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The readers and beneficiaries vary from academicians, professional engineers and scientists, to undergraduate and graduate students from all over the country.



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ॐ सर्वे भवन्तु सुखिनः, सर्वे सन्तु निरामयाः।

सर्वे भद्राणि पश्यन्तु, मा कश्चिद्दुःखभागभवेत् । ॐ शान्तिः शान्तिः शान्तिः॥

Meaning: Om, May All be Happy, May All be Free from Illness. May All See what is Auspicious, May no one Suffer. Om Peace, Peace, Peace.

Abstract - The present study aims to measure the knowledge, attitude and practices towards COVID 19 among Dewas residents during the outbreak of this epidemic disease. The questionnaire was sent online to participants to collect the data and convenience sampling was used that falls under non probability category. The questionnaire consists of 17 questions, in which 12 questions relates to knowledge, 2 relates to attitude and 3 relates to practices towards COVID 19. Sample of 145 participants were obtained. The mean value of knowledge level towards COVID 19 is found to be 9.4, which is quiet at higher side. The sample further shows that approximately 69 percent population agrees that COVID 10 will be successfully controlled, 96.5 percent sample is optimistic about India's triumph over COVID 19. The practices followed by sample are as follows; almost 97 percent sample avoid going to crowded place, approximately 93 percent sample is wearing mask while leaving and 100 percent sample is maintaining social distancing.

Keywords: COVID 19, Knowledge, Attitude, Practices.

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Abstract- The olfactory system is one of the most important chemosensory systems for teleosts. The olfactory epithelium of freshwater catfish *Clupisoma garua* (Siluriformes, Ailiidae) was studied by the aid of light microscopy and transmission electron microscopy the olfactory organs of teleosts are of majestic biological concern as serve for crucial role in kin recognition, mate selection, food finding, predator avoidance, homing, and other behavioral activities. Survive in aquatic habitat, without light but abundant with dissolved compounds, the chemosensory organs of fish exhibit remarkable adaptations according to ecological habitats and taxonomic levels. The olfactory organ is apparently sheathed by epithelium which performs a momentous role in chemoreception. Olfaction of fish is concerned to study as the olfactory organ directly interacts with the surrounding aquatic environment and marks the external chemical stimuli in various ways. The olfactory system accords when odorants affix to molecular receptors located on olfactory receptor neurons within the olfactosensory epithelium. Many reports are available on the fine structure of the olfactory epithelium in a number of fish species. The gross morphology, topology, and cellular organization of olfactory organ variegates considerably among teleosts. The number of olfactory lamellae and the distribution of receptor cells on the epithelial surface mediate the sensory distinctness of the fish. The disposition and texture of olfactory cells among different teleosts have been extensively characterized and reported diverse types of sensory

receptor cells having precise sort of attentiveness for distinct chemical cues. The term olfaction implies the system devised by the bipolar sensory neurons of the olfactory mucosa. Structural organization of the olfactory system is necessary to annotation of the olfactory execution. *Clupisoma garua* a bottom dweller river catfish, feeds mostly on insects, mollusks, small fishes, decaying, and algal matter.

Keywords: Cellular Structure, Chemosensory System, *Clupisoma garua*, Olfactory Epithelium, Transmission Electron Microscopy.

RFI/CPBEAR-2022/129

INVESTIGATIONS OF CHEMICAL AND PHYSICAL PROCESSES RESPONSIBLE FOR PLANT GROWTH

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Abstract - At the molecular level investigations, have provided novel insights into the manner in which regulation of gene activity controls physiological processes, although much of the progress has been made with herbaceous crop plants. Plant growth regulators (PGRs) are chemicals used to modify plant growth such as increasing branching, suppressing shoot growth, increasing return bloom, removing excess fruit, or altering fruit maturity. A physiological process such as photosynthesis, respiration, or transpiration actually is an aggregation of chemical and physical processes. To understand the mechanism of a physiological process, it is essential to make your mind up into its physical and chemical components. Plant physiologists depend more and more on the methods of molecular biologists and biochemists to accomplish this. Such methods have been very fruitful, as shown by progress made toward a better understanding of such complex processes as photosynthesis and respiration. Abscisic acid (ABA) is a wide-ranging plant-growth inhibitor. It induces dormancy and prevents seeds from germinating; causes abscission of leaves, fruits, and flowers; and causes stomata to close. High concentrations of ABA in guard cells throughout periods of drought stress probably play a role in stomatal closure. These differential effects of the three auxins on auxl defects suggest that AUX1 may encode the auxin influx carrier. The agravitropic nature of root growth of an auxin-resistant mutant of *Arabidopsis*, *auxl*, was restored when the synthetic auxin 1-naphthaleneacetic acid (NAA) was added to the growth medium; *auxl* roots were not resistant to NAA. Neither indole-3-acetic acid nor 2, 4-dichlorophenoxy-acetic acid had the equal things as NAA.

Keywords: Stomatal closure, altering fruit maturity, regulation of gene, complex processes, herbaceous crop.

