals with chronic diseases that result in low food intake, such as alcoholics, copper deficiency due to special needs that increase the daily requirement. Vegetarians may have decreased copper intake due to the consumption of plant food in which copper bioavailability is low. Fetuses and infants of several copper deficient women have increased risk of low birth weights, muscle weaknesses, and neurological problem. Copper deficiencies in abnormalities, impaired growth, weight gain, frequent infection. ¹⁹(Kumar S (2012) Biopesticides: a need for food and environmental safety. IJFertilPestic3(1):107.)

The trace amounts of cobalt are found in most foods. Foods high in vitamin B-12 are the only source of cobalt used by body. Anemia is a main cause of a cobalt and vitamin B-12 deficiency. Cobalt is measured in the (mcg) microgram. the average adult intake of the cobalt is 5 to 8 mcg per day.

The trace amounts of zinc are found in most foods. In take the Cobalt content food so what happen. Our immune system to work well to fight off infection, bear growing and test, smell and good vision. The UK department are advises that intake of zinc 10-12 mg per day.

The trace amounts of calcium are found in most foods. In take the Calcium content food so that the bone development from child and adult. Maintain weight, strengthens teeth, heart health blood clotting and transports nutrients. Calcium is measured in the (mg) milligram. the average adult intake of the calcium is 1000 to 1200 mg per day. ¹¹⁰(Bruinuma J (2009) The resource outlook to 2050: By how much do land, water and crop yields need to increase by 2050? FAO Expert Meeting on 'How to Feed the World in 2050' Rome.)

Effect of heavy metal in human body:

Lead:- As a result of human activities, such as fossil fuel burning, mining and manufacturing, lead and lead compound can be found all parts of our Environment.

Copper, Zinc, Cobalt and Calcium:- the human activity for the copper, Zinc, Cobalt and Calcium compound are material in environment and eating like food material of such as fruits. ¹¹¹(Al-Zaidi AA, Elbag EA, Al-Otaibi SH, Balg MB (2011) Negative effects of pesticides on the environment and the farmers awareness in Saudi Arabia: a case study. J Anim Plant Sci 21:605-611.)

Health Effects :-

EPA has determined that is problem human carcinogen. Lead affect the every organ and system in the body.

1. Exposure to high lead level can severely damage the brain and kidneys and ultimately cause death.
2. In pregnant women, high level of exposure to lead may miscarriage.

Regulatory limits:- 1 EPA:- 15 part per billion (ppb) in drinking water, 0.15 microgram per cubic meter in air,

1. The liver is the primary organ of copper induced toxicity. The genetic disorder of copper metabolism and Wilson disease.
2. Hemodialysis patient and individual with chronic liver disease.
3. The excess zinc present in the body then have Indigestion, Diarrhea, Headache, Vomiting etc. disease.
4. Irritate the skin, eyes, nose and throat and asthma-like allergy
5. If the high level makes calcium so your kidneys work harder to filter it. This is causes excessive thirst and frequent urination. ¹¹²(Hubbard M, Hynes RK, Erlanson M, Bailey KL (2014) Thebiochemistry)

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(AAS) Qualitative analysis of heavy metal :

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DENSITY AND VISCOSITY STUDY OF LiCl, LiBr, LiI AND KCl IN AQUEOUS METHANOL AT 313.15K

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ABSTRACT

The densities and viscosities of lithium halides, LiX (X = Cl, Br I) and KCl in (0, 20, 40, 50, 60, 80 and 100) mass % of methanol + water at 313.15 K were calculated, employing experimental densities(ρ), the apparent molar volumes(ϕ_v) and limiting apparent molar volumes (ϕ_v^∞) of the electrolytes. The (ϕ_v^∞) of electrolyte offer insights into the solute-solution interactions. In terms of the Jones-Dole equation for strong electrolyte solution, the experimental data of viscosity is interpreted and the viscosity coefficients A and B have been determined. The 'B' values of these systems rise as methanol concentrations in the solvent blends rise. This suggests that solvent-solvent interactions in these systems grow with the lowering of the solvent's dielectric constant.

Key words: Viscosity; density; apparent molar volume

INTRODUCTION

Density and viscosity measurements of electrolyte solutions have been remarkably helpful in determining the degree to which ion-solvent interactions present in aqueous and non-aqueous solutions.

Crystallization, desalination, waste management, prevention of pollution, oil recovery, heat and mass transfer, fluid flow, mineral transport and deposition, and corrosion are dependent on the transport properties (viscosity and thermal conductivity) of aqueous electrolyte solutions over a broad range of solvent concentrations, solution temperatures, and solution pressures. In numerous applications, these procedures are carried out at elevated temperatures and pressures. Temperature and concentration



Education Policies of India: Past, Present and Future: A Comparative Report

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Abstract:

The national education policy is going to be implemented in June -2023, the draft of this policy was design in and passed in July 2020. The present research article deals with the policies that made in India for the sake of goodness stakeholders. The first education policy draft was design in 1964 in the chairmanship of Daulat Singh Kothari which is so called as Kothari Ayog which has given the formula of 10, 3, 3 and declared that graduate education should be Fundamental education of the students. This Kothari Ayog was successfully implemented and run thoroughly in all the educational institutes of India. This draft was formerly modified in 1986 in the Guideship of Prof. Ramamurthy called Ramamurthy Ayog. After 34 years there is drastic change in the education policy and major reforms have been carried out in the form of National education policy-2020. In this paper an attempt has made to elaborate all the educational policies that have been adopted and implemented in India. The article summarizes the advantages and some demerits and challenges after implementation of national education policy in India for educational stakeholders.

Keyword: Educational reforms, National education policy, Higher education, educational challenges, future of national education policy

1.0 Introduction :

Education is the prime pillar of every nation. According to the famous quote of Sir Albert Einstein "education is not the learning of facts but, training of the mind to think". Thus, education makes the human being more cultured to serve the nation better and learn the ethics, values and soft skills that are required for humanity. India is the country belongs to Asia zone and considered to be developing country and hence education and its policies definitely make strong impact on the development of India. Since, basic needs of human are food, clothes and shelter but the new terminology says the fourth need of human is ultimately the good and quality education. A good developed society is the fruit of quality education. Every nation has a well-organized plan of education and there is fixed budget on education which definitely makes a positive impression on the healthy growth of the nation and society. Hence, there must be constructive investment and a fixed allocated budget for education purpose of every class of the society.

A Critical Analysis of NEP 2020: Emerging Issues, Approaches, Challenges and Suggestions

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Abstract:

An educational system in a well-defined way lays the foundation of any country's growth and development which opens the doors to economic and social progress. By considering tradition and culture, different countries have adopted varied education systems to make them effective. As a result, the National Education Policy 2020 has been designed to let the framework of this reform, which will help in the development of a new educational system in the nation to strengthen economic and social indicators that still need to be improved. NEP 2020, which was approved by the Union Cabinet of India on 29 July 2020, aims to provide quality higher education in addition to multidisciplinary universities and autonomous colleges¹. NEP provide a multilingual facility along with any regional language as the language of teaching. NEP 2020 regulations and management procedures at the university level is included in this article. Also covers the essential NEP elements and looks at their effects on the contemporary educational system. The creation and implementation of NEPs at national and HEI levels are advised (Higher Education levels) to build a stronger education system.

Keywords- National Education Policy 2020, HEIs (Higher Education levels), multilingual, economic, social

Background:

The National Education Policy of 1986 has been replaced with the NEP 2020. A group led by former Cabinet Secretary T. S. R. Subramanian began the New Education Policy consultation process in January 2015. A panel headed by former Indian Space Research Organization (ISRO) chairman Krishnaswamy Kasturirangan submitted the draught NEP in 2019 based on the committee's report from June 2017. The Draft New Education Policy (DNEP) 2019 was later released by the Ministry of Human Resource Development, followed by a number of public consultations.^{1,2} Draft NEP was 484 pages. In order to create the draught policy, the Ministry launched a thorough consultation process: "Over two lakh recommendations from 2.5 lakh Gram panchayats, 6,600 blocks, 6,000 Urban Local Bodies (ULBs), and 676 districts were received." In both rural and urban India, the policy provides a complete framework for education from early childhood through higher education. It includes skill-based education along with theoretical^{1,2}

Introduction:

NEP 2020 shows the ways in which the goals can be excellent. Reimagining India's educational system to be contemporary, forward-thinking, and equal is ambitious. The policy proposes a form of comprehensive, captivating, and immersive holistic learning. Alongside aesthetics and the arts, a scientific mindset and evidence-based reasoning will be ingrained. The difference between establishing a policy in writing and upholding it in practice is enormous. How successfully the government, universities, and schools are able to get over the challenges in

their path will greatly influence how quickly and effectively NEP 2020 is implemented. There are roughly 350 million Indians presently in school-going or college-going age groups, and the NEP asks for large-scale implementation of a magnitude never before tried anywhere in the globe. The execution of this poses significant problems on both a quantitative and qualitative level.

Main Tenets of NEP 2020:

The policy strongly ensures the purpose of education is to develop good human beings' capabilities to enhance rational thinking and actions, possessing compassion and empathy, courage and resilience, scientific temper, and creative imagination. Access, equity, quality, affordability, and accountability are the main tenets of this policy.

- Holistic and Multi-disciplinary approach across the sciences, social science, arts, humanities, and sports for a multi-disciplinary world
- Flexibility, so that learners can choose their learning trajectories and paths in life according to their talents and interests.
- Equal promotion of arts and sciences, physical education, and other extra-curricular activities so that learner ensures the integrity and unity of knowledge
- Regular formative assessment for learning rather than the summative assessment that encourages today's coaching culture.
- Emphasis on conceptual understanding rather than rote learning and learning for exams only, on creativity and critical thinking to encourage logical decision-making and innovation
- Cultivating life skills like cooperation, teamwork, resilience, communication
- A respect for diversity and respect for the local context in all curricula, pedagogy, and policy by always keeping in mind that education is a concurrent subject.
- Total equity and inclusion are the cornerstones of all educational decisions to ensure that all students are able to thrive in the education system².

Emerging Issues Related to NEP 2020

- Early streaming of students into different disciplines.
- Lack of access to Higher Education, especially in socio-economically disadvantaged areas which resulted in the current gross enrolment ratio (GER) of 25% only.
- A corrupted regulatory system allowing fake colleges to thrive while constraining excellent, innovative institutions.
- The lack of research and innovations at most of the universities and colleges.
- Insufficient mechanisms for career management and progression of faculty and institutional leaders.
- Lack of teacher and institutional autonomy to make innovations in Higher Education to attract many students.

Challenges of NEP 2020

1. **The Requirement of Enormous Resources:** A lofty goal of 6% of GDP for public spending has been established. Given the low tax-to-GDP ratio and conflicting demands on the national exchequer from the national defence, healthcare, and other important sectors, mobilizing financial resources will be very difficult.

2. **Need to create a vast and effective pool of trained teachers:** In school education, the policy envisages a sweeping structural re-design of the curriculum a very welcome step. But in order to deliver this curriculum effectively, we need teachers, who are trained in and understand the pedagogical needs. Many curricular changes require substantial mindset shifts on the part of teachers, as well as parents.
3. **Expensive Education:** The new education policy paves the way for admission to foreign universities. Many scholars think that the Indian educational system would likely have to pay a high price for admittance to overseas universities. As a result, it can be challenging for lower-class students to pursue higher education.
4. **Knowledge-Jobs Mismatch:** The knowledge and skills taught and the jobs offered consistently don't match up. One of the biggest issues the Indian educational system has faced since Independence is to provide skilled labour in various sectors. NEP 2020 does not mention rapidly developing technological areas like artificial intelligence, cyberspace, nanotechnology, etc.
5. **Need for Cooperative Federalism:** The suggested reforms can only be carried out jointly by the federal government and the states because education is a concurrent issue (on which both the federal government and the state governments may pass laws). Therefore, the Centre has the enormous challenge of reaching an agreement on several ambitious initiatives.
6. **Bridging Digital Divide:** If technology is a force multiplier, it can widen the gap between the wealthy and the poor if access is restricted. In order to make education accessible to everyone, the state must address the stark discrepancies in access to digital technology. In the era of digitization, access is easy. This contradicts accessing the digital world.
7. **Financing:** Ensuring funding will depend on how strong the willpower is to spend the proposed 6 % of GDP as public expenditure on education. This is the most important area where all system success or failure depends4,6.

Approaches of NEP 2020

1. Curriculum and Content:

The NEP seeks to introduce a shift from a 10+2 structure to a 5+3+3+4 structure, where early childhood education will be a part of formal education. NEP 2020 also focuses on reducing the curriculum content to make space for critical thinking and in turn, develop individuals with 21st-century skills instilled in them. so, all aspects of the pedagogy and curriculum need to be restructured to attain these goals. The challenges in successfully implementing these changes include modifying the curriculum in accordance with The National Curriculum Framework. Also, educators need to rethink the learning content rubric and modify the textbooks accordingly5.

2. Examination Structure:

Rather than summative assessment, NEP focuses on formative assessment for learning. The primary purpose of changing the assessment system is to promote continuous tracking of learning outcomes. Continuous assessment requires schools and teachers to use innovative evaluation approaches and assignments. These approaches demand technological intervention and the active involvement of teachers and students. According to a study, out of the 1.5 million schools in India, 75 % are run by the government. Out of the remaining 400,000 private schools, nearly 80 % of schools are 'budget private schools. Hence, deploying a continuous assessment framework is a challenging task in these schools.

3. Teacher Availability and Training:

In order to deliver the curriculum effectively, schools and concerned authorities need to train teachers and understand the pedagogical needs to make a smooth transition to the new education system. A transition shift is a must from teacher-centered learning to student-centered learning to foster collaborative skills, critical thinking, and problem-solving and decision-making abilities in the youth. A study suggests that over 250 million students are estimated to enroll in K-12 schools in India by 2030. This means that we need nearly 7 million more teachers to handle this burgeoning student population⁷.

Key Targets & Timelines:

- The entire policy will be implemented by 2040.
- Vocational training for at least 50% of learners by 2025.
- Gross Enrolment Ratio is 100% from Pre-School to Secondary level by 2030.
- Universalizing early childhood care and education by 2030.
- Common standards of learning in public and private schools.
- Mission to focus on foundational numeracy and literacy of all students by Grade 3.
- Teachers to be prepared for assessment reforms by 2030.

Suggestions for New Education Policy 2020 of India:

- The initial 5 years are included in early childhood care education. It will be implemented through Anganwadi. First, Anganwadi should be converted into a Kid's Zone so that the child can get an education in sports. Also, one of the two Anganwadi workers should be replaced by an ASHA worker and physiotherapist so that both education and health will work together. It is said that 85% of brain development takes place in this period. Therefore, to prepare a strong and capable generation in this, skilled training will have to be made available to the children in this period.
- Will receive education from class 3 to class 5 in the primary stage. In this class, the child has to reduce the burden of books. In this phase, children should get an education through moral stories so that the round development of the child is possible. Bag less education should be imparted at this stage.
- In the secondary stage, the child develops knowledge about his environment. The government not only distributes bicycles, and mid-day meals to children, but as well as the facility of de-warding like Navodaya. Because of the economic problem in rural areas of India, they are unable to get an education by engaging in agricultural work and leave their education in between.
- Also, 50% of evaluation textbooks and 50% of evaluation should be based on local arts promotion, culture and small cottage industries only then the concept of employment education will come true.
- Internships in various areas of the country to the child through vocational training and entrepreneurship should be given so that children are aware of the geographical environment.
- Implementing all the declarations requires the strong political will of basic infrastructure.
- To improve education, universities must be made autonomous.
- 200 top-ranked universities should be given full academic and administrative financial autonomy to diversify the updated curriculum to promote global innovation.

- Less money is spent on research in India. Research spent 0.7 % of GDP in 2017-18. The United States spent 2.8 % in China and 2.1 % in Israel. To promote research in the new policy, the National Research Foundation needs to be set up on fast-track messages.
- Top Universities of India should produce more than 50,000 PhDs every year so that innovation and special talent can be produced.
- To increase the Gross Enrolment Ratio, the Central and State Governments should equally provide special packages to institutions.
- The new policy is emphasizing the environment, sports, culture, research and development. There is a lack of basic infrastructure required to meet all these needs. For this, the government should arrange to give a large amount to the universities in the form of a loan for 20-30 years.

Conclusion:

The National Education Policy, 2020, which has been approved by the central government to change the Indian education system to meet the needs of 21st century India, if it is implemented successfully, this new system will make India one of the world's leading countries. Under the new education policy, 2020, children from 3 years to 18 years have been placed under the Right to Education Act, of 2009. The aim of this new education policy, which came after 34 years, is to provide higher education to all students, which aims to universalize pre-primary education (age range of 3-6 years) by 2025). The drafting committee of NEP 2020 has made a comprehensive attempt to design a policy that considers diverse viewpoints, global best practices in education, field experiences and stakeholders' feedback. The mission is aspirational but the implementation roadmap will decide if this will truly foster an all-inclusive education that makes learners industry and future ready.

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National Education policy 2020: Vision Towards Higher Education System

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DOI- 10.5281/zenodo.7663336

Abstract:

The foundation of a ny country's growth and development is its Educational system, the National Education Policy 2020 (NEP 2020) has been repurposed as the foundation for this reform. Higher Education (HE) plays an extremely important role in promoting human as well as societal well-being and in developing India as an vision ed in its Constitution- a democratic, just, socially conscious, cultured, and human nation upholding liberty, equality, fraternity, and justice for all. Though the education policy has impacted school and college education equally, this article mainly focuses on NEP 2020 and its impact on Higher Education.

This paper initially depicts an overview of NEP-2020, focusing on higher education & research part, evaluation of the implementation suggestions given in the policy. It also includes many predictive proposals on issues like developing quality universities & colleges, institutional restructuring & consolidation, more holistic & multidisciplinary education, optimal learning environment & student support, transforming the regulatory system of higher education, technology usage & integration, and online & digital education.

Keywords- National Education Policy, School Education, Higher education system, (HES), Economic development, Sustainable livelihoods

Introduction-

NEP-2020 is an innovative and futuristic proposal with both positive and negative aspects, framed with the objective to provide a quality school education and higher education to everyone with an expectation of holistic & research-oriented progress. The policy is an ambitious re-imagination of India's education system into a modern, progressive and equitable one.

Quality higher education must aim to develop good, thoughtful, well-rounded and creative individuals is the requirement of the 21st century. It must enable an individual to study one or more specialized areas of interest at a deep level and also develop character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service, and 21st century capabilities across a range of disciplines. Higher education must form the basis for knowledge creation and innovation thereby contributing to a growing national economy. The purpose of quality higher education is, therefore, more

than the creation of greater opportunities for individual employment.

NEP 2020, has cleared a single regulatory body will guide Higher Education in India. The regulatory body that is named, Higher Education Commission of India (HECI) function as a single authority for all public and private educational institutions (Except Medical and Law education) have 4 verticals to deal with different functions of Higher Education¹⁻⁴.

Four bodies of Higher Education Commission of India (HECI)-

1. **National Higher Education Regulatory Council (NHERC):** Acts as a regulatory body for the higher education sector including teacher education.
2. **General Education Council (GEC):** Function as the standard setting for Academia
3. **Higher Education Grants Council (HUGC):** Functions for funding academia and research activities.
4. **National Accreditation Council (NAC):** These institutions

are accredited. Will function primarily based on basic criteria; public self-disclosure, and good governance.

- a. Currently, higher education bodies are regulated through bodies like University Grants Commission (UGC), All India Council for Technical Education (AICTE) and National Council for Teacher Education (NCTE)¹.

NEP for Higher Education- Key Highlights

1. Increase GER to 50 % by 2035

NEP 2020 aims to increase the Gross Enrolment Ratio in higher education including vocational education from 26.3% (2018) to 50% by 2035. Around 3.5 Crore new seats will be added to Higher education institutions. The gross enrolment ratio is the number of total eligible population at an education level who has taken an admission in educational institutions. For example, the total number of students in the age group eligible for admission to higher education is 100 but if the admission is taken by 60, then this ratio will be 60 %.

2. UG Courses with Multiple Entries and Exits-

UG education can be of 3 or 4 years with multiple exit options and appropriate certification within this period. For example, Certificate after 1 year, Advanced Diploma after 2 years, Bachelor's Degree after 3 years and Bachelor's with Research after 4 years.

3. Multidisciplinary Education and Research Universities (MERUs), at par with IITs, IIMs, to be set up as models of best multidisciplinary education of global standards in the country.

4. The National Research Foundation, a central body will be created as an apex body for fostering a strong research culture and building research capacity across different domains in higher education

5. An Academic Bank of Credit is to be established for digitally storing academic credits earned from different Higher Education Institutes so that students can use these earned credits and can be transferred and counted towards final degree earned.

6. Higher Education Commission of India (HECI) will be set up as a single regulatory body for entire Higher Education System.

7. Rationalised Institutional Architecture

In 15 years, the process of affiliation with universities will be eliminated by giving autonomy to colleges. They will be made fully autonomous. They will be made autonomous colleges that award degrees or will be attached to a university.

8. The policy aims at focusing on multidisciplinary culture in institutions offering professional education. For example, stand-alone technical universities, health science universities, legal and agricultural universities etc. will be helped to become multidisciplinary education.

9. Open and Distance Learning

This will be expanded to play a significant role in increasing GER. Measures such as online courses and digital repositories, funding for research, improved student services, credit-based recognition of MOOCs, etc., will be taken to ensure it is at par with the highest quality in-class programmes.

10. Online Education and Digital Education

A comprehensive set of recommendations for promoting online education consequent to the recent rise in epidemics and pandemics in order to ensure preparedness with alternative modes of quality education whenever and wherever traditional and in-person modes of education are not possible has been covered. A dedicated unit will be set up to facilitate the building of digital infrastructure, and digital content and also to look after the e-education needs of both school and higher education.

11. Financial support for students

Efforts will be made to incentivize the merit of students belonging to SC, ST, OBC, and other specific categories. The National Scholarship Portal will be expanded to support, foster, and track the progress of students receiving scholarships. Private HEIs will be encouraged to offer larger numbers of

free ships and scholarships to their students¹⁻⁴.

Some of the Major Problems Current Faced By The Higher Education System In India include:

1. A severely fragmented higher educational ecosystem;
2. Arigid separation of disciplines, with early specialisation and streaming of students into narrow area of study
3. Limited teacher and institutional autonomy;
4. Inadequate mechanisms for merit-based career management and progression of faculty and institution all leaders;
5. Sub optimal governance and leadership of HEIs;
6. Large affiliating universities resulting in low standard so undergraduate education.
7. Limited access particularly in socio-economically disadvantaged areas, with few HEI that teach in local languages
8. Lesser emphasis on research at most universities and colleges, and lack of competitive peer-review driven research funding across disciplines;
9. Lesser emphasis on the development of cognitive skills and learning outcomes¹

Nep 2020 Vision Includes The Following Key Changes To The Current System:

1. Moving towards a higher educational system consisting of large, multidisciplinary universities and colleges, with at least one in or near every district, and with more HEIs across India that offer medium of instruction or programmes in local/Indian languages;
2. Moving towards a more multidisciplinary undergraduate education. Moving towards faculty and institutional autonomy;
3. Revamping curriculum, pedagogy, assessment, and student support for enhanced student experiences. Reaffirming the integrity of faculty and institutional leadership positions through merit-appointments and career progression based on teaching, research, and service;
4. Establishment of a National Research Foundation of outstanding peer-reviewed research and to actively seed research in universities and colleges;

5. Governance of HEIs by high qualified independent boards having academic and administrative autonomy;
6. "Light but Tight" regulation by a single regular body for higher education;
7. Increased access, equity, and inclusion through a range of measures, including greater opportunities for outstanding public education; scholarships by private/philanthropic universities for disadvantaged and underprivileged students; online education, and Open Distance Learning (ODL); and a digital infrastructure and learning materials accessible and available to learners with disabilities¹⁻⁴.

Conclusion

Higher education is an important aspect in deciding the economy, social status, technology adoption, and healthy human behaviour in every country. Improving GER to include every citizen of the country in higher education of learning is the responsibility of the education department of the country government. National Education Policy of India 2020 is marching towards achieving such objectives by making innovative policies to improve the quality, attractiveness, affordability, and increasing the supply

by opening up the higher education for the private sector and at the same time with strict controls to maintain quality in every higher education institution. It is expected that the new education policy which is research focussed, will accelerate the attainment of the above objectives and makes every stakeholder as innovator. By encouraging merit-based admissions with free-ships & scholarships, merit & research based continuous performer as faculty members, and merit based proven leaders in regulating bodies, and strict monitoring of quality through biennial accreditation based on self-declaration of progress through technology-based monitoring. NEP-2020 is expected to fulfil its objectives by 2030. Although, the policy document consists of and provides for certain guiding principles for its smooth implementation, there are some obstacles. Successful execution of the policy calls for adopting the principal guidelines given in the policy document, dramatic simplification of decision-making structures, re-prioritization



RESEARCH PAPER IN ZOOLOGY

Abstract:

Probably the most profound trouble ever confronted with the aid of human social, political, and financial tactics is weather exchange. Our weather is shifting and this will impact all sectors of the planet. In both industrialized and rising nations economy. To plan for the results of climate change, confusion about the destiny need not be an impediment. Some components of the environment are higher understood than others; however both are challenge to positive uncertainties. This thematic paper examines the modern and destiny global situation of water, climate trade and water scarcity in phrases its causes and their impacts on surroundings, meals protection and natural sources of water.

Keywords: Climate Change, water Crisis.

Introduction:

Water is maximum critical issue of existence however, water satisfactory is continuously declining because of accelerated anti-environmental human activities and certain natural approaches and poses a top notch chance to all forms of life, such as human beings. The fundamental motive of the unfold of many epidemics and some extreme diseases along with cholera, tuberculosis, typhoid, diarrhea and many others is contaminated water. Water is the idea of existence and livelihoods and is critical to sustainable development. Despite this, water is turning into a urgent societal and geopolitical trouble - in some areas, it's miles already of National issue Since the Nineteen Fifties, international call for water has tripled, but sparkling water reserves have fallen through 1/2 a thousand million. People live in international locations which can be water-stressed or water-scarce, and via that wide variety will rise to 3 billion in 2025 due to an increase in a population. The most important client of water is irrigated agriculture, about 80 percentages of worldwide water consumption bills for it. (Munir and Qureshi, 2010)

'Climate Change', the maximum uttered environmental time period of gift time has been used to refer to the change in modern-day climate delivered predominantly with the aid of man or women. It is perhaps one of the most serious environmental troubles that these days' international population facing [Moser, S.C. And Dilling, L. (2004), Lorenzoni, et. al. (2007) and Grover, H (2010)] though the difficulty isn't new [Vlassopoulos, C.A (2012)]. Ever because it emerged within the early nineteenth century, upto past due 20th century the difficulty turned into a subject mentioned solely inside the medical society [Vlassopoulos, C.A (2012) and Seacrest, et. al. (2000)]. In the mid to-late 1980s it first emerged on the public agenda [Seacrest, et. al. (2000) and Moser, S.C (2010)]. Since then, in one hand, it has been manifested by means of the believers that result of human activities on international weather has reached to an alarming country and posing important threats to bodily, socio-financial structures. On the opposite hand, the sceptics have presented fairly enough proof to disqualify the anthropogenic trait of Climate Change. Again, the Climate Change advocates amongst them have debated over the correct strategies of addressing the eminent problem. Thus with growing public involvement in the Climate Change discourse and ensuing consciousness concerning the capacity risks and uncertainties attached to the difficulty, it's been debated and problematized from numerous standpoints, Muhammad Ishaq-ur Rahman (2013).

Methodology:

The take a look at is on Indian weather alternate research. This examine analyzed the consequences of research courses on weather alternate. The paper approached to acquire the targets and aim through evaluate and careful session of applicable journal papers, periodicals, books, international coverage regimes, websites and papers of different businesses. However, there's a large group of Climate Change sceptics who deny the anthropogenic Climate Change, this essay didn't contain that flow of this discourse rather focuses on the movement boosted by way of the Climate Change

believers. This is due to the author's contention that the attitude led via the believers make the difficulty survive and progress hence it's rational to speak about approximately this most effective. Muhammad Ishaq-ur Rahman (2013).

Review of Literature:

Literature evaluation offers a new way to clear up the chosen hassle. This is a précis of the thing's evaluation for the chosen topic, Alex P and Kishore Kumar S (2019). The following literature was reviewed to acquire a concept for the examine. Sangam, Shivappa and Savitha (2019) represented a methodological technique focused on weather alternate and global warming studies as a Scientometric approach. The statistics acquired from Web of Science throughout 2001-2016. They analyzed the various goals of the take a look at, together with book increase, pattern of authors, participating index, diploma of collaborations, prominent authors. Publications improved every year. Single writer contribution reduced and collaborative take a look at extended. Kumar and Alex (2019) analyzed to perceive the research output on marine biology guides period of 1999-2017. They studied the distribution of publications become based totally on the year of publication, use of a, language and file type. Relative growth rate of the guides and doubling time turned into calculated. Isaac Newton and Gomathi (2018) focused on scientometric analysis of worldwide warming during 2008-2010. Scientometric strategies are nonetheless used to determine person clinical indicators, promoting medical outcomes, deciding on library journals, and even figuring out the capacity of a designated field. Recognition for the adaptation of scientometric analysis in unique disciplines three will increase the ever present boom of literature on scientometrics and associated fields. Research statistics turned into received from Web of Science. The effects of research on global warming have been analyzed thru Bibliographic details of this observe, along with copyright, language, report type were analyzed with bibexcel software program device. Haunschild et al. (2016) has studied climate trade studies guides, it aims to show relevant literature in terms of bibliometrics and offers a number of quantitative facts. An boom inside the general extent of production of a e-book, output of some most important sub-regions contributing to journals and international locations and their quotation are studied. Ali, Hydar and Adithyakumari (2015) analyzed the outcomes of studies in the subject of biodiversity carried out from period from 2003 to 2012, with various parameters, consisting of quotation effect, international collaboration, challenge discipline contributions, productivity of leading Indian establishments and most efficient authors. The Web of Science database has been used to acquire records for ten years. Lukwale, Sophia and Sife, Alfred (2017) assessed research developments on climate trade literature in Tanzania among 2006 and 2016. The examine analyzed the increase, collaboration among authors and distribution of situation categories on climate change. They analyzed recognized citations to e-book traits, and analyzed the overall performance of character researchers. The findings shows that there have been 319 scholarly publications in the course of the beyond 10-years, offers a mean of approximately 32 publications in step with year. Saravanan et al. (2014) analyzed



JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Review: Pharmacological Applications of Pyrazole Derivatives

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Abstract: Pyrazole is a five-membered heterocycle with two neighboring nitrogen atoms, are the central structure of a variety of compounds with pharmacological applications. The widespread use of pyrazole cores in biologically active compounds has prompted researchers to seek more elegant and efficient methods for producing these heterocyclic leads. Anti-tuberculosis, anti-cancer, anticonvulsant, antiparkinson, antioxidant, and anti-inflammatory are only a few of the fascinating pharmacological applications of this molecule. The purpose of this review is to present an overview of the pyrazole moiety's various pharmacological applications.

Index Terms – Pyrazole, anticonvulsant, antioxidant, anti-inflammatory.

I. INTRODUCTION

Pyrazole has the formula $C_4H_4N_2$ and is an organic compound. It's a heterocycle with a five-membered ring made up of three carbon atoms and two nitrogen atoms.^[1] Pyrazoles are a group of molecules containing the ring C_4N_2 with adjacent nitrogen atoms.^[2] Although they are rare in nature, they are characterized as alkaloids due to their nature and pharmacological effects on humans. Drugs containing the pyrazole moiety have been shown to display a wide range of biological activities, including immunosuppressive, anti-inflammatory, and anti-cancer activity.^[3-6] The pyrazole fraction's pharmacological potential has been demonstrated in several publications in which researchers produced and tested pyrazoles against a variety of biological agents. Our important aim in this study is to find the most effective molecules for diverse pharmacological actions with the fewest side effects. Pyrazole is a pharmacologically active heterocyclic molecule that has been thoroughly documented in the literature. Due to various wide range of biological applications, these compounds are the target of several research investigations. A review of the literature indicated that pyrazole compounds have a wide range of pharmacological activities.



Structure of Pyrazole

The pyrazole moiety represents a variety of Pharmacological applications.



ISSN 2249-9598 (Online)
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editoroiirj@gmail.com

**Volume-13 / Issue- 03 / May-June 2023 /
ISSN 2249-9598**

Land use land cover change detection of Ramwadi ward in Nashik city

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Abstract

Remote sensing data GIS and GPS techniques are applied for acquiring data, mapping and assessing the proper planning and sustainable development. In this research Ramwadi ward have been select for detecting land use land cover changes. Changes in built up areas, barren land, water bodies, vegetation cover and agriculture land were explored. Information on land use land cover in the form of maps and statistical data is very important for utilization of land for spatial planning and sustainable development. In order to understand the growth and expansion rate of Ramwadi ward in Nashik city. Objectives of this study are to understand the land use land cover change detection. This change is important to understand the future planning.

KEYWORDS Land use land cover, Remote sensing, GIS.

Introduction

For this research the satellite images of 2001 and 2013 of Landsat ETM+ and OIR images processed under ERDAS 9.3+2011 are used, and for mapping Arc GIS 10 software is applied and thereby the land use land cover change from 2001 to 2013 has been detected. Change detection is the process of identifying differences in the state of an object or phenomenon by observing it at different times (Singh; 1989). Timely and accurate change detection of earth's surface features is extremely important for understanding relationship and interactions between human and natural phenomenon in order to promote better decision making. The land use of any area helps to demarcate the potential and difficulties of the urban areas. Ramwadi ward in Nashik city has been selected for study and analysis the change detection using the Remote sensing data and GIS techniques to understand the buildup area, water bodies, vegetation cover, barren land and agriculture.

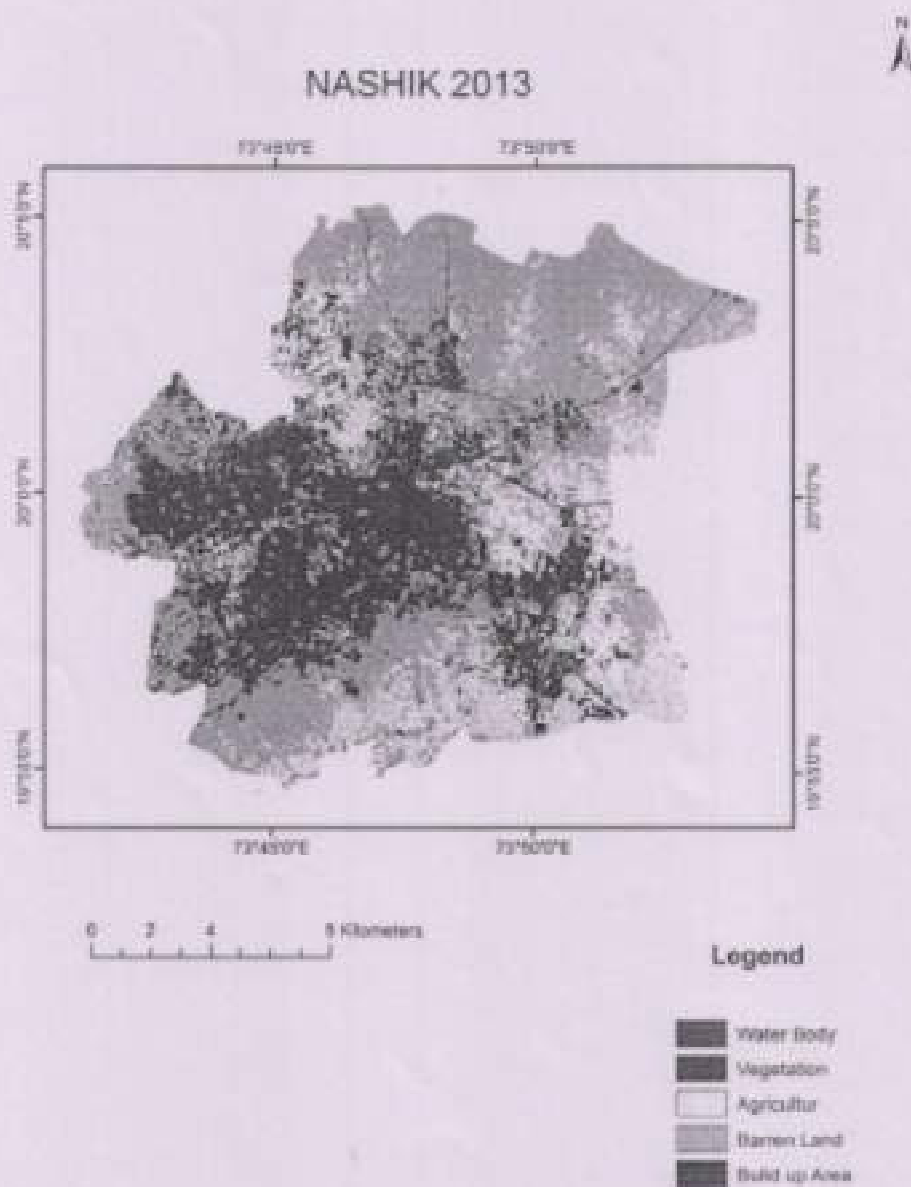
STUDY AREA

Nashik is located in Northern part of Maharashtra state. It is situated on the bank of Godavari River; the approximate coordinates of the city are 20° N and 73° E. The area of Nashik city is extended between 19° 54' 56.7503"N to 20° 04' 44.4821" N latitudes and 73° 41' 01.73" E to 73° 52' 02.02" E longitudes, which covers 259.1 sq. km. area, which is 2nd largest in Maharashtra after Mumbai. The city is situated at altitude of 565 meters above mean sea level (MSL) at a distance of 185 km from Mumbai.

