

3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year 2022-23.



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3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Covid 19 and Challenges and Opportunitites for Indian MSMES	Susanta Chand & Dr. Ratul Saha	Economics	Education And Society	April-June 2023	2278-6864	Print
Ultrastructure and prevalence of the septate gregarine <i>Quadruspinospora indoaiolopii</i> haldar and chakraborty, 1976 (Apicomplexa: Eugregarinida: Conoidasida), parasitic in the alimentary canal of the grasshopper <i>aiolopus thalassinus tamulus fabricius</i> , 1798 (Orthoptera: Acrididae)	Susobhan Mondal and Biplob K Modak	Dept. of Zoology	International Journal of Entomology Research	2/14/2023	2455-4758	https://mjl.clarivate.com/search-results?issn=2455-4758&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
Pricing strategy in an interval-valued production inventory model for high-tech products under demand disruption and price revision	Subhendu Ruidas, Mijanur Rahaman Seikh, Prasun Kumar Nayak	Mathematics	Journal of Industrial and Management Optimization, AIMS, SCIE, Impact Factor- 1.3	2023	1553-166X (Electronics) 1547-5816 (Print)	https://mjl.clarivate.com/search-results

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An interval-valued green production inventory model under controllable carbon emissions and green subsidy via particle swarm optimization	Subhendu Ruidas, Mijanur Rahaman Seikh, Prasun Kumar Nayak, Ming-Lang Tseng	Mathematics	Soft Computing, Springer, SCIE Impact Factor- 4.1	2023	1433-7479 (Electronins) 1432-7643 (Print)	https://mjl.clarivate.com/search-results
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Empowerment of Muslim Women in West Bengal	Sahajahan Zamadar	History	IJRAR	2023	E-ISSN: 2348-1269, P-ISSN: 2349-5138	http://ijrar.org/viewfull.php?&p_id=IJRAR23A1904
Chitosan based micro and nano-particulate delivery systems for bacterial prodigiosin: Optimization and toxicity in animal model system	Subhasree Majumdar, Tamal Mandal, Dalia Dasgupta Mandal	Zoology	International Journal of Biological Macromolecules	2022	0141-8130 (print); 1879-0003 (web)	https://mjl.clarivate.com:/search-results?issn=0141-8130&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
Challenges in developing strategies for the valorization of lignin—a major pollutant of the paper mill industry	Dalia Dasgupta Mandal, Gaurav Singh, Subhasree Majumdar, Protik Chanda	Zoology	Environmental Science and Pollution Research	2022	09441344, 16147499.	https://mjl.clarivate.com:/search-results?issn=0944-1344&hide_exact_match_fl=true&utm_source=mjl&utm_medium=share-by-link&utm_campaign=search-results-share-this-journal
Bacteria as biofactory of pigments: Evolution beyond therapeutics and biotechnological advancements	Dalia Dasgupta Mandal and Subhasree Majumdar	Zoology	Journal of Bioscience and Bioengineering	2023	Print: 13891723 Electronics: 13474421	https://doi.org/10.1016/j.jbiosc.2023.01.008

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COVID 19 AND CHALLENGES AND OPPORTUNITIES FOR INDIAN MSMES

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ABSTRACT

The Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. It contributes significantly in the economic and social development of the country by fostering entrepreneurship and generating largest employment opportunities at comparatively lower capital cost, next only to agriculture. But, the outbreak of the Covid-19 pandemic is an unprecedented shock to the Indian economy as well as MSMEs. After the country is put under lockdown till May 3 one thing is pretty sure that the MSME will be taking a maximum hit and that the distressed sector will render many people jobless and will lead to the closure of thousands of industrial outlets forever.

Our economy was already in a parlous state in respect of demand depression and high unemployment situation before the pandemic struck. With the prolonged country-wide lockdown, global economic downturn and associated disruption of demand and supply chains, the economy is likely to face a protracted period of slowdown. The Daily wage earners, small and medium business men, Migrant labourers, urban poor and students have suffered most due to the current downturn. While we are now focusing in India on securing the population from health hazards and on providing relief, especially to the poor, we also need to think long-term - to secure the health of the economy, the viability of businesses, and the livelihoods of people. Under these circumstances the purpose of this research paper is to study the impact of Covid-19 on Indian MSME sectors which are life blood of Indian economy. Here we have assess the potential impact of the shock on MSMEs under the following sub headings-Contribution of MSMEs in Indian Economy, Lockdown and Its Impact on the MSME Sector, Government Initiative to Revive the MSMEs . Challenges before the MSMEs and Prospects for MSMEs.

KEYWORDS: MSME, LOCKDOWN, PANDEMIC etc.

INTRODUCTION:

The outbreak of the Covid-19 pandemic is an unprecedented shock to the Indian economy as well as MSMEs. After the country is put under lockdown till May 3 one thing is pretty sure that the MSME will be taking a maximum hit and that the distressed sector will render many people jobless and will lead to the closure of thousands of industrial outlets forever. With governments around the world imposing the lockdown and social distancing becoming the new norm, the post-pandemic world will wake up to a new trading culture. On the home grounds, the COVID-19 pandemic has battered all sectors of the economy, with the micro, small and medium enterprises (MSMEs) among the worst-hit. The MSME sector that forms the backbone of the Indian economy was already in hit due to the blows of demonetization and GST implementation. However, as the situation began to show signs of improvement, the pandemic outbreak ushered in a new set of challenges, leaving many companies in the lurch due to the pandemic outbreak and the consequent lockdown. Additionally, factors like credit deficit, shortage of working capital, and a decrease in demand for non-essential goods paints a grim picture.