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ROLE OF INDIAN BLACK BERRY (JAMUN) IN TRADITIONAL AND MEDICINAL USES IN INDORE REGION OF MADHYA PRADESH, INDIA

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Abstract - Jamun (*Syzygium Cumini*) commonly known as Indian blackberry is an important fruit of Indian subcontinent and belongs to Myrtaceae family. It is found in Tropical Asia, particularly India. It has been reported to possess various bioactivities against diabetes. *Syzygium cumini* is one of the most identified species. The trees are available on roadsides, around parks or avenues and are also good windbreakers. It is one of the most commonly plant used to treat various diseases in India. It is evergreen plant and the height of jamun plant is 30 m. It is one of the important fruit and easily grown in Indore city and is much affected by various diseases. The plant is rich in secondary metabolites. Jamun have high quality of fruits that ripe early. It is an important summer plant. It has high quality percentage, color and bigfruit size with small seeds. It has a good shape and aromatic taste. It is known by various names in India. The English name of Jamun is "Indian black berry, black plum, Jambolan, Java plum, Malabar plum". The Hindinames of Jamun are "Jamun, duhat, jam and Jaman". It has rich nutritional and

medicinal value. Various parts of Jamun plant like seeds, leaves, fruits and barks are traditionally used medicine to cure various diseases in India. Seeds are used diabetes and diarrhea. Leaves are used to strength the teeth of gums, fever, dermopathy, constipation, blood discharger and gastropathy. Fruits are used to abdominal pain, loss of appetite, hypertensive, dysentery and irritable diseases. Barks are used to cure digestive problems, diuretic, throat problems and astringent.

Keywords: Indian black berry, anti-diabetic, ethno-medicinal, traditional practice, color, Jamun fruit, Jamun seed, Indore.

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BIO-FUELS: A NOVEL APPROACH FOR SUSTAINABLE MAN AGENT OF ECOSYSTEM BY GREEN ENERGY

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Abstract - Over the past centuries, demand of global energy has been primarily depended on fossil fuels which contribute maximum energy requirement to run our daily life. These non-renewable energy resources contributed to industries, electricity generation, water management, communication, agriculture and farming etc. Due to exhaustion of these limited resources, decaying day by day. So it is the urgent need to minimize the maximum utilization of these natural resources. We have to search ecological and economical alternate energy sources, which can be achieved through government, social and business policy-making collaborations. Bio-fuel is the answer to tall these problem to meet with the demand of current energy resources. As the suggestions bio-fuels are made from using the conversion of biomass such as; plant material and animal waste in to ethanol or allied products. Hence bio-fuel have the potential to reduce world's dependency on fossil fuels. In addition, Bio-fuels can help in reducing the emission of green house gases and climate change. Recent studies presented biofuels as the solution to attain sustainable development goals and the net-zero emissions economy by 2050. The most common method to convert biomass into bio-fuel is through fermentation with the help of microbial cells like as; Nitrobacter and Methanogens etc. Microorganisms are used to convert raw material to product with the help of fermentation. There are various types of bio-fuels such as wood, biogas, biodiesel, ethanol, methanol, butanol. There are three kinds of bio-fuels according to generation, first generation of biofuels are bio-ethanol produced from food products such as wheat, barley etc. second generation of bio-fuels are ethanol and bio-fuels produced from plants or plant materials such as straw, grass etc. third generation of bio-fuels are biodiesel produced from microorganisms such as microalgae, microbes etc. A major problem for commercialization of biofuels is their cost in comparison to petroleum-based fuels. Lower energy density and the price of raw materials make biofuels more expensive when producing heat.

Keywords: Biofuels, fossil fuels, biomass, greenhouse gases, climate, energy, microbes etc.

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CONTEMPORARY SELECTION PARADIGMS FOR ENHANCING QUALITATIVE AND QUANTITATIVE PRODUCTIVE TRAITS IN CROPS

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Abstract - Human remained depend on plants and their products for their survival from the beginning of agricultural practices across ancient Indian farming system via conventional breeding manage mental programs via selection of an efficient host for the preparation of seeds to carry out the next crops. The concept of breeding was introduced at the same time by incorporating the germ-plasm of two selected parental cells for the preparation of hybrid seeds to enhanced productivity by inculcating the multiple traits like as; disease resistance, drought, temperature tolerance etc. Molecular markers are advent tools for the assessment of biological diversity of plant species due to low investment cost as against manually

selection, reliable estimates through analytical statistical tools, expediency and reproducibility which remain in favor of MAS based selection program to characterize the larger number of germplasm with minimal time and resources. These Molecular markers are ease in recognition for almost possible phenotypes, efficient rate of expression, allele specificity, ability of segregating in mendelian way, polymorphic, reproducibility to screen genetic diversity having great significances in the Agricultural Biotechnology for enhancing our cropping system. MAS based selection programs is found more beneficial as compare to earlier methods of selection during the conventional farming system upon the basis of unique alleles across the genome for the establishment of more efficient hybrids for the determination of desired traits.

Keywords: Genetic diversity, molecular marker, breeding, selection, QTL, hybrid etc.