Change Detection Analysis

Ramwadi is located on the left bank of river Godavari. The total geographical area of this ward is 1.43 sq. km. The land use land cover parameters indicate that the built up area

which was 0.32 sq. km in 2001 increased up to 0.78 sq. km in 2013. Area under other parameters like barren land 0.08 sq. km, water bodies 0.52 sq. km and agricultural land 0.13 sq.km has decreased in 2001 and acquired as 0.05 sq. Km area each by barren land and water bodies, similarly 0.07 sq. Km area acquired by agriculture in 2013 Area under vegetation was 0.38 sq. km in 2001 which increased to 0.48 sq. km in 2013. As per the result obtained from the image map the built up area has increased from 0.32 to 0.78 sq.km.



Land use land cover statistics of Ramwadi Ward during 2001-2013.

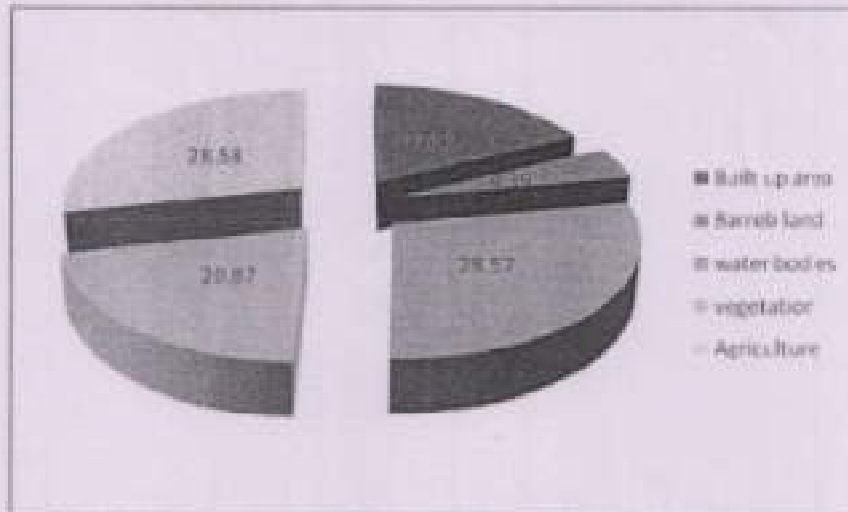
Sr.no	LU/LC parameters	2001		2013	
		Area in sq.km.	Area in %	Area in sq.km.	Area in %
1	Built up area	0.32	17.59	0.78	47.58
2	Barren land	0.08	4.39	0.05	3.49
3	Water bodies	0.52	28.57	0.05	3.49
4	Vegetation	0.38	20.87	0.48	33.56
5	Agriculture	0.13	28.58	0.07	11.88
	Total	1.43	100	1.43	100

Land use change detection of Ramwadi Ward

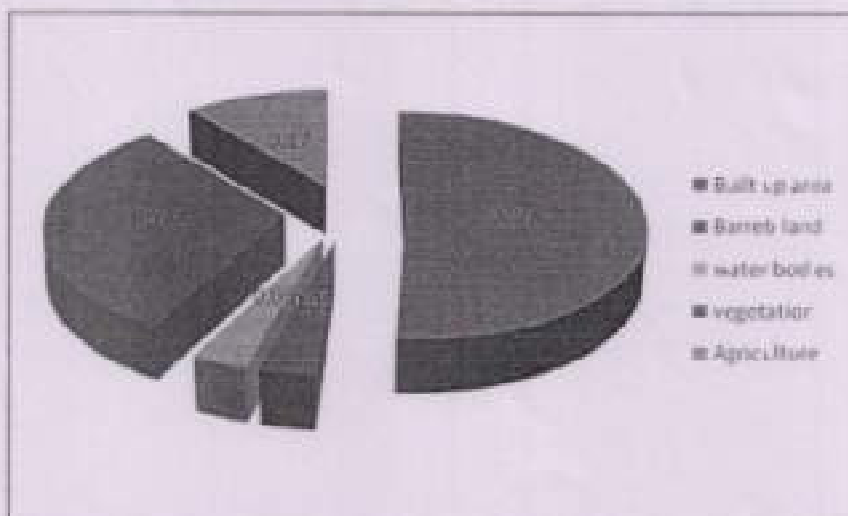
Sr.no.	LU/LC parameter	2001 Area in %	2013 Area in %	Change in %
1	Built up area	17.59	47.58	29.99
2	Barren land	4.39	3.49	-0.90
3	Water bodies	28.57	3.49	-25.08
4	Vegetation	20.87	33.56	12.69
5	Agriculture	28.58	11.88	-16.70

Source-Based on Satellite images ETM+OIR - 2001-2013.

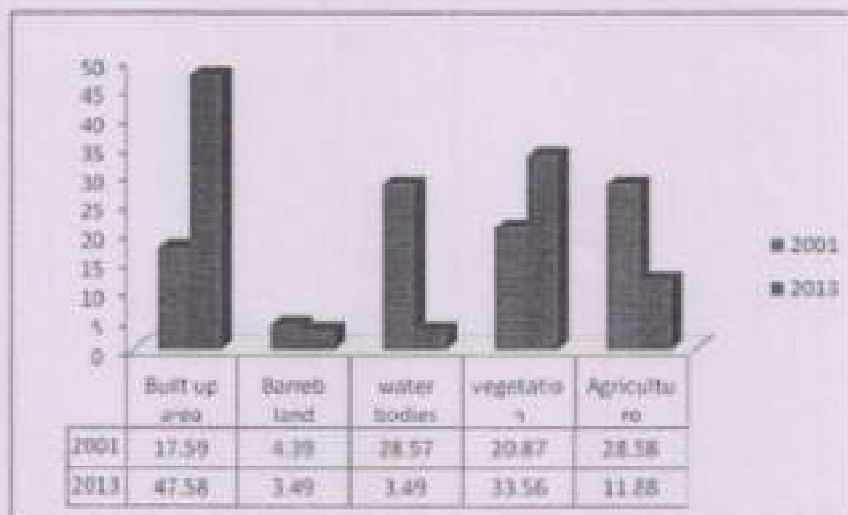
Land use land cover of Ramwadi ward- 2001



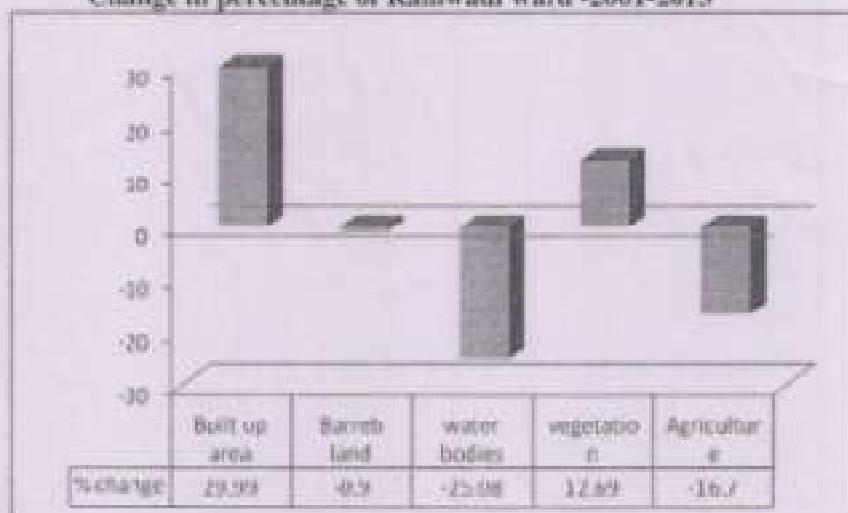
Land use land cover of Ramwadi ward- 2013



Land use land cover change of Ramwadi ward--2001-2013



Change in percentage of Ramwadi ward -2001-2013



The table illustrates the change detection of land use land cover of Ramwadi ward . It becomes clear that the percentage of change in built up area has been recorded highest i.e. 29.99 per cent. In this ward the area under vegetation cover has observed to increase by 12.69 per cent, which represents the efforts made for maintaining the environmental balance. As stated earlier the loss of barren land, water bodies and agriculture land is mainly due to conversion of that land into built up area used for various purposes like, residential, commercial and road networks.

Conclusion

The land use of any area helps to demarcate the potential and difficulties of the urban areas. The land use land cover parameters indicate that the built up area, water bodies, vegetation cover, barren land and agriculture have been detected. The percentage of change in built up area in study area has been recorded highest, according other parameters.

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ISSN 2249-9598 (Online)
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**Volume-13 / Issue- 03 / May-June 2023 /
ISSN 2249-9598**

Geographical study of Physical situation of the Nashik city in Maharashtra

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Abstract

Studying physical situation of any place helps us to have an awareness of the particular place. All places have a history behind them. Considering in the mind Nashik city has been selected for the study on the Geographical platform to understand the physical situation of Nashik city according to the physiography, geology, drainage, climate and temperature. Objectives of this study are to understand the physical situation of Nashik city in Maharashtra on the platform of Geography accordingly the physiography, geology, drainage, climate and temperature.

KEYWORDS Physiography, Geology, Drainage, Climate, Temperature

STUDY AREA

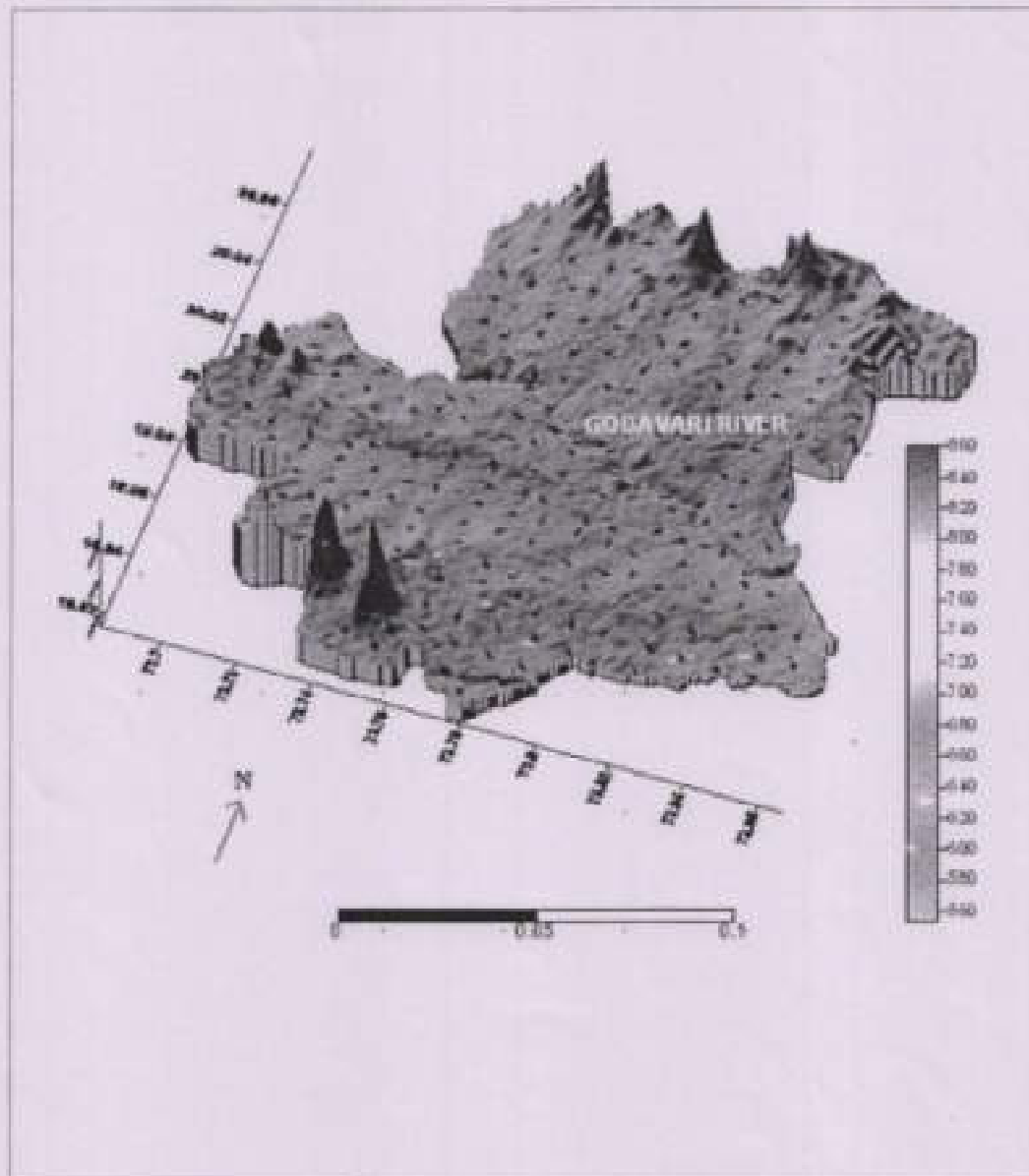
Nashik is located in Northern part of Maharashtra state. It is situated on the bank of Godavari River, the approximate coordinates of the city are 20° N and 73° E. The area of Nashik city is extended between $19^{\circ} 54' 56.7503''$ N to $20^{\circ} 04' 44.4821''$ N latitudes and $73^{\circ} 41' 01.73''$ E to $73^{\circ} 52' 02.02''$ E longitudes, which covers 259.1 sq. km. area, which is 2nd largest in Maharashtra after Mumbai. The city is situated at altitude of 565 meters above mean sea level (MSL) at a distance of 185 km. from Mumbai.

Physical situation (Physiography and Geology)

The Nashik city is the part of the upper Godavari valley, because the Godavari River originates from Trimbakeshwar on the distance of only 24 kms. From the Nashik city. The study area rests the foothill area of the upper Sahyadris on leeward side slope. Hence, its western part is more heighted than the other sides. The arc of the land in the north west; West and South-west is hilly; and changes more or less as a succession on Piedmont flats lower and lower elevation; in to the wider plateau surface to east. The maximum altitude is 848.074 mts, lies in South-west part and minimum altitude is 553.991 mts. in eastern part of the study area in Godavari River stream. The approximate average altitude of the area is 565 mts. above sea level. The river flows in eastern direction, therefore; the hill ranges run in west-east direction which is clearly identified by the contours on the physiographic map. The slope of the area is gentle one. River is flowing in middle of the area which creates valley in middle part. It is clear cut indicated in north-south cross profile. Comparing the altitude of north and south boundary of the area north part is much higher than the south and this is obvious that west part is much higher than the east.

are such alluvial mounts, the remnants of the level surfaces eroded by the Saraswati and other right bank streams and the Panchavati area is an alluvial platform perched on the high eroded left bank of the Godavari and mark off from the rest of the valley expansion by the entranced Aruna and Vaghadi rivers.

NASHIK CITY DRAINAGE MAP OVERLAY OF SURFACE FLOW (VECTOR MAP)

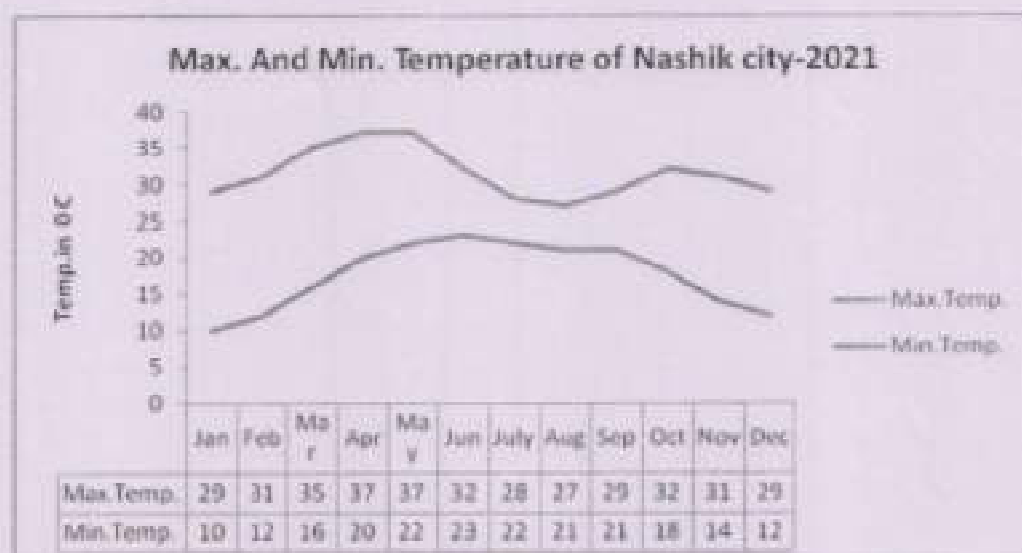


Source: SRTM DEM

Climate:

Nashik city has pleasant climate for most of the year just excluding the hot summer which observed from March to mid-June. The city has semi-arid climate according to Koppen's climatic classification criteria. The period from June to September is the Monsoon season caused by South West monsoon. It gives averagely

about 620 mm. (25 inches) of rain. The city experiences a mild, dry winter season from November to February which are characterized as warm days and cool nights. In general maximum temperature experiences in summer that is near about 42.5°C and minimum in winter which is less than 5°C . Relative humidity ranges from 43% to 62%. But in recent years it is noticed that the temperature is increasing and the rainfall is decreasing due to industrialization and fast deforestation.



Conclusion

This research is based on secondary data. Research highlighted on the physiographic situation of Nashik city. Physical situation considering the physiography and geology. Drainage and climate of the city. SRTM DEM model and vector map of study area indicates the geographical situation very well. The study area rests the foothill area of the upper Sahyadris on leeward side slope. Hence, its western part is more heightened than the other sides. The Godavari is the master stream gathering the waters of its tributaries which have a fan like drainage pattern. Nashik city has pleasant climate for most of the year just excluding the hot summer which observed from March to mid-June.

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(SJIF) Impact Factor-8.575

ISSN-2278-9308

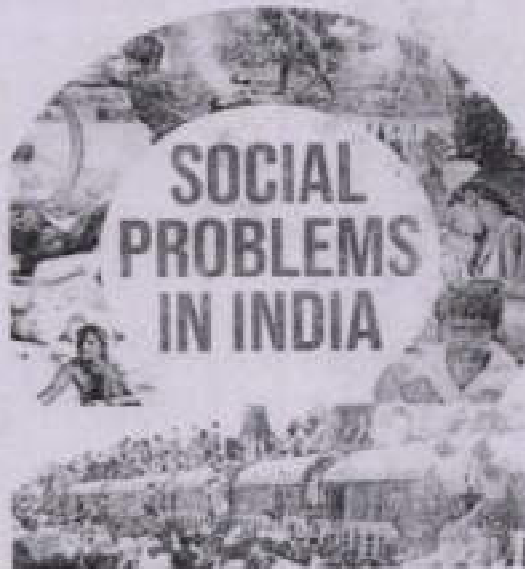
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**Agricultural Problems in Maharashtra: A case Study****Prof. Ahire Vijay Deoman**

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• ABSTRACT:-

Agriculture sector has been play very important role in the Indian economic activity. Agriculture is the most important backbone of the state of Maharashtra. Maharashtra economy is mostly depending on the agriculture. Farm is the main occupation of the people. In this area cash crop and food are grown. But while farming here many kinds of problems are encountered, due to which the farmers of Maharashtra are trying to move away from agriculture. And some farmers are committing suicide. The total irrigated area used for crop cultivation is 33,500 sq KM. and agriculture in the state is mainly rain-fed. The state has 24% of the drought-prone area of the country. Different types of soils in Maharashtra for the agriculture farming. Almost 82% rural population are depending on agriculture farming, but Maharashtra is facing currently varies agricultural problem, therefore, agriculture occupation is becoming unprofitable. This is creating a feeling of poverty and scarcity among the people and farmers are committing suicide due to this. This research paper is about understanding the problems of agriculture in Maharashtra and how to isolate them and reduce the problems in agriculture and tried to suggest this.

• GENERAL INFORMATION OF MAHARASHTRA:-

Maharashtra is the third largest state by area in India. 307713 km² area in Maharashtra. Near about 11237433 population in Maharashtra. 225.56 lakh ha. Gross cropped area and 174.73 lakh ha. Net cropped area in Maharashtra. Agriculture is mostly depend on irrigation. Maharashtra irrigated area is 44.19 lakh Ha. (19.64%) and rain fed area 80.24%. All this characters are affective in agricultural problems, they are mostly seen the ratio of land utilization in agriculture to total land area is very high.

• AIMS AND OBJECTIVES:-

1. To understand the problems in agriculture sector in Maharashtra.
2. Analyze this problems and tried to give some suggestions to solve this problems.

• Key Words:- Agriculture, Problems, Maharashtra.

• SOURCES OF DATA:-

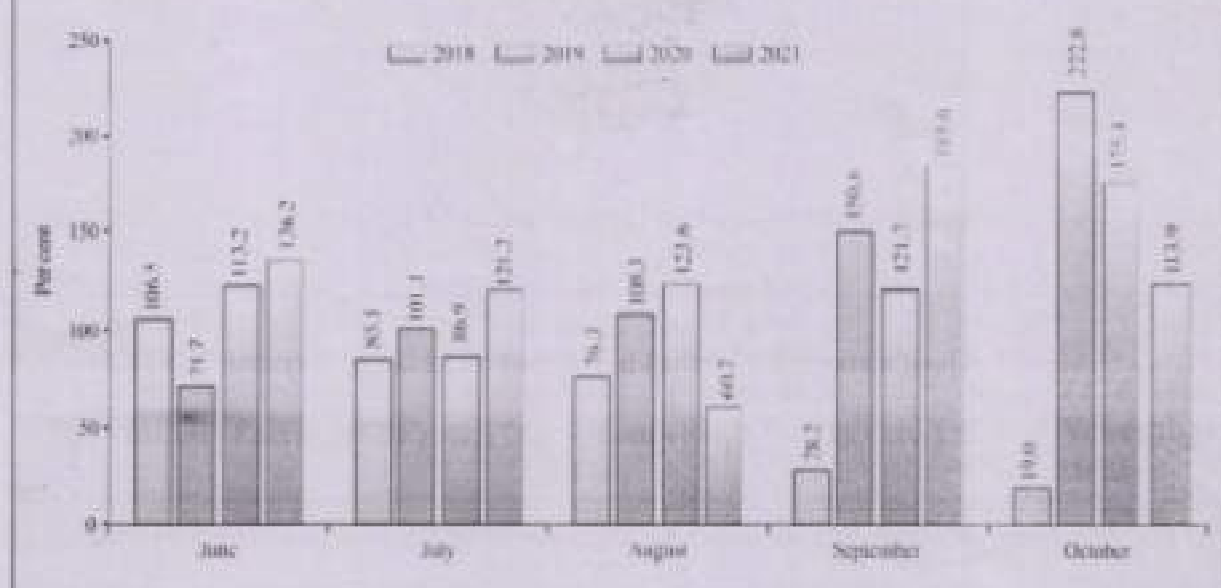
This study is based on secondary data. Present study data regarding agricultural problems in Maharashtra have been collected same research papers, district censuses handbooks, internet website, and related books.

• PROBLEMS IN MAHARASHTRA AGRICULTURE:-

1. Fluctuation of Rainfall:- Rainfall is important factor affective in agriculture product. About 80 to 85% annual rainfall over the state is received during the monsoon period. The number of rainy days has remarkable variation across the state. The observation of Kokan and Vidharbha regions 80 to 100 days and 50 to 60 days and southern part of Madhya Maharashtra has been lowest numbers 15 to 20 of rainy days. This erratic and fluctuated rainfall has a major impact on agricultural production and is a serious problem in Maharashtra agriculture. Give the drought prone area in Maharashtra.



Graph 7.1 : Percentage of rainfall received to normal rainfall in the State



Drought Prone Area in Maharashtra

No. of District	No. of Talukas	Total Area	% of State
25	148	159 Lakh Hecter	52

2. Limited Irrigation:-Artificial water supply for agriculture is a very important tool for increasing agriculture production. The total irrigated area in Maharashtra which has been used for net crop cultivation 174.73 lakh hector. It should be only 19.64% of Maharashtra's gross cropped area is irrigated. These are 55% well irrigation and 45% of surface irrigation seen in Maharashtra. The areas far from irrigation canals and wells face acute shortage of water, which poses serious obstacle for the further development of agriculture.

3. Neglect of Crop Rotation:-To restore the fertility status of the soil, crop rotation and regular fallowing is essential. But farmer is the single way crop cultivated, they are not other ways use in cultivation and continue cultivation uninterruptedly. As a result after a few years the yield per hector decreases. Farmers are not aware of this. They are affected in agriculture products.

4. Impact of Climate change:-Climate is important role to contribute substantially to food production. But last two decade more of variant changes in climate. Several climate factors which affect agriculture productivity are heat wave, high temperature, heavy and prolonged precipitation and excess cold. Sometime it rains even in winter and summer season. As a result, agriculture produce spoils and various region which reduce crop yield. This causes great loss. This has become a serious problem.

5. Lack of Marketing Facilities:-The products by agriculture are of different types and some of the products are perishable and some are non-perishable. Therefore, there is an immediate need for a market for perishable produce. It is necessary to get the right price for agricultural produce. Only then it is appropriate to take such a product. Because if the cost incurred on agricultural production and the price received for that production is not matched, then the agricultural business becomes a loss. Also, even today fraud is seen in the market on a large scale. The money is not received on time after buying the farm produce and some merchant do not pay. Due to this, Farmers get upset due to being cheated. It affects the agricultural production.

Lack of co-ordination between finance and marketing in the basic constraint of agriculture development in Maharashtra. Struggle for reasonable price to agriculture product is unsolved issue. Defective marketing system and exploitation by the middleman these marketing defects caused the problem of agriculture in Maharashtra.

6. Excessive use of Chemical Fertilizers:-Agriculture in Maharashtra is still largely done in traditional ways. So how much chemical fertilizers should be used by the farmer. There is not enough knowledge about this. Therefore, Due to the desire to increase agricultural production, some chemical



fertilizers are used more. It temporarily increases the production of agriculture. But after a few years the yield per hectare decreases. In some places, salinization has become a problem.

7. Distribution of Agriculture Land:- Farmers in Maharashtra belong to rural areas. Hereditary farms are distributed among their children. Therefore, the size of the farm available to each farmer is decreasing. The result is that the agricultural production is decreasing day by day. Due to the reduction in the size of farm land, While the majority of farmers own very little amount of land, they are use of modern tools in the field is limited. A farmer cannot afford to depend only on agriculture. At time small farmers are forced to sell of their land.

8. Poor Quality of Seeds:- Earlier time farmer using our indigenous seeds to growth of production. Farmers in Maharashtra are making different efforts to increase the production in modern times. For that we buy some seeds according to the information given by the media. But most of these seeds turn out to be false. So the product coming is not of good quality. Farmers get tired of this problem and give up trying to increase their production. Soybean farmers in Maharashtra have complaint about that non- germination of soybean seeds. Current year the Maharashtra agriculture department has 13 cases registered against by seed companies for supplying for poor quality seeds. In many cases, instead of selling their produce to seed manufacturers, farmer have sold them in open market. They faced last year.

9. Excessive use of Fertilizer & Pesticides:- Today, chemical fertilizers and pesticides are used in large quantities to increase crop production. Due to this, there seems to be a definite increase the production for some years. But after few years these chemical fertilizers and pesticides have bad effect on different components of agriculture. Two main bad effects. One is that as the amount of organic matter in the soil decreases, after a period, the yield potential of the soils are decreases. And secondly the tolerance of pests to the pesticides develops, and slowly they become ineffective.

10. Conditions of agricultural Laborers:- Conditions of most agricultural laborers in Maharashtra are far from satisfactory. The number of laborers working for agriculture is decreasing day by day. Hence labor wages have become a problem for farmers. Also, due to the migration of agricultural laborers from rural areas to urban areas, sufficient agricultural laborers are not available. Agricultural works sometimes have to be done with excessive wages. It affects the farmer.

• SUGGESTIONS:-

1. Give more irrigation facilities should be available for agricultural development in Maharashtra.
2. Transport facilities should be created in rural areas so that agricultural produce can reach the market quickly.
3. A mechanism should be created so that the agricultural produce can get the market price.
4. Appropriate research should be done to increase agricultural production, so that it does not adversely effect on agriculture.
5. The number of agricultural servants should be increased as guides for farmers to benefit from agricultural research.
6. Agricultural exhibitions should be held more to make farmers aware of modern farming technology.
7. New market laws should be enacted to curb fraud between traders and farmers in the sale of agricultural produce.
8. The process of base price on agricultural commodities should be higher than the cost of production.
9. Loans should be provided at zero interest rate for agricultural improvement.
10. Awareness should be created among the farmers about organic farming.

• CONCLUSION:-

Agriculture is the backbone of the economic sector in Maharashtra. There are many types of problems in the agriculture sector. To reduce the problems in the agriculture sector, it is necessary to provide efficient supply of agriculture related services. Also efforts should be made at the government level for sustainable development of agriculture. Farmer's perception about the adoption of organic farming plays an influential role than conservational farming.



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૧૨	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ પ્રો. ડૉ. પ્રકાશ મહાપત્રી	૧૫૨-૧૫૫
૧૩	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ ડૉ. મીના મહાપત્રી	૧૫૬-૧૫૭
૧૪	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ ડૉ. સુધાન્તી મોહપત્રી ડૉ. આર. એ. કિશોર	૧૫૮-૧૬૨
૧૫	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ ડૉ. મી. એ. કાલે	૧૬૩-૧૬૭
૧૬	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ પ્રો. ડૉ. આર. એ. કિશોર	૧૬૮-૧૭૨
૧૭	પ્રાચીનકાલ સંસ્કૃતિ: સુભાષચંદ્ર બોસ્ પ્રો. ડૉ. આર. એ. કિશોર	૧૭૩-૧૭૭



३५. महाराष्ट्रातील शैक्षणिक, कृषी व औद्योगिक क्रांती आणि यशवंतराव चव्हाण

कविता किशन धोंडे

सहायक उपाध्याय, अर्थशास्त्र विभाग, म. स. गा. महाविद्यालय, मालेगाव.

प्रस्तावना

महाराष्ट्राचे शिल्पकार, महाराष्ट्राचे पहिले मुख्यमंत्री यशवंतराव चव्हाण यांचे ज्योतीमत्त्व दोगाटूनही मोठे होते. त्यांचे कार्य हे नेहमीच अगमन्याला त्यांच्यापुढे कुकळता लावते. त्यांचे आयुष्य हे अनेक घटनांनी व्यापलेले होते. त्यामुळे त्यांच्या जीवनाप्रामाणिकांची अनेकांच्या मनात उमुकता कायम आहे. त्यांचे ज्योतीमत्त्व म्हणजे महाराष्ट्राचा चालता बोलता इतिहास होता. केवळाने महत्त्वपूर्ण पर संभाळत यशवंतरावांनी खऱ्या अर्थाने महाराष्ट्राचे दिलीप नेतृत्व केले. यशवंतराव चव्हाण महाराष्ट्राला समृद्धीच्या दिशेने नेण्या हा इशारा होता. त्यांचे विचार आजच्या काळातही लागू पडतात. त्यांच्या राजकीय राजवटीमध्ये त्यांचा प्रभाव इतका मोठा होता की, स्वातंत्र्योत्तर काळात तेवढा प्रभाव भारतातील कोणत्याही पांडता आला नाही. त्यांनी महाराष्ट्राच्या विकासातले दिलेले योगदान हे खूपच महत्त्वपूर्ण असलेले दिसते. त्यांच्या मते, महाराष्ट्रामध्ये सर्वत्र क्षेत्रात जोपर्यंत विकास होणार नाही तो पर्यंत हे राज्य मागासलेले राज्य म्हणून ओळखले जाईल. म्हणून त्यांनी महाराष्ट्रातील सर्वत्र क्षेत्रातले विकासाचे बांधणे वेगळे पाकडे लक्ष दिलेले दिसून येते.

यशवंतराव चव्हाण यांचे ज्योतीमत्त्व मोठे होते. त्यांचे आयुष्य हे अनेक घटनांनी व्यापलेले होते. त्यामुळे त्यांच्या जीवनाप्रामाणिकांची अनेकांच्या मनात उमुकता कायम आहे. त्यांचे ज्योतीमत्त्व म्हणजे महाराष्ट्राचा चालता बोलता इतिहास होता. केवळाने महत्त्वपूर्ण पर संभाळत यशवंतरावांनी खऱ्या अर्थाने महाराष्ट्राचे दिलीप नेतृत्व केले. त्यांचे ज्योतीमत्त्व हे ही दाखवून देत होते. त्यांचे विचार आजच्या काळातही लागू पडतात. भारतातील कोणत्याही मुख्यमंत्र्याला त्यांच्या एवढा प्रभाव पाडता आला नाही. त्यांनी महाराष्ट्राच्या विकासातले दिलेले योगदान हे खूपच महत्त्वपूर्ण असलेले दिसते. त्यांच्या मते, महाराष्ट्रामध्ये सर्वत्र क्षेत्रात जोपर्यंत विकास होणार नाही तो पर्यंत हे राज्य मागासलेले राज्य म्हणून ओळखले जाईल. म्हणून त्यांनी महाराष्ट्रातील कृषी आणि औद्योगिक क्षेत्रात केलेल्या विकासाचा व विकासात्मक अंगणाचा आदार या मोर्धनिकधामातले येण्यात आलेला आहे.

महत्वाचे मुद्दे / शब्द : महाराष्ट्र, कृषी, औद्योगिक, शैक्षणिक, विकास.

संशोधनाची उद्दिष्टे

१. यशवंतराव चव्हाण यांचे महाराष्ट्राच्या विकासातील योगदान अभ्यासणे.
२. यशवंतराव चव्हाण यांनी महाराष्ट्रातील कृषी, औद्योगिक आणि शैक्षणिक क्षेत्रात केलेल्या विकासाचा आदार घेणे.

संशोधन पध्दती

प्रस्तुत शोधनिबंधामध्ये या विषयाच्या अनुषंगाने प्रवर्तित, अन्वयित साहित्य, वार्तिका, साप्ताहिके, इतरनेट, वृत्तपत्रे, विविध संदर्भग्रंथ, अशा विविध द्वितीयक स्रोतांचा उपयोग करण्यात आलेला आहे.

