










Short communication

Effect of rare earth (Sm^{3+}) substitution in mixed Ni-Zn-Co ferrites: Structural, magnetic, and DC electrical resistivity studies

Tejeswararao Reddy ^a, Sivasankar Reddy Akepati ^a  , V. Nagalakshmi ^b,
D. Jagadeeswara Rao ^c  , Ramakrishna Madaka ^d

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Highlights

- Spinel-structured $\text{Ni}_{0.4}\text{Zn}_{0.35}\text{Co}_{0.25}\text{Fe}_{2-x}\text{Sm}_x\text{O}_4$ ferrite materials were successfully synthesized by employing the solid-state reaction technique and a sintering temperature of 1050°C for 4h.



Advanced nanoparticle-based treatment of aquafarm and hatchery effluents: The role of chitosan and chitosan TPP in water purification

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Abstract

A healthy economy and the multifaceted growth of society depend on access to clean, safe water. Rapid population growth, growing industrialization, urbanization, and widespread agricultural activities have led to the production of wastewater that has made the water not only contaminated or lethal, but also dirty or polluted. Every year, millions of people pass away from diseases spread by drinking water tainted with harmful microorganisms. Although many different approaches to wastewater treatment have been researched over the past few decades, their application is constrained by a number of factors, such as the need for chemicals, the production of disinfection by-products (DBPs), the length of the process, and the cost. In order to create new structures, devices, and systems with superior electronic, optical, magnetic, conductive, and mechanical properties, nanotechnology, which involves manipulating matter at the molecular or atomic level, is becoming more and more popular. This promising technology has accomplished amazing feats in a number of industries, including wastewater treatment. Nanomaterials are well suited for use in wastewater treatment because of their high surface to volume ratio, high sensitivity and reactivity, high adsorption capacity, and simplicity of functionalization. The methods being explored for wastewater treatment utilizing nanotechnology have been discussed in this article and are based on adsorption and biosorption, nano-filtration, photocatalysis, disinfection, and sensor technologies. The fate of the nanoparticles in wastewater treatment and the dangers of their use are also highlighted in this review. The present study carried by Evaluation of various physico-chemical parameters of shrimp farm and hatchery effluents such as alkalinity, electrical conductivity, total hardness, total suspended solids, total ammonia, BOD, COD, was done before and after treatments in laboratory scale. From the results of the present investigations chitosan and chitosan TPP nanoparticles showed good coagulating properties, and has many advantages compared to chemical coagulants and does not affect the pH, alkalinity or conductivity of the water. Further multifunctional environmentally friendly chitosan should play a larger role in the recycling of aquaculture wastewater.

Keywords: Aquafarm wastewater, Hatchery wastewater, Chitosan, Chitosan TPP nanoparticles, Physico chemical parameters

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Behavioural and Morphological Changes in *Centropristis striata* (Sea bass) Under Acute Exposure to Gaseous Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂), and Conglomeration of SO₂+ NO₂

Gandhi N* and Vijaya Ch*

Abstract

This study investigates the acute toxicity of gaseous sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) on 8-week-old sea bass (*Centropristis striata*) in a synthetic marine water environment. SO₂ was generated by reacting sodium sulfite with hydrochloric acid, producing concentrations ranging from 2 ppm to 45 ppm, while NO₂ was generated using copper metal flakes and concentrated nitric acid. LC₃₀, LC₅₀, and LC₉₀ were determined after 24, 48, 72, and 96 hours for each gas, indicating the concentrations at which 30%, 50%, and 90% mortality occurred, respectively. Results showed a concentration-dependent increase in mortality rates for both SO₂ and NO₂, with 100% mortality observed at higher concentrations within the experimental duration. Behavioral observations included equilibrium loss, jumpings, gulping air, restlessness, erratic swimming, opercular movements, and sluggishness, which intensified over the 96-hour period. Morphological changes such as body patches, skin discoloration, scale shedding, mucus secretion, sedimentation of chemicals, and gill clumping were more pronounced with NO₂ exposure and further exacerbated by the mixture of SO₂ and NO₂. The combined exposure demonstrated synergistic effects, leading to enhanced

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Effect of Jasmonic Acid on Somatic Embryogenesis in *Caralluma fimbriata*

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Abstract

Caralluma fimbriata is a succulent plant highly esteemed in traditional medicine for its medicinal properties. Plant hormones, also known as phytohormones, are chemical compounds that regulate several aspects of plant growth and development. The current study demonstrates the establishment of callus culture and investigate the effect of JA (jasmonic acid) on callus in development of somatic embryos and indirect organogenesis from the internodal explants of *C. fimbriata* through micropropagation techniques. MS medium (full-strength) was supplied with different concentrations of auxins (2,4-D, IAA, IBA, NAA) and the optimal callus growth was observed in MS medium + 2,4-D (2.0 mg/l) + NAA (1.0 mg/l) with 100% of callus growth response. JA influenced in producing somatic embryos from the callus at almost all concentrations. Highest shoot induction response (80%) was observed on MS medium+ 0.5 mg/l BAP with highest mean frequency of $9.53 \pm 1.20^{\circ}$, compared to Kn. Rooting was successfully accomplished on MS medium (half-strength) with supplementation of MS salts + 0.1 mg/l NAA. The survival rate of acclimatized plants was recorded at 80%.