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ROBUST MOLECULAR MARKER SYSTEM FOR THE ESTIMATION OF GENETIC DIVERSITY FOR LIVE STOCK MANAGEMENT

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Abstract - Molecular markers are indispensable tools for the determination of genetic variations across the genome with higher levels of accuracy and reproducibility. The genome consist genetic informations in term of unique genes which can unravel through molecular markers to reach out on the reliable conclusions and evidences about their existence within individuals for further utilization. These molecular tools considered as a constant landmarks in genome analysis as they are simply identified, ease of genotyping and transmitted through standard laws of inheritance among the successive generations. Moreover, molecular markers rely on DNA assays, in contrast to morphological markers which are based on visible traits and biochemical markers that are based on proteins produced by genes for their outcome. In recent years, molecular markers have become available in both animal and plant systems for basic and applied studies; RFLP, VNTR, RAPD, SSR, AFLP and more advanced SNPs etc. Although each marker system is associated with some advantages and disadvantages, the choice of the marker system is dictated to a large extent by the intended application convenience and the cost involved. The efficiency of these markers depend on the facts that which types of alleles have been detected to determine the polymorphism (PIC) between individuals within species and even in breeds at genome level. One of the most extensive use of molecular markers is to develop detailed genetic and physical chromosomal maps in a variety of organisms including animal species and humans and also plant systems. There are various important applications of molecular markers that involves: improvement in the efficiency of conventional breeding programs, study of quantitative trait loci (QTL), estimation of genetic diversity and genetic architecture of an individual for the betterment of economic traits of interest.

Keywords: Markers, genetic diversity, polymorphism, PIC, QTL etc.

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RECENT APPROACHES FOR ENHANCED PHARMACEUTICAL RESEARCHES FOR HUMAN WELFARE

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Abstract - Pharmaceutical companies are widely utilizing the advances of Biotechnology or Biological Sciences in broad spectrum for manufacturing drugs, transplantation, to defeat genetic disorders as gene therapy and molecular tools for the reliable disease diagnosis etc. Bio-pharmaceuticals, intend to design and produce a drug that are significance adapted to each person's genetic makeup with minimal harms to the host. Thus, biotechnology based pharmaceutical companies may developing tailor-made medicines for maximum therapeutic response which can be given to patients in appropriate doses according to the patient's genesis and metabolism rate for maximum efficiency of the drug. 'Biotechnology' refers to

the utilization of biological and engineering principles to enhance Laboratory researches and Industrial productivity by using microorganisms and their modifying derivatives for human welfare. The advanced Biotechnological tools have been widely employed in almost Biological researches, industrial productions, bio-chemical, pharmaceuticals, healthcare, agriculture, animal husbandry, environment and food industry etc. Two importance allied disciplines; pharmaceuticals and biotechnology have been combined together for fruitful outcome for drawing human welfare in terms of 'healthcare'.

Almost Biotech companies are producing multiple human health care pharmaceutical products by modifying organisms usually at molecular level by employing the principles of Recombinant DNA technology, Genetic Engineering and DNA Sequencing which involves the transformation of host or targeted cells. Recently, Animal Cell Culture has added several advantages to the Pharmaceutical Industry for the purpose of drug testing in contrast to previously used practices which involved the death or extensive harms to laboratory animals. The 'Hybridoma Technology' has been used for the production of Monoclonal antibodies as Magic bullet in the treatment of Cancer disease. The Tissue Engineering is used for the artificial culture of human organs for transplantation and surgery to the injured patients. These products of many Pharmaceutical companies, have been produced through Biotechnological tools having great significances are widely adopted in the prevention, diagnosis or treatment of many diseases. The most important benefit of pharmaceutical biotechnology is in the form of better Vaccinal immunization responses towards prolonged immunity in the infants by designing and producing safer vaccines by utilizing several organisms which are transformed through genetic engineering by minimizing the risks of vaccines failure. Biotechnology plays an important role in human health care by following earnings; Molecular markers based disease diagnosis, Gene therapy, Medical forensics, Pharmaceutical products, Recombinants Proteins, Insulin, Growth hormones, Recombinant vaccines, DNA vaccines, MAbs, Assisted Reproductive Technology (ART), Transgenic Animals, Molecular Farming, Animal Cell Culture, Pregnancy kits and Transplantation or Grafting etc. for better human health care management.

Keywords: Gene, marker, vaccine, drug, cell culture, diagnosis, health care etc.

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BIODEGRADABLE PLASTICS: AN ALTERNATE APPROACH FOR CONVENTIONAL PLASTIC SUBSTITUTES FOR SUSTAINABLE ECOLOGICAL DEVELOPMENT

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Abstract - Increasing derivatives of Plastics has produced great concern of unwanted storage and harm to soil, ponds, rivers, house hold drainage systems and even causing the death of animals which is disturbing the physical and chemical components of ecosystem. The biodegradable plastic is very important alternate as against the extensive use of conventional plastics by human beings for the packaging and carrying daily needs with the help of advances of Biological Sciences due to increasing environmental issues. The disposal of conventional plastics is a huge eco-technological problem right now to save our environment from these residual wastes and very harmful dioxins groups of highly toxic gases to human beings, ethylene etc. Biodegradable plastics undergo complete degradation due to action of naturally occurring microorganisms such as bacteria, fungi and algae through aerobic and anaerobic digestion of their inclines. No distinguishable residuals are formed in during the formation of compost among the soil during bio-degradation pathways and found advantageous to be utilized for agricultural farming as well in accordance of sustainable management of ecosystem. Bio-degradable plastics have been produced from the plant derived polymers like as; Aliphatic Polyesters, Polyhydroxyalkanoates, Poly-3-hydroxybutyrate, Polyhydroxyvalerate and Polyhydroxyhexanoate, starch, cellulose, cellulose acetate, nitrocellulose and other derivatives as well for the preparation of eco-friendly plastics. Such bio-plastics are undergoes for the complete bio-degradation due to hydrolysable ester bonds in contrast of ethylene polymer's chain which leaves undegradable residuals causing pollution. These eco-friendly plastics consist better mechanical strength like as conventional plastics polymers, so it can be a very good

alternate as against petroleum-based plastics which warrant in-depth study and financial aids from the funding agencies for better output.