यशवंतराव चव्हाण यांचे महाराष्ट्रातील विकासातील योगदान

यशवंतराव चव्हाण यांच्या महाराष्ट्रातील विकासातील योगदानाची चर्चा पुढील मुद्द्यांच्या आधारे करता येईल. शैक्षणिक क्षेत्रातील योगदान

१. तांत्रिक शिक्षण व प्रशिक्षणाच्या क्षेत्राचा पुरस्कार

आर्थिक विकास व भरभराट यासाठी सर्व प्रकारच्या पध्दतींचे मुख्य साधन शिक्षण हे होय. आर्थिक दृष्टीने साहजिकचपणेच तांत्रिक शिक्षणाचे महत्त्व अधिक पुढेसे तांत्रिक ज्ञान उपलब्ध असल्याशिवाय असलेल्या मास्टर प्लॅनचाचही बोवना पडतशी करता येण भयान्य असल्याने तांत्रिक शिक्षणाच्या व प्रशिक्षणाच्या सोयी वाढवल्याच्या क्षेत्राचा पुरस्कार करण्यात आला. त्यावेळी पक्षी शिक्षणाची जास्तीत जास्त वाढ होईल अशी परिस्थिती निर्माण करण्यासाठी शिक्षणाची सर्व दार उघडी करून घ्यालच्या कार्यपद्धत ते पोचलेल अस ठरवण्यात आले.

२. मोफत शिक्षण योजना

ही योजना महाराष्ट्रात वाचोरी प्रथमच सुरू करण्यात आली अर्थात शिक्षणाची ही सर्वांसाठी सतत उघडी झाल्यामुळे महाराष्ट्रात एक आगळी क्रांती घडून गेली. शिक्षण हे सर्वांचा मोफत देण्याचा हा उपक्रम होता. भारतीय घटनेच्या २६ व्या कलमानुसार राज्य सरकारने लोकांच्या विरोधात. यागवलेल्या लोकांच्या शैक्षणिक व आर्थिक फितकडे खास लक्ष पुरविल्याची तरतुद करण्यात आली आहे. त्यानुसार त्यांच्या फालकांचे वार्षिक उत्पन्न १,००० रुपयांपेक्षा जास्त नसेल अशा गरीब विद्यार्थ्यांना मोफत शिक्षण देण्यासाठीचे नियम त्या काळात प्रथमच तयार करण्यात आले.

३. विद्यापीठांची स्थापना

२३ ऑगस्ट १९५८ रोजी आगाखान बेचे याठरावा विद्यापीठ आजचे (डी. बाबासाहेब आंबेडकर याठरावा विद्यापीठ) उद्घाटन प. नेतक यांच्या हस्ते करण्यात आले. हा १० फेब्रुवारी १९५२ ला शिवाजी विद्यापीठ, कोल्हापूरचे उद्घाटन ही. राधाकृष्णन यांच्या हस्ते करण्यात आले. या दोन्ही विद्यापीठांच्या उद्घाटनीत यशवंतरावांच्या मौलिक स्थिरता आहे.

४. सैनिकी स्कूलची स्थापना

मातारा येथील सैनिकी स्कूलची स्थापना हे सैनिकी शिक्षण क्षेत्रातले यशवंतरावांचे असले एक निरनोव कार्य उभे राहिल आहे. सैनिकी शिक्षण अकादमीसाठी शिक्षण मिळण्याची सोय सातत्याच्या या सैनिकी स्कूलमध्ये. उपलब्ध झाली. भारतातले अशा प्रकारचे हे पहिले सैनिकी स्कूल ठरले. महाराष्ट्राच्या सैनिकी पैदासा हे स्कूल माताचे एक यशदान ठरले आहे.

५. आश्रम शाळाची योजना

आदिवासींना मुलांना शिक्षण घ्यायक तर त्यांना आजच्या मुलांना शाळेत आणावं लागणार होते, परंतु या प्रश्नात बरीच गुंतागुंत होती. या त्यासाठी असा निर्णय करण्यात आला की, आदिवासी मुलांना शाळेत आणण्याऐवजी त्यांच्या दारीन शैक्षणिक सोयी नेऊन पोचवाय्यात. त्यादून मा आश्रम शाळांची योजना साकार झाली. आश्रमशाळा स्थापन करण हाच आदिवासींच्या शिक्षणाच्या गुंतागुंतीच्या प्रश्नावर उपाय होता. अशा आश्रमशाळांचे लोक पुढच्या काळातही कायम राहिल आहे.

आधुनिक चळवळीने शेती करायची तर त्यासाठी धोरणे, पाठवलेल्या, हा कार्यक्रम त्यांनी सुरू केला होता. शेतीच्या बाबतीतला एक मोठा निर्णय, धोरण आणि ते राबवण्याबाबत यशवंतरावांचे अर्पण एक उदाहरण म्हणजे महाराष्ट्रात कुळकायद्याची प्रभावी अंमलबजावणी आणि (१९६१) सालचा कंगाल जमीन अधिग्रहण कायदा.

त्यामुळे कृषीअर्थव्यवस्थेत सर्व काहीकडे जमिनीचे वाटप झाले. बहुतांश शेत्याक या व्यवस्थेची जोडला गेला. शेतार या अन्य राबवण्याने आजही जमिनीचे समान वाटप नसल्याने काय आर्थिक आणि सामाजिक प्रश्न उद्भवले ते पाहता, महाराष्ट्रासाठी हे धोरण कम महत्वाचे ठरले याचा अंदाज लावता येतो.

५. महत्कार चळवळ

महत्कार जगातीलचा मोठ्यापट्टा महाराष्ट्रात औद्योगिक प्रगती झाली. साखर कारखाने, सुत गिरण्या, कापड कारखाने, तेल पाने, फळ प्रक्रिया इत्यादी उद्योगधंद्यांची निव्विही महत्कारी तळावर झाली. शेतीप्रधान महाराष्ट्राचे स्थान औद्योगिक महाराष्ट्रात होण्यास महत्काराने मोलाची कामगिरी बजावली. महाराष्ट्राची ही चळवळ सर्वात अगोष्टीक आहे. ही चळवळ अतोपर असण्याने शेवट प्रामुख्याने यशवंतरावांच्या छाने लागले. त्यांनी महत्कार क्षेत्राकडे लागीचपुर्वीक लक्ष दिले. ग्रामीण भागातून नवे राजकीय आणि सामाजिक नेतृत्व उभे करायचे असले तर त्यासाठीही महत्कार क्षेत्रात यशवाचे ठरेल हे त्यांनी धोरणीयपणे आढळले होते. म्हणून त्यांच्या काळात महत्काराच्या एका नव्या पार्श्वी सुरूवात झाली.

यशवंतरावांच्या अगोष्टीय प्रयत्नांमध्ये असतील या अन्य महत्कारी तळावरचे प्रयोग महाराष्ट्रात यशस्वी झाले होते. पण यशवंतरावांनी या प्रयोगांना कायद्याने आणि संस्थात्मक पाठ दिले. ठरपून नाही धोरण निश्चित केली. त्या धोरणांमुळेच राज्यात महत्कारी औद्योगिक वसाहती तयार झाल्या.

साखर कारखाने, दूध सध, कुक्कुटपालन, पानेवृक्ष अस एक जाळे काढातुरुप तयार होत गेले. केवळ शेती अस स्वयं पालत ही उद्योगांची पाळ बनली. महत्कारी कायद्याने त्यात लोकशक्ती पद्धतीची आणली आणि म्हणूनच पंधरावट राज्य पद्धतीमधून अस नवे स्थानिक नेतृत्व तयार होत. तसेच ते महत्कारी उद्योगांच्या पद्धतीमधील तयार होऊ लागले. यशवंतरावांच्या मोठ्या काळात अशा नवे साखर कारखाने सुरू झाले.

निष्कर्ष

प्रस्तुत संशोधनातून असे स्पष्ट होते की, आधुनिक महाराष्ट्राच्या सांस्कृतिक बदलपद्धतीत धोरणे महत्काराच्या वजाण यांचा मोलाचा वाटा आहे. यशवंतरावांचे जीवन मालते साक्षात एक इतिहास आहे. तो सत्यशोधक समाजाचा, स्वातंत्र्य चळवळीचा, संयुक्त महाराष्ट्र आंदोलनाचा आणि नवमहाराष्ट्राच्या बदलपद्धतीचा एक इतिहास आहे. यशवंतरावांचे राजकीय, सामाजिक, सांस्कृतिक आणि शैक्षणिक कार्य अकार होत. त्यांचे जीवन सैव एखाद्या महत्काराप्रमाणे होते. त्यांचा तळ कुणालाही सोपने सहावी शक्कल नाही.

समृद्ध महाराष्ट्राचे हे शिष्यकार म्हणून यशवंतराव वजाण यांचे व्यक्तिमत्त्व अभ्यासातून त्यांचे शिक्षणविषयक विचार भारताच्या स्पर्धात्मक युगातही किती परिणामकारक ठरतात आणि त्यांच्या विचारांची आजही किती गरज आहे, हे लक्षात घेते. महत्काराची विविधता कुठे आणि कोठे वधू लागण्याच यांच्या सामाजिक व आर्थिक विषयात दूर बसण्याच्या कार्यमुळे त्यांना एक नवी दृष्टी प्राप्त झाली होती. देवगुटे तयार राहून त्यांनी विषमतेबरोबरच शेत्या-यांची दुःखे जाणली होती. त्यातूनच शिक्षणाची गरज आणि महत्त्वही

लक्षात घेतले होते. जेव्हा याची पुढची गिरी ही शिक्षकी विद्दीने असली पाहिजे आणि शिक्षण हे लक्षापाळातल्या प्रत्येकासाठी मिळाले पाहिजे, याकरीता ते आघाडी होते. त्यांच्या दूरदृष्टीकोनातून सैनिक स्कूल, शिवाजी विद्यापीठ आणि मराठवाडा विद्यापीठाची निर्मिती झालेली आहे.

एकाद्या मोठ्या व्यक्तिबद्दल बोलताना त्या व्यक्तीचे व्यक्तिमत्त्व अल्पेने आहे किंवा होते असे म्हाणवाची रीत आहे. याच भागातूनने शिल्पकार चक्रवर्तय चक्रवर्त यांच्याबाबतून मात्र ही औपचारिकता केवळ औपचारिकता राहिल नाही, जसे एका हि-वाला शिकवी करताना किती पैलू दिले हे सहाजी मोठ्या बोल नाही, त्यातल्या चक्रवर्तयांचे व्यक्तिमत्त्व होते, धोर देशभक्त, सैनिक साहित्यिक, धुरंधर मुत्सदी राज्यकारणी, विचारवंत, गुणज्ञातक, सौन्दर्यपुन, जनतेच्या प्रेमाने गुरफटलेला निभावत नेता, एक जाणकार समाजवादी, लोकजातीय नितान्त बद्धा देवपारा, यातिल संपन्न सुसंस्कृत नगरिक, ओबसवी बला, समृद्ध महाराष्ट्राचा शिल्पकार आदी पैलूची बद्ध असे व्यक्तिमत्त्व अभ्यसताना त्याचे वैयक्तिक विचार आजच्या युगातही युगावतक असल्याचे जाणवताना, टिळक राधाकृष्णकरांचे शिक्षण घेताना झालेल्या संस्कारानुषंगे चक्रवर्तयांच्या मनात टिळकाप्रमाणेच प्रखर ध्येयवाद, देशप्रेम, स्वाधीनता व विद व भावना येण्या गेल्या होत्या. त्यांच्या सर्व विचारांचा केवळिदू राष्ट्रीय भासात राहणारा माधुर्य हाच होता. त्यांनी राधकृष्णेच्या जेरी, उद्योगधंदे, शिक्षण व मनुष्यबळ या चारमुखी कार्यक्रमातूनही हेच स्पष्ट होते.

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UGC CARE LISTED
ISSN No. 2394-5990

संशोधक

• वर्ष : ९१ • मार्च २०२३ • पुरवणी अंक १



इतिहासाचार्य वि. का. राजवाडे संशोधन मंडळ, धुळे



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ISSN No. 2394-5990

इतिहासाचार्य वि. का. राजवाडे मंडळ, धुळे या संस्थेचे त्रैमासिक ॥ संशोधक ॥

पुरवणी अंक १ - मार्च २०२३ (त्रैमासिक)

- शके १९४४ ● वर्ष : ९० ● पुरवणी अंक : १

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दूरध्वनी (०२५६२) २३३८४८, ९४०४५७७०२०

कार्यालयीन वेळ

सकाळी ९.३० ते १.००, सायंकाळी ४.३० ते ८.०० (रविवारी सुट्टी)

मूल्य रु. १००/-

वार्षिक वर्गणी रु. ५००/-, आजीव वर्गणी रु. ५०००/- (१४ वर्षे)

विशेष सूचना : संशोधक त्रैमासिकाची वर्गणी चेक/ड्राफ्टने
'संशोधक त्रैमासिक राजवाडे मंडळ, धुळे' या नावाने पाठवावी.

अक्षरजुळणी : सी. सीमा शिंदे, चारजे-माळवाडी, पुणे ५८.

महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळाने या नियतकालिकेच्या प्रकाशनार्थ अनुदान दिले आहे. या नियतकालिकेतील लेखकांच्या विचारांशी मंडळ व शासन सहमत असेलच असे नाही.

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Contribution of Bhausahab Hire in the economic and social spheres; An Analytical Study

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Abstract :

Bhausahab from a common farmer family got his education under adverse conditions. Bhausahab started an independent lawyer's business in Malegaon from a charitable point of view for the rural poor, but within a short period Bhausahab, inspired by the thoughts of Mahatma Gandhi and Pandit Nehru, was drawn into the freedom movement. Karmaveer Bhausahab Hire was the leading leader of the Union of Maharashtra movement along with Mumbai. Karmaveer Bhausahab Hire, a native of Nashik district, took a firm stance that according to the rules of language-wise provincial structure, there should be an independent state for Marathi speakers including Mumbai. The entire society is extremely grateful to the dedicated leadership of Karmaveer Bhausahab Hire for his outstanding contribution in the freedom struggle, cooperation, education, agriculture, finance, trade, industry, tribal welfare as well as in the political and social fields. Emphasizing economic development through the principle of cooperation, Karmaveer Bhausahab Hire did social work and politics. Even in the era of globalization, the importance of the principle of cooperation is being highlighted from time to time. From time to time Bhausahab had helped the drought sufferers in a big way during the droughts in the country.

Farmers in Maharashtra were in trouble due to zamindari and moneylenders. Also, as the farmers had no means of ensuring income, he

was in the depths of poverty. As Bhausahab himself was a farmer, he was aware of the economic and social plight of the rural community. He was fully aware that social development is not possible unless the economic exploitation of this class is stopped, so he embraced the principle of co-operation. His sincere desire was to create an ideal society. In order to reduce the dependence of farmers on moneylenders and traders, Bhausahab established a buying and selling association. He established many cooperative societies.

Keywords: Karmaveer Bhausahab Hire, Maharashtra, co-operatives, zamindars, Kasei Tyachi Zamin, Kul.

Introduction:

Bhausahab Hire's mind was disturbed after seeing the oppression and exploitation of farmers in Maharashtra. They started thinking that something must be done and the farmer brothers must be saved. It was from this that the clan law was created.

The basic principle of Kula Law is 'Kasei Tyachya Zaman'. According to this, a person who works hard in agriculture as someone else's farm has been decided as 'Kul'. In view of the plight of the class, on April 1, 1957, the clans who legally occupied the agricultural land of others were declared by law to be the owners of that land. According to the law, after paying a certain amount to the government court, the land acquired by the clans was duly registered in their



name. With this act, the toiling landless agricultural laborers got their own land. This Act came into existence only in 1956 and according to it, all the clans in Bombay State were deemed to have purchased all the land they had on a particular date (1st April 1957). It was announced as Kasara's day. The possession-rights of the land were given to the clans with few exceptions.

An important provision of the new clan-laws was that if the clan voluntarily returned its land to the owner, the owner could retain it only for his own use or for non-agricultural purposes. The land which the landlord cannot retain goes to the landless clan. Moreover, the clan and the owner can negotiate between themselves to buy the land for the house. If the price is not fixed by mutual agreement, the Tribunal shall fix the price; That is, there was a provision in these laws that this price will not be more than twenty times the rent of the premises.

Since the introduction of the principle of 'Kasal Tyachi Zamin', there has been a huge revolution in the agricultural and land ownership sectors of Maharashtra. A long history of feuds, lawsuits and lawsuits between landlords and clans arose out of them. The 'Clan Act' which adopted the principle of 'Kasal Tyachi Zamin' became the biggest factor affecting the issue of land tenure in Maharashtra. The clan law brought about a radical change in the state. Many Jagirdars and Vatandars had to hand over their lands to the clan. This Act had the greatest impact on rural life in Maharashtra. According to this law, only 48 acres of land will be owned by the clan. This practice continued from 1960 to 1975.

Bhauasaheb Hire's contribution in the field of co-operatives:

Vinthalrao Vikhe Patal of Loni was making vigorous efforts to set up a sugar factory on cooperative basis. Prof. Under the guidance of Dhananjayrao Gadgil, efforts were on to get

government permission for the factory. But the government did not allow it. At that time, Bhauasaheb Hire tried to start a butter factory and got approval for the same. Bhauasaheb Hire tried to ensure that the new co-operative sugar factory licenses were given to common farmers instead of private factory owners or capitalists. For this, Bhauasaheb along with Vaikunthbhai Mehta met the then Chief Minister of Maharashtra Morarji Desai and on his advice sent a delegation to Delhi to meet Prime Minister Pandit Nehru. Rather than giving licenses to the capitalists, Prime Minister Pandit Nehru eventually got over the idea and decreed that sugar mill licenses should be given to farmers' cooperative sugar mills. In order to reduce the dependence of farmers on moneylenders or traders, Bhauasaheb first established a buying and selling association. Nashik District Central Bank was closed since 1928. In those days loans were disbursed through branches of Bombay Provincial Co-Bank. But as this loan is very small and limited, the farmers have to face financial problems. Due to their efforts to break this dilemma and have their own bank, Nashik District Central Bank was established in 1955. Due to this bank, the foundation was laid for the co-operative movement in the district. With the help of the stalwarts of the co-operative sector like Principal Puranik, Daga Patil, Dadasaheb Bidkar, the web of co-operative movement was woven. His dream was that farmers should become entrepreneurs themselves to stop the exploitation by private entrepreneurs. He encouraged co-operative industrialists to start co-operative processing industries on agricultural produce like sugarcane, cotton, oilseeds. Under the guidance of Vaikunthbhai Mehta, Senior Economist Dhananjay Gadgil, Bhauasaheb set up Girna Cooperative Sugar Factory at Dabhad. He also provided guidance in the construction of sugar factories like Niphad and Rahuri. The efforts put in by Bhauasaheb for the establishment of



laborers while serving as a minister. Several states in the country had passed clan laws. But those clan laws were not being effectively implemented. Maharashtra was an exception. Because the clan law enacted by Bhausaheb Hire was effectively implemented. For that, Bhausaheb Hire blocked loopholes in the law. Bhausaheb did what he could to get the ownership of land to the clans. A committee was appointed in 1972 to look into the impact of the Descent Act in Maharashtra. According to the findings of this committee, about 11 lakh 10 thousand clans in Maharashtra became the owners of farms under this Act. These clans got ownership of 12 lakh 86 thousand hectares of land. In 1952, Morarji Desai's cabinet came to power after the assembly elections in Maharashtra. Bhausaheb Hire, the revenue minister in this cabinet, passed the clan law.

Farmer's Day:

01-04-1957 has been declared as Farmer's Day under Section 32(1) of the Maharashtra Clan Management and Agricultural Land Act. On this day the clan recorded as the legal clan is deemed to have purchased the relevant agricultural land.

Kasel's Land:

After the Clan Protection Act, many lands were retained by the clans, the principle of 'whatever you want' was introduced. On April 1, 1957, the clan was given an opportunity to buy the land it was occupying at a price fixed by the government official and to pay the price in twelve installments. The maximum price was set at 200 times the total. The clans became permanent owners and the land tenure of the original landowners was destroyed.

Bhausaheb Hire's Socialist Ideology:

In 1926 Bhausaheb took a bold decision to hold a conference of Satya Shodhak Samaj at Nimgaon to give equal status to the Dalit community. He said that a united and egalitarian

society cannot exist until the economic disparity in Indian society is eradicated. He played an important role in bringing justice to the poor, Dalit and suffering people in the form of equality.

A system of thought which treats all as equals by keeping the production of wealth in the ownership of the society and brings everyone to the same level by equitable distribution of wealth. The means of production, distribution and exchange should be owned by the people, i.e. the society, every person should be given equal opportunity to cultivate his qualities and the productive power of the society should be developed from it. The concept of socialism implies a call to reorganize society on a just level and make human life happy and prosperous by ending poverty and exploitation.

In short, socialist ideology advocated a new social order based on equality and justice. According to the proponents of this system of thought, social interest is more important than individual interest. Socialist thought arose out of the industrial brilliance, economic disparity that arose after that revolution, and individualism and capitalism. When the capitalist social structure came into being, its economic defects led to the idea of socialism in the nineteenth century as an antidote and a democratic ideal based on the fundamental rights of liberty, equality and fraternity.

The fundamentals of democratic socialist ideology in India can be found in the socialist group formed in the Congress-Targat. Jawaharlal Nehru had loyalty and faith in democratic socialism. He declared that the aim of the Congress was to establish a socialist society.

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MAH/NAN/10936/2015

ISSN : 2454-7905

SJIF 2022 - Impact Factor: 7.479

***Worldwide International
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Vol. I

ISSUE - LXV

Year – 8

July 2022

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CURRENT SCENARIO OF INNOVATIVE RESEARCH IN ECONOMICS

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Head

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ABSTRACT:

In this research paper I have studied various research methods used in economics. I have reviewed that it is possible to do qualitative research using new technology. I have tried to analyze how we can contribute to the progress of the country with the help of economic research. The importance of research in the economic development of a country is unique. This is because corruption is rampant in all the economic sectors of the country and it is having an adverse effect on the economic development of the country. It is possible to stop corruption in the country, for which research needs to be used at school level to higher education. Also the alliance of corrupt bureaucracy and corrupt politicians is detrimental to economic development. The only way to break this alliance is to use research. This is possible through economic research.

KEYWORDS:

Research, Economics, Innovation, Creativity, Corruption, Bureaucracy, development

INTRODUCTION:

Innovative research is about finding and applying strategic techniques and new methods in research. Innovative research involves using new ideas, analyzing problems, diagnosing problems, and suggesting solutions to improve government. Innovative research in economics is intended to use the new tools used for research. The use of primary tools in research should be up to 80%. The National Center for Research Methods was established in England in April 2004. Its purpose was to enhance the quality of research methods in the social sciences. In the same way, an institution needs to be set up in India to enhance the quality of social sciences. Searching for knowledge in general is research. Social research is a systematic attempt to acquire new knowledge. New economic research needs to expand the scope of knowledge, examine its accuracy, and find scientific methods to analyze how useful this knowledge is for the formulation of theories. The basic goals of economic research include acquiring knowledge in a systematic way, using this knowledge for future research, and improving the social system in the expected way. It is possible to contribute to the economic development of a country through economic research. Corruption in all parts of the country is made possible by an alliance of corrupt politicians and corrupt bureaucrats. Extensive economic research is needed to break this alliance. For this, it is necessary to conduct economic research from school to higher education level and it should be done without any fee while publishing the research.

METHODOLOGY:

In the present research paper, the researcher has used his own observation as the primary source. Also other secondary source is used.

OBSERVATION:

The goal of economic innovation:

The goals of the new economic research can be described as follows.

1. Understanding the working of the country's economy.
2. Study of individual behavior and social activity.
3. To study the current social problems and their impact on the economy of the country.

PWD official, cell officer of the ministry and the minister and others. Therefore, only 30 to 40 per cent of the expenditure on roads is spent. So the work was of inferior quality. Such corruption is going on in various ministries. If corruption is to be stopped, the central government must set up an 'economic intelligence system' to stop corruption in the country. In this, economic innovation research is important.

- 5. The role of industry is important in the development of the country. But if you want to start a business in India, the time required is long. Corruption occurs in order to obtain the various types of permissions required for business. Land, water, electricity and other permits required for industry are not easily obtained. Therefore, the cost of production of goods produced by the industry in the country is extra. If we want to reduce it, we need to expand the scope of economic research. Extensive economic research will definitely create a better environment for doing business. This will increase exports from the country and help in increasing the economic growth rate of the country.

CONCLUSION:

Innovative research in economics is important in the economic development of a country. Corruption in the country needs to stop if any kind of development is to take place. There is also a need to reform the country's bureaucracy. Because corrupt bureaucracy and corrupt politicians do corruption together. Therefore, it is adversely affecting such economic development. Stopping corruption is possible only through economic research. Economically innovative research can be done in all fields. Students should be encouraged to do research to save the country's money from school level. If you can save a single rupee of the country through economic research, it is important. The country needs an intelligence agency to stop the economic corruption that is taking place in the country and through it the corruption in various sectors can be stopped. There is also a need to enact legislation to control corruption. At present, the country does not have anti-corruption legislation, so corruption is rampant. Corruption is rampant in many states. Therefore, the need for economic research has increased. If corruption is stopped, companies in the country will be able to reduce their production costs and we will be able to export our products abroad in large quantities. The people of the country should be involved in stopping corruption. Because people know where and how corruption is going on. Whoever exposes corruption should be rewarded and the property of the corrupt should be confiscated and strict action should be taken against him.

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साहित्य, कला आणि लोकसंस्कृतीला वाहिलेले त्रैमासिक

तिफण

वर्ष १४ वे, अंक - ४ था
जानेवारी - फेब्रुवारी - मार्च २०२३
भाग - ३

UGC Care Listed Journal
ISSN 2231 - 573X

♦ संपादक ♦
डॉ. शिवाजी हुसे

पत्ता : संपादक, तिफण, 'शिवार' श्रीराम कॉलनी, हिवरखेडा रोड,
कन्नड, जि. औरंगाबाद - १३१४०३, मो. ९९०४००३९९८

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MAH MAR 34737/13/2009 - TC

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जानेवारी - फेब्रुवारी - मार्च २०२३

यशवंतराव चव्हाण विशेषांक

◆ संपादक ◆

डॉ. शिवाजी हुसे

◆ अतिथि संपादक ◆

प्राचार्य डॉ. राजेंद्र मोरे

डॉ. राजकुमार मरे

◆ संपादक मंडळ ◆

डॉ. सर्जेराव जिगे

डॉ. सुभाष बागल

डॉ. सुभाष शेंकडे

डॉ. राजकुमार मुसणे

डॉ. ताहेर पठाण

डॉ. रामचंद्र झाडे

डॉ. सुखदेव इंगारे

डॉ. सुधाकर जाधव

डॉ. दिलीप चिरुटे

डॉ. दत्तात्रय हुंबरे

डॉ. प्रेमला मुखेडकर

डॉ. रंजना कदम

मूल्य : २५० रुपये

या अंकातील लेखकांच्या संपादक सहमत असतीलच असे नाही, या निष्पक्षवृत्तिवत् नजारातून राज्य साहित्य आणि संस्कृती मंत्रालयाकडून अनुदान प्राप्त झाले आहे, परंतु या निष्पक्षवृत्तिवत् प्रसिद्ध झालेली मते मंत्रालयात मान्य असतीलच असे नाही.

पत्ता : संपादक, तिफण, 'शिवार' श्रीराम कॉलनी, हिवरखेडा रोड,
कन्नड, जि. औरंगाबाद - १३१४०३, मो. ९९०४००३९९८



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६. साहित्यिक बंधनविषयक पत्रे

मराठी पत्रात्मक साहित्यामध्ये साहित्यिक बंधनविषयक पत्रे महत्त्वाची ठरतात. ही पत्रे मराठी साहित्याच्या अभ्यासकांना बहुमोल ठरवारी आहेत. उदा. भातली सहिबकर यांचा 'अलका तू अरुं लिही' हा पत्रसंग्रह प्रसिद्ध आहे. त्यात त्यांनी आपल्या लहान सहिबकारी साधलेला साहित्यविषयक संवाद आहे. ए. शि. काडिये यांनी बोल्लटकांनी साहित्यविषयक पत्रे 'बोल्लटकांनी पत्रे' हा पत्रसंग्रहात मराठीत केला आहेत. बी.एम. पशिंदे यांनी 'पत्रे भुरग्या भटांची' हा पत्रसंग्रह प्रकाशित केला तर म. द. हातकरांगळेकर आणि बी. पु. भागवत यांनी 'जी. ए. बी. निवडक पत्रे मराठीत केलेली आहेत. त्यात जी. ए. कृतकर्ता यांनी साहित्यिकाशी साधलेला संवाद आहे.

अशाप्रकारे मराठी पत्रात्मक साहित्याच्या उपदेकत विविध प्रकारात विपुल लेखन झाले आहे. या प्रकाराभ्यतिरिक्त सामाजिक, राजकीय, वैयक्तिक, चळवळीविषयक इत्यादी विविध प्रकारात महत्त्वपूर्ण पत्रलेखन झाले आहे. परंतु प्रस्तुत ग्रंथनिबंधात काही निवडक पत्रप्रकारांचाच विचार करायला आला आहे.

२. बरगवंतराव चव्हाण आणि 'विदेश-दर्शन': एक परिचय

१२ मार्च १९१६ रोजी चळवंतराव व विठ्ठलबाई चव्हाण यांच्या पोटी बरगवंतराव चव्हाण यांचा जन्म पूर्वीच्या भारतात व सध्याच्या सांगली जिल्ह्यातील देवगण्टे येथे झाला. बरगवंतराव चव्हाण यांचे प्राथमिक शिक्षण यांचे गावी पूर्ण झाले. पुढे चळवंतराव चव्हाण यांच्या अकाश्री दिवसानंतर आई विठ्ठलबाई यांनी आपल्या मुलाबरोबर कराड येथे स्थलांतर केले. अत्यंत विघट परिस्थितीतही बरगवंतराव, चणपतराव, ज्ञानदेव तसेच राधाबाई या भावंडांकर आईने मायेचे छत्र बघले. देवगण्टे येथे चौबीसवर्षांचे शिक्षण पूर्ण केलेल्या बरगवंतरावांचे पुढील शिक्षण कराडच्या टिळक हायस्कूल येथे सुरू झाले. अत्यंत प्रतिकूल परिस्थितीत जिद्द व निष्ठाटीच्या जोरावर बरगवंतरावांनी आपले शिक्षण पूर्ण केले. १९२७ साली ते म्हर्नाबसुडार कायनलची परीक्षा पास झाले. १९३४ साली कराडच्या टिळक हायस्कूल मधून ते मॅट्रिक परीक्षा पास झाले. त्यानंतर कोल्हापूरच्या राजाराम कॉलेज मध्ये त्यांनी प्रवेश घेतला. चौ.ए.मराठी इतिहास व संस्कृतसह ते विषय घेऊन ते १९३८ साली मुंबई विद्यापीठाची पदवी परीक्षा पास झाले. पुढे पुणे येथील लॉ कॉलेजमधून ते १९४९ साली एल्. एल्. बी पास झाले. या वर्षी प्रॅक्टिसींग प्रवाय करीत असतानाच त्यांचे लक्ष स्वातंत्र्य चळवळीच्या लढ्याकडे वेधले गेले आणि त्यांनी जलतला या लढ्यात झोकून दिले. इराफामुनच त्यांचा एकुलत जीवनप्रवास सक्क करायला आहे. चळवळीच्या अनुषंगाने विविध कार्ये चार पाहत्यानाच राजकारणातील त्यांचा पायाही भक्कम होत गेला. १ मे १९६० साली जलंत बहालपुत्राच्या पहिल्या मुख्यमंत्री पदाची सूत्रे त्यांनी हाती घेतली ते पुन्हा काही मागे वळून पाहिलेच नाही. राज्याच्या राजकारणापासून मुक्त झालेला त्यांचा प्रवास पुढे कांदे राजकारणध्ये उज्ज्वलतेचा ठरला. १९६२ ते १९६६ साली भारताचे सांख्यिकमंत्री, १९७० ते १९७४ साली अर्थमंत्री, १९७४ ते १९७७ साली विदेशमंत्री तर १९७९ साली देशाचे उपपंतप्रधान या मानाच्या तसेच जबाबदारीच्या पदावर त्यांनी आपल्या विद्या-कार्याची मोठ्या उमटवळी सज्जात तसेच देशाच्या राजकीय-सामाजिक क्षेत्रात कार्यरत असताना त्यांनी अनेक विकाससात्मक योजना आखल्या आणि राबविल्याही कार्यक्षम मंत्री तसेच यशनेता, संघटनपटू आणि मुत्सारी राजकारणी म्हणून ते सर्वपरिचित आहेत. कृषी, औद्योगिक, आर्थिक, शिक्षण इत्यादी विविध क्षेत्रात त्यांनी ज्ञातीकारक कार्य केले. चौकट घालून, साहित्यिक मनःपिंड, जीवनकाठी दृष्टिकोन, समन्वयकाठी भूमिका, ज्ञान-धर्म निर्मोहतेचा पुरस्कर्ता या आणि अनेक विषयांवेल्या त्यांनी कार्ये ठरविल्या.

મહાનુભવ જે 'આધુનિક મહાગદ્ય'ને 'કવિ' મહાનુભવ ઓઢાવેલે જાતાત અગા મા લોર મહાત્માએ નિધન ૨૫ ઓક્ટોબર ૧૯૮૪ રોજી થિલ્લી પેને ફાલે.

૨૦૧૨-૧૩ જે વર્ષ યશવંતરાવ ચવ્હાણ યાંધે કવ્યસાતાથી વર્ષ મહાનુભવ યાજો કરાતાત ત્યાંયા વિષા-કાર્યાલ ડાહ્યા મિહ્યા તમેય ત્યાંયા વિષા-કાર્યાલ આદર્શ જોડ્યાસમોર ડેકન આપન આપત્યા કાર્યાલ લોગ દિશા દેધે જીવ જ-યા અતનિ ત્યાંયા ક્રાંતિની ડોલ.

યશવંતરાવ ચવ્હાણ યાંધા પદ્યુગ્ય વિષા-કાર્યાલ પુરસ્કાર કામોરે શેકડો ઇંચ આજ ડપલત્ય આજેત. ત્યાંયા વિષા-કાર્યાલો આજકર વિશિષ્ટાંગને સમીધા ફાલેલી દિયુન પેતે. યશવંતરાવ ચવ્હાણ રચત: એક મુદ્દવી જીવનવાદી સાહિત્યિક હોતે. અત્યંત યોદ્ધવગીલ મનાતે ત્યાંની તિથિલેતે 'જુગ્માકાંડ' જે આત્મચરિત્ર મળજે એક મહાન મુદ્દા તરલ મહાત્મા આલિધ્યાર આતે. ત્યામયોગર વિષાલ્યાર, શિવનેરીયા નીધતી, મહાગ્રાંથે લોર, પુગાતર, મુનિકા યા માયગયંદ્રાતુન તમેય ક્રાંતિનુવંધ યા લેહનયંદ્રાતુન ત્યાંયા સાહિત્યિક, યોદ્ધવગીલ મનાથી, વિષાલ્યંતથી તમેય ડગલ્ય મુદ્દિયલેથી લાધ પડતે. ડગ્નુન લોધનિવંધાત યશવંતરાવ યાંધા 'વિદેશ-દર્શન' યા પરમંદ્રાત્મા વિષ્ણુવને પરમર્ષ ત્યાલ્યાના આતે.