Keywords: *Caralluma fimbriata*; jasmonic acid; Somatic embryos; Auxin; Cytokinin

Rural Backyard Pig Farming Constraints Faced by Tribal Farmers

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Abstract

Pig farming plays a significant role in the global livestock industry, providing a valuable source of meat and by-products for human consumption. However, like any agricultural endeavor, pig farming faces numerous challenges that can hinder productivity, animal welfare, and environmental sustainability. This research paper aims to analyze the existing socio-economic status of pig farmers along with major constraints faced by pig farmers, exploring the factors affecting their profitability, sustainability, and overall well-being. The study on socio-economic profile revealed that the majority of the households had annual income of Rs75001-105000.00 per annum with agriculture and livestock (46.68%) as major source of income. The respondents were mostly belonging to nuclear family with average land holding of >1.0 ha (46.40%). The respondent ranked non-availability of quality pig germplasm as the most severe constraints among different breeding constraints identified with mean score of 74.68%. The different feeding constraints in pig farming showed that the high cost of pig feed and feed ingredients was identified as the single most major constraints. Amongst the health care related constraints, non-availability of vaccines against most harmful diseases of pigs was ranked I with mean score of 75.26 by the respondents. Similarly, 76.91 of the respondents perceived lack of organized marketing facility as most severe marketing constraints.

Key words: Pig farming, Profitability, Sustainability, Constraints

Pig farming holds significant importance in the rural economy of Assam, India, especially within tribal communities. For centuries, pig rearing has been an integral part of their livelihoods, culture, and traditional practices. In the context of Assam's diverse tribal population, pig farming plays a vital role in providing sustenance, income, and nutritional support [1]. Pig farming has been a key pillar of the livestock sector for centuries. Its importance in providing high-quality meat and various by-products has steadily grown due to increased demand for pork worldwide [2]. Pig farming, or swine production, is an integral part of agriculture and livestock rearing in many regions worldwide. In particular, pig farming plays a crucial role in the livelihoods and cultural traditions of tribal communities. Tribal pig farmers often depend on pig rearing for their subsistence, income generation, and social ceremonies [3]. However, despite the cultural significance and economic importance of pig farming, tribal pig farmers encounter various constraints that hinder their productivity, profitability, and overall well-being [4].

Pig farming holds profound cultural significance in many tribal communities, serving as more than just an economic activity. Pigs are integral to traditional rituals, ceremonies, and social events. Tribal pig farmers possess a rich

repository of traditional knowledge and expertise in pig rearing passed down through generations. This knowledge encompasses breeding, feeding, healthcare, and housing practices tailored to local ecological conditions [5]. Tribal pig farmers often characterized by small scale backyard system of rearing to free-range systems, sometime allowing pigs to forage naturally in the forest and surrounding areas to a very few intensive rearing. This practice not only reduces feed costs but also capitalizes on the natural resources available. Limited access to commercial feed necessitates the utilization of locally available feed resources such as kitchen waste, agricultural by-products, and forest forages, making pig farming more cost-effective [6]. Recently, a community-based cross-sectional study was carried out to know about pig farming patterns, ethnoveterinary knowledge and practices among various tribal pig farmers in Karbi Anglong district of Assam, India [4]. The pig farming although an age-old practice and considered as profitable enterprise is yet to make inroads in terms on commercial scale.

This research article aims to investigate the socio-economic status of pig farmers and major constraints faced by tribal pig farmers in Karbi Anglong district of Assam for sustainable development. The study draws on primary data

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ENHANCING FACULTIES PERFORMANCE THROUGH TRAINING AND DEVELOPMENT - AN EMPIRICAL STUDY

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ABSTRACT

Training and development are essential for improving faculty performance in a number of ways. Improved teaching talents, subject knowledge, technology proficiency, leadership qualities, and research competency are all results of successful T&D programs. Maximizing the impact of these programs requires addressing issues like sustainability, resistance to change, and resource restrictions. To guarantee that T&D efforts satisfy the changing demands of faculty and contribute to the overall performance of educational institutions, they must be continuously evaluated and adjusted. This study explores the impact of T&D practices on faculty performance. A sample of 120 faculty members was analyzed to determine the correlation between T&D practices and performance outcomes. The results revealed a significant positive correlation ($r = 0.592$, $p < 0.01$), indicating that effective T&D practices are associated with enhanced faculty performance. Additionally, the reliability of the T&D assessment was confirmed with a Cronbach's alpha of 0.889 for the 12-item scale. These findings suggest that investing in robust T&D programs can substantially improve faculty performance, benefiting educational institutions.

Keywords: Faculty, Performance, Training, Development, T&D, Education



Enhancing Well-Being: The Role Of Positive Psychology Interventions In Promoting Mental Health

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ABSTRACT

Positive psychology interventions (PPIs) have garnered significant attention in recent years for their potential to promote mental health and overall well-being. This review paper explores the role of PPIs in enhancing well-being and their implications for mental health promotion.

The paper begins by providing an overview of the field of positive psychology, highlighting its focus on strengths, virtues, and optimal functioning. It then delves into the theoretical foundations of PPIs, discussing key concepts such as resilience, optimism, gratitude, and mindfulness, which form the basis of many intervention strategies.

A comprehensive review of empirical research is conducted to examine the effectiveness of various PPIs in promoting mental health across different populations and settings. The review encompasses a range of interventions, including gratitude exercises, mindfulness-based practices, strengths-based interventions, and positive affect interventions.