Keywords: Plants, biodegradation, plastics, plant derived polymers, petroleum etc.

RFI/CPBEAR-2022/139

TO STUDY THE ISOLATION OF ACTINOMYCETES PRODUCING ANTIMICROBIAL COMPOUND FROM DIFFERENT SOIL SAMPLES COLLECTED FROM MEDICINAL PLANTS AREA

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Abstract - The need for new and useful compounds to provide assistance and relief in all aspects of the human condition is ever growing. Drug resistance in bacteria, the appearance of life threatening viruses, the recurring problems with disease in persons with organ transplants, and the tremendous increase in the incidence of fungal infections in the world's population. The screening approach has been employed extensively in the search for microorganism capable of producing useful antibiotics. Screening of microorganisms for the production of novel antibiotics has been intensively pursued for many years by scientists. Antibiotics have been used in many fields including agriculture, veterinary and pharmaceutical industry. Actinomycetes have the capability to synthesize many different biologically active secondary metabolites such as antibiotics, herbicides, pesticides, anti-parasitic, and enzymes like cellulase and xylanase used in waste treatment. In addition, more drugs are needed to efficiently treat parasitic protozoan and nematodal infections, such as malaria, leishmaniasis, trypanomiasis and filariasis. The aim of this work is the isolation of Actinomycetes producing antimicrobial compound from soil samples collected from medicinal plants area. The object behind this research is isolation and screening of Actinomycetes producing new useful antimicrobial compound which may cause death of the microbes which has been got resistance. This research will be very useful for the future study for the screening of Actinomycetes from soil samples.

Keywords: Actinomycetes, Multi Drug Resistance (MDR), Antibiotics, Isolation, Secondary metabolites, Cellulase, Xylanase.

RFI/CPBEAR-2022/140

TO STUDY THE ANTIOXIDANT AND RADICAL SCAVENGING PROPERTIES OF TRADITIONAL MEDICINAL PLANTS OF INDIA

Dr. Priyanka Das, Dr. P.C. Suriyakala

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Abstract - Throughout the ages, humans have relied on natural world for their essential needs, for the production of food, shelter, clothing, transportation, fertilizers, flavours, fragrances as well as medicines. The nature has provided the storehouse of remedies to cure all ailments of mankind. The traditional herbal medicines are still practised in large part of our country mostly in tribal and rural areas. In many developing countries, a large section of population relies on conventional practitioners, who are dependent on herbal folk medicines for their most important health care. Since the use of these herbal folk medicines is increasing, the issues of safety, quality and efficacy in industrialized and developing countries have cropped up. Thus, plants have formed the basis of complicated traditional medicine systems that have been in existence for thousands of years and continue to provide mankind with new remedies. Even though some of the therapeutic properties credited to plants have proven to be incorrect, but, as a matter of fact, medicinal plant therapy is based on the findings of hundreds and probably thousands of years of use.

Plants have been used in traditional medicine for several thousand years. The knowledge of medicinal plants, in India, has been accumulated throughout the course of many centuries based on different medicinal systems such as Ayurveda, Unani and Siddha. In India it is reported that traditional healers use 2500 plant species and 100 species of plants serve as regular sources of medicine. During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional uses in different

parts of the world. Documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources.

Today according to the World Health Organization (WHO) as many as 75% of the world's people depend on traditional medicine for their primary healthcare needs. There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases. Due to less communication means, poverty, ignorance and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailments. A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance.

Ethnobotany is not new to India because of its rich ethnic diversity. The tribal's constitute about 7.5% of India's population. During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional healing by either tribal people or indigenous communities of India. Apart from the tribal groups, many other forest dwellers and rural people also possess unique knowledge about plants. There are many plants which are mainly consumed as food, also have medicinal importance. Mostly aerial parts including leaves, flowers (after removing the reproductive parts), buds, tender branches even stem (herbaceous plants) are boiled, cooked and taken as vegetables in most of the part of our country.

Plants are nature's finest chemists, having evolved a huge range of chemical repertoires fitting the needs of a highly variable and generally hostile global environment. This metabolite richness reported to extend to approximately 200,000 compounds in the plant kingdom is also reflected in our plant based foods that have been reported to contain approximately 25,000 different metabolites of which approximately 7,000 are volatile components. Our food contains not just a mixture of staple ingredients, but also a multitude of less prevalent components, which nevertheless, represent potentially physiologically relevant bioactives. The quality of crop plants, nutritionally or otherwise, is a direct function of metabolite content.