યશવંતરાવ ચવ્હાણ યાંની વેંદ્ર યાકારત્યે યાંધ્યાનથી, અર્ધમંદી તમેય વિદેશ મઝી અમતાના વિવિધ દેશાંયા લીર કોલ ૧૯૬૨ જે ૧૯૭૭ યા ૧૬ વર્ષાંયા ડ્રીઈય વાલચંદ્રાત ત્યાંની રશિયા, અશિયા, યુરોપ તમેય અમેરિકન જુદાનીલ અલેક દેશાંયા લીર કોલ. જા લીર પ્રમુલ્યાને માતાંયા કિતાંયા લુટિહોવાનુન ડાર દેશાંથી લર્ષા કર્યે, યામત્યે કરા કરા, દેશાંદેશાંથીલ તયંધ મુધાતો અગા યલક્યાના હોત. યા પ્રમુલ જેનુધયોગર યશવંતરાવ ચવ્હાણ યાંની વિદેશ દર્શનાયા જો લાલી એક લેલિધ્યુર્લ અનુભવ પેતલત તો ત્યાંની આપત્યા લેહનામયે લલિત કોલ, આલિ જે લેહન મળજેય 'વિદેશ-દર્શન' મળીલ પડે હોત. હી પડે યશવંતરાવ ચવ્હાણ યાંની આપત્યા પલ્લી લેનુતાઈ યાના પાડલેલી આજેત. પ્રવૃત્તિયા લાગ્યામય લેનુતાઈના યશવંતરાવલેલત પાંદેશાત જાતા પેત નસે. યાંથી યશવંતરાવનાં જાત આતે. યાકાલત ત્યામગસાથી જોગી તિથિવાત, 'જો તિથી યશવંતરાવનાં અચ્ચાત કામોરી હોતી, પરંતુ માડાલજ હોત. લેનુતાઈ આપત્યા પ્રવાસાત મહાથી નમત્યા તરી ત્યાંના પાકાંરે વિદેશ-દર્શન જાલે અગી ત્યાંથી ડલકટ ડેમ્લ યા પડલેહનાંયા લપાને યમ્લ ફાલે. યમિક લાલકરી લેનુતાઈપ્રવાસેય જા પરમંદ્રાત લાલત અમતાના વિદેશ-દર્શનાત જતો. માતાંયા એક અગ્રાલપ, મુદ્દર્શી, મહાનુભવ, પ્રજાવંત મુલ્તથી યા લપાત યા 'વિદેશ-દર્શન' પુલકાનુન યશવંતરાવલેલી દર્શન પડતે.'^૧ અગાપ્રકારે વિદેશાનુન પાડલિલેલ્યા પાંધમપુન યશવંતરાવ ચવ્હાણ યાંની લેનુતાઈના એક પ્રકારે વિદેશ-દર્શનય પડનુન આગલે આતે અયે જાગતા પેડીલ. 'યશવંતરાવને જે વર્ષ લેહન પડ્લ્ય આતે. ત્યાંની જે લેહન લાધ્યાન જીવગલ ત્યાંયા તિથિલ કામોર આતે. ત્યાંની માંયા જગાલ પ્રવાસ કોલ પડા તો એકાથી લેનુતાઈથી પ્રવૃત્તી દુર્લ, જાગે લેલાંયા લાલપાંથીયા પ્રવાસ ત્યાંના ડેપનાંય મલ્લ. ત્યા લિલ દિલ્લીલ, ત્યમુદી. યશવંતરાવનાં માંથી જાત ત્યાંયા લેહવાંની ડેલા ડગલી અચાથી.'^૨ અગાપ્રકારે લલકાક જોગી યાંની યશવંતરાવ ચવ્હાણ યાંથી પડલેહનામાયની ડેલા નમુદ કોલી આતે તો લમર્લક લાલે.

૧ જુન ૧૯૮૩ માંથી લેનુતાઈને નિધન ફાલે. લેનુતાઈના મુલ્પપચ્છાત્ ત્યાંને લાલિ તિથિલે જાલે અગી યશવંતરાવ ચવ્હાણ યાંથી ડેમ્લ હોતી. હી જાલકરી યશવંતરાવનાં ત્યાંયા લીર્ષકાલ લિલવાયાત અમલેલે નિલ રમલાક જોગી લાંવાલ લોલકિલી હોતી. ત્યાનિમિતાને યશવંતરાવ ચવ્હાણ યાંની જા અચોલ પાંધા ડેલા રમલાક જોગી લાંવાલકલે લોલકિલ આલિ યા ડેલ્લાલત્ય રમલાક જોગી યાંની ૧૯૮૮ માંથી 'વિદેશ-દર્શન' યા પરમંદ્રાત્મા આકાર લિલ.

असहलेल्या नाट्यसमीक्षकांनी दुसरी प्रत्यक्षाच घेत. बॉक्सऑफस या ठिकाणी असलेल्या त्यांची शेकडोपिअरच्या 'ऑनिलो' नाटकाची कथाही मिळे घडली त्या 'ऑनिलो डॉर' ला भेट दिली. इंग्लिंडोनिचा ही गीत सुंदरी आणि ऑनिलो हा वयाळा बालक यांच्या प्रेमकथेत याच सावरीकित्याची पार्श्वभूमी लघुचलित आहे. या सागर किनाऱ्यावर एका उंच तटावर रांगराने वेडा झालेल्या ऑनिलोने आपल्या प्रेयसीचा गळ घातून घून घेतला होता. प्रत्यक्षातील ते स्वतः पाहिलेले घडामोडी लिहिताना, "हा तटावर विमानाक चिडलीत उभा राहून समोर उघडलेला समुद्र मी पाहत होतो. मानवी जीवनातील अनंत काळ पाहिल्याचा संघर्षाचे जे काळाचे या नाटकात शेकडोपिअरने उभे केले आहे त्याला किती विस्मय आणि रोमांचकारी पार्श्वभूमी त्याने निवडली आहे! हा तट रात्रीत अंधार जाईल. मशिदी आणि चर्चेंगरी कटाक्षित राहतील किंवा आतील. पण सागराच्या जीवनातील द्वेष आणि अमुखा, चक्री आणि विद्रोह यांचे खेळ असेच अखंड चालू राहतील जसा या समुद्राच्या लळा किनाऱ्यावर चालू जात आहेत."⁴² पात्रकाराच्या चित्रणातून त्यांची कलात्मकता प्रकट होते. अशाप्रकारे अनेक देशांच्या नाट्यसमीक्षकांनी आम्हाद घराबंततय बाबला यांची घेतला आहे. त्यांचा प्रत्यक्ष 'विदेश-दर्शन' मधील विविध पत्रसंवादातून येतो. त्याचप्रमाणे शेकडोपिअरने जम्मूच्या स्टॅटफोर्ड, मुद्रमिद्ध कवी बाबराय यांचे ज्या संवेदनांच्या काठी चालून काही कविता लिहिल्या आणि ज्या संवेदनात त्यांचा अंत झाला त्या जिविताच्या संवेदनाला ते आकर्षून घेत देतात. त्याचप्रमाणे प्रकाशदरम्यान ते बाबरायचे मुद्रमिद्ध कवी रात्रीत. एकाचदा असलेल्या ते उमरकतकम 'मिद्रमिद्ध' यांचे उमरकतकम 'मिद्रमिद्ध' यांची 'मिद्रमिद्ध' यांच्याचे विविध प्रकारच्या पुस्तकांचे बाबराय ते करीत असत यांचेही दाखले 'विदेश-दर्शन' मधील पत्रसंवादातून घेतले.

अकलागिझानच्या भेटीदरम्यान त्यांनी सामिधान देशाला भेट दिली. या ठिकाणी १५०० ते १६०० वर्षांपूर्वीचे भगवान बुद्धांचे दोन भव्य पुतळे आहेत आणि याच भूमीत मॅगिझानने एके काळी आलेक घातलेला होता. हे चालू घराबंततय बाबला अंतर्मुख होताना. ३१ ऑक्टोबर १९७५ रोजी नाट्यलिलेच्या पत्रात ते याविषयी लिहिताना, "कालाची भूमी भगवान बुद्धांची उभे आहेत आणि मॅगिझानने जॉर्जची शेजारची उभे आहे. इंग्लिंडोनि कोर आणि काला यांची जणू काही स्पर्धा चालू आहे. कुणाचा विजय आहे? कालाचा की जॉर्जचा? मग कधी कधी घाबराक होते. आम्हाच्या जगाकडे पाहिले की हा प्रश्न भेटलाच लागतो. मानवाची प्रगती होत आहे असा आम्हाचा दावा आहे. हा खरा असेल तर कालाचाच विजय होतो असे मानावे लागेल. पण आम्हाच्यांच्या कालाचे आधुनिक मॅगिझानने जॉर्ज उभे आहे. याची जाणीव झाली की मग पुन्हा मग आम्हाच्या आणि कालाचे होते."⁴³ अशाप्रकाराच्या विवेचनातून घराबंततय बाबला यांची रवीर चित्रनशिलता प्रकट होताना दिसते. त्याचप्रमाणे त्यांची चकटून गेलीही उल्लेखनीय होती. इंग्लिश देशाच्या भेटीवर आल्यानंतर २९ मे १९७५ रोजी लिहिलेल्या पत्रात या देशाच्या विविध घेताना दिलेल्या उतरांच्या बाबलात ते म्हणतात, "गंगा-यमुनेच्या प्रदेशातील जनतेच्या सुमेल्या माईलकाटच्या जनतेसाठी मी वेळून आले आहे."⁴⁴

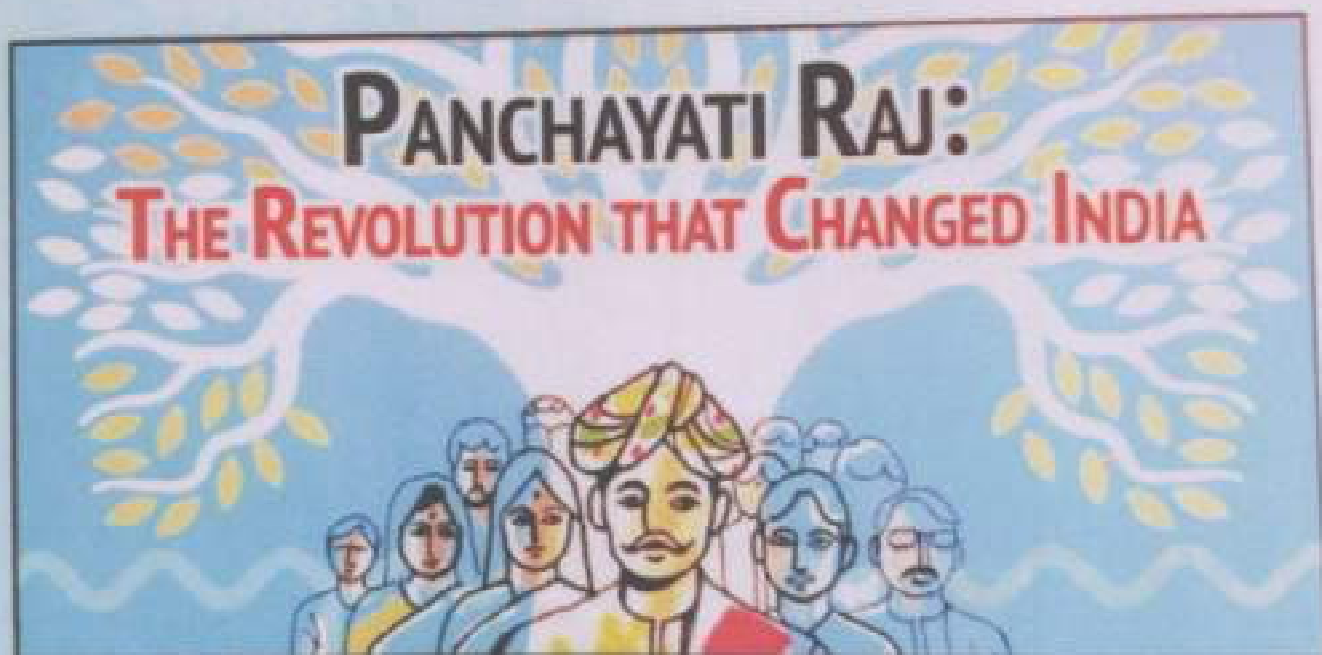
अशाप्रकारे 'विदेश-दर्शन' या पत्रसंवादातून घराबंततय बाबला यांच्या प्रगल्भ वैचारिकतेचे, कला दृष्टिकोने, साहित्यिक मर्यादे, चित्रनशिलतेचे, संभाषण चालुपणे प्रभावी दर्शन घडते. यासर्व विवेचनातून त्यांच्या एकुलत अष्टपैलू व्यक्तिमत्त्वाने दर्शन घडते.

४. 'विदेश-दर्शन' मधील पत्रसंवादातील भावनात्मकता

'विदेश-दर्शन' मधील पत्रसंवादातून घराबंततय बाबला यांचे अष्टपैलू व्यक्तिमत्त्व प्रकट होते. मुळतःच घराबंततय भावनाप्रधान स्त्रीचे. त्यांचा प्रत्यक्ष त्यांच्या समग्र लेखनातून येतो. शोधनिबंधातील या

PANCHAYAT RAJ

(STATUS & GOALS)



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Aadhar Publications, Amaravati

PANCHAYAT RAJ (STATUS & GOALS)

■ Dr. Dnyaneshwar S. Shambharkar

■ *First published, – 24th April 2023*

. © Editor & Publisher

■ Published by

Prof. Virag Gawande for

Aadhar Publications,

Behind Govt. VISH,

New Hanuman Nagar,

Amravati – 444 604.

■ Printed by

Aadhar Publications,

■ Notice

The editor, publisher, owner, printer will not be responsible for the articles published in this issue. The articles published in this issue are the personal views of the authors.

ISBN-- 978-93-95494-18-2

■ Price : 400/

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**Role of Gramsabha in Rural Development; an
Analytical Study**

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Abstract:

A small village is managed by a local self-government body called Gram Panchayat. This administration is looked after with the help of Sarpanch, Upasarpanch, GramSevak. The lowest but most important level in Panchayat Raj is called Gram Panchayat. It is also called the Executive Committee of the Gram Sabha. In the year 1992, the 73rd amendment was passed in the constitution of our country, due to this amendment Panchayat system of government was started in our country. In this panchayat state system, a system called gram sabha has been created in each gram panchayat.

Gram Panchayat Act was enacted in Maharashtra in 1958. This Act also created Gram Sabhas in each Gram Panchayat. They have now acquired constitutional status due to the 73rd Amendment. Also, the Government of Maharashtra passed some amendments in the Gram Panchayat Act 1958 in the Gram Sabha context and passed the Gram Panchayat 'Amendment Ordinance' on October 16, 2002. Therefore, Gram Sabhas have been given special importance and instead of earlier four Gram Sabhas, a total of six Gram Sabhas have been made mandatory. It is also mandatory to hold village meetings of women. Gram Sabhas have also been given other special powers due to this amendment.

Keywords: Gram

Panchayat, government, Panchayat Raj, Gramsabha, Sarpanch, Gramsevak.

Introduction:

Gram Sabha is a truly democratic institution. In order to make the affairs of the Gram Panchayat more transparent through the participation of the villagers, the voice of the people at the grassroot level should reach the government, a Gram Sabha was established for each village under Section 7A of the Bombay Gram Panchayat Act

1958. Gram sabha members should come together. Tell the Gram Panchayat what are the needs of the people and suggest what schemes should be taken up for the betterment of the villages. Advise and guide Gram Panchayat. In short, Gram Sabha members should participate in the development of villages. Apart from this, Gram Sabha, Gram Panchayat should inform and review the works done in the development of villages during the year. The village panchayat should take information about the development works that it has decided to carry out in the next year. The gram panchayat should calculate the expenditure incurred during the year and get information about the amount to be spent in the next year. The Gram Panchayat should know the doubts raised by the Auditing Officer while verifying the accounts and understand the answers given by the Gram Panchayat to those queries. Ask questions about the affairs of the Gram Panchayat and get information and give instructions to the Gram Panchayat. That is, it is expected that the gram sabha should control the affairs of the gram panchayat and encourage the elected members of the gram panchayat if they do good work and ask them to answer if they do not perform well.

What is gram sabha?

The Gram Sabha of every village is the platform of rights of the villages. It is the 'Lok Sabha' of the village. The people of the village should come together, tell the Gram Panchayat what are the needs of the people and suggest what plans should be taken up for the betterment of the villages, advise and guide the Gram Panchayat for the development of the village. In short, Gram Sabha is the platform of the people of the village where the villagers participate in the affairs of the Gram Panchayat. Under Section 7 and 8 of the Maharashtra Gram Panchayat Act, there is a provision for holding a Gram Sabha.

Provisions regarding Gram Sabha of Maharashtra Gram Panchayat Act:

- 1) Members of the Gram Sabha the electors of the village (villagers above 18 years of age who are named in the voter list) shall be the members of the Gram Sabha.
- 2) Gram Panchayats are obliged to hold at least six Gram Sabhas in every financial year (1st April to 31st March).

16) Gram sabhas minimum 100 or 15 percent of the total electorate, whichever is less will be considered as quorum.

17) The Minutes (Minutes) of the Gram Sabha will be prepared by the concerned Secretary (Gram Sevak) of the Gram Panchayat, or if directed by the Deputy Sarpanch, shall form the staff of the Gram Panchayat.

18) The Gram Panchayat once in every six months, shall report the expenditure incurred on development works in the Gram Sabha and the information thereof shall be posted on the notice board of the Gram Panchayat.

19) All matters raised by the villagers in the Gram Sabha shall be discussed and considered by the Gram Panchayat.

Schedule of Gram Sabha:

According to Section 7 of the Maharashtra Gram Panchayat Act, it is mandatory to hold four of the six meetings on April-May, August-September, November and 26th January. The first meeting of Gram Sabha should be held within two months after the beginning of that year.

Preparation of Gram Sabha:

1. Notice of Gram Sabha must be given at least 7 days in writing.
2. The Gram Sabha should be publicized through publicity and by posting notices in public places in the village. Also, publicity should be done through mobile SMS.
3. Gram sabha instruction, notice should be given to all government and semi-government employees at village level.
4. Matters to be taken up in the Gram Sabha must be submitted in writing to the Sarpanch/Gram Seva two days before the date of the Gram Sabha.
5. It is mandatory for members to hold Ward Sabha in their respective wards before every Gram Sabha.

Functioning of Gram Sabha:

In the first gram sabha of the financial year, it is mandatory to take the administration report of the previous financial year, statement of accumulated expenditure, audit report, answers given to the audit and development program of the current year. (Under Section 8). If these matters are not taken up for approval in the Gram Sabha, action may be taken to remove the Sarpanch from the post.

Other gram sabhas are mainly responsible for the planning of development works, selection of beneficiaries under individual benefit

Panchayat Raj (Status & Goals)

schemes (houses, individual toilets etc.), financial plan of Mahatma Gandhi National Employment Guarantee Scheme as well as approval of the budget for the financial year and work to be undertaken under various schemes.

Powers and Duties of Gram Sabha:

1. Approval of social or economic plans, programs and projects to be implemented in the village before the Gram Panchayat undertakes them.
2. Authorizing the Gram Panchayat to incur any expenditure on development schemes.
3. Gram Sabha to select beneficiaries for personal benefit schemes of State or Central Government.
4. Approve the budget for the financial year.
5. Before acquiring any land, the gram panchayat must seek the opinion of the gram sabha before expressing its opinion.
6. Gram sabhas have the power to elect committees like TantamuktiSamiti, Village Education Committee, Rural Water Supply and Sanitation Committee, Audit Committee etc.

Implementation of Gram Sabha resolutions:

1. The resolutions passed in the Gram Sabha have to be implemented by the Sarpanch/Gram Sevak.
2. Gram VikasAdhikari (Gram Sevak) is responsible for correspondence with the concerned government departments regarding the decisions approved in the Gram Sabha within the prescribed time. Sarpanch should follow up on this.
3. The minutes of the Gram Sabha must be submitted to the PanchayatSamiti within 7 days.

It is mandatory to post the minutes of the Gram Sabha on the board

Dated 25th June, 2014 Government Decision No. As per Sangram-2014-P.K43/Sangram Room, from April 1, 2014, all Gram Panchayats in the state have made it mandatory to post the minutes of Gram Sabha/Monthly Sabha/MahilaSabha/Ward Sabha and various committee meetings on the gram panchayat board and publish it on the gram panchayat website. Also, instructions/notices of Gram Sabhas and other meetings should be given only in the prescribed format.

six Gram Sabhas in a year. There is no problem if you take more than six. But it does not seem to be implemented in reality. For that, it is necessary for the youth of the village to pay attention to how the Gram Sabha can be held efficiently. Voters have the right to speak in the Gram Sabha. Voters should speak with the permission of the Gram Sabha President. Only the Speaker can answer the questions of the voters in the meeting. Others have no right of reply. But in reality the voters are not allowed to speak in the Gram Sabha. Also other people try to answer. Therefore, to see whether the work of the gram sabha is really going on or not, it is necessary to ensure it at the highest level by shooting the video of each gram sabha. Prepare a statement of the issues you want to be resolved in the next Gram Sabha and submit the request to the Gram Panchayat eight days before the meeting and acknowledge it. A resolution should be presented in the Gram Sabha. A majority should be forced on it. The resolution is passed or failed, it should be read whether it is written in the proceeding book or not whether the resolution is written as it is or it is changed. Otherwise there are many cases of not writing the proceeding book or wrongly writing it even after the resolution. It is compulsory to hold the first gram sabha of the financial year in the office of gram panchayat. Also the rest of Gramseva should be taken on other increments, settlements like the chairman of English alphabets. It is mandatory to hold Gram Sabha in the evening or early in the morning at the convenient time of the voters. A Women's Gram Sabha must be held one day before every Gram Sabha. The resolutions passed in that meeting have to be accepted by the Gram Sabha as it is. If our resolution is not recorded in the original minutes, we can check the video recording of the Gram Sabha from behind. Every village has highly educated persons. They should be appointed to the village education board and they should be directly involved in how to improve the quality of education in the village. By doing this, every village can get quality education. Every village should have an anti-corruption committee of village dignitaries and the direct involvement of this committee should be in the Gram Panchayat through the Gram Sabha. By doing this every gram panchayat can be free from corruption. Government should take initiative for that. It is necessary to get the benefit of various schemes to the poorest sections of the village. It is necessary to make Gram Sabha competent for that. In order to benefit the people of the village

Panchayat Raj (Status & Goals)

from various schemes, it should be verified whether they have actually participated in the Gram Sabha or not. It is necessary to control the gram sabha so that only the person who attends the gram sabhas gets the benefits of the schemes in priority order and the rich sections of the village do not get the benefits of the schemes.

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ग्रामसभानियमवअटी.

अक्षर वाङ्मय

वर्ष तेरावे, पुरवणी अंक चौथा, पुरवणी क्रं. १

एप्रिल-मे-जून २०२१



मुख्य संपादक

डॉ. नानासाहेब सुर्यवंशी



अक्षर वाङ्मय

एप्रिल-मे-जून 2023

वर्ष तेरावे, पुरवणी अंक चौथा, पुरवणी क्र. ३

संपादक

डॉ. नानासाहेब सूर्यवंशी

कार्यकारी संपादक

डॉ. शिवाजीराव देशमुख

मार्गदर्शक

डॉ. अरुण प्रभू

संपादक मंडळ

डॉ. बाळासाहेब लबाटे
डॉ. रत्नाकर बेगडे

डॉ. दीपक चतदरवार
डॉ. संदीप सांगळे

अमेरिकेतील समन्वयक
रमेश देशपांडे किशोर
त्रिजेश करकटे

सोनाली जांभेकर

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ग्रणव रुक्मिणी नगर, धोडगा रोड, अहमदनगर ४१३५१५
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- महाराष्ट्र राज्य साहित्य व सांस्कृतिक मंडळ या नियतकालिकाच्या प्रकाशनात अनुदान दिले असले तरी या नियतकालिकेतील लेख लेखांच्या विचाराशी मंडळ व शासन सहमत असेलच असे नाही.
- या अंकातील लेखातून व्यक्त झालेले लेखकांच्या मतांशी संपादक, संपादक मंडळ, प्रकाशक व मुद्रक सहमत असतीलच अस नाही.

सोमनाथ रामचंद्र पावडे,

मराठी विभाग प्रमुख,

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प्रयोगारूप लोकलला ; गोंधळ लोकनाट्य परंपरेतील सामाजिकभान

गोपबारा :

गोंधळ ही महाराष्ट्रातील प्रयोगरूप लोककलेतील एक कला आहे. परंपरेने चालत आलेल्या या कलेत अनेक बदल होत गेले. पूर्वीच्या पारंपारिक वाद्यांची जागा नवीन वाद्यांनी घेतली. पूर्वीच्या गोंधळ गीते जाऊन नवीन गोंधळ गीतांची रचना झाली. गोंधळ कार्यक्रमात विविध दृष्ट्या पूर्ण झाल्यानंतर रात्रभर जागरण केले जाते. गोंधळ ही एक शैक्षणिक, मनोरंजक आणि महत्त्वाची परंपरा आहे. गोंधळ ही एक धार्मिक लोककला आहे ज्यामध्ये गोंधळी लोक देवतांचे आवाहन करतात. असे मानले जाते की लग्न, धागा समारंभ यांसारख्या शुभ प्रसंगी गोंधळ घरात वाजवला तर आपले जीवन अश्वस्थित होत नाही.देवी रेणुका किंवा देवी मुळजामवानी यांचा आशीर्वाद मिळविण्यासाठी, भक्त कुटुंबातील पारंपारिक गोंधळीला (गोंधळ सादर करणारे कलाकार) आमंत्रित करतात आणि त्यांना संपूर्णपणे गोंधळ सादर करण्याची विनंती करतात.

आजही कोणत्याही शुभ कार्यासाठी जवळपास सर्व समाजात कुमदेवतेला प्रमथ करण्यासाठी गोंधळ घालण्याची परंपरा आहे. हा लोकविधी सादर करताना निरनिराळ्या देवतांना गोंधळी गोंधळाला घेण्याचे गाण्यादूनच आवाहन करतात. ज्यांनी गोंधळ घालण्यासाठी बोलावले असेल तेथे गोंधळवाऱ्या माटाचे तिकाटणे उभे करतात, दिवटे पेटवतात, दिवटी हातात घेऊन संबळाच्या तालावर गीत आणि नृत्य सादर करतात. हे ऐकताना विशेष आनंद होतो.

गोंधळ ही परंपरा लोप होत चालली आहे. असे म्हंटले जात असतांनाच एकीकडे ही प्रयोगरूप लोककला कात टाकताना जाणवते आहे. या लोककलेत समाजाच्या मानसिकते नुसार बदल होताना दिसत आहे. लोच बदल येथे मांडण्याचा प्रयत्न केला जाणार आहे.

कीवर्ड: प्रयोगरूप, जागरण, गोंधळ, मुरली, लोकनाट्य

प्रास्ताविक

परंपरा ही समूहाची असते. लोकसाहित्य हे मौखिक परंपरांचे एक रूप आहे. हिंदू, बौद्ध, जैन या धर्मांच्या पुरातन साहित्या या मौखिक परंपरांनीच जपलेल्या दिसतात.

प्रयोगात्मक लोककलेतील लोकगीते ही मौखिक परंपरेने आलेल्या अनेकविध गीतप्रकारांचा निर्देश करतात. लोकगीते ही समूहमनाची व समूहप्रतिभेची निर्मिती आहे. निसर्गाच्या लयबद्धतेशी व तालबद्धतेशी संवाद साधितच ही गीतनिर्मिती झाली. लोकगीत, लोकसंगीत व लोकनृत्य ही परस्पररोपजीवी परस्परावलंबी व निसर्गसंवादी अशी मानवाची निर्मिती आहे. लोकगीतांची निर्मिती व्यक्तीची असली, तरी तिच्या निर्मितीमागची प्रेरणा समूहमनाची असते.

घोडक्यात गोंधळ ही एका मानवी समूहाने दुसऱ्या मानवी समूहासाठी, त्यांच्या धार्मिक समजुतीतून निर्माण होणारी प्रयोगरूप कला आहे. ही फक्त सांगितली जात नाही तर ती प्रयोगाच्या रूपाने इतर लोकसमूहापुढे सादर करावी लागते.

लोकनाट्याचे स्वरूप

जागरण-गोंधळ हे लोकनाट्या परंपरेतील एक प्रकार दिसतो. घरातील आनंदी प्रसंगाच्या वेळी विविध विधींचे आयोजन केले जाते. या विधी प्रसंगी नृत्य करण्यातून विधीनृत्य प्रचलित झाले. पुढे या नृत्याला संगीत आणि गीतांची जोड मिळविल्यामुळे त्यात नाट्य आले. विधीचा संबंध नाट्याशी जोडल्या मनीरंज हा एक हेतू या नाट्याला लाभले. नाट्यात रंग भरण्यासाठी संवादाची योजना आली. पुढे नटला त्यात प्रवेश मिळाला. यातूनच पुढे विधीनाट्याची जडण-घडण झालेली जाणवते लोकनाट्य संदर्भात प्रभाकर मांडे म्हणतात, लोकनाट्याची पुर्वावस्था ही विधीनाट्य धर्मधर्मेच्या बैठकीवर उभी असलेली, देवतोपामनेचा भाग म्हणून रुढ झाली आहे.¹ यांच्या मते विधीनाट्य हे लोकांच्या धर्मधर्मेतून निर्माण झाले.

भारतीय जीवनातील लोकांचे लोकनाट्य हे जणू महासमुद्रप्रमाणेच आहे. भूल, भविष्य, वर्तमान हे सर्व काही हा महासमुद्रप्रमाणे आपल्या मध्ये सामावून घेतले आहे. खरेतर लोक भारतामध्ये विविधी संस्क्रुतींचा संगम झाला असून धर्मधिरानेतून उभ्या राहिलेल्या लोकनाट्या मध्ये विविधतात आहे. लोककला किंवा लोकनाट्या ही जीवनातल्या अनेक धड्या, भावना, विचार यांची एकत्रीत लय आहे. सामान्य जनता ज्या धड्यात हसते, रडते, खेळते, गाते त्याच प्रमाणे जन्य घासून ते अंत्यविधी पर्यंत जे संस्कार त्यांच्यावर होतात या सर्वांचा लोककलेत अंतर्भाव होतो.

भारतीय समूहमनाचा संवाद लोकनाट्याशी अधिक जवळीक साधणारा दिसतो. समाजातील जामूत जनता आणि लोककाल-लोकनाट्य यात सदैव सूक्ष्मपणे अभिसरण प्रक्रिया घडत असते. या सतत होणाऱ्या प्रक्रियातून म्हणजेच विधीशी जडण घडणीत नृत्य, गीत, संगीत, संवाद यांचा एकत्रित अविष्कार हा महाराष्ट्रातील बऱ्याच स्थानातून दिसतो. महाराष्ट्र प्रदेशागणिक देव-देवतांची पूजाविधीची पद्धती वेगवेगळी आढळते. त्यातून विधी नाट्याच्या पद्धतीती पण बरेच बदल झालेले जाणवतात.

गोंधळ जागरणाची कार्य पद्धती.

कुटुंबातील व्यक्ती देव्हान्यातील देव पेऊ जेजुरीईला जातात. घरातील लोकांचे लग्न जमने तर बाप्पामुरळीचा घरातील कुमादेवालाचा जागरण गोंधळाचा कार्यक्रम केला जातो. पूर्वी जागरण गोंधळ कार्यक्रमामाठी जेजुरीवरून बाप्पामुरळी कार्यक्रमासाठी येत असत. यात तळीभरणे, लंघर तोडून डोक्यावरचे जोसे उतरविणे, दिवटी-बुघली राकभर पेटवणे. या जागरणामाठी राकभर देवदेवतांची गीत गायन करणे, कथा सांगणे. सर्व नाते संबंधातील मंडळी, मित्रपरिवार यांना जेवणामाठी निमंत्र दिले जाते.

गोधळातील गीत समारंभात देवीची स्तुतिगीते असतात. कृष्णकथा गुंफणाच्या गीळगी असतात. वीरांचे पराक्रम गाणारे पोवाडे असतात. आध्यात्मिक भेदिक रचना असतात. ग्रामीण जीवनातील वास्तवावर उपरोधिक भाषेत प्रकाश चकणारी गीते असतात. तर कीर्तनकारांच्या उत्तररंगाल रंगणारी आख्यायणीतेही असतात. गोधळाच्या उत्तररंगाल आख्यान लावले जाते. त्यात अंबरीष राजा, विक्रम राजा, जोभुळ आख्यान, चांगुना आख्यान यांमारखी आख्याने, निरुपण, निवेदन, विनोदी बलावणी, गमतीगीर संवाद यांमह गोधळी रंगवून रंगवून सांगतो.'

बोडक्यात, महाराष्ट्रातील लोकसंगीतात गोधळ या प्रयोगरूप लोककलेचे स्थान महत्वाचे आहे. गोधळी ही देवीच्या भक्तांची भटकी जात आहे. गोधळ हा लग्न, मुंज, वारसे, जावळ, अशा समारंभाचे वेळी देव - देवतांच्या उपासनेसाठी केलेला एक कुलाचार आहे.

निष्कर्ष :-

१. लघ लोककला या काळाच्या पडद्या अड होत चालल्या आहे. अशा नव पिढीतल एक स्वर निघतांना दिसतो. पण ग्रामीण भागणे अजूनही ती नाळ तुटून दिसेले नाही याची प्रचीती गोधळ या प्रयोगरूप लोककलेतून जाणवते.
२. गोधळ ही प्रयोगरूप लोककला असल्याने, समाजातील धार्मिक विधी, ज्ञानदोस्तव, लघ समारंभ, जेदुरीला जाणे या प्रसंगाच्या वेळी तो केला जातो. यातून समाजातील सामाजिकभानाची जाणीव निर्माण होते. कारण गोधळाच्या वेळी सर्व पाहुणे, नाते संबंधातील मंडळी एकत्रित येऊन हा कार्यक्रम साजरा करतात.
३. गोधळ ही प्रयोगरूप लोककला धार्मिक यत्नेतून निर्माण झाल्याचे जाणवते.
४. लोकांच्या समागातून, धार्मिक जाणीव लक्षात घेऊन गोधळ-जागरण करण्यात येतात. लघ विधी हा एखाद्या माणसाच्या आयुष्यातील, त्याच्या घरातील लोकांच्या दृष्टिने अतिशय महत्वाचा आहे. तरी त्या प्रसंगी गोधळ-जागरणाच विधी केला जाताना दिसते.
५. गोधळ-जागरण ही समूहमनाची व समूहप्रतिभेची निर्मिती असल्याचे दमते.

संदर्भ साहित्य

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Maharashtra Political Science and Public Administration Conference

Reg.No. MAH / 12-83 / Aurangabad F - 985

Volume - 10

No - 3

Issue - 30

Sept-Dec. 2022

ISSN-2347-9639

39Years

VICHAR MANTHAN

National Research Journal of Political Science and Public Administration
(Peer Reviewed Journal)

IJIF

Impact Factor
2.283



महाराष्ट्र राज्यशास्त्र व लोकप्रशासन परिषदेची संशोधन पत्रिका

विचार मंथन

सामंजसक

प्राचार्य डॉ. पी. डी. देवरे

संपादक

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प्राचार्य डॉ. मनोहर पाटील । प्राचार्य डॉ. बाळ कांबळे । डॉ. सियाकत खान । डॉ. विठ्ठल दहिफळे



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रशिया-युक्रेन युद्ध आणि त्याचे जागतिक परिणाम

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प्रस्तावना

दुसऱ्या महायुद्धानंतर जगात शांतता प्रस्थापित नव्हती आणि युद्ध होऊ नये म्हणून संयुक्त राष्ट्रांसंघटनेची स्थापना करण्यात आली. जगातील कोणत्याही राष्ट्रांमध्ये वाद/समस्या निर्माण झाल्यास चर्चा, विचार विनिमय, वाटाघाटी, करार करून आंतरराष्ट्रीय कायद्याच्या आधारे सोडविणे अपेक्षित आहे. दुसऱ्या महायुद्धानंतर जगाची विभागणी अमेरिका आणि सोव्हिएत रशिया या दोन गटात झाली. त्यातून शीतयुद्ध सुरू झाले. जगात प्रचंड तणाव संपर्क सुरू झाली. १९९१ मध्ये सोव्हिएत रशियाने विघटन झाले आणि शीतयुद्धाची समाप्ती झाली. शीतयुद्धाच्या समाप्तीनंतरही परिस्थिती बदलली नाही अमेरिका-रशिया यांच्यात वाद सुरूच आहे. तेव्हापासून जगाची फेरफटका आजपर्यंत चालू आहे. त्यामध्ये जुन्या संघटना मार्गे पाहून नव्या जगातला आस्वास. राष्ट्रकुल आणि अलिप्तता चळवळीचे महत्त्व कमी झाले. बॉसल करारातील कम्युनिस्ट देश विभागले गेले, तर नाटो गटातील राष्ट्रांचा विस्तार झाला. त्याचे एक रूप युक्रेन युद्धातही दिसत आहे. २४ फेब्रुवारी २०२२ रोजी रशियाने युक्रेनवर पूर्ण प्रमाणावर आक्रमण सुरू केले आणि रशिया-युक्रेन युद्धाला सुरुवात झाली. दुसऱ्या महायुद्धानंतर युरोपमध्ये अशा प्रकारचे युद्ध हे प्रथमच सुरू झाले आहे. रशिया-युक्रेन युद्धाचा परिणाम फक्त युरोपवरच नाही, तर संपूर्ण जगावर खोलवर झाला आहे. हे युद्ध यांबविले जागतिक शांतता आणि मानव जातीच्या कल्याणासाठी महात्वाचे आहे.