The paper discusses the mechanisms through which PPIs exert their effects on well-being, including cognitive, emotional, and physiological pathways. Moreover, it explores the potential moderators and mediators of intervention outcomes, such as individual differences and contextual factors.

Ethical considerations surrounding the implementation of PPIs are also addressed, including issues related to informed consent, confidentiality, and potential risks of harm. Additionally, the paper examines the cultural relevance and adaptation of PPIs to ensure their effectiveness and appropriateness across diverse cultural contexts.





Overall, this paper highlights the promising role of PPIs in promoting mental health and enhancing overall well-being. By synthesizing existing research findings and addressing ethical considerations, this paper provides valuable insights for practitioners, researchers, and policymakers interested in utilizing PPIs as a means of fostering mental health and resilience in individuals and communities.


Keywords: Positive psychology interventions, Well-being, Mental health promotion, Resilience, Optimism, Gratitude, Mindfulness, Strengths-based interventions. Positive affect interventions. Ethical considerations






Short communication

Structure, DC electrical resistivity, and magnetic properties of Gd^{3+} substituted NiZnCo ferrites system

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D. Jagadeeswara Rao ^c  , Ramakrishna Madaka ^d

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Highlights

- According to the XRD analysis of $Ni_{0.4}Zn_{0.35}Co_{0.25}Fe_{2-x}Gd_xO_4$ ferrites ($x=0.0, 0.02, 0.04, 0.06, 0.08, \text{ and } 0.1$) ferrites prepared by the solid-state reaction method.






Short communication

Effect of rare earth (Sm^{3+}) substitution in mixed Ni-Zn-Co ferrites: Structural, magnetic, and DC electrical resistivity studies

Tejeswararao Reddy ^a, Sivasankar Reddy Akepati ^a  , V. Nagalakshmi ^b,
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Highlights

- Spinel-structured $\text{Ni}_{0.4}\text{Zn}_{0.35}\text{Co}_{0.25}\text{Fe}_{2-x}\text{Sm}_x\text{O}_4$ ferrite materials were successfully synthesized by employing the solid-state reaction technique and a sintering temperature of 1050°C for 4h.

IMPACT OF SKILL DEVELOPMENT TRAINING PROGRAMMES ON PERSONALITY TRAITS OF THE YOUTH TRAINEES: A STUDY OF SELECTED DISTRICTS IN ANDHRA PRADESH

P. Srinivas * and P. Lakshmi Narayana **

1. Introduction

Skill development is defined as the development of skills or competencies, which are relevant for the workforce (UNEVOC, 2009). Skill development is a key factor in improving the employability of individuals, increasing productivity and competitiveness of enterprises, reducing unemployment, poverty and exclusion, strengthening innovation and attracting investment. It also facilitates the transition from the informal to the formal economy (ILO, 2008).

The objective of Skill Development programmes being implemented in India is to create a workforce encompassing the necessary and continuously upgraded skills, knowledge and internationally recognized qualifications to get access to decent employment and ensure India's competitiveness in the dynamic global market. Skill Development aims at improving the productivity and employability of workforce (wage and self-employed) both in the organized and the unorganized sectors. It requires increased participation of youth, women, disabled and other disadvantaged sections and to harmonize the efforts of various sectors and reorganize the present system with the better capability to adapt to changing technologies and labour market demands.

The importance of skill development from the Indian perspective is for several reasons. Rapid economic growth of Indian economy during post liberalization is accompanied by a shift in the composition of GDP away from agriculture to the higher-value-added industrial and service sectors. People employed in industrial and service sectors as machine operators, technicians, craftsman, sales man, professionals, and managers need various skills and

Growth, Instability and Supply Response of Cotton in Andhra Pradesh

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ABSTRACT




Agricultural growth, instability and supply response are the essential characteristics and remained key subjects of intense debate in the agricultural development in India. Since agriculture is dependent on various conditions, the area, production and yield of the crops are subject to significant variations over time. As cotton is the major commercial crop growing in Andhra Pradesh, the present study was conducted to analyze the growth, instability and supply response of area, production and yield of cotton crop in the state for the period of 20 years from 2001-02 to 2020-21. A simple regression growth model, the Cuddy Della Valle instability index and Nerlovian's Supply Response model were considered to assess and analyses the growth, instability and supply response of cotton. The study observed that cotton had positive growth rates in area, production and yield. Moderate instability was observed in the growth pattern of area and yield whereas high instability in production of the cotton in Andhra Pradesh. It is also observed that lagged price, lagged yield, irrigation and lagged area may influence positively on the current year area during the study period.

Key words: Instability, Supply response, Cuddy Della Valle Instability Index, Nerlovian's model.

Reinforcement and characterization of biopolymer-rhamnolipid nanoparticles: Biocompatibility, *in-vitro* stability, physico-chemical, rheological and bioactive properties

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Abstract

In the present study, biopolymer (chitosan and alginate)-reinforced rhamnolipid nanoparticles were prepared and represented as 'ALG-RHLP-NPs' and 'CHI-RHLP-NPs'. The sizes of the nanoparticles ranged from 150 to 300nm. The encapsulation efficiencies of ALG-RHLP-NPs and CHI-RHLP-NPs were found to be 81.1% and 90.2%, whereas the loading capacities were in the range of 42–50%. The estimated particle size of the reinforced nanoparticle suspensions was correlated well with predicted particle size as exhibited by partial least squares regression (PLSR) model. The second derivative of the absorbance ($\log 1/R$) of the nanoparticle suspensions showed that the reinforcement of rhamnolipid nanoparticles (RHLP-NPs) did not alter the molecular organization of the biopolymers. The synthesized ALG-RHLP-NPs and CHI-RHLP-NPs were found to have cracked and layered fractures as revealed by surface topography. *In-vitro* stability and rheological flow behavior revealed that the addition of RHLP-NPs to biopolymers has reduced aggregation and facilitated the production of uniform particles, and thereby improving the stability of synthesized nanoparticles via electrostatic interactions. Furthermore, the nanoparticle-reinforced membranes were found to be non-toxic and biocompatible as revealed by cytotoxicity study of *L929* fibroblast cells. The results