Food nutrition is, by definition, aimed at maintaining human cell and organ homeostasis. For these reasons a balanced diet should be considered not just to concern the staple food ingredients centred on carbohydrates, proteins and lipids, but also other physiologically active ingredients. More and more food products are reaching the market bearing health-related claims, for example on antioxidant activity. Evidence is rapidly growing of how food components can influence physiological processes at all stages of life. Epidemiological studies have shown that consumption of fruits and vegetables as well as grains has been strongly associated with reduced risk of chronic diseases such as

- Cardiac diseases
- Cancer
- Diabetes
- Gastrointestinal diseases
- Neurodegenerative diseases
- Alzheimer's disease, age related diseases

Phytochemicals common in fruits and vegetables can have complimentary and overlapping mechanisms of action including modulation of detoxification enzymes, scavenging oxidative agents, stimulation of the immune systems, regulation of gene expression in cell proliferation and apoptosis, hormone metabolism and antibacterial and antiviral effects.

Reactive oxygen species (ROS) are an entire class of highly reactive molecules derived from the metabolism of oxygen. ROS, including superoxide radicals, hydroxyl radicals, and hydrogen peroxide, are often generated as byproducts of biological reactions or from exogenous factors. In vivo, some of these ROS play positive roles in cell physiology; however, they may also cause great damage to cell membranes and DNA, inducing oxidation that causes membrane lipid peroxidation, decreased membrane fluidity, and DNA mutations leading to cancer, degenerative, and other diseases.

Mammalian cells possess elaborate defence mechanisms for radical detoxification. Key metabolic steps are superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPX), which destroy toxic peroxides. In addition to antioxidant enzymes, non-enzymatic molecules, including thioredoxin, thiols, and disulfide-bonding play important roles in antioxidant defence systems. Some of the compounds are of an exogenous nature

and are obtained from food, such as a- tocopherol, b-carotene, and ascorbic acid, and such micronutrient elements as zinc and selenium. If cellular constituents do not effectively scavenge free radicals, they lead to disease conditions as described above.

Antioxidant-based drugs/formulations for the prevention and treatment of complex diseases like atherosclerosis, stroke, diabetes, Alzheimer's disease, and cancer have appeared during the last three decades. This has attracted a great deal of research interest in natural antioxidants. Subsequently, a worldwide trend towards the use of natural phytochemicals present in berry crops, tea, herbs, oilseeds, beans, fruits, and vegetables has increased.

Several herbs and spices have been reported to exhibit antioxidant activity, including rosemary, sage, thyme, nutmeg, turmeric, white pepper, chili pepper, ginger, and several Chinese medicinal plants extracts. The majority of the active antioxidant compounds are flavonoids, isoflavones, flavones, anthocyanins, coumarins, lignans, catechins, and isocatechins. There is an increased quest to obtain natural antioxidants with broad-spectrum actions. The majority of the rich diversity of Indian medicinal plants is yet to be scientifically evaluated for such properties.

Keywords: Phytochemicals, Ethnobotany, Reactive Oxygen Species (ROS), Antioxidant properties, Medicinal plants, Superoxide dismutase (SOD), Catalase (CAT), Glutathione peroxidase (GPX).

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RECONNOITERING ON VIRUSES IN BROAD SPECTRUM OF HEALTH ISSUES IN SITU CORONAVIRUS: COVID-19

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Abstract - There is much debate among virologists about this question. Three main hypotheses have been articulated. The progressive, or escape, hypothesis states that viruses arose from genetic elements that gained the ability to move between cells; the regressive, or reduction, hypothesis asserts that viruses are remnants of cellular organisms; and the virus-first hypothesis states that viruses predate or coevolved with their current cellular hosts. Because of the great diversity among viruses, biologists have struggled with how to classify these entities and how to relate them to the conventional tree of life. They may represent genetic elements that gained the ability to move between cells. They may represent previously free-living organisms that became parasites. They may be the precursors of life. This is a well known fact that viruses are quite diverse. Unlike all other biological entities, some viruses, like poliovirus, have RNA genomes and some, like herpes virus, have DNA genomes. Their structures and replication strategies are equally diverse. Viruses, do, however, share a few features: First, they generally are quite small, with a diameter of less than 200 nanometers (nm). Second, they can replicate only within a host cell. Further, some viruses (like influenza virus) have single-stranded genomes, while others (like smallpox) have double-stranded genomes. In addition, populations of living organisms evolve over time. According to this hypothesis, viruses originated through a progressive process. Mobile genetic elements, pieces of genetic material capable of moving within a genome, gained the ability to exit one cell and enter another. The progressive and regressive hypotheses both assume that cells existed before viruses.. The disease COVID-19 caused by SARS-CoV-2 is the third highly infectious human Coronavirus epidemic in the current century due to its high transmission rate and quick evolution of its pathogenicity. Genomic studies indicate that it is zoonotic from bats. The COVID-19 has led to significant loss of lives and a tremendous economic decline in the world. Generally, the population at risk of a fatal outcome are the elderly and those who are debilitated or are immune compromised. The fatality rate is high, but now is reduced after the development of preventive vaccine although an effective treatment by drug against the virus is yet to be developed. The treatment is narrowed to the use of several anti-viral drugs, or other re-purposed drugs. Social distancing, therefore, has emerged as a putative method to decrease the rate of infection.

Keywords: Covid-19, Coronavirus, Outbreak, Current status, Detection, Pathogenicity, Double-Stranded Genomes, Zoonotic.