संशोधन पद्धती : सार शोधनिबंध हा दुय्यम सार्पनाच्या सोतावर आधारित आहे. यामध्ये संदर्भ ग्रंथ, वर्तमानपत्रातील लेख, चर्चासत्र, यांचा आधार घेतला आहे.

उद्देश

१. रशिया-युक्रेन युद्धाची कारणे अभ्यासणे.

२. रशिया-युक्रेन युद्धाचे परिणाम अभ्यासणे.

३. त्यावर उपाय सुचवणे

रशिया-युक्रेन युद्धाची कारणे

१. रशियाचा युक्रेनला नाटो (NATO- North Atlantic Treaty Organization) मध्ये सामील होण्याला विरोध आहे. रशियावर दबाव आणण्यासाठी अमेरिका सतत प्रयत्न करत आहे. जर युक्रेन नाटोमध्ये सामील झाला, तर त्यांचे सैन्य आणि सत्तांच्या जोरावर अमेरिका युक्रेनच्या मदतीने रशियाचे प्रचंड नुकसान करू शकते, याची जाणीव रशियाला आहे.

२. अमेरिका आणि पश्चिम युरोपीय देशांनी नॉईस्ट्रॉम-२ या पाइपलाइनचे काम बांबवलेले आहे. या प्रकल्पावर रशियाने अस्वावधी डॉलर खर्च केले आहेत. या पाइपलाइनद्वारे रशियाला गॅस, जर्मनीसह संपूर्ण युरोपला गॅस आणि तेल पुरवठा करायचा आहे. मापूची हा पुरवठा युक्रेनमधील पाइपलाइनमधून केला जात असे. यापासून युक्रेनला दरवर्षी लाखों डॉलर्स मिळत होते. नवीन पाइपलाइनमुळे युक्रेनचे मोठे आर्थिक नुकसान होणार आहे. त्यामुळे युक्रेन रशियापासून वेगळे होण्याच्या मार्गावर आहे.

३. युक्रेनच्या पश्चिमेला युरोप आणि पूर्वेला रशियाची सीमा आहे. १९९१ पर्यंत युक्रेन सोव्हिएत युनियनचाच (USSR) भाग होता. १९९१ मध्ये सोव्हिएत रशियाचे विघटन होऊन १५ स्वतंत्र राष्ट्रे निर्माण झाली. वेगळे झाल्यानंतरमुद्धा युक्रेनमध्ये रशियाचा प्रभाव

मोठ्या प्रमाणात होत. युक्रेन सरकारमुद्दा रशियन सरकारच्या आदेशानुसार काम करत होते. मात्र युक्रेनची खालवत चाललेली अर्थव्यवस्था, वाहली महागाई आणि बहुतेक युक्रेनियन नागरिकांवर अल्पसंख्यक रशियन भाषिक लोकांचे राज्य वामुळे बंडाला खतपाणी मिळत गेले. त्यातून रशिया-युक्रेन युद्ध सुरू झाले.

परिणाम

१. संपूर्ण युरोप खंडाला नैऋत्य गॅस रशिया पुरवठा. रशिया हा नैऋतिक बाजूचा जगातील सर्वात मोठा निर्यातदार देश आहे तसेच कच्च्या तेलाचा जगातील दुसरा सर्वात मोठा पुरवठादार आणि कोळसा निर्यातीत तिसरा क्रमांक असलेला देश आहे. युरोपला १/४ तेल, वायू आणि कोळसा रशियामधून येतो. त्याचा पुरवठा थांबवून रशियाने संपूर्ण युरोपची आर्थिक कोडी केली. त्यामुळे युरोपमधील ऊर्जाभिनिर्मीतता खूप मोठा परिणाम झाला.
२. जगाला अन्नधान्याच्या गंभीर संकटाचा सामना करावा लागत आहे. कारण रशिया व युक्रेन हे दोन्ही देश गव्हाचे प्रमुख उत्पादक आणि निर्यातदार आहेत. रशिया जगाला ४०% टके गहू पुरवतो, तर युक्रेन जगातील १०% गहू निर्यात करतो तसेच मकाच्या जागतिक व्यापारात १५% युक्रेनचा सहभाग असून जगातील ५०% सूर्यफूस तेलाची निर्मिती युक्रेनमध्ये होते. युद्धामुळे जगात गहू आणि सूर्यफूस तेलाचा तुटवडा निर्माण झाला आहे. जगातील राहणकरून गव्हाची मागणी वाढून किमत्त वाढली आहे. संयुक्त राष्ट्रांच्या अन्नपुरवठा कार्यक्रमावर बाईट परिणाम झाला आहे.
३. सतत युद्धात गुंतल्यामुळे रशिया आणि युक्रेन यांचे प्रबंध आर्थिक नुकसान झाले आहे.
४. आफ्रिका आणि तिसऱ्या जगातील देशांमध्ये अन्नधान्याचा तुटवडा निर्माण होऊन जगात महागाई झपाट्याने वाढत आहे व आगामी

काळात महागाई वाढण्याची शक्यता आहे.

५. अमेरिका-चीन बांधवातील तैवानचा युद्ध अधिकच तापला आहे.
६. युरोपमध्ये नाटोच्या हालचाली वाढल्या आहेत.
७. अण्वस्त्रांचा धोका वाढत आहे.
८. आंतरराष्ट्रीय व्यवहारात डॉलरचे प्रमाण गेल्या २० वर्षात ७०% वरून ५९% पर्यंत खाली आले आहे.
९. अमेरिका युरोपाच्या गट आणि पश्चिम युरोपतील राष्ट्रांनी रशियावर आर्थिक निर्बंधांबरोबर इतर निर्बंध लादल्याने रशियाच्या अर्थव्यवस्थेबरोबर जागतिक अर्थव्यवस्थेवर नकारात्मक परिणाम झाला आहे.
१०. अमेरिका आणि संयुक्त राष्ट्रांची विश्वासार्हता जगभर कमी होताना दिसत आहे आणि अजून जगातील सर्व देश याच्या काळानुसार धोरणे बदलत आहेत.
११. रशिया-युक्रेन युद्धाच्या काळात कच्च्या तेलाच्या किमती वाढल्या आहेत.
१२. जागतिक मंदी येण्याची दाट शक्यता आहे.
१३. युक्रेनमधील १० लाख लोक विस्थापित होऊन हजारो लोकांना आपले प्राण गमवावे लागले.
१४. युक्रेनमधील लाखो रशियातील देश सोडून इतर देशात स्थलांतरित झाले आहेत. पूर्व युरोपला त्याचा फटका जास्त बसला आहे.
१५. भारताचे द्वितीयबंध फक्त अमेरिका व रशिया या दोन राष्ट्रांपुरते मर्यादित नसून सर्व बाजूंनी गुंतलेले आहेत. त्यामुळे भारताच्या आर्थिक व्यापारासह संरक्षण क्षेत्रावरील या युद्धाचा प्रबंध अनिष्ट परिणाम होईल.

उपाय

१. संयुक्त राष्ट्र संघाने सुरक्षा परिषदा सक्षम केली पाहिजे.
२. प्रत्येक देशाने आपल्या करमसी (चलनामध्ये) इतर राष्ट्रांकडून खोटी करणे.
३. जागतिक व्यापारातील डॉलरची भक्तेदारी

- कमी करणे.
४. संयुक्त राष्ट्र संघाच्या सुरक्षा परिषदेचा विस्तार केला पाहिजे.
५. जगातील अण्वस्त्र नष्ट करण्यासाठी जागतिक पातळीवर सामुदायिक प्रयत्न करणे.
६. राष्ट्रा-राष्ट्रांभे पराजलधित्व कमी करणे.
७. खनिज तेलाच्या भाषातीसाठी खून दिवस असत देशांवर अचलतून राहू नये.
८. युनैटेड नेशन्समध्ये सामील होण्यापासून वांचवणे गरजेचे आहे.

समासोप

रशिया-युक्रेन युद्धाला आतापर्यंत १० महिने पूर्ण होत असून अजून कोणताही देश माध्यम घेण्यास तयार नाही. इराण-इराक युद्धाप्रमाणेच आगामी काळ रशिया-युक्रेन बांध्यातील संघर्ष सुरुच राहील आणि त्याचे परिणाम संपूर्ण जगाला भोगावे लागतील. आज संपूर्ण जग असुरक्षित बनले आहे. संयुक्त राष्ट्रसंघ आपली भूमिका पार पाडू शकत नाही. संयुक्त राष्ट्रांमध्ये युद्ध बांधविण्याची खनता नाही. आज अमेरिका महासत्ता राहिली नाही. अमेरिकेची सुरक्षेची हानी कमी झाली आहे. आंतरराष्ट्रीय

संघटना कमजोर झालेल्या आहेत. आज जगातील प्रत्येक देश असुरक्षित बनला आहे. जगत अण्वस्त्र स्पर्धा वाढत आहे. त्याचे आर्थिक परिणाम जगाला भोगावे लागणार आहेत. आज जगाचा नकाशा पाहिला तर अमेरिका, चीन, भारत, युरोपीय महासंघ, इटली, जपान, रशिया, सौदी अरेबिया या सर्वांचा समावेश असणारा हा सर्वात बलवान राष्ट्रगट आहे. सध्याचा काळ युद्धाचा राहिलेला नाही, हे जगातील सर्व राष्ट्रांनी लक्षात घेऊन गरिबी, जागतिक हवामान बदल, विविध रंगांच्या साथी आणि दहशतवाद या समस्या सोडविण्यासाठी प्राधान्य देणे गरजेचे आहे. युद्धक्रिेची राजकारण घडानवी होण्याकरिता नव्या टोस परिवर्तनसाठी आंतरराष्ट्रीय संस्था, संघटनांची पायाभरणी होण्याची गरज आहे.

संदर्भ सूच

१. अविनाश्वर: संविधान संघाची महाविद्यालय, नविक, ०५ एप्रिल २०२२.
२. महानंद टाऊन ०२ डिसेंबर २०२२.
३. साकाराज्या २५ मेजुवारी २०२२.
४. लोकमत २५ मार्च २०२२.
५. साकाराज्या ०५ जून २०२२.

नवोदीत संशोधकांसाठी कॉम्प्रेड प्राचार्य डॉ. विठ्ठल मोरे पारितोषिक

राज्यशास्त्र व लोकप्रशासन विषयाचे पदव्युत्तर निघाची/पीएच.डी. संशोधक निघाची / सहाय्यक प्राध्यापक फक्त यांचेसाठी महाराष्ट्र राज्यशास्त्र व लोकप्रशासन परिषदेच्या वार्षिक अधिवेशनात प्रत्यक्ष उपस्थित राहून पेपर सादर करणा-यांकरीता कॉम्प्रेड प्राचार्य डॉ. विठ्ठल मोरे पारितोषिक.

अकूट संशोधन पेपर सादरीकरण

प्रथम पारितोषिक:- २१०० रुपये रोख सन्मानचिन्ह व प्रमाणपत्र

द्वितीय पारितोषिक:- १००१ रुपये रोख सन्मानचिन्ह व प्रमाणपत्र

तृतीय पारितोषिक:- ७०१ रुपये रोख सन्मानचिन्ह व प्रमाणपत्र

इतर तीन प्रोत्साहन पर प्रमाणपत्र

(टीप पेपर सादरीकरणासाठी विषय बंधन नाही)

Sustainability Enhancement of Traditional Cropping Framework in Surgana Tehsil of Nashik District Through MAP-based Intercropping

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Article Info

Article type:

Research Article

Article History:

Received: 29 April 2022

Received in revised form:
19 Oct 2022

Accepted: 30 Oct 2022

Published online: 31 May
2023

Keywords:

Mixed cropping,
Intercropping, Tribal
farming, Medicinal and
aromatic plants,
Sustainability

Abstract

Objectives: Traditional cropping framework in Surgana Tehsil Primary Crops Grown in Surgana Tehsil c rotations in tribals of Surgana mixed cropping framework in Surgana obstructions of Traditional cropp framework in Surgana sustainability enhancement by Integration of Heterogeneity in crops through MAPs-ba intercropping pattern

Materials and Methods: Selection of study area, visits were organized to tribal farmers and farming area field data collection was carried out during the whole cropping season.

Results: From decades ago, there has been 5-30% drop in mountain farming in hilly and tribal areas of Maharashtra. Only selected varieties of cereals, pulses, amaranths etc. are important cash crops in the hilly areas of Surgana Tehsil. In conventional cropping pattern, proso millet, finger millet, rice, pea, chick pea, pigeon pea, amaranth etc. were used by farmers of Surgana for mixed cropping system. This conventional cropping patterns are not found much profitable and unable to fulfil the demands of growing population. In such tribal and hilly areas of Surgana, turmeric, hemp, stevia, *Tinospora*, *Asparagus*, mint, long pepper, isabgol, lemon grass, ginger, *Chlorophytum* (safed musli) etc. medicinal and aromatic plants (MAPs) can play extraordinary role in improving the sustainability of the tribal farming. Nevertheless, these crops yet are not a part of the cropping pattern in Surgana. MAP based intercropping with conventional cropping will obviously enhance the yields of main crops and make extra income to the tribal families. The topography and climatic condition of Surgana is convenient for growth of these crops and incorporation of MAPs with main crops is another choice to boost the agril production in Surgana.

Conclusions: The present study concludes in the direction of development in socioeconomic circumstance of Surgana farmers through advent of MAPs as intercrops in the current cropping System. Crop Diversification in present cropping framework including MAPs may be helpful to satisfy the needs of the tribal farmer's family in addition to improve the standard of living.

Introduction

Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to

meet their own needs" [1]. This concept encompasses the economic, social, and environmental dimensions, both locally and globally, to achieve the immediate objectives

without jeopardizing future ones. Nowadays, humanity is faced with a major challenge to achieve sustainable agriculture that provides sufficient food and ecosystem services for both present and future generations. Modern agricultural systems, which are based on high technological inputs and oriented to maximizing profits, have been criticized as often being detrimental and nonviable when considered from social and ecological perspectives [2-3].

Demand for agricultural products is expected to continue to boost and the human population is growing in both size and inflation. However, due to the widespread environmental impact of traditional agricultural intensification, there is a general consensus that a global transition to agricultural systems that ensure food security and nutrition, social and economic justice, and create and protect ecosystem functions which is foundation of agriculture. This has caused the promotion of several alternative pathways (Table1) that exploit instead of combine the ecosystem services supplied with the aid of using biodiversity (e.g. nutrient cycling, pest control or pollination) to create resilient and effective farms [4].

The agriculture sector in India has always played a crucial role in driving the wheels of socio-economic development of the country. India was primarily an agrarian economy with almost 60% of the country's population depending on agriculture for their livelihood.

Table 1. Diverse Classes of Systems of Farming [4]

Conventional Intensification	<p>Led to larger fields of monoculture crops that rely on external inputs, including synthetic fertilizers and pesticides.</p> <p>Include traditional farming approaches.</p>
Diversified Farming	<p>Integrate several crops and (or) animals in the production system,</p> <p>Promote agrobiodiversity across scales, regenerating</p>

	ecosystem services, and reducing the need for external inputs
Sustainable Intensification	Relied on sustainable practices, such as agroforestry, conservation agriculture, and biological pest control to establish low-input 'resource-conserving systems' that are based on promoting favourable ecological interactions within the agroecosystem, rather than depending on external inputs.
Ecological Intensification	Emphasizes management to enhance ecological processes that support production, including biotic pest regulation, nutrient cycling, and pollination; there is an explicit focus on conserving and using functional biodiversity.
Agro ecological Farming	Agro ecological farming is knowledge, management, and labour-intensive rather than external input-intensive, and aims to regenerate long-term agroecosystem properties by incorporating functional biodiversity, leading to sustainable, resilient systems.
Organic Farming	<p>Holistic system for enhancing soil fertility, water storage, and the biological control of crop pests and diseases.</p> <p>Prohibits the use of most synthetic inputs and GMOs, while allowing organic fertilizers and pesticides.</p>

Indian Agriculture production in most part of the country is close related to the optimum use of available natural and human resources of the country. Therefore, riding on the back of agro climatic condition and rich natural resource base, India today has become the world's largest producer of numerous commodities. The country is a leading producer of coconuts, mangoes, milk, bananas, dairy products, ginger, turmeric, cashew nut, pulses and black pepper. It is also the second largest producer of rice, wheat, sugar, cotton, fruit and vegetables [5].

About Surgana Tehsil of Nashik District

Surgana Tehsil is a sub district administrative division in Nashik District, Maharashtra India. Surgana tehsil is one of the tehsil of Nashik district Maharashtra having 846.50 km² area. In Surgana tehsil there are 190 villages and 1 town. Total population of Surgana tehsil is 175,816 as per Census 2011 Data. Sex ratio in Surgana tehsil is 1001 per 1000 male. Literacy rate in Surgana tehsil is 68.15%. In Nashik district, the highest proportion of Scheduled Tribe population is recorded in Surgana tehsil (96.51%) and percentage of scheduled tribe population to total population 98.15%. Running north-south in the western part of the District, the Sahyadri Hills cover the entire tehsil of Surgana. This region has an altitude varying between 900 to 1,200 metres. The central parts of these hills are more elevated than the northern and southern portions. The hills are densely covered under forests and these are mainly reserved forests. Surgana has an average rainfall of 2000 mm. while the average rainfall in the rest of the District is only 635 mm [6].

Workers profile of Surgana Tehsil

Surgana has 97,557 population engaged in either main or marginal works out of them 49,756 males and 47,801 female population are working population. Full time workers in Surgana tehsil are 81,950 and 15,607 are marginal (part time) workers

[6]. The capacity of land-based activities in hilly regions of Surgana has attained its threshold limit. Farmers in the hilly areas struggle due to low manufacturing capacity and resource utilisation because of small growing season, farm fragmentation, water stress, low soil quality, remoteness, low yield, post-harvest control, unavailability of market and capitalism. All those innate and tribal fiscal pressure have caused less-utilization of favourable resources in the hilly area. Tribal people within the hilly area have restricted lifestyle choices because of current conventional cropping framework. So, there is demanding call for sustainability enhancement of traditional cropping framework in hilly and tribal regions of Surgana to make it extra effective.

Traditional Cropping Framework in Surgana Tehsil

Traditional cropping framework, means the agriculture land use pattern (percentage of area under various crops at a point of time in a unit area) used on a farm and its interaction with farm assets, other farm enterprises and available technology. In the traditional cropping framework, once in a while numerous crops are grown together, or they are grown separately at short durations in the same field (Table 2). In the hilly region of Surgana, diverse agro-climatic zones are present, i.e. (i) planes, (ii) lower altitude and (iii) medium altitude.

Crops growing seasons followed in the agro-climate zones of Surgana include: (a) Kharif (rainy season; mid-June to October), (b) Rabbi (winter season; November to February). Summer can be divided into two: (i) Spring season (March–April): space near houses are used for growing mainly vegetables. (ii) Hot summer season (May–June): regular practice of burning of fields before rainy season. Reasons for field burning have been named as to control weeds, pests and diseases, and to facilitate seedbed preparation for the following crop [7-8].

Table 2. Types of cropping framework in Surgana Tehsil

Mono cropping	Growing of single crop on a piece of land year after year.
Multiple cropping	Two or more crops grown in the same field within given year with a definite row arrangement.
Inter cropping	Growing two or more crops simultaneously on the same piece of land with a definite row pattern.
Sequence cropping	Growing two or more crops in sequence on the same piece of land in single farming year.

Primary Crops Grown in Surgana Tehsil

Grains/millet: Rice, *Nagali* (finger millet), *Varai* (proso millet), *Rajgira* (amaranth), *bajri* (pearl millet) and maize (corn).

Pulses and beans: Black gram, mung bean, *Chavli* (cowpea), *urad* (black gram), *mung* (green gram), *arhar/tur* (pigeon pea) and *masoor* (lentil).

Oilseeds: Sunflower, ground nut, soya bean, *Karhale/ Khursani* (Niger seed).

Vegetables: Cucumber, cabbage, spinach, brinjal, bitter guard, cauliflower, chilli, tomato.

In the hilly regions of Surgana the following crop rotation and mixed cropping patterns are practiced.

Crop Rotations in Tribals of Surgana

The tribal ways of crop rotations of Surgana are as follows

- Proso millet–rice–wheat
- Proso millet–rice
- Maize–rice–wheat
- Lentil–rice–wheat
- Finger millet/proso millet–rice–wheat
- Chilli–tomato
- Black gram–finger millet–proso millet
- Soya bean–green gram/black gram

Mixed Cropping Frame work in Surgana

The tribal cropping framework associates sowing of different regional well adopted crop seeds in a single field during the kharif or monsoon season, which facilitates the farmers to invest diverse foods, preserving agri-biodiversity, improving soil fertility (by the use of legumes), prevention of pests. It is anticipated that mixed crop systems helps to boost production per acre. Dominant mixed cropping Patterns in Surgana are as follows:

Rice + Finger millet + barnyard millet

Rice + soybean + black gram

Barnyard millet + finger millet + Soya bean + pigeon pea

Bajri (pearl millet) + maize (corn)

Pea + masoor (lentil) + chick pea

Obstructions of Traditional Cropping Framework in Surgana

Traditional farming practices are based on the indigenous knowledge and experience developed over the centuries and have remained popular even now. Routine conventional cropping framework consist of agroforestry, intercropping, crop rotation, cover cropping, traditional organic composting, integrated crop-animal farming, shifting cultivation, and slash-and-burn farming. Although there are many profits associated with these systems, such as enhanced soil fertility, carbon sequestration, resource utilization, biodiversity maintenance, sustainability, and environment protection, there are also certain negative implications associated with some practices such as slash-and-burn activities in shifting agriculture. Traditional cropping is getting global attention for being a source of sustainable food production in times of environmental degradation and need for safe food production [9].

The following are some limitations in traditional cropping framework in Surgana Tehsil:

Definite proportion or pattern is absent in crop cultivation.

Use of traditional cropping only to meet the domestic needs of the farmer's family.

The poor yield of crops is due to competition for resources.

Farmers invest practically nothing on inputs, such as seed, fertilizers, irrigation facilities, pest control.

Small and fragmented land holdings of farmers in the Surgana Tehsil.

The soil becomes infertile with sowing of many types of crops collectively in a single field.

Yield of cash crops is poor because of low population frequency.

Ultimately, traditional cropping framework in Surgana was not helpful to the farmer in terms of income, ecology and biodiversity.

Heterogeneity of crops is the only solution to environmental and socio-economic pressure. This can be achieved through integration of extra cash crops as intercrops like medicinal and aromatic plants (MAPs) in the traditional cropping framework, which accomplish the fundamental needs of the farmer's family, and supports to achieve extra profit and improves their lifestyle.

Sustainability Enhancement by Integration of Heterogeneity in Crops through MAPs-based Intercropping Pattern

The sustainability goals for Rice-based systems in the Surgana region were chosen as "To increase the productivity of rain-fed cropping systems per unit (1) land and (2) water, (3) increase

the profitability of production, and (4) maintain or enhance soil fertility" [10]. Many reports have been published earlier for MAP-based intercropping pattern with main crops for sustainability enhancement in tribal and hilly regions. Within Surgana tehsil, Rice (*Oryza sativa*) is the main staple food. Rice-based systems dominate the zone delineated by the 1500 - 2000 mm rainfall. Typical rain-fed rice-based rotations include food (*Cicer arietinum*, *Lens culinaris* (Kulid), mung bean, black gram [10-12].

Fields are commonly left uncultivated over summer; as insufficient moisture prohibits the reliable production of rain-fed summer crops. Long fallows (winter plus summer) have been largely replaced by MAP based intercropping to enhance production through intensified land use [10]. Traditional nitrogen-fixing legumes have been used to improve soil fertility and staple crop performance for a long time, and a rich diversity of local species have been employed such as mung bean (*Vigna radiata*), cowpea (*Vigna unguiculata*), black gram (*Vigna mungo*), and groundnut (*Arachis hypogaea*) [13]. The Figure 1 contains list of some medicinal and aromatic plants which are recommended for integration of heterogeneity in main crops through MAPs-based intercropping pattern for enhancement of sustainability in hilly and tribal regions of Surgana tehsil.

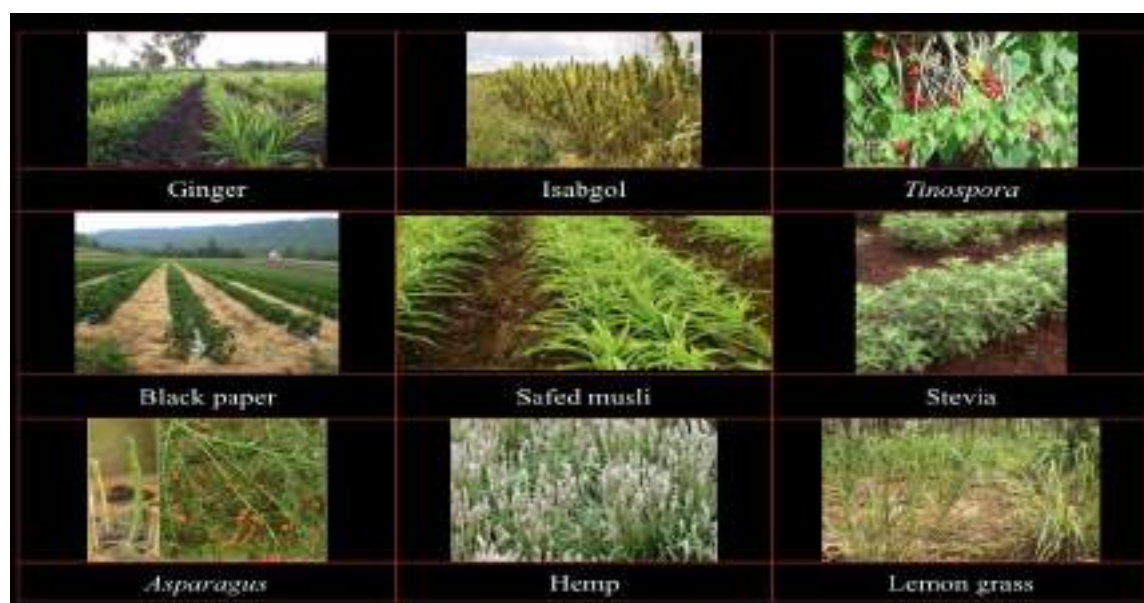


Figure 1. Choices for MAPs-based Intercropping Pattern

Medicinal and aromatic plants grown intercropping with short duration vegetables is essential to fulfil the requirement of vegetables. Intercropping of medicinal and aromatic plants with different horticultural plants has a great role reducing the post-harvest yield losses, production quality maintenance and increase its shelf life in storage. The aromatic nature and essential oil of MAPs enables to protect soil borne nematodes; they also protect nematode diseases by suppressing in its rhizosphere. Intercropping with the main crops greatly enhance the growth, biomass yield, oil content, composition and quality oil in MAPs. MAPs are also significantly increases soil organic nitrogen, soil water content, decreased pH and available nitrogen content. Intercropping of MAPs with other crops produce favourable environment resulting in the improvement in resource use efficiency in terms of productivity and net return per unit area [14].

Conclusion

MAPs are of prime monetary importance due to the non-stop and increasing call for products by national and international markets. Intercropping of MAPs with distinctive main crops

has an excellent function in decreasing the post-harvest yield loss, quality and boosting storage shelf life. The critical oil content, oil production and content of MAPs is likewise affected by interspecific plant competition in intercropping framework.

The inclusion of MAPs allows to halt the damage with insect. MAPs produces volatile oils which can intrude with the main crop, competition, dispersal and pollination, ensuing in reduced pest abundance. MAPs intercropping with main crops enables to broaden the field. Thus, the insect repellent quality of a few MAPs it has a notable aspect for crops like tomato, cabbage, potato, onion and other horticulture plants. Intercropping with MAPs can boost soil fertility, soil organic nitrogen, soil capillarity and acidic pH. Sustainability Enhancement by Integration of Heterogeneity in Crops through MAPs bring about the increase in efficiency of resource in terms of abundance and net yield per unit area.

The current investigation designed against enhancement of social and fiscal status of farmers in Surgana by sustainable integration of heterogeneity in crops through MAPs based intercropping pattern. This results in improving the farmer's socio-economic standard of living and meets the needs and food security of growing population in Surgana.

Acknowledgement

The author is thankful to Principal, Mahatma Gandhi Vidyamandir's Arts, Science and Commerce College Surgana, District Nashik, MH, India for providing reliable facilities for data collection during field survey and encouragement.

Conflicts of interest

The author has no conflicts of interest to declare.

Availability of data and material

Data are available on request to the author.

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2



Respiratory Metabolism affected by mercuric chloride and aluminum sulfate in freshwater Catfish, *Clarias batrachus*

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ARTICLE INFO

Original Research Article

Received on Jan 28, 2022

Revised on February 11, 2022

Accepted on March 09, 2022

Published on March 16, 2022

Article Authors

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PUBLICATION INFO

International Journal of

Agricultural

Invention (IJA)

RNI: UPENG/2016/70091

ISSN: 2456-1797 (P)

Vol.: 7, Issue: 1, Pages: 9-13

Journal Homepage URL

<http://agriinventionjournal.com/>

DOI: 10.46492/IJA/2022.7.1.2

ABSTRACT

Industries are the major sources of heavy metal pollution and it is released into water and soil. Heavy metals cause several ill effects to aquatic living organisms and environment (Muneeshkumar *et al.*, 2015). In recent work we present the knowledge and adverse effects of man-made activities such as industrial development throughout the world. Industrial waste contains amount of hazardous metals mix-up with the nearby water bodies and damage to the tissue of fishes and finally causing death. Respiration is one of the most vital physiological parameters on which many of the vital functions like growth as well as reproduction of fishes depends. Respiration is an important physiological body activity for each and every animal. Similar weighted catfishes *Clarias batrachus* were chosen for the study of respiration. They were found in the muddy fields of water which have barbles. The selected fishes were experimented with lethal concentration of both the compounds in the laboratory for two days. Winkler's method was used to measure the respiratory mechanism (Welsh and Smith, 1959). In this investigation it was found that the gradual descending trend of oxygen consumption when exposed to mercuric chloride and aluminum sulfate for 96 hrs. Alterations in oxygen consumption may be due to respiratory distress as a consequence of impairment in oxidative metabolism.

KEYWORDS

Mercuric Chloride, Aluminum Sulfate, *Clarias Batrachus*, Oxygen Consumption

HOW TO CITE THIS ARTICLE

3. S. Kamble, B. S., More, P. R., Bhandare, R. Y. (2022) Respiratory Metabolism affected by mercuric chloride and aluminum sulfate in freshwater Catfish, *Clarias batrachus*, *International Journal of Agricultural Invention*, 7(1): 9-13. DOI: 10.46492/IJA/2022.7.1.2

The problem of pollution of the water where the wastes are usually discharged has increased to a great extent in recent years. Aquatic life is strongly influenced by physical properties of a water body. It is known that heavy metals as well as agro-pollutants are potentially harmful to the aquatic lives. All pesticides applied for the pest control eventually pollute the water resources either in their original chemical form or in some degraded variety. On the other hand, all industries discharge their effluents indiscriminately in the adjoining water areas and frequently cause serious hazards to aquatic life.

Among the aqua fauna, fishes are affected to a significant extent (Muneeshkumar *et al.*, 2015). The consumption of aquatic oxygen in fishes is one of the most important tests to observe the entry of toxicant into the body of fishes. Use of recently developed chemicals and industrial wastes are well known for the adverse effects on the aquatic organisms. The toxicity of metal generally affects the central nervous system and extending towards the stress on physiological status of the fish. This physiological stress and status can be determined by the estimation of biochemical effects.

This change in physiological form causes the increase in the consumption of the oxygen for more work by the body of fish finally which leads to imbalance in the natural status of fish. In aquatic animals particularly in fishes, gills are the main respiratory organ. Water bore toxic contaminants damages initially to gills of fishes. Saroja (1959) literature review found that in aquatic ecosystem when contaminated by toxic pollutants it relates with the concentration of pollutants to which that much attention has not given. In the present study focus was given on respiratory study through oxygen consumption of *Clarias batrachus* when exposed to mercuric chloride and aluminum sulfate with different time period of 24 hrs, 48 hrs, 72 hrs, and 96 hrs.

Materials and Methods

All same sized (180-200 gm) weight of healthy freshwater *Clarias batrachus* test fishes were collected from the fisher man, Nanded. In order to their good settlement they were brought to the laboratory, cleaned by using 0.1% KMnO₄ to avoid dermal infection. The fishes then were made to settle for or acclimatized 15 days and later they were used for experimental work. The fishes were offered the small pieces of earthworm, rice or wheat flour balls. The fishes were exposed to mercuric chloride and aluminum sulfate concentrations. The respiratory metabolic function was measured by "Winkler's Method" (Welsh and Smith, 1959). For analysis of oxygen content from the sample, dark bottles having inlet and outlet for control separate bottles were used.

The selected animals were kept in a chamber and sample was collected for the estimation of oxygen. Sufficient time was given to the animal for both control and experimental. Then the samples were collected and analyzed for the oxygen uptake the difference between initial and final oxygen content was determined. The freshwater experimented catfish *Clarias batrachus* showed fluctuation in oxygen consumption uptake and oxygen after treating with mercuric chloride and aluminum sulfate up to 96 hours. The present observation show that due to the effect of mercuric chloride on oxygen consumption of catfish, it was recorded as 2.82, 2.19, 1.71 and 1.05 ml (C.C.) of O₂/ catfish/ hr. at the time of 24, 48, 72 and 96 hrs

respectively in experimented group. In control group oxygen consumption was 3.17 ml (C.C.) of O₂/ catfish/ hr. which indicate that the descending order when compare with the normal group. The freshwater fish *Clarias batrachus* showed variations in total oxygen consumption of mercuric chloride and aluminum sulphate up to 96 hours. In present investigation total oxygen consumption of fish to the effect of aluminum sulfate was 2.51, 2.11, 1.71 and 0.98 ml (C.C.) of O₂/ animal/ hr. during 24, 48, 72 and 96 hours respectively in treated group. In control group total oxygen consumption was 2.98 ml (C.C.) of O₂/ animal/ hr. which indicate decreasing trend to compare with normal.