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Epidemiology, molecular prevalence and prevention on canine parvovirus in India: A review

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Research Article



Phylogenetic Analysis of VP2 Gene in Canine Parvovirus Isolates in India and their Molecular Implications

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Abstract | Canine parvovirus (CPV) is a contagious and pathogenic virus in puppies and dogs. It was first reported in 1978; however, it was later replaced by three antigenic variants at different periodic intervals that now circulate globally with random strains. This particular study aimed to determine the genetic changes in the VP2 gene, which are responsible for creating different antigenic variants, and to understand their impact on pathogenicity. In contrast, molecular characterization has become an essential tool in comprehending the evolution of viruses. For studying the molecular level changes, 28 field isolates were collected from various regions in India and subjected to PCR for amplification, with sequencing of a partial region of the VP2 gene. Among these isolates, 27 samples were positive for CPV, of which one was CPV 2b while the remaining were CPV 2a, and one isolate was CPV negative. The obtained sequences were submitted to NCBI to get gene accession numbers, and the phylogenetic tree was created to deduce the relationship between the different isolates of dogs, with a distance matrix derived from sequence variations in the genomes.

Keywords | Canine parvovirus, Hemorrhagic enteritis, VP2 gene, Maternal antibodies, CPV variants, Immunisation

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INTRODUCTION

Canine parvovirus is known to cause acute hemorrhagic gastroenteritis and myocarditis in puppies over 3-4 months old, leading to high mortality rates among this vulnerable population (MacLachlan, 2016). Puppies receive maternal antibodies immediately after birth, providing passive immunity that gradually diminishes over time. Consequently, a series of vaccinations are required for their protection; the first shot should be administered first three weeks of after birth. As puppies grow older, they need further vaccinations, spaced 3-4 weeks apart, to

bolster their immunity effectively. The canine parvovirus is a small, single standard DNA with the range of 4-5Kb. It is classified with in the family Parvoviridae and the genus Protoparvovirus (Cavalli *et al.*, 2008). The virus genome has two open reading frames (ORFs), One of which codes for two nonstructural proteins (NS 1 and NS 2), and the other codes for two structural proteins (VP1 and VP2). VP2 is a significant capsid protein required for host immune response (Reed *et al.*, 1988) and is crucial in detecting CPV-2. The viral DNA is replicated through a rolling hairpin mechanism on both ends of the genome using palindromic hairpins of around 150 bases (Parrish,



Role of Microbiomes in Defining the Metabolic and Regulatory Networks that Distinguishes Between Good Health and a Continuum of Disease States

12

Satyanagalakshmi Karri, Manohar Babu Vadela,
and Vijay A. K. B. Gundi

Abstract

In this world, animals are teeming with different microbes comprising bacteria, fungi, and viruses. Animal-microbe interactions have become an interesting research area because of their beneficial and significant role in human life. The human microbiome project reported the significance of gut microbes and also explained complex diversity in a way to equilibrium maintained. For instance, gut microbes help control the colonization of exogenous pathogens. The beneficial role of microbes in humans extended the knowledge from individual taxa to a level of an ecosystem. However, rapid-growing technology provided a great understanding of individual microbes. Little is known about the microbiota association with animals and humans and the significance of microbial consortia in the ecosystem. The knowledge of microbes and host metabolism and their influence on modifying the microbiota ecosystem is important to understand microbiota's beneficial and pathogenic efficacy. This chapter outlined the current knowledge of microbiota and microbiome in ecosystems and their significant role in human and animal life.

Keywords

Pathogens · Dysbiosis · Communal bacteria · Hologenome theory · Animal-microbe interaction

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New Paradigms on Microbiome Diagnostic Design and Engineering

14

Manohar Babu Vadela, Satyanagalakshmi Karri,
and Vijay A. K. B. Gundi

Abstract

A vast microbial diversity is associated with different ecologies, including humans, animals, and plants, challenging the microbiologists in the perspective of their identification, potential applications, and clinical diagnostics. Microorganisms, including archaea, bacteria, fungi, and viruses, harbored and colonized on humans' skin and gastrointestinal and gut, play a key role in various diseases. Identifying and characterizing this vast, diverse microbiome and diagnosing clinically important pathogens have triggered the establishment of massive DNA sequencing technologies. In the modern era, these new sequencing technologies have allowed scientists to precisely identify any organism's taxonomic status. This chapter described a few pathogenic microbiomes and their identification approaches, like in situ microbiome engineering, microfluidic systems, engineered organoids, and single-cell imaging approaches.