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THERMAL BEHAVIOR OF THE DISSOCIATION OF NEODYMIUM SOAP SOLUTIONS IN 60/40 BENZENE-DIMETHYL SULPHOXIDE MIXTURE (V/V) AT DIFFERENT TEMPERATURES

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Abstract- To determine the critical micellar concentration (CMC), limiting molar conductance at infinite dilution, degree of dissociation and dissociation constant. The values of CMC decreases with increasing chain length of fatty acid component of soaps. The results shows that Neodymium soaps behaves as a weak electrolyte in dilute solutions below the CMC and Debye-Huckel-Onsager equation is not applicable to these soap solutions. The thermodynamic parameters indicate that the micellization process is favored over the dissociation process.

Keywords: Critical micellar concentration; micellization; thermodynamic parameters; Neodymium soaps.

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AN ASSESSMENT ON SOME VIRUSES CAUSING CHALLENGING DISEASES

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Abstract - Due to pandemic lots of analytical work could be done on viruses again. Analytical sequence about the origin, structure and life cycles of viruses with their interaction with immune system and response to different kind of medication give some researchers, the use of a hand to budding scientists in their research as a single point reference. The evolutionary account of viruses represents a captivating, topic for virologists, immunologist and cell biologists. However researchers will find this paper very useful in their studies.

Keywords: Pandemic, Regressive, Parasites, Biological Entities, Double-Stranded Genomes, replication strategies.

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REPERCUSSION OF ROUTINE LABORATORY PRACTICE IN THE DETERMINATION OF DEGREE OF DISSOCIATION OF WEAK ELECTROLYTE AND DEVIATION FROM THE EXPOSURE OF STRONG ELECTROLYTES

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Abstract- The Ostwald's dilution law was proposed in 1888. The Ostwald's dilution law holds good only for weak electrolytes and fails completely in the case of strong electrolytes because strong electrolytes are completely ionized at all dilution. When ionic compounds dissolve in water, the ions in the solid separate and disperse uniformly throughout the solution because water molecule surround and solvate the ions, reducing the strong electrostatic forces between them. This process represents a physical change known as dissociation. Under most conditions, ionic compounds will dissociate nearly completely when dissolved and so they are classified as strong electrolytes. That is, they produce relatively few ions when dissolved in water. Their solutions produce a small current. The most common weak electrolytes are weak acids (e.g., acetic acid) and weak bases (ammonium hydroxide – NH₄OH). The reduction of the electrostatic attraction permits the independent motion of each hydrated ion in a dilute solution resulting in an increase in the disorder of the system as the ions change from their fixed and ordered position in the crystal to the mobile and much more disordered states in solution. In other cases, the electrostatic attractions between the ions and water molecules are so weak, that the increase in disorder cannot compensate for the energy required to separate the ions and the crystal is insoluble. That is, they produce relatively few ions when dissolved in water. Their solutions produce a small current. The most common weak electrolytes are weak acids (e.g., acetic acid) and weak bases (ammonium hydroxide – NH₄OH). In an ideal electrolyte solution, the activity coefficients for all the ions are equal to one. Ideality of an electrolyte

solution can be achieved only in very dilute solutions. Non-ideality of more concentrated solutions arises principally (but not exclusively) because ions of opposite charge attract each other due to electrostatic forces, while ions of the same charge repel each other. In consequence ions are not randomly distributed throughout the solution, as they would be in an ideal solution. In present research paper the study of deviation from the ideal behavior has been proposed through experimental outcomes.

Keywords: Ideal electrolyte, disordered states, hydrated ion, electrostatic attraction.

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SIGNIFICANCE AND ROLE OF ETHYLENE AS PLANT GROWTH REGULATOR

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Abstract - Usually, ethylene is not used in plant tissue culture. Plant growth regulators (also called plant hormones) are abundant chemical substances that overwhelmingly influence the growth and differentiation of plant cells, tissues and organs. Ethylene is a easy gaseous hydrocarbon with the chemical structure $H_2C=CH_2$. Ethylene is in fact not required for usual vegetative augmentation. It acts as plant growth regulatory part. Plant growth regulators function as chemical messengers for intercellular communication. However, it can have a significant impact on development of root and shoots. Organ regeneration in plants can be broadly categorised as either direct or indirect (reviewed by Sugimoto et al.4). In the case of the former, shoots or roots are directly induced from tissue explants, while indirect organogenesis involves callus formation as an intermediate preceding to shoot or root induction. There are at present five recognized groups of plant hormones: auxins, gibberellins, cytokinins, abscisic acid (ABA) and ethylene. They work together coordinating the growth and development of cells. Ethylene is mainly involved in abscission and flower seccence in plants and is rarely used in plant tissue culture. In addition to the five principal growth regulators, two other groups sometimes appear to be active in regulating plant growth, the brassinosteroids and polyamines. In Arabidopsis, indirect organ regeneration in culture is a two-step process. Small pieces of plant tissue (explants) are first treated with auxin-rich callus-inducing medium (CIM) to form callus, the endogenous levels of cytokinin typically being sufficient for this procedure. Ethylene is unique in that it is found only in the gaseous form. It induces ripening, causes leaves to droop (epinasty) and drop (abscission), and promotes senescence. Plants often increase ethylene production in response to strain, and ethylene often is found in elevated concentrations within cells at the end of a plant's life. The increased ethylene in leaf tissue in the fall is part of the reason leaves fall off trees. Ethylene also is used to ripen fruit (e.g., green bananas).