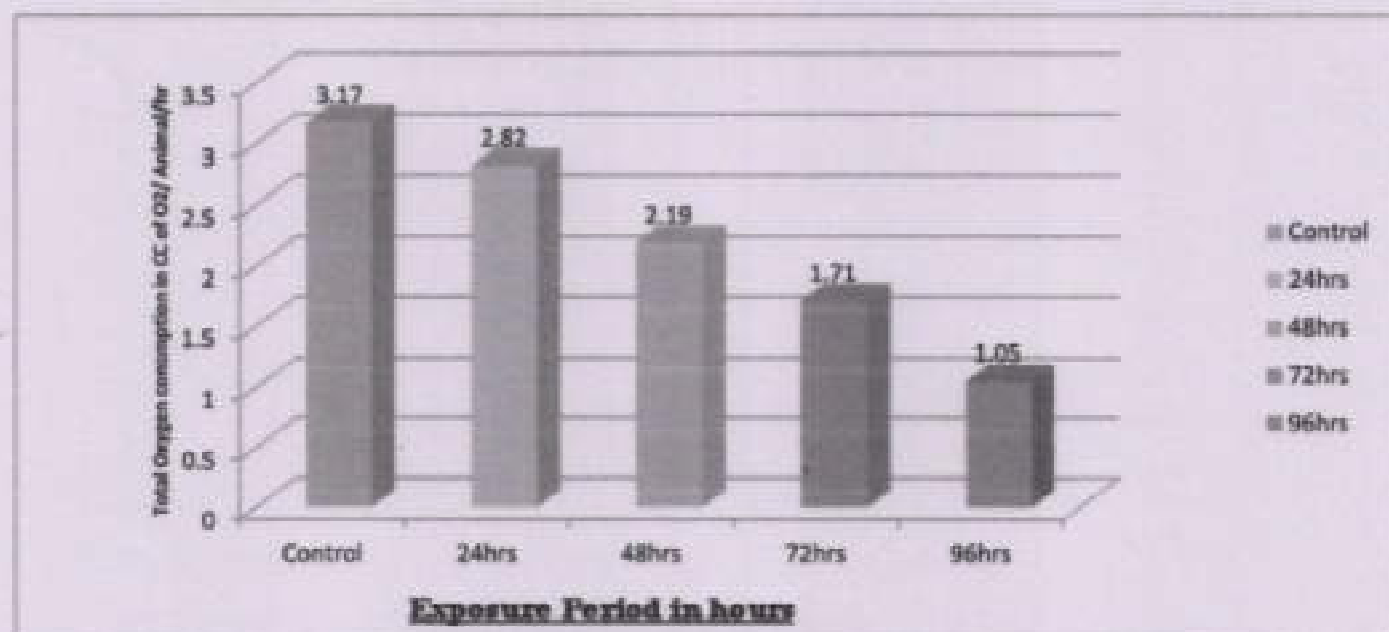
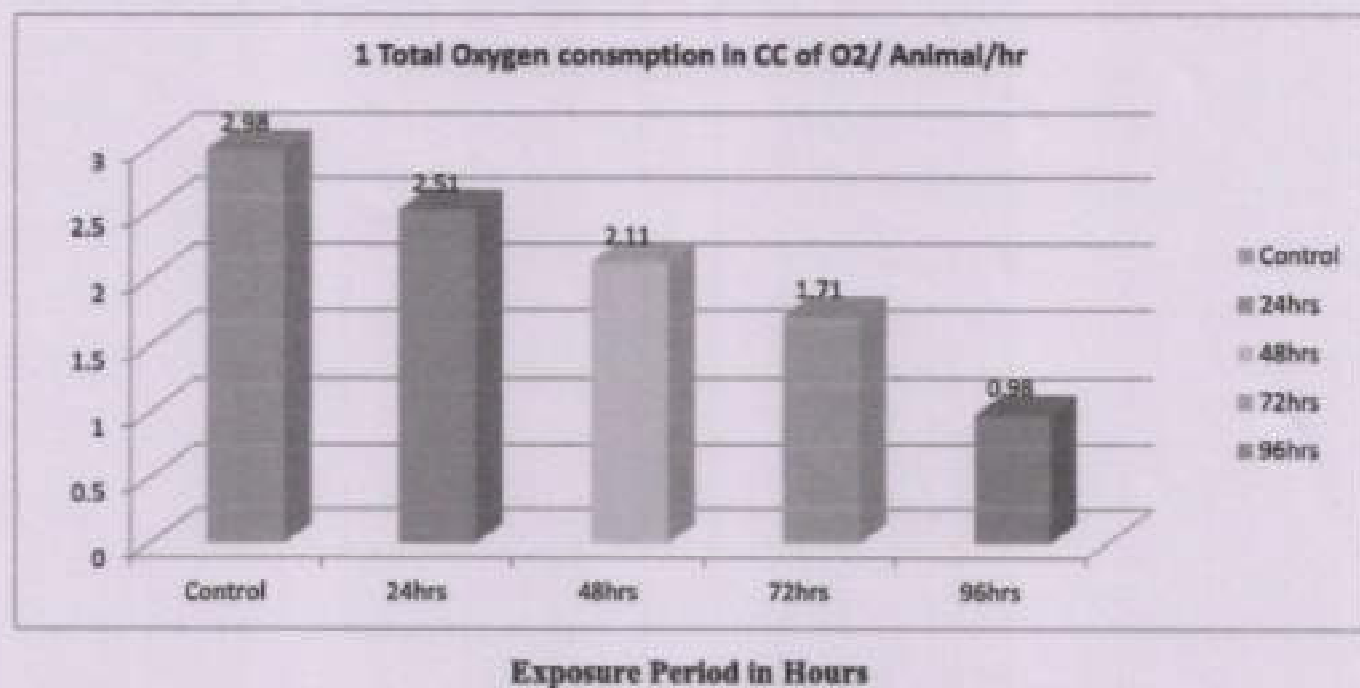
Results and Discussion

The recent observation made here, the effect of mercuric chloride and aluminum sulfate is showed clearly. As a result oxygen consumption was declined due to the more toxic effects of mercuric chloride as compare to aluminum sulfate on physiology of catfish *Clarias batrachus* (Landis *et al.*, 2002). The oxygen consumption was determined by the respiratory study. As per result it was found that the mercuric chloride was more toxic. They have capacity to change the respiratory function of the body of catfish. It changes the normal physiological working in respiration and oxygen consumption rate was reduced. Any change in oxygen consumption of catfish is for the reason that there was change in the aquatic environmental condition. It is often used to determinate metabolic fluctuation. Water contains mercuric chloride showed declined effect in oxygen consumption and rate of oxygen consumption (Agarwal *et al.*, 2000). Oxygen consumption was found to be decreased in all the experimented groups.

The oxygen consumption decreased when time exposure period increased by 24 hours to 96 hours. The mercuric chloride after entering in the respiration system of catfish it became complicated. It varies from metal to metal and also from species to species (Maula Reddy, 1988). It observed that there was oxidative respiratory dysfunction (Delgado *et al.*, 2006). Water pollutions are artificial process responsible for the threat of discharges from various sources (Vatakuru, 2005). The damage of organ depends upon the toxicants and the species of fish.

Table 1. Effect of mercuric chloride and aluminum sulfate on total oxygen consumption of catfish (*Clarias batrachus*)

S. N.	Name of the Compound	Consumption of Oxygen	Normal	Experimental			
				24 hrs	48 hrs	72 hrs	96 hrs
1	Mercuric Chloride	Total O ₂ Uptake in CC of O ₂ /Animal/ hr.	3.17±0.34	2.82±2.37	2.19±0.25	1.71±0.19	1.05±0.15
2	Aluminum Sulfate	Total O ₂ Uptake in CC of O ₂ /Animal/ hr.	2.98±0.34	2.51±0.18	2.11±0.10	1.71±0.10	0.98±0.16

**Fig 1. Effect of mercuric chloride on oxygen consumption of catfish (*Clarias batrachus*)****Fig 2. Effect of aluminum sulfate on oxygen consumption of catfish (*Clarias batrachus*)**

Results and Discussion

Various toxicants dissolved in water and affect the fresh water aquatic life as well as marine water life (Balaji M., 1991). When freshwater catfishes are exposed to pollutants in water, the oxygen consumption of fishes was found to be decreasing, as a result of depletion of dissolved oxygen content in water. This increase in BOD level, reduction oxygen consumption in *Channa punctatus* when exposed to metasytox (Natarajan, 1981). Another effect of pesticide was noticed that on fresh water fish *Channa punctatus* and reported that rate of respiration declined in the fresh water fish (Ali, 1982).

Verma and Dale (1975) observed that oxygen consumption reduced due to the existence of suspended solid materials in the fresh water which would cause injury to aquatic animal and disturb normal life of fish. Magare and Patil (2000) reported a decrease in the rate of O₂ consumption in *Puntius ticto* exposed to endosulfan. The unusual behaviour of the fish, *Clarias batrachus* in stress condition may be due to obstructed functions of neurotransmitters. The gill opercular movements increased initially to support enhanced physiological activities in stressful habitat and later decreased may be due to mucus accumulation of gill. The toxic stress of pesticides has direct bearing on tissue chemical compounds (Tilak and Yacobi, 2002). This was also reported by (Chaudhary *et al.*, 2001).

The observed decrease in oxygen consumption by the whole animal may be due to the respiratory distress as a consequence of the impairment of oxidative metabolism. Several authors reported similar decline in whole animal oxygen consumption in different species of fishes exposed to toxicants (Ahmed *et al.*, 1981, Rangaswamy, 1984, Mushigeri *et al.*, 2002). Gills are the major respiratory organs and all metabolic pathways depend upon the efficiency of the gill for their energy supply and damage to these vital organs causes a chain of destructive events, which ultimately lead to respiratory distress (Joice, 2001). In consonance with this, he also reported that the depletion in O₂ consumption was due to the disorganization of the respiratory function caused by rupture in the respiratory epithelium of the gill.

It is also due to the disturbance in mitochondrial integrity and decreased activities of some mitochondrial enzymes (Ravinder, 1988). It is observed that the total oxygen uptake was reduced when exposed to concentration of 1.2 ppm of mercuric chloride. The physiological disturbance of metabolic respiratory activity may be an sign of stress caused due to the pollutants (Newell, 1973). The different workers reported that there was adverse effect of heavy metals on respiratory metabolism of aquatic animals. The Similar changes were also observed by (Chinnayya, 1971, Nagabhushanam, 1972 and Nagbhushanam *et al.*, 1981) there is significant drop in rate of oxygen consumption in fresh water fishes.

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HISTOLOGICAL ALTERATIONS IN THE GILLS OF FRESHWATER FISH *CHANNA PUNCTATUS* DUE TO DIMETHOATE CONTAMINATION FROM RIVER SHIVNA, MAHARASTRA, INDIA

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(Received 12 October 2022, Revised 9 December 2022, Accepted 23 December 2022)

ABSTRACT : The river Shivna accommodates large scale of agricultural activities, where large quantities of pesticides are applied. To assess the biological impact of pesticide residues that are continuously entering in the water body, biomarkers are common approach in bio-monitoring study as early warning signals to pollutants Shah and Parveen (2022). In the present study analyses of gill histopathological parameters were determined in *Channa punctatus*. Histopathological biomarkers of toxicity in fish organs are useful indicator of environmental pollution (Bhandare et al, 2019). The fishes *Channa punctatus* were exposed to lethal concentration at 96 hrs LC₅₀ and sub lethal concentrations at (1/5, 1/10 and 1/15 ppm) of dimethoate for 30 days.

Key words : *Channa punctatus*, Shivna river, dimethoate, histopathology, gills.

How to cite : K. T. Palthane, R. Y. Bhandare and T. S. Pathan (2023) Histological alterations in the gills of freshwater fish *Channa punctatus* due to dimethoate contamination from river Shivna, Maharashtra, India. *J. Exp. Zool. India* 26: 973-977. DOI: <https://doi.org/10.51470/jez.2023.26.1.973>. DocID: <https://connectjournals.com/03895.2023.26.973>

INTRODUCTION

Agrochemicals are used in the fields for pest control, about 90% of these chemicals are left out in the environment without degradation. The bio-geographical structure of river Shivna has changed by large scale of anthropogenic activities such as usage of large quantity of pesticides in the agricultural areas along the basin (NGRBA, 2011), Physician Quality Reporting System (PQRS) (2017), Government of India and Dwivedi et al, 2018).

The exposure to chemical contaminants can induce a number of lesions and injuries to different fish organs suitable for histopathological examination in searching for damage to tissue and cells (Rabitto et al, 2005). Based on earlier findings (NGRBA, 2011), Physician Quality Reporting System (PQRS, 2017). Government of India (Dwivedi et al, 2018; Rabitto et al, 2005 and Shah and Parveen, 2021). These chemicals persist in the compartments for years causing impact on non-target organisms (NGRBA, 2011; Shah and Parveen, 2021) under altered physico-chemical parameters (Takatori et

al, 2008). thus the structure and functioning of the cell may change. These changes will influence the well being of animals at population and ecosystem (Vasseur and Cossu-Leguille, 2003; Eggen et al, 2004 and Moore et al, 2004). Biomonitoring in order to assess ecosystem integrity at regular basis is essential for management of aquatic ecosystem. The biomarkers such as oxidative stress markers although non-specific has proved to be meaning indicators of health of both marine and fresh water for it is responsible for the alteration in bio-molecules. Histological changes in the organism exposed to the contaminants have been considered as the best tool for evaluating the toxic effects both in laboratory and field studies (Poleksic et al, 2010; Adam et al, 2019; Javed et al, 2014; Shah and Parveen, 2020). Gills as primary organs for oxygen uptake in fish which remain in continuous contact of toxicants present in water, thus the stress is exacerbated. Gill lesions as indicative of toxicant effect have been previously used in various laboratory and field studies (Dalzell and Macfarlane, 1999; Oliveira et al, 2002; Thophon et al, 2003 and Maurya

and Malik, 2019).

Thus in the backdrop of above cited literature, histopathological changes in gills upon toxicant exposure are useful tool to assess the impact of the toxicity in vital processes of a living organism (Shah and Parveen, 2022). The present study was carried out to evaluate histopathological changes in the commonly edible fishes collected from sites of pesticide contaminated river Shivena.

MATERIALS AND METHODS

For the study of histopathological effects, live specimens of *Channa punctatus* were collected from Shivana river flowing near Dhoregaon, 26 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 activity were selected for histopathological studies.

For the histopathological studies the fishes were exposed to lethal and sublethal concentrations of dimethaote. The fish *Channa punctatus* exposed to 21.275 ppm (LC_{50}) of dimethaote. Simultaneously a control aquarium was also maintained. At the end of acute exposure for 96 hrs the survived fishes were killed by decapitation and gills were removed and fixed in Bouins fluid for 24 hrs.

In second set of experiment, the test fishes, *Channa Punctatus* were exposed to three sublethal concentrations of dimethaote for 30 days prepared as mentioned in the earlier chapter of chronic toxicity. Simultaneously, a control aquarium was also 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. The blocks were prepared in paraffin wax and sections were cut on rotatory microtome to a thickness of 4 to 6 μ . For staining the double staining method was followed by using Haematoxylin and Eosin as a stains and mounting was done in DPX.

RESULTS

In aquatic animals, gills are supposed to be the main tissues for maintenance of physiological conditions. In view of this, some of the target tissues like gills of the *Channa punctatus* have been observed for histopathological changes induced by dimethaote.

Histology of gill (control)

Gills are situated in bronchial chamber on either side of the body in fishes. Each gill has a gill arch with double

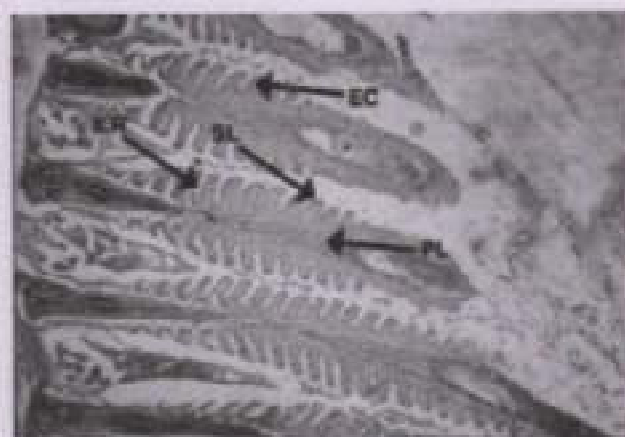


Fig. 1 : L.S. of Gill of *Channa punctatus* (Control). H/E400X: EC (Epithelial Cell), ILR (Inter lamellar region), PL (Primary gill lamellae), SL (Secondary Gill lamellae).

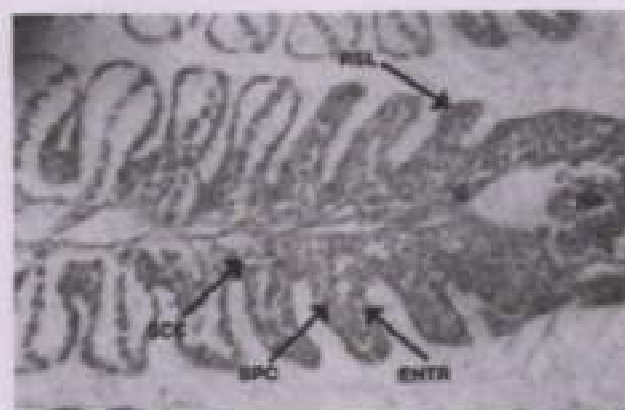


Fig. 2 : L.S. of gill of *Channa punctatus* after 21.27 ppm (LC_{50} of 96 hrs) exposure to dimethaote. H/E 400 x: EHTR (Epithelial hypertrophy), HR (Hemorrhage), RSL (Reduced secondary lamellae), SCC (Swelling of chloride cells), SPC (Swelling of pillar cells).

row of elongated, laterally projecting gill filaments. These filaments are flat and leaf like and join at the base on gill rakers by a gill septum. Numerous semicircular, leaf like projections are lined up along both sides of the primary gill lamellae called as secondary gill lamellae. The primary gill lamellae consist of centrally placed rod like supporting axis with blood vessels on either side. The secondary lamellae also termed as respiratory lamellae are highly vascularised and covered with thin layer of epithelial cells. Blood vessels are extended into each of the secondary gill filaments provided with pillar and chloride cells.

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

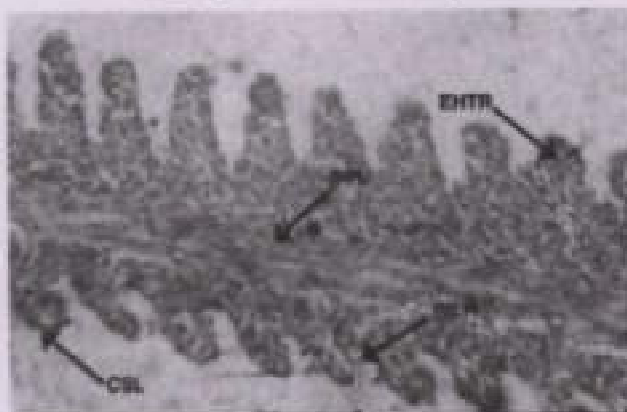


Fig. 3 : L.S. of gill of *Channa punctatus* after 4.25 (1/5) ppm exposure to dimethoate. H/E 400 x: EHTR (Epithelial hypertrophy), BPL (Bulging tip of primary lamellae), CSL (Curling of secondary lamellae), RILR (Reduced inter lamellar region).

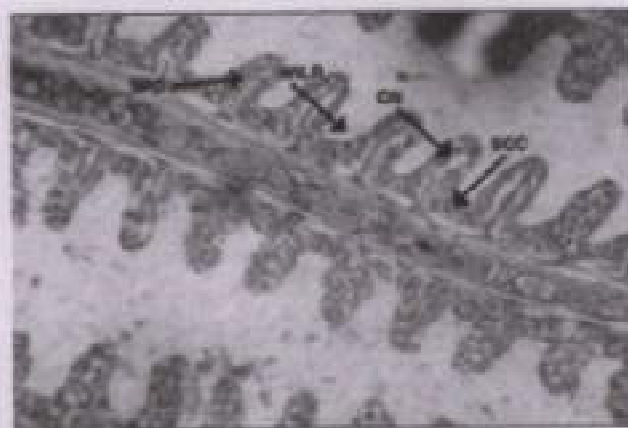


Fig. 4 : L.S. of gill of *Channa punctatus* after 2.12 (1/10) ppm exposure to dimethoate. H/E 400 x: SPC (Swelling of pillar cell), SCC (Swelling of chloride cell), CN (Cell necrosis), WILR (widening of inter lamellar region).

Histopathology of gill

Fish exposed to lethal concentration (LC_{50} of 96 hrs) at 21.27 ppm of dimethoate showed marked pathological changes in the architecture of gill, reduction in secondary gill lamellae and hypertrophy of epithelial cells were observed. The cells of gill lamellae i.e. pillar, mucous and chloride cells showed cloudy swelling. Hemorrhage at primary lamellae (Fig. 2).

Fish exposed to sublethal concentration at 4.25 ppm (1/5) of dimethoate for 30 days showed marked degenerative changes like curling of secondary lamellae, epithelial hypertrophy, reduced inter lamellar distance and bulging at the tip of primary filament was noticed (Fig. 3).

Fish exposed to sublethal concentration at 2.12 ppm (1/10) of dimethoate treatment for 30 days exhibited marked pathological changes. The most common symptoms of toxic exposure were hypertrophy of

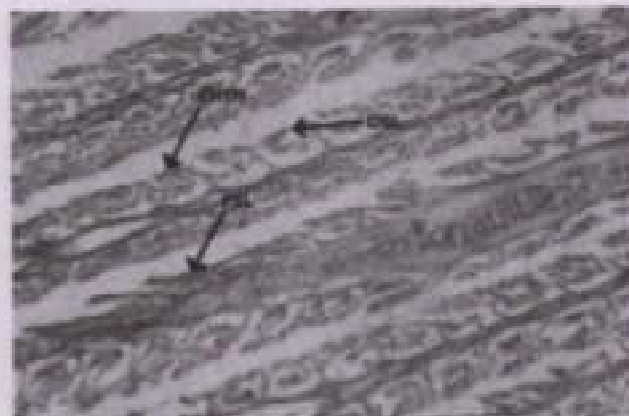


Fig. 5 : L.S. of gill of *Channa punctatus* after 1.41 (1/15) exposure to dimethoate. H/E 100 x: EHTR (Epithelial hypertrophy), DSL (Degeneration of secondary lamellae), FSL (Fusion of secondary lamellae).

epithelial with cell necrosis, widening of inter lamellar distance. The cells of gill lamellae i.e. pillar and chloride cells showed cloudy swelling (Fig. 4).

Fish exposed to sublethal concentration at 1.41 ppm (1/15) of dimethoate for 30 days showed marked pathological changes like fusion of secondary lamellae; disorganization and ruptured secondary lamellae and hypertrophy of epithelial cells were also noticed (Fig. 5).

DISCUSSION

The objective of the histological assessment of the gill is to verify the possible damage caused to the organism by dimethoate, 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). The thin lamellae that cover the secondary lamellae represent the largest site for gaseous exchanges. The chloride cells, responsible for ionic exchanges, are usually distributed among the secondary lamellae under condition of low ionic concentrations, besides transporting Na^+ , Cl^- and other substances.

Altinok and Capkin (2007) observed lesions in the gill of rainbow trout exposed to 0.6 or 1.3 mg/lit endosulfan concentration consisted oedema, separation of epithelium from lamellae, lamellar fusion and swelling

of the epithelial cells. Susithra *et al* (2007) noticed bulging of the hyperemic secondary lamellae in to the lumen of the accessory respiratory organ, necrosis and swelling of the respiratory epithelium leading to hemorrhages and fusion of secondary lamellae of cadmium chloride exposed fish, *Heteropneustes fossilis*.

Erkman *et al* (2000) studied histopathological changes induced by cyphenothrin in gill of *Lebistes reticulatus* and found lifting of the epithelial layer from gill lamellae, degeneration of secondary lamellae due to edema, shortening of secondary lamellae and club shaped lamellae. Prasad (2002) studied effect of copper and zinc on the gill of *Channa marulius* and found necrosis, exudation of erythrocytes from the secondary lamellae, atrophy of gill filament, vacuolization and separation of basement membrane from the epithelial cells curling and fusion of some secondary lamellae after 2160 hours exposure. Soni and Gupta (2006 b) studied histopathological changes due to mercuric chloride and influence of EDTA on the gill of *Heteropneustes fossilis* and recorded histopathological changes in the gill due to long term exposure of the fish to mercuric chloride are severe. Oedematous condition and vacuolization in the cells of gill rays, hypertrophy in the gill septum, breakage in the epithelium covering enlarged micropillaries and small separated pillar cells have been clearly observed.

Peebua *et al* (2008) studied the histopathological alteration in the gill of *Oreochromis niloticus* exposed to alachlor. Gill alteration includes edema of the epithelial cell system, aneurism with some ruptures, hypertrophy and hyperplasia of epithelial cells. Aniladevi *et al* (2008) reported that, on short term exposure of pesticide, the changes in gill were hyperemia, clubbing and edema. After 21 days of pesticides exposure gill become edematous with prominent clubbing. Separation of primary gill lamellae and hemorrhage in the vessels outside the secondary gill lamellae were observed.

The present study reveals extensive damage to the gill architecture of treated fishes compared to gill of control fish. The changes like In the present investigation, *Channa punctatus* subjected to dimethoate 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 dimethoate 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.

CONCLUSION

The present study showed that, dimethoate caused toxicity in the fishes captured from Sivana river. In *Channa punctatus*, changes in the use of non-specific histopathological alterations indicate that, dimethoate is highly toxic to fishes, thus suggesting them as sensitive and effective tool for reflecting unfavorable environmental conditions for fish health. Histological alterations also could be used as meaningful indicators of pesticide pollution. Histological alterations also could be used as meaningful indicators of pesticide pollution. Accumulation of pesticides in the water body primarily affects the non-target organism especially fish and get deposited.

However, more research is needed to confirm the presence of pesticides and other environmental toxins harming the species in the river under investigation. On the other hand, frequent monitoring and accessing the effect of environmental pollution on total flora and fauna of the river Shivana is important. These fish through food chain affects humans and causes deleterious effects. Hence, the usage of the pesticide should be restricted to have a healthy ecology.

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THE CONTEXT

Quarterly e-Journal of English Literary Studies

International, Indexed & Peer Reviewed / Refereed Journal

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Bertrand Russel's '*How To Escape From Intellectual Rubbish*': A Study

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ABSTRACT

The present research paper is the confrontational essay which is excerpted from 'An Outline of Intellectual Rubbish'. The essayist Bertrand Russell cautions us against holding beliefs that we have not vigilantly scrutinized or acknowledged estimations on matters we are indecisive of. He offers the detailed approaches to stay away from false notions and dogmatism. It is the universal truth that every one of us has some predispositions and chauvinisms in our minds. We may be prejudiced towards people from a dissimilar state, religious conviction, colour, sex, doctrines etc. We may be inclined towards philosophies or other living beings. Russell writes with the intention of pleading with the reader to espouse a few stratagems that will help in rooting out blind beliefs. He also asks us to vitally observe the genuineness of matters before accepting them. The objective of the research is to convince the readers that human follies are not unusual, either in time or space. All the civilizations have had a number of superstitions, which led to national and maltreatment. The researcher justifies the fact by providing ample of suggestive examples of what is to be circumvented and what can be done to remain contented.

Keywords: Superstitions, dogmatism, strategies, prejudices, follies, blind beliefs



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FULL PAPER

Bertrand Arthur William Russell (1872-1970) British theorist, truth-seeker, playwright, political activist, social opponent, originator of mathematical logical beliefs, is best known for his work in analytic viewpoints. He was born in aristocratic family at Monmouthshire, United Kingdom. In his entire career, he made significant contributions to a wide range of subjects including education, history, political theory and spiritual studies. He led the British upheaval against impracticality with G. E. Moore. He defended anti-imperialism and presided over the India league. During 1950's and 1960's, Russell became an icon to several idealistic youth as a result of his unrelenting anti-war and anti-nuclear protests. He was awarded the Nobel Prize for literature in 1950 for his humanitarian principles and sovereignty of contemplation. He was also the beneficiary of the De Morgan Medal (1932), Sylvester Medal (1934), Kalings Prize (1957) and Jerusalem Prize (1963). Russell's major works include: *The History of Western Philosophy*, *The Problems of Philosophy* and *The Principles of Mathematics*.

Before studying the basic superstitions and dogmatism in the essay, let us have a glance on these key concepts in detail so that it would be convenient to the readers to grasp and to take interest in it. The prime objective of this research study is to study and examine the key concepts like superstitions and dogmatism and several strategies to avoid it. The data and information presented in this study were analysed, scrutinized and verified on the basis of theoretical and analytical. The facts are proven through analytical data wherever required.

Snehalakshmi 23 Nov 2016, quotes in her article 'How to escape from Intellectual Rubbish by Bertrand Russell: Detailed summary and notes' dogmatism and Empiricism, ways to get rid from dogmatism, self-esteem and fear. Sujarisha Saravanan, 19 July 2019 has substantiated a detail summary on the essay 'How to escape from Intellectual Rubbish'. The limitation of her study is to focus on dogmatism and its prevention.

Considering the above-mentioned references and limitations, the researcher has thoroughly explored the several dimensions of the essay in its objectives, rationale, research methodology, superstitions, dogmatism, and how to avoid these, how to aware of our own biases, common sources of error in the form of self-esteem and fear etc. Thus researcher has attempted to showcase the entire in-depth canon of Bertrand Russell's philosophy about superstitions and dogmatism.

Superstitions

The word superstition is frequently used to refer to a creed not accomplished by the preponderance of a prearranged society in spite of whether the established faith



contains assumed fallacies. Lyann Demisch (2010) defines superstition as: "Unreasonable thinking that an object, accomplishment, or situation that is not rationally connected to a course of proceedings manipulates its conclusion."

Superstitions are beliefs resulting from lack of knowledge, trepidation of the unidentified, faith in enchantment or probability, or a false formation of causation. It is also an illogical hopeless outlook of mind toward the paranormal, natural world, or God resulting from false notion. It is generally applied to attitudes and practices surrounding coincidence, destiny telling, spirits, good luck charm, astrology and telepathic entities, predominantly the conviction that prospect measures can be predicted by explicit disparate former actions. According to Dale Martin, "Superstitions may symbolize long standing accepted ways of life and observations which presume an invalid indulgent about cause and effect, that have been discarded by contemporary science."²

Dogmatism

The term 'dogmatism' is the propensity to lay down ideology as incontrovertibly correct, without deliberation of verification or the judgments of others. Dogma is a belief or set of beliefs that is acknowledged by the members of a group without being inquiry. It may be in the form of principles or canon of a religion. It is found in political belief-systems. Dogma refers to imposed verdicts, such as those of hostile political warfare. The word dogmatism derives from the Greek word *dogma* which means that which seems to opinion or belief. Dogmas are described in religion, in which they are the fundamental beliefs. Rokeach defines dogmatism as: "a moderately closed cognitive association of attitudes about veracity focused around a vital set of thinking's about unconditional influence which provides a structure for blueprints of prejudice and competent forbearance toward others." (Rokeach, 1954, p.195).

Strategies to avoid Superstitions

Bertrand Russell begins this essay by stating the truth: "To avoid the various foolish opinions to which mankind are prone, no superhuman genius is required. A few simple rules will keep you away from all silly errors." He proves the fact, "If the matter is one that can be settled by observation, make the observation yourself," by citing the example of Aristotle, the great Greek philosopher, who made a dogmatic assertion that "Women have fewer teeth than men." Russell points out that Aristotle was less cautious and undeniably doctrinaire in making this statement, for he could have at least employed a simple device by asking Mrs. Aristotle to keep her jaws unfurled while he counted up. This is the most dangerous mistake. "Believing that you are acquainted with when you don't is an incurable fault to which we are all inclined." Russell opines that one can get away from forming such stupid opinions, by simply following some



rules. He further demonstrates this situation stating his own beliefs about hedgehogs and beliefs of the ancient and medieval authors about unicorns and salamanders. Russell says that 'One's outlooks are to be conveyed to the analysis of encounter'.⁸ Many times 'matters are hardly brought to the test of experience'⁹ which is indeed difficult. The main reason is that like most of mankind we too are infatuated with fervent and passionate convictions on many such matters. This is how we become biased. There are several methods by which one can become conscious of one's foregone conclusions. If estimation divergent to one's own makes him / her angry, then they must understand that they themselves are doubtful in the unconscious level. He differentiates the key concepts like mathematics and mysticism. Persecution is used in theology whereas knowledge is used in arithmetic. But in theology, there is only opinion. Comprehension is the consequence of clarifications but estimation doesn't require so. Whenever one gets irritated about another person's belief, the person should be on his / her protector and formulate interpretations to establish their thought.

Techniques for avoiding Dogmatism:

One can easily keep away from dogmatism by following some simple steps:

1. Get out of your societal circle.

When you are constrained within the battlements of the communal circles to which you fit in, you are only recognizable with the ethnicity, background and viewpoints of that scrupulous circle. There is a widespread human propensity to enlarge narrow-minded chauvinism out of this. In order to get rid of this inflexible intolerance, it is always greater to become aware of beliefs held in societal circles dissimilar from your own. Russell here cites his individual experience particularly when he stayed outside his own nation- U.S., Italy, Germany and France.

2. It is not essential that all have state of affairs that favour journey.

Russell says that hunt for the people whom you deviate. It is constantly an enjoyable know-how to take on a vigorous disagreement with people whom you diverge. This will assist you to assume from their standpoint, thereby reducing the strength of narrow discrimination.

3. Reading newspapers that does not fit in to your group can also facilitate mostly.

As we all reproduce on our own variations of genuineness to be reliable and infallible, there is a predisposition to scorn others versions of legitimacy. Our version of conviction and others version of reality may be a build actuality which may be far away from the pointed realism. So if the people and the newspaper look like mad and wicked, take you back yourself that you appear so to them. Russell also calls out



consideration to the gloomy side of becoming responsive of distant customs. He upholds that the similar does not all the time have an advantageous consequence. For example, when the Manchus dominated China in the 17th century, it was a tradition of the Chinese women to preserve small feet and among the Manchus for men to put on tress. Instead of each reducing those idiotic civilizations, each assumed the imprudent convention of the other.

4. To imagine arguments with a person having a hypothetical opponent.

Russell speaks about the psychological imagination. He asserts that it is a fine arrangement to imagine wrangle with a person having a unlike partiality. This advantage is not subjected to the limitations of time and space. Russell says that he had changed his mind several times as a result of such kind of imaginary dialogues.

Several Ways in which one can make yourself aware of own bias:

a. Observe yourself

Look for signs like getting annoyed very straightforwardly whenever you are deal with an opinion dissimilar to yours. If you have experienced the same, it implies that you are subconsciously sentient of having no good rationale of thinking as you do and you are terrified of admitting the truth. If someone opines that two and two are five, you feel sympathy rather than rage, unless you recognize so minute of mathematics or topography that his judgment vibrates your own opposite fervor.

b. Dogmatism versus Empiricism

According to Russell, the gravest disparities are those about matters that are confident in nature. For example, difference between mathematics and mysticism. Bullying is used in faith and not in sums. In arithmetic, there is perceptiveness. Social contact is our consciousness with something and it is exclusively based on happening and therefore realistic in nature. But in theology, there is only inference, which can naturally twist to be inflexible.

Self Esteem and Fear: Common Sources of Error

Self-Esteem

Russell asks us to be watchful about opinions that can *flatter your self-esteem*. It is very intricate to hold this problem because everyone is cognizant of his / her intelligence of supremacy. When your self-esteem gets overgenerous, it can superimpose system for the enlargement of convinced superiority complexes. Hence both men and women are self-assuredly convinced of the superior distinction of their own gender. This should be hampered with a miniature humbleness and reasonableness. Our standard of moral principles should not be categorical because there are other people and other cultures. Their principles of values are evenly



trustworthy and respected for in their lives. He further states that it is trickier to deal with the self-esteem of man as man, because we cannot clash out the matter with some non-human intelligence. The only way to disentangle this common individual pre-eminence is to replicate about the discontinuous human continuation in a small planet. In addition to this, humans should be acquainted with that the other parts of the cosmos may encircle lives better to as we are to jelly fish.

Fear

According to the narrator, consternation is one more normal basis of error. Fear can infrequently function unwaveringly by inventing rumors, imagining matters of trepidation like calamitous conflict, mischievous spirits etc. Imagination works censoriously and harmfully when one formulates certain kind of horror such as dismay of bereavement, fears of the herd, fear of the mysterious, fear of the dark etc. It is our foreboding we engender the perceptions like heaven and hell. One must be trained to admit these fears. When one triumphs over fear, he / she become less credulous and more evenhanded. Russell says that we need to eclipse this fear by admitting to yourself and thus protecting yourself against the myth making supremacy of human mind, if you want to envisage about matters of superior intimations. In fact, fear is one of the main sources of false notions and viciousness too. So the authentic understanding lies in conquering terror. The fear can be evaded by two ways.

1. by convincing ourselves that we are impermeable from catastrophe. Pre-historic magic has the reason of securing fortification, either by injuring opponents or by defending oneself by talismans, fascination, invocations etc.
2. by practicing pure courageousness

Russell cites that science has now narrowed the faith in magic. The church has damned sorcery, the uncanny and witchcraft and proved it justifiably as plausible wrongdoings. These things can only fabricate hallucinations of self-sufficiency. One becomes truthfully liberated only when they defeat anxiety prudently. Attraction was a provisional method of staying away from frights. Principally in 15th, 16th and 17th century dread of witches and sorcerers led to the ablaze of hundreds of thousands predestined of these evil doings. The essayist gives an example of Socrates on the day of his death (if Plato is to be believed) expressed the conviction that in the next world he would live in the company of the gods and heroes and be surrounded by just spirits who would never object to his endless argumentation. Finally Russell finishes off with the declaration of Plato in his 'Republic', those joyful views of the next planet should be imposed by the State only because it would construct the defense force more enthusiastic to breathe their last in the battles. He would have none of the conventional mythology about Hades, because they symbolized the spirits of the departed as discontented and ominous.