Keywords

Diagnostic methods · Microorganisms · Biosensor · Engineered microbes · Microfluidic diagnostic · Antimicrobial peptides

14.1 Introduction

Microbial diversity is a core factor and influences the stability of microbes and their related health of the population (Coyte et al. 2015). The alterations in microbiota in an ecosystem have been associated with pathological conditions such as metabolic dysfunction, neurodegenerations, and cancer. The finding of functional diversity of

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Insights on the New-Generation Technologies and Role of Bioinformatics Tools to Understand Microbiome Research and the Microbial World

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and Vijay A. K. B. Gundi

Abstract

Over the decades, omics-based research intensely changed our understanding of microorganisms and their importance in animal and human life. Different strategies are exploited to understand microbes and their mechanisms in various environments. The microbiome research enhanced our knowledge from understanding the microbes to surprising associations with Parkinson's disease and depression. It is also understood that the microbiome can change health status by influencing the life bodies regarding several diseases such as allergies, cancer, cardiometabolic disorders, and obesity. In such cases, nutrients, metabolites, and microorganisms play an important role. Moreover, microbial characteristics can change rapidly with environmental conditions, including temperature and air. The progress of microbiome research depends on designing and standardizing methodologies and protocols, modifying existing procedures, or adapting novel technologies and models. Thus, it is necessary to develop standard protocols for microbiome research, including ideal protocols for sampling microbiomes and their data analysis. To develop standard protocols for metagenomics, Human Microbiome Project Consortium (NIH) established quality-controlled high-throughput metagenomic data for scientific communities. The questions raised toward microbiome standard protocol are developing an ideal protocol for collecting a microbiome sample for analysis and proper tools for data analysis. In this chapter, we described the new-generation technologies and capabilities of bioinformatic tools to understand the microbiome and microbial world.

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A RETROSPECTIVE STUDY ON CURRENT TRENDS IN INCIDENCE AND PROGNOSIS OF BREAST CANCER AT A TERTIARY CARE CENTRE, NELLORE, SOUTH INDIA

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Breast cancer, Cancer mortality, Tumour grade, NPI Score, Early diagnosis.

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Abstract

Background: Breast cancer is the most commonly diagnosed cancer among the women in India and the entire world. As per recent studies there is a significant rise in the breast cancer mortality in India. The prognosis of breast cancer depends on the stage of presentation. The aim of the study is to know the incidence, histological type and stage of presentation of breast cancer in our area. **Materials and Methods:** A total 158 cases of breast cancer were analysed retrospectively for a period of one year from January 2022 to December 2022 in a tertiary care centre, Nellore, South India. **Result:** Out of 158 cases the most common histologic variant is infiltrating duct cell carcinoma, seen in 81.53 % of cases. Most of the patients (87.34 %) were stage II at the time of presentation. 39.24 % were categorised as group III, with a predicted moderate long-term survival as per the NPI score. **Conclusion:** Breast cancer related mortality is increasing in India as the most of the cases are presenting late with high tumour grades. Conducting screening programmes and creating self-awareness may help in prompt cancer diagnosis and treatment thereby reducing the breast cancer related mortality among women.

INTRODUCTION

Breast is the most common site of malignancy in women world wide followed by colorectal and lung cancers. As per the Globocan data, 2.3 million new cases of female breast cancer were diagnosed in 2020 globally.^[1] Globocan (2020) reveals the incidence of breast cancer is 13.5% of all cancer cases and 10.6% of all cancer related deaths in India.^[2]

The current study was done: 1) To know the burden of breast cancer in our region. 2) To study the patterns of histopathological diagnosis of breast carcinoma occurring in recent times and 3) To predict the survival outcome based on prognostic factors using NPI. And also, to compare the trends observed in similar studies in other geographical areas of India.

The aim of our study is to know the incidence and predict the prognosis of breast cancer in patients attending a tertiary care centre, Nellore, Andhra Pradesh, India. The data can be utilised in

strengthening programmes for cancer awareness, screening and provide support to the women with risk factors to reduce the cancer burden in India.

MATERIALS AND METHODS

A hospital based retrospective study on breast cancer was conducted in a tertiary care hospital, Nellore, Andhra Pradesh, Southern India, for a period of one year from January 2022 to December 2022. Institutional approval was taken. The data was analysed from the hospital medical records. All the details like name, age, sex, cancer diagnosis, morphological site, histological type, grade and stage of presentation according to Tumour, Node, Metastasis (TNM) classification are recorded. Tumour staging was reported using the TNM system adopted by UICC and the American Joint Committee on Cancer (AJCC). Tumour grading was done using the Nottingham modification of the Bloom-

Evaluation of the Phenolic Profiling, Flavonoid Content, Antioxidant and Antimicrobial activities of the Selected Three Edible Mushrooms.

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Abstract

Mushrooms are known to mankind and are gaining importance because of their nutritional and medicinal properties, since early human civilization. Mushrooms are producing antioxidant and antimicrobial properties that are known to have a potential source variety of bioactive compounds. Antioxidant defenses through dietary supplementation of edible mushrooms are to reduce the level of oxidative stress, might be in enhancement of directly used. Mushrooms wild or cultivated bioactive compounds are polyphenols, polysaccharides, vitamins, carotenoids and minerals, due to their bioactive compounds, such as polyphenols. They have been related to significant antioxidant properties. Antioxidant and health benefits observed in edible mushrooms are seen as an additional reason for their traditional use as a popular delicacy food. The methanolic extracts of *A. bisporous*, *L. edodus*, *T. heimii*, were analyzed for their antioxidant activities in different test systems namely, total phenolics, and flavonoid contents. To them in addition in activities DPPH free radical scavenging, Hydroxy free radical, ABTS, β -carotene/linoleic acid, reducing power and β -glucans. *A. bisporous*, *L. edodus*, showed the strongest activity patterns. Their activities were as the positive controls as strong. The species was excellent of the DPPH, ABTS, reducing power. The extracts