Keywords: Callus-inducing medium, tissue culture, organ regeneration epinasty, abscission, organogenesis.

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A CRAMMING ON EMPOWERING DIVERSITY IN SCIENCE GLOBULE WOMEN BREAKFAST IN CHEMISTRY WHY SO FEW AND WHY CARE

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Abstract - The International Union of Pure and Applied Chemistry (IUPAC) have been supervising an event on the Global Women's Breakfast (GWB) this year again. The aim was to celebrate the accomplishments of Women in Science and to inspire younger generations to pursue careers in science. Women and men from all types of science organizations have come together to share breakfast either virtually or in person. A central goal is also to establish an active network of both men and women to overcome the barriers to gender equality in science. The Global Breakfast facilitates the formation of communities on a local, regional, and international scale to effectively share ideas and strategies for progress. Another key goal is to establish a network of individuals to help overcome the barriers to gender equality in science. The GWB helps to facilitate this at the local level, but also on a

national and international scale. Present research paper is to focus the key points why women are so few in science organization or in science field world wide and what would be the solution to minimize or to overcome the gap.

Keywords: Strategies, communities, facilitates, barriers, accomplishments, gender equality.

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WATER PURIFICATION TECHNIQUES FOR TREATING ALL POSSIBLE CONTAMINANTS AT LOW COST

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Abstract - The standards for drinking water quality are typically set by governments or by international standards. These standards usually include minimum and maximum concentrations of contaminants, depending on the intended use of the water. The history of water purification includes a wide variety of methods. The methods used include physical processes such as filtration, sedimentation, and distillation; biological processes such as slow sand filters or biologically active carbon; chemical processes such as flocculation and chlorination; and the use of electromagnetic radiation such as ultraviolet light. Generally water purification has been known as the process of removing or at any point reducing undesirable chemicals, biological contaminants, suspended solids, and gases from water. Most water is purified and disinfected for human consumption (drinking water), but water purification may also be carried out for a variety of other purposes, including medical, pharmacological, chemical, and industrial applications. The goal is to produce water that is fit for specific purposes.. Water purification may reduce the concentration of particulate matter algae, viruses, and fungi as well as reduce the concentration of a range of dissolved and particulate matter. Simple procedures such as boiling or the use of a household activated carbon filter are not sufficient for treating all possible contaminants that may be present in water from an unknown source. Even natural spring water – considered safe for all practical purposes in the 19th century must now be tested before determining what kind of treatment, if any, is needed. Chemical and microbiological analysis, while expensive, are the only way to obtain the information necessary for deciding on the appropriate method of purification. All treatment methods those are in recent practice are expensive. This research article is to present low cost techniques for water purification to treat all possible contaminants at low cost.

Keywords: Contaminants, household, reducing undesirable chemicals, activated carbon, disinfected, unknown source, electromagnetic radiation, Chemical and microbiological.

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ELEMENTAL DEFICIENCY AND COGNIZANCE FOR THE WOMEN HEALTH ISSUES

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Abstract- The elements play significant role in all the biotic or abiotic system. On the other hand elemental deficiency or efficiency is the major cause of malnutrition mainly in women, children and infants. In this world, there is a misconception that majority of the vegetarians and vegans are mal nourished¹. Malnutrition caused by elemental deficiency or efficiency is not just found among poor people but also found among those who don't take a proper diet or the ones whose body cannot process the food. The Food and Agriculture Organization of the United Nations estimates that 843 million people worldwide are hungry and a greater number suffer from nutrient deficiencies². Approximately one billion people have inadequate protein intake¹ certain people in developed countries are also at risk. Malnutrition is a condition that results from eating a diet in which one or more nutrients are either not enough or are too much such that the diet causes health problems most foods contain some protein. As a result, true protein deficiency is rare in developed countries. A lack of adequate breastfeeding leads to malnutrition in infants and children, associated with the deaths of an estimated one million children annually. Illegal advertising of breast milk substitutes contributed to malnutrition and continued three decades after its 1981

prohibition under the WHO International Code of Marketing Breast Milk Substitutes. Maternal malnutrition can also factor into the poor health or death of a baby. Over 800,000 neonatal death have occurred because of deficient growth of the foetus in the mother's womb.³ Deriving too much of one's diet from a single source, such as eating almost exclusively corn or rice, can cause malnutrition. This may either be from a lack of education about proper nutrition, or from only having access to a single food source.⁴ special study on malnutrition has been presented in this research paper.

Keywords: Elemental deficiency, elemental efficiency, inadequate protein, poor health, vegans, malnutrition.

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A REFERENCE REVIEW ON MACHINE LEARNING TOOLKIT

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Abstract - There are many great toolkits that provide support for developing machine learning software in Python, R, Matlab, and similar environments. Dlibml is an open source library for both engineers and researchers, with the goal of providing an equally rich environment for developing machine learning software in the C ++ language. To this end, dlibml includes an extensible linear algebra toolkit with built-in BLAS support. It also includes the implementation of algorithms for performing Bayesian network inference and kernel-based methods for classification, regression, clustering, anomaly detection, and feature ranking. To make these tools easy to use, the entire custom programming library has been developed to provide complete, concise documentation and powerful debugging tools.