Conclusion

The researcher sums up the article with some major truths that we must evade blindly believing anything without tangible rationale. We should substantiate the things that we can with surveillance and listen the opinions of others regarding controversial topics. As far as self-esteem and fear is concerned, self-esteem affects judgment and can be checked by harking back ourselves of our position in the world. Fear, as an ordinary source of blunder, can be dominated through overconfidence. The author speaks about people's views and how we might thwart the reckless ones. He tells us to uphold our viewpoints and elaborates about influences.

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**‘THE POWER OF FORGIVENESS THROUGH LEO TOLSTOY’S
‘GOD SEES THE TRUTH BUT WAITS’**

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ABSTRACT:

Leo Tolstoy (1828-1910) was the most outstanding Russian short story writer, dramatist, essayist, social reformer and ethical philosopher of his time. He was born into a well-known family of Russian aristocracy in Yasnaya Polyana. Later, he relinquished his patrician roots and civil liberties. In a nut shell, he worked for the edification and betterment of peasants and labourers. Tolstoy strongly alleged in non-violent confrontation and his views predisposed well-known twentieth century political and communal campaigners including Mahatma Gandhi and Martin Luther King. He had a lasting influence on the Indian independence national movement. His classical works of world literature incorporate 'War and Peace' and 'Anna Karenina'. 'God sees the truth but waits' is the moral story and parable of the protagonist Ivan Dmitrich Aksionov. He was a blameless and innocent person and sent to the prison for a murder he did not commit. As a young man Ivan was a non-violent man but prone to drinking profoundly. One day he goes for a Nizhny fair, ignoring his wife's warnings. On the way to the fair the police arrest him accusing him of a murder. Ivan ends up spending twenty six years in prison. But one day he realizes that one of his fellow inmates is the real culprit in the murder case. In this research, the researcher wants to highlight the power of forgiveness, injustice, faith, pacifism and non-violence through Leo Tolstoy's 'God sees the truth but waits'. In this context, he justifies the content of the research topic through biblical message and spectrum of Christianity.

Keywords: Power, Forgiveness, Injustice, Faith, Pacifism, Non-Violence, Christianity, Biblical Message Etc.

• Introduction:

'God Sees the Truth, But Waits' is a short story written by the Russian author Leo Tolstoy. The story is published in 1872. It strengthens the biblical significance that when the humanity is in opposition to you, God single-handedly knows the veracity. The alternative titles of the story are: *The Long Exile, The Confessed Crime and Exiled to Siberia.*



The story is set in Tolstoy's contemporary Russia. It is recounted in the third person in an uncomplicated and clear-cut style. It is obviously an allegory about exoneration that investigates devout and religious themes. In this story, the protagonist Ivan Dmitrich Aksionov is sent to prison in Siberia for a murder which he did not obligated. Due to this, the story takes an outline of a parable of clemency. Here Ivan is wrongfully accused of murder and mistakenly incarcerated for twenty six years for an offense he did not commit. He was banished to Siberia. In all these opposite circumstances, he puts his trust in God and surrenders himself in the hands of God. He believes that God will definitely show him the right way and wisdom to act as per the will of God. In this regard, story investigates the real power of forgiveness. Before going to disseminate the power of forgiveness, it is crucial urgency and temperament to comprehend other significant qualities such as *injustice, faith, pacifism and non-violence through Leo Tolstoy's 'God sees the truth but waits'*. These qualities make the readers understand to know the strength and worth of forgiveness.

Injustice refers to the authenticity of a condition being undemocratic and irrational act. Racial favoritism, pecuniary inconsistency and class discrimination are the indispensable root causes of societal injustice. When a group with material comfort and authority gives advantaged treatment to its own group over associates of another group, social injustice occurs.

In Old and New Testament in Bible, It is clearly mentioned for the believers to have the spirit of justice. In Old Testament, especially in Psalm 82:3, it is written,

'Give justice to the weak and the fatherless; maintain the right of the afflicted and the destitute.'

The prophet Isaiah proclaims in Isaiah 1:17,

'Learn to do good; seek justice, correct oppression; bring justice to the fatherless, and please the widow's cause.'

Injustice means lack of justice or an unjust act. Here the person does not think what is morally right or wrong.

Another significant trait is **faith**. It is the strong assurance, complete trust and credibility to God in any religion. The real rationale of faith is to believe in oneself and permit God to come into your life and take entire control. Faithfulness means living in self-assurance and hope. It is the best way to find things in self-effacing appreciative manifestation. When we ask in faith for something that is in accordance with the willpower of God, he will grant us according to our wishes. Heavenly Father knows us, loves us and desires everything necessary for us to return to His existence. In New Testament, it is proclaimed,

'Faith is confidence in what we hope for and assurance about what we do not see.' (Heb. 11:1)

The Bible says, *'Without faith, it is impossible to please God.'* Faith refers to the credence and conviction in and reliability to God. Faith cause us to take action on what we haven't



practiced yet, to trust promises in the Bible that haven't been fulfilled yet, and to trust God when our circumstances haven't altered yet.

The word **pacifism** was invented by the French peace activist Émile Arnaud. Then it was espoused by other peace protesters at Glasgow at the tenth Universal Peace Congress in 1901. The term 'ahimsa' is an interior view in Indian religions such as Jainism, Buddhism and Hinduism. In modern era, this concern was invigorated by Leo Tolstoy in his work 'The Kingdom of God is Within You.' Gandhi advocated the practice of unwavering non-violent resistance, i.e. '*satyagraha*' influential in its role in the Indian Independence Movement. Its efficiency served as stimulation to Martin Luther King Jr., James Lawson, Mary and Charles Beard, James Bevel and other thinkers in the civil rights movement. It is the conviction that all combats are erroneous and that one should not wrestle in them. It is the resistance to war and violence.

In the Holy Bible, pacifism is explained in detail. Most of the Christian's are peace lovers because they consider that it is inappropriate to use violent behavior, whatever the situation, even to accomplish what it right or to overpower malevolence. Jesus Christ, the saviour of mankind, taught that God's people should be the people of tranquility. They should emphasize and run after for peace. The prophet Isaiah prophesizes,

'For unto us a child is born, unto us a son is given and the government shall be upon his shoulder, and his name shall be called wonderful counselor, the mighty God, the everlasting father, the prince of peace.'
(Isaiah 9:6)

Jesus enlightened his acolytes to be peacemakers.

'Hallowed are they which are maltreated for morality sake, for theirs is the sovereignty of paradise.' (Matthew 5:9)

The term **non-violence** rejects the use of physical violence in order to achieve political or social change. It is a force for alteration, righteousness and the well-being of all that is neither aggressive nor unreceptive. It is a powerful method for challenging and overcoming violence without using brutality. Non-violence is a prevailing bludgeon which cuts without wound and enhances the man who manipulates it. Jainism also teaches us that the real pathway to illumination is only through non-violence and plummeting harm to living things.

In the Bible, all aggression is measured an offence against divinity and against humankind. Jesus Christ, the Son of God, showed a magnificent revelation of nonviolence: 'Love your enemies'. 'Put down your sword'. ; Blessed are the peacemakers'. Scripture itself condemns violence because it is related with impiety and condemned as 'contemptible to the Lord'. In reality, a non-violent person is harmless and innocent creature as he is saved by the power and grace of God. He musters the courage not to be violent. Such bravery comes from the conviction that God sits in the spirits of all and that there should be no terror in the existence of God.



- **The Power of Forgiveness:**

According to the Psychologists, forgiveness is an intentional and reactive resolution to liberate sentiments of displeasure or retribution toward a person or group who has mistreated you, regardless of whether they actually justify your forgiveness. Research has proven that the work of clemency can harvest enormous rewards for your healthiness, lowers the jeopardy of heart attack; recovers cholesterol levels and sleep and decreases soreness, blood pressure and levels of nervousness, gloominess and trauma. Mark Twain claims,

'Clemency is the aroma that the violet drops on the heel that has compressed it'.

- **Aksionov as a very image of Jesus Christ as a Great Forgiver:**

The protagonist Ivan Aksionov in *Leo Tolstoy's 'God sees the truth but waits*, has the great capability to exonerate Makar Semyonich for a transgression that has virtually ruined his life. His change in the prison was outstanding. It is the unrequited question whether this transformation was pious or a great loss of hope that makes him impervious to any thoughts of revenge. Also, what upshot does Aksionov's act of leniency have on Semyonich? Jesus Christ forgave the Roman officials, peoples and sinners on cross. Likewise Aksionov also excused and forgave the Makar Semyonich, a great sinner. Let's attempt to resolve this query through the forgiveness behaviour of Ivan.

Ivan Dmitrich Aksionov, a resident of Vladimir was a young successful merchant. He lives with his wife peacefully. He had two children, two shops and a house of his own. He was a handsome, fair haired, curly headed fellow, humorous and a lover of singing. He had all good traits except one, i.e. he had a bad habit of excessive drinking. But after marriage, he gave up drinking. Occasionally he used to consume the drinking.

One summer, being a merchant, Aksionov goes to Nizhny Fair to sell his goods. He said goodbye to his family. His wife warned him not to go as she has had a nightmare in which he returned with grey hair.

'Ivan, do not start today. I have had a awful nightmare about you. I do not know what I am frightened of: I dreamt you have returned from the town, and when you took off your cap, I saw that your hair was quiet grey. (ENH: 18)

Here Ivan was supposed to listen to his wife and would respect her words. 1 Peter 3:7 asserts,

'In the same way, you husbands must give respect to your wives. Treat your wife with consideration as you live jointly. She may be weaker than you are, but she is your equal collaborator in God's gift of new life. Treat her as you should so your prayers will not be delayed.'

Instead of respecting her, he mockingly laughs for her great anxiety that the dream was a bad omen and understands the dream as a sign of luck. He assures her that he will bring nice present for her from the fair.



During the journey, Aksionov met a fellow merchant from Ryazan. Later, they both become good friends. They had some tea together and then went to bed in adjacent rooms. They put up the same inn for the night. Aksionov had a habit to go to bed and wake up early in the morning. He also instructed his driver to get ready in the morning. As per his regular routine, he woke up at dawn. He didn't wake up other merchant. Early in the morning, in cool atmosphere, he paid landlord's bill, sets off with his horses and coachman and continued his journey. After twenty-five miles, he discontinues to nourish his horses. He rested for a shorter time in the passage of the inn. Then he stepped out into the porch and ordered a samovar, a metal container used to boil water for tea, to be heated, got out his guitar and began to play.

• **Aksionov: A Victim of False Accusation as a Murderer:**

After some time, a police officer along with two soldiers appeared and began to ask questions to Ivan and asked who he was and from where he came. Ivan answered him satisfactorily. This was the external conflict for Aksionov for his non committing any wrong doings. But the officer went on cross questioning him and asking him,

'Where did you spend last night? Were you alone or with a fellow merchant? Did you see the other merchant this morning? Why did you leave the inn before dawn?' (ENH: 19)

Aksionov wondered why he was asked all these questions, but he described all that had happened and then added,

'Why do you cross question me as if I were a thief or a robber? I am travelling on business of my own and there is no need to question me.' (ENH: 19)

The police officer revealed his identity and told him that the merchant with whom Ivan spent last night has been found with his throat cut. Then officer ordered the soldiers to search Ivan's luggage. Aksionov shivered in fright when the official investigated his possessions. They unstrapped his belongings. Suddenly the officer drew a knife out of a bag and asked him about the knife. Aksionov was frightened by seeing the blood stained knife. He tried to answer but could hardly utter a word and only stammered: *'I don't know, it's not mine.'* The police officer said,

'This morning the merchant was observed in bed with his throat cut. You are the only human being who could have done it. The residence was sheltered from inside and no one else was there. Here is the blood stained knife in your bag and your countenance and approach deceive you! Tell me how you exterminated him and how much money you stole?' (ENH: 19)

Aksionov swore he had not done it; that he had not seen the merchant after they had had tea together, that he had no money except eight thousand rubles of his own and that the knife was not his. But his voice was broken. His face became insipid and he trembled with trepidation as though he went culpable. The police officer commanded the soldiers to tie Aksionov and



to locate him in the cart. The men tied his feet together and flung him into the cart. They arrested Aksionov. This was the humiliating experience for innocent and blameless Aksionov. He crossed himself and wept. He didn't curse God for this unexpected and worst happening.

He had never committed any wrongdoing and he was without guilt. He had firm belief in God and was aware about his calling from God, Ephesians 1:4 says,

'God chose us in Christ so that we might be holy and blameless in his sight.' Later, he was sent to the nearest town and imprisoned there. Enquiries about his character were made at Vladimir. The merchants and other inhabitants of that town gave a good testimony about Aksionov. A good testimony symbolizes an inherent epistemic value as a evidence and extrinsic epistemic value as competence and general moral and social values as conscientiousness and honesty. They said about Aksionov,

'In former days he used to drink and waste his time but he was a good man.' (ENH: 20)

• Trial and Imprisonment of Aksionov at Siberian Jail:

Then the trial came on. He had an accusation of assassinating a merchant from Ryazan and stealing from him of twenty thousand rubles. The news of Ivan's incarceration made his wife panic. She was in desolation and did not know what to believe. She took her two children and went to Siberia to meet her husband. The jail authority gave her authorization after her continuous begging. When she saw her husband in prison dress and in chains, shut up with thieves and criminals, she fell down and came to her senses after a long time. She asked him about the happenings in detail. She also asked him about the further move. Aksionov said,

'We must petition the Czar not to let an innocent man perish.' (ENH: 20)

His wife told him that she had sent a petition to the Czar but it had not been accepted. After hearing this, Aksionov became despondent. She revealed her suspect out of concern and asked her husband whether he had really committed the murder. Aksionov felt sorry for this and he began to weep. Then a soldier asked Aksionov's wife to go away as the time is over. Thus Aksionov said good bye to his family for the last time. After the departure of his wife from jail, Aksionov recalled what had been said and what he remembered that his wife also had suspected him. He said to himself,

'It appears that only divinity can be acquainted with the legitimacy; it is to Him alone we must plead and from Him alone wait for mercy.' ENH: 21)

Aksionov didn't write any petitions furthermore, gave up all hope and only prayed to God. He decided to appeal to God rather than men. He put his faith in God and accepted his sentencing and ritual battering. Being a true believer, he kept his faith on God and His promises, Psalm 75:7 says,



'But it is God who executes judgment, putting down one and lifting up another.'

Isaiah 33:22 also quotes,

'For the LORD is our judge; our lawgiver, our king; he will save us.'

- **Transformation of Aksionov as a Spiritual Leader and Judge in a Jail:**

After few days, he is sent to work in the Siberian mines with other convicts. He lived as a convict there. Aksionov changes into a religious old man during those twenty-six years in Siberia. His hairs turned white as snow and his beard grew long, thin and grey. All his happiness and laughter went, he stooped, walked slowly, spoke little and never laughed but he often prayed. Among other prisoners, he develops a reputation as a humble and fair man. Being a prayer warrior, he practiced the biblical verse Ephesians 6:20 in his life without shattering his faith,

'Lastly, be sturdy in the Lord and in the power of his might. Put on the whole shield of God that you may be able to situate against the design of the evil spirit. For we do not struggle against flesh and blood, but against the sovereigns, against the establishment, against the extraterrestrial powers over this present obscurity, against the sacred army of sin in the blissful places. Therefore take up the entire protective covering of God that you may be able to endure in the malevolence day, and having done all, to set firm.'

In jail, Aksionov learnt to craft boots and produce a little money, with which he procured *'The Lives of the Saints'*. He studies it when there was daylight in prison and on Sundays, in the jail church, he read the lessons and sang in the choral group. The prison establishment liked Aksionov's humbleness and his associate prisoners appreciated him. They christened him- *Grandfather* and *The Saint*. Thus Aksionov has been endorsed as a 'Spokesman' and 'Judge' for the prisoners in jail. He put the things right and judged the matters with great wisdom. Luke 14:11 says,

'For everyone who exalts himself shall be humbled and he who humbles himself shall be promoted.'

Aksionov obtained this position because of the fear of God. Proverb 1:7 says,

'The fear of the Lord is the beginning of knowledge; wisdom and instructions cometh from God.'

- **Arrival of Makar Semyonich, a real culprit, in Jail as a convict:**

One day a fresh gang of convicts came to the prison. In the evening, old prisoners including Aksionov asked to new ones about their place and reason of the punishment. In



those new convicts there was Makar Semyonich. He was a tall and strong man of sixty, with a closely cropped grey beard. He was about the same age as Aksionov and from the same hometown Vladimir. He also narrated what brought him to Siberia. He was arrested and accused of stealing a horse tied to a sledge when in reality he had only borrowed it. However, he was convicted and imprisoned. Aksionov suspects the man is responsible for his doom. Showing his unawareness about the crime, he raised his head and questioned,

'Tell me, Semyonich, do you know anything of the merchants Aksionov of Vladimir? Are they still alive?' (ENH: 22)

Makar dubiously responded,

'The Aksionov's are rich, though their father is in Siberia, a sinner like ourselves, it seems!' (ENH: 22)

Then Makar asked Aksionov about his imprisonment. Aksionov told that his sins have brought him in Siberian jail. Actually he does not want to tell or share anything about his misfortune to Makar. Aksionov's companions told the newcomers how Aksionov came to in Siberia, how someone had killed a merchant and had put the knife among Aksionov's things and Aksionov had been unjustly condemned.

When Makar Semyonich heard this, he looked at Aksionov with surprise and slapped his own knee. He exclaimed that it was really wonderful to meet them all in the prison. He also mockingly said that someone has kept knife in Aksionov's bag while he was in deep sleep and it would surely have woke him up. These words created certainty in the mind of Aksionov that Makar is the man who had killed the merchant.

• **Aksionov's reaction after knowing about the real perpetrator:**

When Aksionov came to know that Makar is the real offender, he rose and went away. He didn't sleep well the whole night. He felt terribly unhappy and all sorts of images i.e. of his wife, his children and himself, rose in his mind. There was the illustration of his wife when he separated from her to go away to the fair. He noticed her as if she were there, her countenance and her eyes rose before him; he listened to her conversation and chuckle. Then he visualized his small children. He also bears in mind himself as he used to be youthful and joyous. He keeps in mind how he is seated playing the guitar in the balcony of the inn where he was under arrest and how liberated from concern he had been. In his mind he saw the place whether he was whipped, the slaughterer and the people standing around, the chains, the criminals, all the twenty six years of his prison life and his untimely old age. All these thoughts led him into unhappiness. He wished to commit suicide. He thought that all these worst happenings occurred due to Makar. He got very angry and longed for vengeance against Makar even if he himself should perish for it. He kept repeating prayers for all night but could not get peace. Being a humane nature, his faith has been shattered for a little time. He forgot the promise of vengeance of God. It is the universal truth: 'If we think of vengeance, we definitely lose our peace of mind'. Romans 12:9 assures,



'Beloved, never avenge yourself but leave it to the wrath of God, for it is written, Vengeance is mine, I will repay, says the Lord.'

He did not approach Makar Semyonich in day time. Also he didn't look at him. In this condition, he spent a fortnight. He could not sleep at night and was so miserable that he did not know what to do. One night he was walking about the prison, he discovered that Semyonich was digging a tunnel under his sleeping shelf. Semyonich angrily approached to Aksionov and threatened him not to communicate about his mission of escaping from jail and digging the tunnel to the authorities otherwise he would kill him. Aksionov quivered with annoyance as he gazed at his opponent. He drew his hand away and said,

'I have no craving to run away and you have no need to execute me, you exterminated me long ago! As to telling of you, I may do so or not, as God shall lead'. (ENH: 24)

Next day, when the convicts were led out to work, the convoy soldiers noticed that some of the prisoners have emptied some earth out of his boots. The penitentiary was explored and the tunnel found. The Governor approached and interrogated all the captives to discover who had excavated the opening. They didn't admit of it. Few of the offenders knew about Makar's action of digging subway but they kept quite because they don't want to deceive Makar Semyonich; once the secret is divulged, he would be thrashed almost to bereavement. Finally he asked to Aksionov, a virtuous man,

'You are a truthful old man; tell me, before God, who has been digging a hole under the wall?' (ENH: 25)

Here we observe the state of inner conflict in Aksionov's mind. Makar Semyonich looked at Governor as well as Aksionov. Aksionov's lips and hands trembled. Therefore he couldn't utter a single word. There was a great fight with his nostalgia for retribution. Here he would have take revenge of Makar, the destroyer. But his inner conscience didn't allow him to do so. He considered that his action of confessing the truth won't be fruitful and it wouldn't be good for him. Then there wouldn't be essential difference in both. The readers can witness the forgiving spirit of Aksionov here. Only a pious and broad minded person can have such a courageous and forgivable spirit. He thought in his mind,

'Why should I screen him who bankrupted my life? Let him compensate for what I have experienced. But if I tell, they will possibly beat the existence out of him and maybe I deduce him imperfectly. And after all, what good would it be to me?' (ENH: 25)

Aksionov glanced at Makar Semyonich and said,

'I cannot pronounce your honour. It is not God's willpower that I should inform! Execute what you like with me; I am in your hands.' (ENH: 25)

Instead of confessing the truth, he enthusiastically took all the culpability upon himself and tried to save the life of his adversary, Makar. Governor tried to resolve the matter but Aksionov remained firm to his point. Consequently Governor left the matter.



• **Makar Semyonich's Confession and Repentance:**

That night, When Aksionov was lying on his bed and just beginning to doze; someone came quietly and sat down on his bed. He peeped through the dark and acknowledged Makar. Aksionov asked him the rationale of his coming in secret. He also endangered him that he would call the protector. Makar Semyonich bends over and undertones a request for amnesty. He confesses,

'It was I who killed the merchant, stole his money and hid the knife among your things. I wanted to murder you too but I heard a sound outside, so I hid the knife in your bag and runaway out of the window.'
(ENH: 25)

Here the readers observe the true repentance of Makar. He knelt upon the ground and pleaded Aksionov for forgiveness,

'Ivan Dmitrich, forgive me! For the love of God, forgive me! I will confess that it was I who killed the merchant and you will be released and can go to your home.' (ENH: 26)

Aksionov told Makar that he has suffered a lot and spent twenty six years and he is the real culprit for his doom. Now he has no reason to go outside of the jail as he had lost his wife and children. His wife is no more and his children have forgotten him. Aksionov responded that his life is already over and he has nowhere to go. Makar Semyonich strike his head on the floor and began to cry,

'When they beat me with the knot it was not so hard to bear as it is to see you now.....yet you had pity on me, and did not tell. For Christ's sake forgive me, wretch that I am!' (ENH: 27)

When Aksionov saw Semyonich's tears, he also began to weep. Again Semyonich begs for forgiveness. Aksionov tells him that God will forgive him, and that perhaps he himself is a hundred times worse than him. After this utterance, Aksionov's heart grew light. He felt frothiness penetrated his body. He no longer had any desire to leave the prison or go home; he only hoped for his last hour to come.

Finally Semyonich gave a confession to the governor. He confessed his guilt. Accordingly the officials arranged for Aksionov's release. However, Aksionov passes away in serenity before the order for his liberation is implemented.

Conclusion:

Tolstoy ultimately suggests that one must conquer the consideration that exculpation is an drain idea and learn to trust, along with Aksionov, that 'God Sees the Truth, But Waits' and will finally exonerate those who subsist a life of fidelity. According to Tolstoy, 'God works in outlandish ways. He doesn't always operate the approach we anticipate him to. It doesn't mean that God isn't aware of the legitimacy at all times. It's only that we don't perceive the genuineness the same manner God does.



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Introduction of Theories and Philosophies of Poetry

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Abstract:

Poetry is considered as one of the basic actions of human beings. It is the praiseworthy fact that all cultures rehearse it and take pleasure in poetry's universal high repute. The main objective of the researcher is to introduce the multidimensional facets of poetry and to acquaint the readers and poetic lovers to deal with the key concepts of poetry such as its definition, nature, types, technical elements and poetry over the ages. In a nut shell, defining poetry is quite complex and disputed matter. In connection with this, the researcher tries to highlight the idea of poetry, language of poetry and its practicality to mankind in a real sense.

There is no necessitating defining poetry. We experience the charisma of poetry everywhere. Our ancient ancestors used poetry as a means of communicating their spiritual, chronological and edifying awareness through hymns, mantras, invocations and descriptive poems. In fact, poetry is a prehistoric mode of expression and the main form of languages themselves. It has enormously popularized and developed due to its twofold function and twin appeal of emotion and imagination. In poetry, words are arranged in such a way that their meaning, sound and rhythm evoke different kinds of imaginative associations in the reader. Poet makes direct appeal to the reader's emotions and imaginations of the readers.

Keywords: Definition, nature, types, technical elements, poetic terms, developments in poetry

Introduction:

Poetry is an antique mode of expression and the principal form of languages themselves. It has immensely popularized due to its twofold function and twin appeal of emotion and imagination. In poetry, words are arranged in such a way that their meaning, sound and rhythm evoke different kinds of imaginative associations in the reader. It also makes direct appeal to the emotions and imaginations of the reader. Poetry consists of complex poetic language. Folk songs and nursery rhymes are exceptional cases.

Poetry is one of the most sophisticated of all arts. Words can have implications and different shades of meaning. They can rouse our minds and emotions both consciously and unconsciously. Words, as a powerful weapon, can convey multiple feelings. The poet can share his / her ingenious experience of the world with the reader. Images of sight and sound, impart to the reader something of the vision of the poet. Poetry can be of various forms such as lyric, elegy, epic, satire, narrative, dramatic, festive, descriptive and moralizing. Poetry can be of

various techniques like blank verse with a single unrhymed line, the rhymed couplet, the rhymed stanza of four lines and the fourteen line sonnet. The basic conventions of meter and rhyme and techniques like metaphor and simile enhances the quality and richness of poem.

Kinds of Poetry:

Narrative poem offers either a simple or complex story. The poem may be brief or it may run into many pages. These poems tell a story and they may belong to any one of these genres: ballad, epics and metrical romances.

The ballad deals with folk cultures and makes use of dialogues, simple stanzas and repetition. It is meant to be sung and narrates a single memorable episode. The origins of the ballad form may be traced to oral traditions. It is absolutely free from literary influences. Ballads have certain refreshing simplicity. The ballad stanza consists of four lines (quatrain) in which the second and fourth lines rhyme.

An epic is a lengthy descriptive poem. It is one of the most popular genres in the cultural history of any race. It tells us of a great man, a hero, who crystallizes in his personality, the most enviable

qualities in human beings. In this sense, he comes to represent the values and appreciated ideals of a race or nation. Its style is supercilious or elevated, keeping in the mind the nature of the subject.

In **metrical romance**, from a hero of condescending physique, we move on to kings, knights and despondent maidens. Religion, faith, love and the desire to explore the mysterious are all brought together in a metrical romance. A long romantic tale in verse, a metrical romance actually lacks consistency due to its impulsiveness. A narrative of escapade coming from a narrator, a metrical romance, true to its theme, holds the reader in anticipation.

Dramatic Poetry employs the features of drama in order to achieve certain lyrical effects. Here we witness one speaker. The word 'mono' means single and 'logue' means conversation. The speaker himself reveals certain features of his life and personality. Progressively he develops the rhythm of the poem, leading to the pinnacle.

The word '**lyric**' derives from the 'lyre' which refers to a melodious instrument. It was intended to be sung to the accompaniment of a lyre. Lyric is the words of a song. It uses features of drama in order to attain certain rhythmical effects. Its musical quality originates from the minimalism of its stanzas, its tuneful rhyme scheme and a marked rhythm. It gives expression to the poet's personal passionate emotions. It is marked by strong thoughts, melody and feeling. Hymn, ode, sonnet, elegy and eclogue are comes under the rubric of expressive poetry.

The word **hymn** comes from the Greek word 'hymnos' which means a song of honour. St. Ephraim, a 4th century Mesopotamian deacon, poet and hymnist is called the father of Christian hymnody. Hymn is a devotional song in praise of gods or great souls. It is imbued with deep sacred emotions. It is purposely written for the rationale of adulation or prayer. It is a metrical composition adapted for singing in a religious service. Praising songs and hymns assist Christians to worship god and thank him for the good things he has done for them.

The Ode is a type of lyric poetry. It is an convoluted lyric which uses many literary devices within the structure of the poem. It appeals more to the intelligence. It conveys dignified and stimulated

emotions. It is expressed in a language that is inventive, distinguished and truthful. Odes are structured poems praising or glorifying an occasion or individual, describing nature intellectually as well as sensitively. A classic ode is classified in three major parts, strophe, anti-strophe and epode. Greek odes were initially poetic pieces performed with musical accompaniment. There are three typical forms of odes, the Pindaric, Horatian and Irregular. Pindaric odes follow the form and styles of Pindar. Horatian odes follow conventions of Horace.

The sonnet is derived from Italian word 'sonetto' which means 'a little song'. The sonnet has an unrefined attractiveness that depends on the balance of regular and irregular form and melody. Love is the main theme of sonnet. It is a graceful form that originated in the poetry composed at the court of the Holy Roman Emperor Frederick II in the Sicilian city of Palermo. It is fixed verse form of Italian origin consisting of fourteen lines that are typically five foot iambs, i.e. of iambic pentameter and follows a fixed rhyme scheme, line one rhyme with three, line two with four, line five with seven and so on, which is usually indicated by letters. It reflects upon a single idea. It usually takes a turn called a Volta, about 8 lines in and then resolves the issue by the end. Petrarch is the father of sonnet. Sonnet is brought to England by Sir Thomas Wyatt and Henry Howard, Earl of Surrey in the 16th century. Sonnet reflects upon a single feeling with a amplification or turn of thought in its concluding lines. Shakespeare uses the sonnet form to highlight his message about his beloved and their brilliant appearance. Shakespearean sonnet has a rhyme scheme of abab, cdcd, efef, gg. The poet observes a certain attitude towards his lady love. Sonnet is a lyrical poem, a poem with a kind of musical flow that is easy to read and adapts to some musicality. These compositions convey the emotions of the author imaginatively.

The word '**elegy**' comes from the Greek word 'elegos' which means 'song'. It is a formal and thoughtful lyric poem wherein the poet contemplates on a solemn theme such as a death or loss. It is the grief for the dead. It also explores the themes of deliverance and comfort, anguish, praise and consolation are the three parts of elegy. The Roman poet Propertius, the 1st century B.C. is called as the

father of nation. The Latin elegy of prehistoric Roman literature was most often erotic or legendary in nature. The elegiac couplet was also used by both Greek and Roman poets for witty, humorous and sardonic subject matter. Elegy is a form of poetry natural to the philosophical mind. Elegy represents very thing as lost and gone or absent and future.

Eclogue is a short countrified poem and is usually in dialogue. It is on the subject of rural life and the society of shepherds, depicting rural life as free from the intricacy and dishonesty of more cultured life. The eclogue is first appeared in the idylls of the Greek poet Theocritus. The anxiety of the eclogue is to rejoice the simplicity and gorgeousness of rural life and the ways of shepherds.

• Technical Elements / Literary Devices of Poetry:

Poetry is a fine art. Following aspects are the technical elements of poetry.

The science of versification is known as **prosody**. It is the study of rhythm and sound effects in a poem. It has certain rules and laws. It concerns itself with the grouping of syllables, number of syllables in the line and rhyme at the end of a line. It is the study of the elements that give the poem its rhythm, its musical quality. These elements include: pitch, reverberation, assonance (repetition of vowels), alliteration (repetition of consonants) and cadence (breathe pauses).

According to Edgar Allen Poe, poetry is the elegiac formation of beauty. **Rhythm** is created by the reappearance of similar units of a pattern of sound. Rhythm can be divided into four parts.

i. Quantitative rhythm:

The deliberation is the length of time it takes to utter a syllable, with regular series of long and short syllables

ii. Accentual Rhythm:

The thought is the occurrence of a stressed or accented syllable

iii. Syllabic Rhythm:

The number of syllables, stressed or unstressed, is fixed in a line

iv. Accentual-Syllabic Rhythm:

The number of syllables and the number of accents are fixed in a line

Meter is the number of cadenced units in a line and the process of determining this is called scansion. Each rhythmic unit is called a foot and it come in various kinds- iambic, trochaic, anapestic and dactylic

The **sound structure** of poetic language is the crucial factor. A poem makes the sound and echo and it also determines our poignant and ingenious response. A poem creates its sound effects by convinced interlocking word sounds within a line or among lines (**rhyme**): born-corn, fight-might, gate-late etc. In **alliteration**, the initial sound of two or more words is repeated, for ex. full five, rapid rattle etc. When there is similarity in vowel sounds but not between the succeeding consonants, it is called **assonance**, for instance, lake, fight, light, lives

Poetry is about creating form. The word 'poem' is derived from the Greek word 'poiein' which means to make or create. Poetry makes new forms of words. One can perform the task of creation by putting together pieces (assembling), arranging similar things into a structure (patterning) and then deciding if the parts are so associated that they form an inseparable whole (unifying).

Poetic language is generated out of images or pictures; even structures of images are created by the poet. **Imagery** refers to the images created in the minds of the readers by a work. Images appeal to your senses-sight, sound, touch, taste, smell. A mixture of these generates a particular emotional rejoinder in the reader. Images are the means by which sensory experience is communicated. In fact, emotion is the very life of a poem. The essence and meaning of the poem lies in its imagery. The poet can uses two momentous techniques under imagery- the simile and the metaphor.

Simile is overt evaluation which uses the words such as like and as. For example, 'My love is like a red, red rose'. It tells you the supremacy of the word as a symbol. It is the aspect of figurative language. It brings together in a sentence, in either verse or prose, two very unlike things and calls upon the reader's imagination to see this unlikely relationship. With the use of a simile, one would write, 'Harry trudged along like a snail.'

A **metaphor** conveys a certain meaning by comparing two or more dissimilar objects or themes to bring out an inventive link between the two. It is

an implied comparison without the words: like and as. For instance, the evening's dewy veil. It is the indirect comparison between two things, objects or ideas.

Symbol is a sign that represents something. Ex. Sun, moon, rose, dove etc. Here word or object represents something other than its literal meaning. For example, a white dove represents the idea of peace and a flag is the symbol of nation. In literature, a symbol may be used by an author to convey ideas, emotions and to create an atmosphere. Symbols may be public or cultural. Their worth is widely conventional within the fastidious cultures.

Euphemism is introduced by John Lily in his works 'Euphuus: The Anatomy of Wit' (1578) and 'Euphuus and his England' (1580). It is a distasteful expression used in place of one that is considered horrible. For example, one says, 'he passed away.' Instead of 'he died'. The purpose is to lessen a harsh statement. 'He was relieved of his money' meaning 'he was robbed'.

Oxymoron is a figure of speech that fuses two opposite ideas that is seemingly incompatible, for example, 'freezing fire' or 'happy grief'. In 'Paradise Lost' Milton uses the oxymoron 'darkness visible' when describing hell. Shelley describes poetry inspired by the skylark as 'harmonious madness.'

Tone conveys a particular mood by a speaker in a literary text. It is the voice which is presented through characters, their speech and mode in which the events of a story are presented. This voice of the author reveals his approach towards the reader of the literary text as well as towards the subject matter dealt within the text. The tone of the author depends on 'how it is said' and not on 'what is said'.

Refrain is phrase or line or a single word that is repeated at certain intervals throughout a poem. It is used for poets and performers to memorize poems. They also helped readers and listeners to grasp the rhythm of the poem. Sometimes it is used to enlarge an argument. It is usually employed at the end of a stanza. For example, the refrain in Spenser's 'Prothalamion', 'Sweet Thames, run softly, till I end my song'.

Motif refers to storyline elements such as a character type, an image, an incident, an idea, a reference, or even a verbal or musical pattern that recurs in literary works. A motif can act as a symbol.

The visions in *Macbeth* are symbols of the culpable scruples of Macbeth and his wife. The recurrence of a motif in a work helps to set up the work's theme. A motif that is frequently used within an imaginative work is referred to as a 'leitmotif', for example, the act of rejection in Tennessee Williams' *The Glass Menagerie*.

Diction is the procedure of choosing words and arranging them in scrupulous ways in a piece of writing. It is chosen in accordance with the type and form of writing. A story written for children written should be in simple words and with short sentences. The ancient Greeks and Romantics gave minor treatment to diction whereas the Neoclassicist, the Formalists and New critics gave major significance to diction.