were increased of hydroxy radical scavenging capacity with the increasing concentration. On the other hand, *L. edodus*, found to have the highest phenolic content. Total flavonoid content of *A. bisporous* found the superior to the other mushroom. The antioxidant potential is dependent dose in all the assays carried out. It is concluded that the *L. edodus*, *A. bisporous* can be used as a medicine against free radical associated oxidative damage. Mushroom species natural demonstrated as a strong antioxidant and antimicrobial activity tested the present study shows that. It suggests that mushrooms may be used as good sources of natural antioxidant and for pharmaceutical purpose in treating of various diseases. Edible mushrooms may have potential as natural antioxidants. The antimicrobial activity was estimated by determination of minimal inhibitory concentration by using disc diffusion plate method against 3 species of bacteria. The edible mushroom extracts had tested relatively strong antimicrobial activity against generally the tested microorganisms.

Keywords: Antioxidant activity, Antimicrobial activity, *A. bisporous*, *L. edodus*, *T. heimii*.

Introduction

Mushrooms have been utilized for medicinal purposes as well as being consumed as food in many parts of the world for centuries. Mushrooms are food sources that are poor in

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Antiquorum Sensing Activity of Methanolic Seed (Nutmeg) Extract of *Myristica Fragrans* Against a Gram-Positive Bacterium

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Abstract: The increase in multidrug-resistant pathogens has created new anti-pathogenic and anti-virulence compounds. This is because of the behavioural changes bacteria acquire, such as increased antibiotic resistance and virulence capacity. This social behaviour is maintained through a signalling transduction pathway called Quorum sensing. The present study aims to evaluate the inhibition of quorum sensing in *Bacillus subtilis* with *Myristica fragrans* seed extract. The seed of *M. fragrans* is called nutmeg. Methanolic nutmeg extract was used to test the anti-quorum sensing activity of *B. subtilis*. Total flavonoid and phenolic concentrations of nutmeg were estimated. 10 µg/ml, 30 µg/ml, 50 µg/ml, 70 µg/ml and 90 µg/ml concentrations of nutmeg extract were used to check against bacterial motilities and biofilm formations. Inhibition of biofilm formation was observed under a fluorescence microscope, and inhibition of swimming and swarming motilities were observed on 0.3 % and 0.5 % agar plates, respectively. These observations suggest that the seed of *M. fragrans* showed anti-quorum sensing activity against *B. subtilis*. This research work helps to study and isolate natural quorum-sensing inhibitors from medicinal plants. These inhibitors can synthesize novel anti-pathogenic or anti-virulence drugs that combat bacterial infections by interrupting with quorum-sensing controlled phenotypes and decreasing bacterial virulence.

Keywords: *B. subtilis*; Motility; *M. fragrans*; Nutmeg; Quorum sensing

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***In vitro* Assessment of The Bioactive Compounds and Anticancer Potential of *Citrus medica* Leaf Extract**

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Highlights

- Antimicrobial activity of the *Citrus medica* leaves extract was tested against *Staphylococcus aureus* and *Candida albicans* was analysed through SEM. The extract is a rich source of bioactive compounds showed good antimicrobial, antioxidant and anticancer activity.
- The GC-MS analysis of leaf extract of *Citrus medica* revealed the presence of omega fatty acids which are considered to be as important as food supplements for boosting the immunity and also scavenging of free radicals.
- The active principles such as methyl 8, 11, 14-hepta decatrienoate which is a linolenic acid, α -linolenic acid trimethyl silyl ester and levulinic acid are the predominant compounds belongs to omega-3 fatty acids group with health benefits can be used in various food products that results in health benefits.

Growth and Instability in jowar crop (A study of Andhra Pradesh)

N.R.V. Ramana Reddy*
P. Srinivas**

ABSTRACT

The objective of this study is to examine the growth and instability in the production of Jowar crop with time series data in Andhra Pradesh. The simple Linear Regression Model has been incorporated to analyze the growth trends and Cuddy Della Valle Instability Index measurement has considered in studying the instability in area, production and yield of Jowar. The study observed that the area, production and yield of Jowar are increasing trend in the study period. The instability analysis clearly shows that there is moderate instability in area, production and yield of Jowar in Andhra Pradesh.

Key Words: Jowar, Area, Production, Yield, Growth, Instability, Linear Regression, Cuddy Della Valle Instability Index

1. Introduction:

The agricultural sector creates demand for industrial products with the advent of the Green Revolution, there has been a considerable increase in farm incomes in areas with relatively better irrigation facilities. The concept of Growth with stability is considered important for development of agriculture. There is a large amount of literature on growth and instability of productivity and production of crops in theoretical and as well as empirical perspectives. Agriculture growth and instability has remained subject of intense debate in the agricultural economics literature in India. While the need for increasing agricultural yield is obvious. Agriculture continues to be a major source of income and employment to a vast majority of people in India. The Government of Andhra Pradesh has continuous efforts, to increase the production of major crops like paddy, jowar, groundnut, sunflower, cotton and sugarcane to meet the requirement of people.