Keywords: kernel method, svm, rvm, kernel clustering, C ++, Bayesian network.

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AN ANALYSIS ON ROLE OF DIGITAL INDIA IN RURAL DEVELOPMENT

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Abstract - The Digital India programme is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy and "Digital India" is an initiative of the Central Government of India to transform India into a global digitized hub by improving digital connectivity and skill enhancement and various other incentives to make the country digitally empowered in the field of technology. It is the outcome of many innovations and technological advancements to bring digital revolution. The drive behind the concept is to build participative, transparent and responsive system. It is a dream project of the Indian Government to remodel India into a knowledgeable economy and digitally empowered society, to ensure that government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity. There are many problems in the way of its successful implementation like digital illiteracy, poor infrastructure, low internet speed, lack of coordination among various departments, issue pertaining to taxation etc. The programme have one mission and one target that is to take nation forward digitally and economically. The initiative will enable people to get engaged in the innovation process which is needed by the economy to move forward. But to implement this is a great challenge. There are many roadblocks in the way of its successful implementation like digital illiteracy, poor infrastructure, low internet speed, lack of coordination among various departments, issue pertaining to taxation etc.. These challenges need to be addressed in order to realize the full potential of this programme. It requires a lot of efforts and dedication from all departments of government as well as private sector. If implemented properly, it will open various new opportunities for the citizens of the country. Digital India is an initiative by the central government of India to ensure that government services are made available to everywhere electronically by increasing internet connections .Digital India is a program to prepare India for a knowledge

future .The digital India was introduced by the deity and digital program is like a giant umbrella under which several big projects will run , aiming to bring broadband speeds to India's rural areas which suffer from lack of connectivity .This conceptual paper focus on the impact of digital India in rural areas also find out the pros or cons in rural areas. The digital India has one of the main aims is bridge the gap between the rural and the urban areas.

Keywords: Digital India, rural areas, internet connectivity.

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CLOUD COMPUTING BENEFITS IN E- GOVERNANCE

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Abstract - The global rise in the communications is affecting the life of societies particularly our modes of work, learning and interacting. Presently, nearly all organizations as well as the official government are presenting their facilities via internet. E-Governance is an approach to implement ideal system through ICT to help find a better citizen involvement. The various customers of the E- governance like government, citizens, as well as businessmen. A successful e- governance regime has to be cost effective, easy and dependable to be maintained. Unluckily, recent technologies are insufficient to cover the entire need of E- governance. The cloud computing is a modern approach to computing that targets improve the ways of communication and storing of data in a protected environment through the internet find a policy. cloud computing is an active application advancement that help find a resolution for all E-Governance infrastructure development with low price as well as short time. This research introduces e-governance challenges and benefits supplied by cloud computing that complement and sustaine-Governance.

Keywords: Cloud Computing, E-Governance, Challenges, Benefits, Government, IT.

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BENEFITS OF OUTSOURCING OF MEDICINE IN INDIAN PHARMACEUTICAL INDUSTRY

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Abstract - Forecasts indicate that by 2025, India's pharmaceutical market would be worth \$100 billion. 1 India's pharmaceutical exports were worth \$16.3 billion in fiscal year 2019/2020. As of 2019, the Indian biotechnology market was valued at \$64 billion, and by 2025, that number is expected to grow to \$150 billion. Generic pharmaceutical production and export constitute the majority of the industry. After modifications to the Indian patent system in 2005 made it possible to patent pharmaceutical items, the focus shifted to the development of novel medications. Slower growth in the U.S. market is only one of these factors, alongside a decrease in the discovery, development, and commercialization of new chemical entities despite an increase in the number of blockbuster medications, competition from generic pharmaceutical goods, and regulatory obstacles. The commercial components of the sector are the primary focus of this research, which also suggests some changes to the existing business model and future directions.

Keywords: Medicine, pharmaceutical, Outsourcing, Industry, encourages.

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TO EXAMINE THE DEVELOPMENT OF DIABETIC NEPHROPATHY IN EXPERIMENTALLY INDUCED TYPE 2 DIABETES IN RATS

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Abstract - When the glomeruli are damaged, protein leaks into the urine, which may lead to a low serum albumin and, in turn, widespread body swelling (edema) known as nephrotic syndrome. Inhibition of transforming growth factor- β 1 and fibronectin upregulation by

antioxidants after high-glucose and H₂O₂ treatment is evidence that reactive oxygen species contribute to high-glucose-induced kidney damage. It has been established that the flavonoid luteolin possesses direct antioxidant action, and as a result, we postulate that it may be effective in the treatment of many chronic diseases related with oxidative stress, such as diabetic nephropathy. Our findings revealed that modulating superoxide dismutase (SOD) activity, malondialdehyde (MDA) content, and Heme Oxygenase-1 (HO-1) protein expression were all implicated in luteolin's ability to protect against the development of diabetic nephropathy. Microalbuminuria may already exist in as many as 7% of patients with type 2 diabetes at the time of diabetes diagnosis. This is because the value of the serum creatinine can be used to calculate the estimated glomerular filtration rate (eGFR), which reflects the percentage of glomeruli which are no longer filtering the blood.

Keywords: Calcium, channel, blockers, diabetic, nephropathy, diabetes, mellitus.