The rhythmic flow of a succession of words or sentences in a text is called its **cadence**. It is derived from the Latin word 'cadentia' which means 'to fall'. The Imagists like Ezra Pound, T. S. Hulme and W. C. Williams believed that cadence should be replaced for meter. For example, Allen Ginsberg's poems like 'Howl' and 'Kaddish'.

The term '**caesura**' comes from the Latin word 'caesurus' meaning 'to cut'. A caesura is a pause between two lines or phrases in a stanza of a poem. It is signified by two parallel vertical lines. The caesura was used in Old and Medieval English poetry in the works of Beowulf. The caesura is initiated from choral poetry. There is a brief pause between lines so that singers could catch their breath. It also served to break a line into two logical parts. For example, Homer's 'Iliad': 'Sing, o goddess, the rage of Achilles, the son of Peleus.'

Chorus is a group of people who function as storytellers and observer on the action. They serve as the link between the performer and the audience. In poetry, chorus refers to a set of lines that are repeated after every stanza. For example, James Joyce's 'The Ballad of Persse O' Reilly'.

A chorus may also be used for emphasis or to create drama. Walt Whitman used refrains in his poetry like in 'Song of the Redwood Tree' which employs the refrain:

Farewell, my brethren,

Farewell, o earth and sky-farewell, ye adjacent waters,

My time has finished, my tenure has come.'

Stress or accent is the stress that we give to certain syllables within a word. It is a occurrence that is explicit to the English language. When we pronounce words with more than one syllable, all syllables do not receive the identical eminence. For example, when you pronounce 'potato', the middle syllable is stressed whereas the final syllable is stressed in the pronunciation of a word such as 'perhaps'.

• **Developments in Poetry:**

Western poetry deals with ancient, medieval and modern age. Let us study the significant developments in the sphere of poetry.

Classical Greek and Latin poetry consists of **ancient poetry**. Homer's '*The Iliad*' and '*The Odyssey*' are two great magnum opus of Western literature. These works deal with the lives of the heroes of the Trojan War. These epics are the stimulations for the poets and writers of all age.

Medieval poetry started in middle ages, particularly in the 4th century AD. It witnessed the rise of the Christian church. The feudal structure of society was united with the universal influence of the church. The epic '*Beowulf*' (between 675 and 850 AD) was the great work of art of this period in the British literary history. Several lyric and elegiac poems were also written during this period. This period is also famous for vernacular forms of religious, narrative and symbolic poetry. Geoffrey Chaucer is considered as '*the father of English literature*' and '*English Homer*'. John Gower and William Langland were his contemporaries. They responded principally to French, Italian and Classical literature. In Italy, Petrarch (1304-1374) perfected the sonnet form.

Renaissance period was the new age in the history of Western literature. It began in 15th century. The period witnessed the rebirth or revival of interest in classical (Greek and Roman) culture. The impact of Renaissance appears in England at the close of the 16th century. Fundamentally the 16th century concluded in the Elizabethan period. Queen Elizabeth ascended on the throne in 1558. Poetry flourished in the Renaissance era abundantly. William Shakespeare, Edmund Spenser, Sir Philip Sidney, Christopher Marlowe etc. were the major pioneers of this poetry. The age was one of high standards and of

extreme literary movement. The Renaissance observed the first important anthology of English lyric poetry '*Tottel's Miscellany*' (1557). The sonnet was the most accepted Elizabethan lyric form. Sir Thomas Wyatt introduced it into England early in the 16th century. His friend Henry Howard, the Earl of Surrey invented the new form 'blank verse'. It was fixed with the rhyme in a sonnet, abab cdcd efef gg.

The Renaissance also brought pastoral tradition into Elizabethan literature. Pastoral poetry praises the simple life of peace loving shepherds. It is highly romantic and synthetic. Spenser's '*The Shepherd's Calendar*' (1579) is considered as the best English pastoral. Spenser is also known for his sonnets in '*Amoretti*' (1595) and the epic '*The Faerie Queene*' (1590-1596).

John Donne, Henry King, George Herbert, Richard Crashaw, Andrew Marvell, Henry Vaughan etc. started **metaphysical poetry** in 17th century England. The term 'metaphysical' was applied to these poets by John Dryden and Samuel Johnson in order to designate that their poems materialized unnatural. John Donne developed an original poetic style uniting thinking and sensation. His truth-seeking and pious poems are also known for their heightened mental scrutiny and sexual practicality. His '*Holy Sonnets*' dwell on theology and ethics and contain some of his most memorable poems. Irony and paradox flourished in his poems.

The term '**Neoclassical poetry**' is applied to the works of late 17th century and 18th century poets who reproduced the classical Greek and Roman poets. The 18th century is also known as '*the Age of Enlightenment*' or '*the Augustan Age*'. John Dryden and Alexander Pope emulated Latin poets like Ovid. Horace and Virgil wrote during the reign of the Roman emperor Augustus (27 BC – 14 AD) Hence the term 'Augustan'. These poets personified a group of attitudes towards art and human existence-ideals of order, sense, self-control, respectability and so on. John Milton was the greatest English poet in the early years of the 17th century. He was highly praised for his poems '*Lycidas*' (1638), '*Paradise Lost*' (1667) and '*Samson Agonistes*' (1671). Some of his well-known poems include '*On the Morning of Christ's Nativity*', '*On Shakespeare*', '*L'Allegro*' and '*Il Penseroso*'. '*Paradise Lost*' inspired writers like Alexander Pope, William Wordsworth and John

Keats to write long poems. Dryden wrote '*Athalam and Achanophel*' (1631) a great political satire and an allegory. It uses a biblical framework. His '*The Rape of the Lock*' (1712-1714) is the radiant mock epic. Pope is well known for his ironic verse, his translation of Homer and his use of heroic couplet. Thomas Gray, Oliver Goldsmith, Edward Young and William Collins are the notable writers of this age. Neoclassical poets drew on both classical and modern French models. They subjugated English literature from the reinstatement of realm in 1660 until the end of the 18th century, when the publication of '*Lyrical Ballads*' (1798) by William Wordsworth and S.T. Coleridge marked the materialization of Romanticism.

Romanticism is one of the supreme literary movements of Western poetry. In Britain, Wordsworth and Coleridge wrote '*Lyrical Ballads*' in 1798. It was the first foremost work of English Romanticism. In his '*Preface to Lyrical Ballads*', Wordsworth explains,

'Poetry is the first and last of all knowledge. It is as immortal as the heart of man.'

The ferocious egoism, respect for the accepted world, impracticality and enthrallment for the mystical are the outstanding features of Romantic poetry. P. B. Shelly won great recognition for his '*Ode to the West Wind*' (1819) which was included in this anthology, '*Adonais*' (1821) and '*Prometheus Unbound*' (1820). In America, the Romantic age gave to literary history such great writers as Edgar Allan Poe, Ralph Waldo Emerson and Henry Wadsworth Longfellow. Emerson believed that poetry was the artistic form that would play a decisive role in shaping the prospect of America. The 19th century American movement *Transcendentalism* believed in the prospective in man to transcend history and unite himself with the Over soul or God. Since God was in natural world and since nature was seen as an epitome of the self or soul. The transcendentalists concluded that nature, the self and God are one.

Modern Poetry witnessed especially after the 1850's the 'Industrial Revolution', which left their impacts on poets. A.L. Tennyson, the poet Laureate of the Victorian era and Robert Browning, the master of the 'dramatic monologue' are the noteworthy works of this age. Thomas Hardy, a major novelist of the

period, won acknowledgment for his verse drama '*The Dynasts*' (1903-1908). Browning's wife Elizabeth Barret Browning, George Meredith and D.G. Rossetti composed delicate sonnets during this period. Matthew Arnold and Rudyard Kipling justified the faith that British poetry of the second half of the 19th century was outstandingly dazzling and affluent. In America, between 1850 and 1900, two important volumes of American poetry earned gratitude- Walt Whitman's '*Leaves of Grass*' (1855) and Emily Dickinson's '*Poems*' (1890). Walt Whitman writes, '*The United States themselves are essentially the greatest poem*'. Whitman experimented with images and urbanized an original poetic hallucination. He turns away from American avarice to reach out to the spiritualism linked with India.

Conclusion:

Poetry, an artistic and literary genre, now a day has turned out to be a means of encouragement. It is a creative configuration of expression which suggests a message that customary people can relate to. One can inscribe their own emotions and views of legitimacy through poem. Poetry appeals to one's ethical consideration and good sagacity to hark back the implicit and serve like a voice of the worldwide morals. Poetry has the potential to replicate the deepest sensations of heart and soul. However poetry also serves to demonstrate the ingenuity, originality and buoyancy of the human beings. Poetry is a powerful instrument to present universal truths like philosophy. Poetry is superior to history and philosophy. Philosophy, in a real sense, presents only conceptual principles which cannot be comprehended by the young people whereas history deals with tangible facts. General truths of poetry can be easily communicated through examples, and these examples are drawn from a supreme globe and so they are more flamboyant and effectual.

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VOL- X	ISSUE- 1	JANUARY	2023	PEER REVIEW #-JOURNAL	IMPACT FACTOR 7.367	ISSN 2349-638x
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**SELF ANALYSIS: UNIFICATION OF SWOT ANALYSIS AND ATTITUDE****DR. KAMALAKAR BABURAO GAIKWAD**

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ABSTRACT:

In today's world of competition, self analysis is very significant attribute for every learner. The rapid change in technology has constrained the world of employment to revolutionize swift in order to endure in cut-throat competition. This has resulted in numerous changes in the set of understanding; attitude and skills obtained by the learner may be superseded when he / she will be coming out of the educational institution. In this regard, self analysis helps students to be acquainted with the minutiae of supplementary set of comprehension and skills required in altering demand of industries for an explicit employment. Due to fast changing situations in the industry, it is predictable that person working in the organization shall possess a right approach towards all characteristic of his vocation, sense of duty and responsibilities. This will also support to construct positive surroundings around him. The main objective of the researcher is to explore the thematic concern and significance of self, personality, self analysis and how it helps in establishing the relationship between SWOT Analysis and the functions and techniques of positive and negative attitude. He also emphasizes on the fact that self analysis and attitude assists in maintaining and improving the human being's mentality and edification.

- **Keywords:** Self Analysis, Self, Personality, Swot Analysis, Positive And Negative Attitude

Introduction:

Our education system in general and professional education in particular focuses on providing professional knowledge for the students in educational institutes. Students are required to adopt these professional skills not for the fixed tenure of their education but should apply it throughout their career for their self development and growth. In addition to core or technical knowledge, students are required to possess soft skills to work efficiently in the organization. In this regard, Swami Vivekananda rightly says,

'We need such edification, by which personality is shaped, potency of mind is augmented, intelligence is stretched out and by which one can situate on own feet.'



Development of Life Skills covers individual maturity and interpersonal expertise. Life skills help to develop the personality and they should be practiced from within. Considering its significance, industries emphasize on conducting trainings related with job activities and soft skills. In order to fulfil the need of the industries, the educationalists have incorporated the soft skills content in the curriculum after collecting suggestions, organizing conferences and conducting workshops with industry experts. It is the opinion of the industrialists that students are lacking in communication ability, language proficiency, presentation skills, interpersonal skills, decision making and problem solving. The interaction with the industry experts lead to a certain conclusion that students should familiarize with the following soft skills which enhance their linguistic competence and ability to tackle the adverse situations in life. These skills cover reading skills, listening skills, observational skills, communication skills, presentation skills, leadership skills, Interpersonal skills, information search etc.

• **Objectives of the Study:**

1. Appreciate the need of Self Analysis and maintaining a positive attitude
2. Conduct his/her own self analysis by using SWOT Analysis tool
3. Locate weaknesses in his/her personality and identify remedies to minimize them.
4. Understand the power of words and implementation of positive words while speaking with others
5. Analyze traits of positive attitude
6. Use techniques to build a positive attitude

• **Self Analysis:**

Self, personality and SWOT / SWOC Analysis are the major key concepts of self analysis. Julius and Augustus Hare define about self Analysis:

‘Be what you are. This is the first step toward becoming better than you are.’

Self analysis is like a mirror which narrates about the self and personality. It gives an idea about internal aspects of our personality. It focuses on a concept of self. Self analysis is the amalgamation of attitude and SWOT Analysis. It is the requirement of the employer as well as employee also. The industries require work force having huge amount of self confidence among them. After successful recruitment in the organization, candidates have to work in the industry on individual as well as group level. While working, he / she should have a clear understanding of himself / herself. He / she should know about his personal traits, characteristics, qualities, disabilities, limitations and knowledge. This should be manifested through his behaviour, presentation and methodology of performing tasks. William Morrow proclaims about self analysis,

‘What lies behind us and what lies before us are tiny matters compared to what lies within us.’

Self may be viewed as every individual is a unique personality with his / her specific peculiar personality traits. These traits describe the whole personality of every individual. In fact, self an indicator of very existence of own.



Personality is a set of attitude, aptitude, physical, mental and behavioral characteristics which embark upon the style in which the individual is going to present himself / herself before the others.

- **SWOT Analysis:**

The word SWOT refers **Strength, Weaknesses, Opportunities and Threats / Challenges** of one's personality. SWOT Analysis is a strategic tool used by the organizations to find out its position in the competitive environment by studying the potential strengths and weaknesses and possible opportunities and threats to their company. On the same basis, one can predict the SWOT factors of his/her own personality. Strength and Weaknesses are present factors due to characteristic traits of your personality whereas Opportunities and Threats are future factors due to your strength and weaknesses respectively. Personality traits may be your impressive personality, excellent communication skills, convincing ability, good physique, good voice, good friends, sportsmanship etc. For instance, the person with good voice as strength may get opportunity to sing on radio station or may win any singing competition. Weaknesses of personality may be short tempered nature, highly sensitive, poor in communication skills, shyness, lack of general knowledge etc. For example, the person with poor communication ability may not be in a position to give speech on a dais and so on. In this way one has to critically examine own personality and list out SWOT factors for further improvement and development.

- **Methods of Conducting SWOT Analysis:**

The person who is carrying out SWOT Analysis has to use following steps.

1. Consider one's own strength abilities and make list
2. Analyse one's weaknesses and list them
3. Think of probable opportunities to make use of strengths and reduce shortcomings
4. Identify probable hurdles which can be overcome in future

Such analysis helps in deciding the action to be taken for self development.

- **Guidelines for Self Analysis:**

- a. Analyze own strengths and weaknesses without considering that of others
- b. Observe the outcome from self analysis without any prejudice in mind
- c. Accept the outcome as it comes. If it is negative, concentrate on how to minimize negative things and if it is positive just accept it calmly and think on the methods of improving it.
- d. If the outcome from analysis is incorrect, then two things are possible-
 - The rules and regulations of self analysis haven't been followed with extreme honesty
 - the method itself may be wrong.
- e. In such situation, it is better to consult a person who knows better
- f. List down the remedies for weaknesses and apply all those tools in your day to day life



- g. Remember that self analysis is carried out for improvement. Therefore use different methods, tests and assessment procedures to find out own strengths and weaknesses.
- h. Don't apply the academic parameters of success to self analysis.

- **Attitude:**

Winston Churchill asserts about attitude,

'Attitude is a little thing that makes a big difference.'

Maintaining a positive attitude even in difficult situations is important characteristic that will help students achieve success. Students need to learn to recognize the causes and effects of negative attitudes and see how those attitudes affect others around them. Then they can work toward changing attitudes into healthy ones. Positive attitude equips students with the ability to learn and grow through their fears and frustrations and interact appropriately with others.

An attitude is a predisposition to act or feel in a certain way towards a person or thing. Attitudes are generally positive or negative views of a person, place, thing or event. This is referred to as the attitude object. People can also be ambivalent towards an object meaning that they simultaneously possess both positive and negative attitudes towards the object in every situation. In this regard, Helen Keller aptly says,

'When one door of happiness closes, another opens; but often we look so long at the closed door that we do not see the one which has been opened for us.'

- **Positive Attitude:**

It means to keep a set of ideas, values and thoughts that tend to look for the good, to advice, to overcome problems, to find the opportunities in every situation. A positive attitude is seeing the glass half full. Persons with positive attitude are always optimistic. Effect of positive attitude is as follows.

- a. Think positively and feel confident
- b. Use imagination, see possibilities and find opportunities
- c. For success, believe in dreams
- d. Self realistic goals, make plans, take actions
- e. Creative, productive and fulfilling life
- f. Achieve success and enjoy life

- **Negative Attitude:**

A negative attitude is self defeating. Solutions to problems in life cannot be found by looking for someone or something to blame. The persons with negative attitude are pessimistic in nature. Winston Churchill rightly quotes.

'A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty.'

The effect of negative attitude is shown below and it leads to frustration at every stage.

- a. Think negatively and feel insecure



- b. No imagination, see problems and faults
- c. No vision, no idea, no success
- d. No realistic goals, no plans, no clear directions
- e. Boring, unproductive and miserable life
- f. Failure and frustrated life

• **Functions of Attitude:**

There are four basic functions of attitude.

1. **Adjustment:**

-Attitudes help persons adjust to situations

-People seek out group acceptance in order to gain praise or rewards and avoid punishment.

Jimmy Dean reiterates,

'I can't change the direction of the wind but I can adjust my sails to always reach my destination.'

2. **Knowledge:**

-Attitudes help person to make decisions

3. **Value Expressive:**

-Person's attitudes are often a reflection of their values

4. **Ego Defensive:**

-Attitudes are formed to protect the ego.

• **Behavioral Comparison of Optimist and Pessimist:**

S.N.	Optimist	Pessimist
1	Optimist says, 'It may be difficult but it is possible.'	Pessimist says, 'It may be possible but it is too difficult.'
2	Says, 'I must do it.'	Says, 'Something must be done.'
3	Makes it happen.	Let it happen.
4	Considers as part of the team	Keeps away from the team
5	Says, 'Let me do it for you.'	Says, 'That's not my job.'
6	Sees the doughnut and not the hole in it.	Sees the hole, not the doughnut.
7	Philosophy: 'Don't do it to others what you would not want them to do to you.'	Philosophy: 'Do it to others before they do it to you.'



- **ABC Model of Attitude:**

Attitudes are generally considered to be made up of three components. Affect, behaviour and cognition are interrelated with each other.

1. **Affective / Emotional Components:**

These are related with feelings and physiological nervous reactions to an object, situation or a person. For example, in an organization a personal report is to be given to the General Manager. He looks at the report and points out that Sales department have not performed their due responsibilities. Therefore he forwards a written notice to the marketing manager with the Sales staff. (Affect - Feeling- Ex. Teacher is biased.)

2. **Behavioral Components:**

It deals with an observable reaction related to movement. It refers to that part of attitude which reflects the intension of a person in short or long run. (Behavioral - Action- Ex. Unhappy, reluctant to attend the periods of teacher.)

3. **Cognitive Components:**

These are certain beliefs which are related to our mind. It refers to that part of attitude which is related to a person's thought. For instance, 'Smoking is injurious to health.'

(Cognition - Knowledge- Ex. Teacher gave more marks to someone who deserves less.)
Frank Lloyd Wright convincingly proclaims,

*'The thing always happens that you really believe in and the belief
in a thing makes it happen.'*

- **Tips or Guidelines for Developing Positive Attitude:**

- a. **Practice Genuine Smiling:**

You must practice smiling when you don't feel like smiling. Counterfeit smiles don't count. When there seems to be an unconscious heaviness holding your lips from spreading wide into an authentic smile that is when you practice. Make silly faces at yourself, speak to yourself in strange voices, relate loving recollections or look at hilarious pictures. Find and make use of your witty weak spot. Learn to let go off your bad-tempered glare. A smile needs room to work with.

- b. **Exhale Positive Aspects:**

An effective meditation can allow you to speak directly to your subconscious mind. Practice meditating and speaking positive words into your soul. If possible, breathe deeply. Exhale all your negative thoughts, inhale all that is positive. Sometimes it helps to focus on a happiness switch and to practice flipping it on.

- c. **Practice Letting Go:**

We tend to hold on tightly to the things that bother us. Doing this causes us to settle into a negative mindset, prolong a bad mood and can keep us awake at night. If you find yourself obsessed with the same thoughts repeatedly it's time to let them go. You can practice letting go by telling yourself to let go and then consciously let the thoughts drift away. Let a new peace of mind settle firmly in their place. Don't get frustrated. Every failure is an opportunity for more practice.

**d. Practice Optimism:**

Sometimes it's hard to see the good in something without a trained eye. Increasing our optimism is easy if we practice it. You can do it anytime by counting your blessings or listing the good things you experienced today. For more difficult practice you have to seek out the good in a bad situation and make it prominent. You must find enjoyment and appreciation for the brighter side of life and use it to flip pessimism on its head. As your optimism increases, you will begin to realize you can find positive things in every negative.

e. Practice Love:

Love and sincere compliments are the most powerful components of happiness. It's hard to think about yourself and your problems while giving love and attention to someone else. To practice love you must help others in any way you can. You could help someone in need or offer encouragement to one who is disheartened.

Love what you do. Positive attitude is definitely developed when you start loving your job, your work or whatever you perform. In all these tasks, you need to identify the thing in your work which you like most. For example, study can be done through reading, writing or speaking. Out of this which thing you like the most do that. It will definitely give you pleasure.

• Conclusion:

SWOT analysis helps to obtain an edge over the competition. Identification of your strengths and opportunities is a stepping stone to verdict several ways of optimizing them to better your market probabilities. It is an outline for identifying and analyzing an organization's strengths, weaknesses, opportunities and threats. Its primary aspiration is to augment the consciousness of the factors that go into making a business pronouncement or launching a business strategy.

It can be summarized that attitude is a condition in which man moves to take action or do anything in response to a state of affairs or situation of the objects in the immediate environment. Attitude is significant because it can control your potential to move through the globe. Positive attitude can help you accomplish quantifiable favourable outcomes in your personal and professional life.

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IMPACT FACTOR 7.14

ISSN 2278-9529

THE CRITERION

AN INTERNATIONAL JOURNAL IN ENGLISH

14 Years of Open Access

Vol. 14 Issue-II April 2023

Bi-monthly Peer-Reviewed e-Journal

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ISSN 2278-9529



Authenticity of Spiritual Reputation in Kiran Nagarkar's Select Fiction

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Article History: Submitted-14/03/2023; Revised-22/04/2023; Accepted-25/04/2023; Published-30/04/2023.

Abstract:

Religion is a vicious thing which is practiced from ancient age. It edifies people to come across many obstacles, hindrances and superstitious belief. The Legendary stalwarts have fought against the religious practices which occur in the society. Kiran Nagarkar, the significant post colonist writer, through his writings enlightens people by exploring the real life incidents in his works. His prodigy in handling religious activity has been revealed clearly on his works. Through multiculturalism, he highlights the unification of ethnicity in all his works. Following one's own religion should take away people in right manner.

The main purpose of this research paper is to investigate and to highlight the basic concepts like objectives, materials and research methodology, literature survey, superstitions and religion, religious reflections, spiritual eminence and its authenticity. Ethical values can be taught through religious groups. Spiritual eminence should be advocated and humanity must be eulogized.

Keywords: Religion, sociology, multiculturalism, superstition, morality, religious convictions.

Introduction:

Kiran Nagarkar is a genuine experimentalist. He has proficiency to combine a incredible intuition for storytelling with a rare directness of thoughts. He is the most precious and renowned author of the significantly commended novels *Seven Sixes Are Forty Three*, (landmark in post independence Indian literature), *Ravan and Eddie*, *Cuckold*, (Sahitya Akademy Award) *God's Little Soldier*, *The Extras*, *Jasoda* etc. Kiran Nagarkar's fictions have translated into Marathi,

French, Italian, German, Spanish and Portuguese. He has also written several plays and screen plays both in Marathi and English.

Before studying the authenticity of spiritual eminence in Kiran Nagarkar's select novels, let us focus on the key concepts like objectives, materials and research methodology, literature survey, superstitions and religion, religious reflections, spiritual eminence and its authenticity in detail so that it would be convenient to the readers to grasp and to take interest in it.

- **Objectives:**

The main intention of this research is to investigate the genuineness and authenticity of spiritual eminence in Kiran Nagarkar's select novels.

- **Materials and Research Methodology:**

The data and information presented in this study were analyzed, scrutinized and verified on the basis of theoretical and analytical. The facts are proven through analytical data wherever required.

- **Literature Survey:**

'Veracity of Religious Prominence in Select Novels of Kiran Nagarkar' L. Vaishnavi, Dr. V. Suganthi, Ph.D. Research Scholar, Assistant Professor in English, Research Scholar, Tamilnadu, Infokara Research, Volume 8 Issue 8 2019, ISSN No: 1021-9056. Considering the above mentioned references and limitations, the researcher has thoroughly explored the several dimensions of the essay in its objectives, rationale, research methodology, superstitions, dogmatism, and how to avoid these, how to aware of our own biases, common sources of error in the form of self esteem and fear etc. Thus researcher has attempted to showcase the entire in-depth canon of Bertrand Russell's philosophy about superstitions and dogmatism.

- **Superstitions and Religion:**

The word *superstition* is frequently used to refer to a creed not accomplished by the preponderance of a prearranged society in spite of whether the established faith contains assumed fallacies. Lysann Damisch (2010) defines superstition as:



‘Unreasonable thinking that an object, accomplishment, or situation that is not rationally connected to a course of proceedings manipulates its conclusion.’¹

Superstitions are beliefs resulting from lack of knowledge, trepidation of the unidentified, faith in enchantment or probability, or a false formation of causation. It is also an illogical hopeless outlook of mind toward the paranormal, natural world, or God resulting from false notion. It is generally applied to attitudes and practices surrounding coincidence, destiny telling spirits, good luck charm, astrology and telepathic entities, predominantly the conviction that prospect measures can be predicted by explicit disparate former actions.

According to Dale Martin,

‘Superstitions may symbolize long standing accepted ways of life and observations which presume an invalid indulgent about cause and effect, that have been discarded by contemporary science.’²

• The Authenticity of Spiritual Eminence.

Declaration of religious conviction in India is an extensive aspect. It enables the populace to influence their life in a consistent manner. In fact, religion instigates community in a conscious method. India is an authoritative homeland where numerous spiritual groups led in the same shared space. Faith matures ethical augmentation of the people. It allocates people to sustain their principled standards. India has been driven with multiple beliefs. Hinduism, Christianity, Islam etc. are the major religions in India. Buddhism and Jainism are considered as marginal and minority religions. They do not have a deeper impact on the society to a great extent.

Kiran Nagarkar has projected religious and pious aspects in his fictions. He mainly focuses on three major religious groups. The traditions, customs and lifestyles of Hinduism and Christianity are reflected in *Seven Sins are Forty Three*, *Ravan and Eddie*, and *The Extras*. The glimpses of religious fervor and Islamic tradition are highlighted in *Cuckold* and *God's Little Soldier*. Kiran Nagarkar's themes were often associated to matter-of-fact life. His characters were down-to-earth in nature. He reveals the ingenuous and truthful condition of the Country. His widespread themes were about the poverty, illness, suffering, death, exploitation, eroticism, prostitution, discrimination, absurdity, religious fervor, dominance of women etc.

The fundamental conviction in Hindu tradition is Lord Brahma, the creator of the human being and every mortal in the cosmos. Then Lord Vishnu preserved the universe and human beings. Birth, life and death are the important cycles. Finally Lord Shiva has the power to destroy the planet.

In Christian religion Lord Almighty is the originator of world and he began to generate the human beings and other such living things. There is a belief that God has taken seven days to create this universe and on seventh day he took rest from his work.

*'And on the seventh day God finished his work and he rested on the seventh day from all his work. Then God blessed the seventh day and consecrated it, because in it he rested from all his work which God had created.'*¹³ (Genesis 2:2)

Accordingly Christian community believes the perception and follows seven days week which starts with Sunday and ends with Saturday.

- **Spiritual Reflections in 'Seven Sixes Are Forty Three':**

The novel proclaims the notion of belief that:

*'Time has infiltrated the whole world. Every corner of the world, every little corner. God has a rucksack, as big as the universe, and god is in an urgency. He is stuffing the bag with every second he can discover, anxiously and dreadfully. From the instant he formed the universe, he has been suffocating the present into the past. He has gone berserk and he is driving us mad. His work is never finished. He drips with sweat, you all over the world the future stretches to infinity.'*¹⁴ (SSAFT: 40)

It also reveals the fact that everyday woman manufacture a fifty thousand babies and Kombiamma washes the steps of Mahalaxmi temple. Here Raghu explains all these things to his girlfriend,

*'Look, I like you, honest to God, I do. And I like it too. But for Christ's sake, I can't be doing it all thirty two hours of the day, not even if I wanted to.'*¹⁵ (SSAFT: 40)

In another instance, Kushank's mother Tai at Kothrud (Pune) tells him,

*'Bow and touch it, Kushank. I'm older than you and I tell you god is in every stone.'*¹⁶ (SSAFT: 41)



In order of personal and respective note, she asks him to bow and worship her. Kushank thinks that,

'May be, If God is in every stone, then there is a saffron painted stone in the heart of God.' (SSAFT: 41)

They believed that nothing escapes from god. Nothing slips from sack and God has no eyelids. He had them once, but they fell off from disuse. They had no purpose, since he never closes his eyes. He always opens his eyes to watch people. Kushank has a doubt that why does he create people and need to take them away. He had a doubt on the almighty's creation of human being and to take them away from this world, on the simple note '*reason for birth and death*'. No one knows the reason behind his creation and for his demolition; he is the creator as well as a destroyer.

- **Kiran Nagarkar's Awareness about 'Superstitious Implications on the Indian Society':**

The novel *Ravan and Eddie* deals with many illogical beliefs. Spiritual practices in India were carried out in a routine order. Hindus and Islam indulge in worshipping God. People believe that almighty is accountable for all the good and bad things happen in their lives. For instance, in *Ravan and Eddie* we witness that Ravan as an infant fall from the fourth floor. This happening is granted as God's leniency. Therefore, people execute special prayers for thanking God for defending him from the evil incident. Such pious practices are often measured as people's essential rights that they do not bother about the neighbours when they carry out these sacraments. Though these rituals create public disturbance, commotion, sound of speakers and microphones, mantras, still people tolerate it as a part of religious ceremony. Any religious ceremony performed with in the halls by persons or by the population beside temples on the public grounds is always escorted by carsplitting singing and hymns. Here Ravan's mother Parvatibai would like to thank God for saving his son. Therefore, she keeps performance of prayers (Satyanarayan Mahapuja) through microphones and prayers by Brahmins. She doesn't consider that this microphone will create nuisance to her neighbours.

The major predicament of defining religion is caste. The caste is defined by religion. Certain group of caste survives only under a particular religion. However, caste can be visualized multiplied across diverse religions. The Indian organizations itself gives more magnitude to the caste discrimination rather than religious favoritism even though religion plays a crucial role in

creating the uniqueness of individuals. In Ravan and Eddie, we can see the concept of honour killing in terms of love relation between Ravan and Pieta. Pieta's mother has a disregard of accepting Ravan from his child hood days as her son-in-law. She thinks that Ravan is the only root cause for his husband's bereavement and she christened him from Ram to Ravan. Another reason for her inattention was religion dissimilarity. They never settle on the same floor, their flat has been alienated according to their religious group. People inhabit separate blocks according to their religion.

Nagarkar incarcerates the genuine quintessence of all the societal connections that happen in terms of religion and caste in society. The novel *Seven Sixes Are Forty Three* depicts the love affair of Kushank and Prachint. They were also discarded on the basis of caste difference. The pervasiveness of social tribulations such as untouchability and unfairness happens at the caste level.

Cuckold recounts the narrative of the chronological events, which take place about three hundred years ago. The Rajputs are combatant society. The social, political, cultural, and devout code of demeanor was profoundly centred on bravery and intrepidity. The Gods and Goddesses themselves were prevailing fighters. Valour and demise in war were considered as gracious concepts and sacred preaching reinforced the holiness of participating in a war. Death in battlefield is considered as an undeviating pathway to deliverance and salvation. While death in combat equates itself to life in paradise, running away from a battle is compared to hell. Like any other population that deeply depended on warfare and fighting, the Rajput community also relied on religious corroborations to stimulate its armed forces. On the other hand, women had a confidence that a combatant is equal to a deity or God. At the same time, the God and Goddesses were also well thought-out as fighters. Women were trained to believe God and a soldier on the same lines. Therefore, womanhood persuades to worship the man who they marry, and married the God whom they worshipped. Women feel affection with God, and contributing their existence to the divinity, by wedding with the God and spending one's life in the temple of the god is ordinary throughout India. The devout character Meera in *Cuckold* intensely falls in love with the Lord Krishna. She devotes her whole life to Lord Krishna. This is one of the best examples of superstitious belief. The perception of a woman marrying a divine being is seen throughout India. However, Nagarkar creates a impediment in the novel *Cuckold*, by contrasting



the God and the Prince on the same level, by forcing Meera to get married with Maharaj Kumar. Here the writer wants to show how the religious concept of placing a fighter equal to that of a God in case of Meera. Even though the formation of a saintly image to fighter often allows him to obtain sufficient admiration and respect from the common folk including women, the writer projects that such an approach will also have superfluous results like what happened with Meera and Maharaj Kumar. Meerabai is a patrician Hindu spiritual singer and aficionado of Lord Krishna from Rajasthan. She is from the saint tradition of the Vaishnava bhakti movement. She wrote nearly about 1300 prayer songs and bhajans. Her compositions are mostly written on the honor of Lord Krishna. She inscribed most of the poems in the Rajasthan dialect of Hindi. She anticipated Lord Krishna as her husband. Other family members were also prone towards Vaishnav bhakti practices. Meerabai got a devotional environment from her family and she has full-grown generously of her own spiritual emotions. Her wordings about Lord Krishna are,

*'He was my best companion, my close friend and preceptor. This Blue god with the flute and the peacock feather wedged in the band around his head.'*³ (Cuckold: 102)

Thus, *Cuckold* is shown as a historical citation of social and artistic lives of the Rajputs as well as the religious condition that exist during the period.

The novel *God's Little Soldier* is principally a novel on religious fanaticism. It deals with the life and mind of terrorist. It digs unfathomable into the consciousness of an individual, tracing out a variety of influences together with religion that produces a giant out of man. The novel demonstrates how religious propaganda right from a youthful age can have really a control over a human being. It is the story of a young boy who is absolutely persuaded by religious dedication. Zia Khan, a Muslim young boy is persistently trained by the extreme form of religious thinking. He is frequently uncovered to prejudiced and restricted outlook to his parents are liberals. Zia is overwhelmed and taken care of by his aunt Zubeida's preachings. He has exposed a new adversary every day and his brother Amanat refers to him 'a religion of extremism'. He has also influenced on the term of violence and terrorism. He ignores the idol of Lord Ganesha. He takes no notice of other sacred group people. His engagement in Islamic set of guidelines at the influence of his dedicated aunt makes him as 'a protector of Islamic values' in disintegrate and morally wrong world. Religious fervor is frequently distinguished by seclusion and total lack of connect with the common public. The isolation is the predecessor to the

expansion of devotion. This disengage is formed and later urbanized with the dispute that the general public is forever sitting against the God they trust. The likeness of the society being poisoned and therefore God necessitates a martyr, or a soldier, to sanitize all the dire from the society is one of the common disagreement put forth by people who persuade others to clinch religious keenness. In order to demonstrate that the world is full of contamination, and that they tried to live the life of wholesomeness, these spiritual fanaticisms separate themselves from all the standard customs and behavior of people. The protagonist Zia Khan from his childhood hates listening music and watch movies because these are the foundations of pleasure. They do not go with the preaching of their religion. This religious propaganda brainwashes and convinces the individuals to follow fanaticism. They believe that purity can be maintained through such things and they alone can achieve deliverance while the rest of the world is condemned.

• **Conclusion:**

Religious conviction and faith plays a major role in every human beings life. Kiran Nagarkar's novels investigate the imperfections of society's religious practice. His novels bestows populace to triumph over the superstitious concerns occurred in the society. Belief should not be followed profoundly; it should preach good judgments and didactic ideas to people. Faith has the supremacy to bring together the nation in the precise manner. It should not divide the nation by flattering one's religion as superior than other and rebuking other creed in most horrible manner. The universal truth is that civilization is superior to all the religions. Human benevolence is better than spiritual practices. Spiritual eminence should be advocated and humanity must be eulogized.

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