2. Review of Literature:

Md Jaber Rana, Shamima Islam and M. Kamruzzaman (2021) discussed the growth and instability in area, production and productivity of major spices in Bangladesh and found that major spices had low growth rate in area and production. Kundu. K. K and Parveen Kumar Nimbrayan (2021) made an attempt to estimate the instability of wheat and rapeseed mustard at national level. The study concluded that overall scenario provided a clear picture about instability and accomplished that instability was very high in case of rapeseed mustard as compared to wheat. Jainuddin, S.M. (2021) made a study to assess the growth and instability of sunflower production in Karnataka. The major findings of this study are that the growth pattern of sunflower showed a downward trend with respect of area, production and yield in all four regions of Karnataka. Mahendra, et. al. (2020) calculated the growth rates of area, production and productivity of mungbean (green gram) in Nagaur district of Rajasthan and indicated that area, production and productivity of mungbean (green gram) positively increased at significant growth rates.

Shivalika Sood, Hari Singh (2020) study aims to examine the growth performance of pulses in Rajasthan with collected secondary data from various publications of the state. The study concluded that the production of chickpea increased more due to area effect and the production of pigeon. Sunita et al. (2019) has made an attempt to examine the instability in the area, production and productivity of barley crop in India and Haryana during three phases i.e., pre-green revolution, green revolution and post green revolution period. The results says that in case of area, the instability is more in the post-green revolution than pre-green revolution period as the focus of the green revolution was mainly on other crops like rice and wheat.

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India's Smart Cities Mission: Progress and Challenges

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ABSTRACT

Urbanization in India has become an important and irreversible process, and it is an important determinant of national economic growth and poverty reduction. This transition to a quasi-urban society, however, has not been accompanied by a commensurate increase in the supply of basic urban services like water supply, sewerage and drainage network, solid / liquid waste management facilities, citywide roads, public transport, and public safety systems like street lighting and pedestrian pathways. The supply of land and housing has not kept pace with the increase in urban population. With an aim to improve the quality of life and attract investments to the City, setting in motion a virtuous cycle of growth and development, the government of India has launched various urban development schemes such as Smart Cities, AMRUT, Swachh Bharat, HRIDAY, PMAY etc. In this paper, an attempt has been made to analyze the physical and financial progress of Smart Cities Mission. It was found that there has been a considerable progress on a wide variety of smart projects in the 100 cities and towns chosen under the Smart Cities Mission.

Key Words: Urbanization, Economic Growth, Urban Infrastructure, Smart Cities, Development

I. Introduction

Urbanization in India has become an important and irreversible process, and it is an important determinant of national economic growth and poverty reduction. The process of urbanization has been characterized by a dramatic increase in the number of large cities, although India may be said to be in the midst of transition from a predominantly rural to a quasi-urban society. The 2030 development agenda of the United Nations has emphasized the role of sustainable cities by incorporating Sustainable Development Goal (SDG), i.e. Sustainable Cities and Communities for making cities and human settlements inclusive, safe, resilient and sustainable.

As per Census of India 2011, the population of India is 1210.50 million, of which 377.10 million (31.2%) is urban and 833.40 million (68.8%) is rural. The urban population is located in 7,933 towns, comprising 4,041 Statutory Towns and 3,892 Census Towns. During 2001-2011, in absolute terms, the decadal increase in urban population was 90.99 million vis-à-vis 90.97 million in rural population. The percentage increase in urban population, however, was vis-a-vis 12.3 in rural population. Also, during the decade, while the number of Statutory Towns increased by 242 (6.4%), the number of Census Towns went up by 2,530 (185%). At current rate of growth, urban population in India is estimated to reach a staggering 575 million by 2030 and 875 million by 2050. This transition to a quasi-urban society, however, has not been accompanied by a commensurate increase in the supply of basic urban services like water supply, sewerage and drainage network, solid / liquid waste management facilities, citywide roads, public transport, and public safety systems like street lighting and pedestrian pathways. The supply of land and housing has not kept pace with the increase in urban population. As a result of that slums have been increased in urban areas which make the sign of urban poverty in India.

Nearly 31% of India's current population lives in urban areas contributing to 63% of India's GDP (Census 2011) and with increasing urbanisation, urban areas are expected to house 40% of India's population and contribute to 75% of India's GDP by 2030.

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Original Article

Measuring Microfinance-Based Women Entrepreneurs and their Impact on the Livelihood of Women: A Study of Nellore District in Andhra Pradesh

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Abstract: The Self-Help Group Bank Linkage Programme (SHG-BLP) has emerged as a pioneering initiative in fostering financial inclusion by integrating the Self-Help Group (SHG) approach with banking operations. This study investigates the transformative impact of entrepreneurship within microfinance-based SHGs on livelihood patterns. Utilizing primary data from 500 participants in Nellore district, Andhra Pradesh, the study reveals significant positive changes in employment, financial control, social behavior, household financial participation, skill enhancement, interaction with officials/members, and banking awareness post-SHG participation. Findings underscore the role of SHGs in economic empowerment, improved financial management, social cohesion, and skill development. Recommendations include continuous investment in skill development, financial literacy, gender equality, and networking to amplify SHG's impact on livelihoods and community development, thereby contributing to sustainable poverty alleviation.

Keywords: Self-Help Group, Women Entrepreneurship, Livelihood Pattern, Skill Enhancement.

I. INTRODUCTION

Ensuring access to financial services for rural and vulnerable communities is crucial for reducing poverty and fostering sustainable development. The Government of India has implemented various policies, including the Nationalization of Banks, the Lead Bank Scheme, Regional Rural Banks, the Service Area Approach, and support for Self-Help Groups (SHGs) to enhance the accessibility of the rural poor to formal financial institutions. Despite these efforts, the proportion of rural poor individuals receiving bank credit remains notably low, as banks still perceive lending to this demographic as risky. An SHG, or Self-Help Groups, is a cohesive assembly of up to 20 individuals who share similar social and economic backgrounds. These groups come together voluntarily with the collective aim of pooling savings and facilitating credit activities. Importantly, SHGs typically do not require collateral for obtaining loans, and there are no restrictions on the purpose for which credit is utilized. These groups operate under established rules and bylaws, conduct regular meetings, maintain detailed records of their proceedings, including savings and loan transactions, adhere to credit discipline, and function in a democratic manner, ensuring participation and decision-making among all members.

The origins of Self-Help Groups (SHGs) in India can be traced back to the establishment of the Self-Employed Women's Association (SEWA) in 1970. The SHG Bank Linkage Project, initiated by NABARD in 1992, has grown into the largest microfinance project globally. The 1990s witnessed a significant surge in SHG initiatives, with the establishment of the National Bank for Agriculture and Rural Development (NABARD) and the introduction of the SHG-bank linkage program, which accelerated SHG development. Acknowledging the pivotal role of SHGs, the Reserve Bank of India (RBI) issued a circular allowing banks to extend loans to women-led SHGs. However, during this period, bank lending to SHGs was primarily driven by subsidies and specific targets. In 1993, NABARD, in conjunction with RBI, authorized SHGs to open savings accounts in banks, a move that significantly propelled the SHG movement and laid the foundation for the SHG bank linkage program. In 1999, the Government of India introduced the Swarn Jayanti Gram Swarozgar Yojana (SGSY) to foster self-employment in rural areas through the formation and training of SHGs. This initiative evolved into a nationwide movement in 2011, becoming the National Rural Livelihoods Mission (NRLM), which is the largest poverty alleviation program worldwide. Presently, State Rural Livelihood Missions (SRLMs) are operational in 29 states and 5 Union Territories (excluding Delhi and Chandigarh). NRLM has facilitated universal access to affordable, efficient financial services for the poor, including financial literacy, bank accounts, savings, credit, insurance, remittance, pension, and counseling on financial matters.

The process of providing accessible banking and credit services to economically and geographically disadvantaged individuals was slow until the inception of the Self-Help Group (SHG) approach, which aimed at fostering social capital to deliver savings and credit products. This approach, integrated with banking operations, led to the establishment of the Self-





Cover Page



PROBLEMS OF MICRO FINANCE BASED WOMEN ENTREPRENEURS: A STUDY OF NELLORE DISTRICT IN ANDHRA PRADESH

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Abstract

Microfinance is a relatively recent concept, involves providing access to credit and other financial services to poor, women and other vulnerable groups particularly in rural areas. Microfinance initiatives helped to support small and medium-sized businesses run by women, particularly those coming from economically disadvantaged backgrounds. In many developing economies including India microfinance-based women entrepreneurs play a vital role in driving economic growth, creating employment opportunities, and fostering social development. However, despite the transformative potential of microfinance, women entrepreneurs face various challenges that hinder their entrepreneurial journey and limit their ability to thrive in the marketplace. This research paper delves into the various challenges encountered by microfinance-based women entrepreneurs (supported by Self Help Group Bank Linkage Programme), shedding light on the nuanced complexities inherent within their entrepreneurial journey. Through a primary data-centric approach, employing carefully designed questionnaires, the study explores problems such as extreme competition, high interest rates, limited market access, inadequate publicity, customer preferences for branded products, psychological constraints, and technical limitations. Conducted in the Nellore district of Andhra Pradesh, the study encompasses a sample size of 500 participants engaged in diverse sectors relevant to entrepreneurial pursuits. Analysis of the data reveals significant challenges, including the perception of extreme competition, limited market access, and inadequate publicity, while also highlighting nuanced views on issues such as interest rates and psychological constraints. The findings underscore the need for multifaceted approaches to address these challenges, encompassing strategies to improve market access, provide support for skill development, enhance marketing opportunities, and mitigate technical barriers. By addressing these challenges, stakeholders can empower women entrepreneurs to thrive in their ventures, fostering economic growth and development.

Keywords: Microfinance, SHG Bank Linkage Programme, Women Entrepreneurs, Challenges

INTRODUCTION

Microfinance has emerged as a powerful tool for promoting financial inclusion and empowering marginalized communities, particularly women, by providing them with access to credit and other financial services. In many developing economies, microfinance-based women entrepreneurs play a vital role in driving economic growth, creating employment opportunities, and fostering social development. However, despite the transformative potential of microfinance, women entrepreneurs face various challenges that hinder their entrepreneurial journey and limit their ability to thrive in the marketplace.

In today's ever-evolving economic environment, microfinance initiatives often focus on supporting small and medium-sized businesses run by women, particularly those coming from economically disadvantaged backgrounds. Microfinance, a relatively recent concept, involves offering financial aid with the aim of reducing poverty by providing capital and resources to rural entrepreneurs, enabling them to improve their income and living standards. Thanks to microfinance programs, millions of women worldwide have been able to access commercial and economic opportunities previously out of reach. In countries like India, Self-Help Groups (SHGs) play a key role in delivering various financial services to women nationwide.