Ultrastructure and prevalence of the septate gregarine *Quadruspinospora indoaiolopii* haldar and chakraborty, 1976 (Apicomplexa: Eugregarinida: Conoidasida), parasitic in the alimentary canal of the grasshopper *Aiolopus thalassinus tamulus* fabricius, 1798 (Orthoptera: Acrididae)

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Abstract

Septate gregarines (Apicomplexa: Eugregarinida: Conoidasida) are the most varied and common protozoan parasites of invertebrates, especially arthropods. The genus *Quadruspinospora* has sixteen species, all from orthopterans and all from India except *Q. mexicana*. *Quadruspinospora indoaiolopii*, commonly found in the midgut of *Aiolopus thalassinus tamulus* (Orthoptera: Acrididae). There have been no ultrastructural studies of any *Quadruspinospora* species reported from India. The present study aims to investigate the surface morphology of *Q. indoaiolopii* by scanning electron microscopy. For scanning electron microscopy, mature trophozoites and gamonts were isolated and fixed in 2.5% glutaraldehyde solution with Na-cacodylate buffer (pH 7.4). 29 grasshoppers out of 124 were found to be infected with *Q. indoaiolopii*. During the monsoon and early winter, prevalence remains higher, averaging 43.3%. Epimerite is subspherical and knob-shaped, with 10–23 digitiform processes. Gamonts are elongated and solitary. Gametocytes are almost orbicular and dehiscence by simple rupture. Oocysts are ellipsoid in shape and armed with four long spines; each pole has two. Under SEM, the epicytic folds look like ridges that run the whole length of the trophozoite and gamont. Both protomerite and deutomerite remain covered with longitudinal, parallel epicytic folds, which are undulating in appearance. Epicytic folds are absent in the epimerite region. The epimerite-protomerite junction has a short, narrow neck-like structure, and the deutomerite exhibits deep longitudinal grooves. The density of folds is about 7–9 epicytic folds per micron, compared to *Q. mexicana*, which had five folds per micron.

Keywords: apicomplexa; *Quadruspinospora indoaiolopii*; *Aiolopus thalassinus tamulus*; septate gregarines

Introduction

The short-horned grasshopper, *Aiolopus thalassinus tamulus* (Fabricius, 1798), is commonly found in grasslands as well as crop areas such as rice, wheat, and vegetable farms all over India and does significant harm to agricultural crops (Mandai *et al.*, 2007) [1]. Grasshoppers in West Bengal were frequently reported to have a septate gregarine infection. In the phylum Apicomplexa, septate gregarines are one of the most diverse and common species of protozoan parasites (Smith and Clopton, 2003) [14], which primarily affect invertebrates (Clopton, 2002) [2]. Arthropods have the highest diversity of septate gregarine among invertebrates, and insects are their preferred hosts. Grasshoppers belonging to the genus *Aiolopus* were found to be infected with four species of septate gregarines: *Quadruspinospora aelopii* (Sarkar and Chakraborty, 1969) [12], *Q. indoaiolopii* (Haldar and Chakraborty, 1976) [4], *Phleobum cloptoni* (Chatterjee and Haldar, 2003) [1], and *P. janovii* (Patra and Haldar, 2004) [10].

The genus *Quadruspinospora* was established by Sarkar and Chakravarty (1969) [12] from the midgut of the short-horned grasshopper, *Aiolopus* sp. in which the trophozoites are solitary and elongated. The epimerite in younger trophozoites is conical or knob-like. In mature trophozoites, the epimerite is subspherical, often with a few stumpy digitiform processes or even none at all. The gametocyst is almost orbicular in shape and has a pronounced ectocyst; the cyst dehiscence with a simple rupture. Oocysts are ellipsoid-shaped and have two long spines at each pole. There are currently sixteen recognised species in the genus

Quadruspinospora, *Q. aelopii* Sarkar & Chakravarty, 1969; *Q. chakravartyei* Chakraborty & Haldar, 1975; *Q. indoaiolopii* Haldar & Chakraborty, 1976; *Q. acridaei* Haldar & Chakraborty, 1976; *Q. megaspinoza* Haldar & Chakraborty, 1976; *Q. atractomorphii* Haldar & Chakraborty, 1978; *Q. dichotoma* Kundu & Haldar, 1983; *Q. platyepimerita* Datta, Gosh & Haldar, 1990; *Q. adigitalis* Datta, Gosh & Haldar, 1990; *Q. gesoniata* Datta, Gosh & Haldar, 1990; *Q. jalpaiguriensis* Datta, Gosh & Haldar, 1990; *Q. hieroglyphae* Mandal & Ray, 2007; *Q. cloptoni* Modak, Basu & Haldar, 2008; *Q. caudata* Modak, Basu & Haldar, 2008; *Q. oxyae* Yunnam & Mohilal, 2015; *Q. mexicana* Medina-Duran *et al.*, 2020. They are all reported from various orthopteran species, and except for *Q. mexicana* (Medina-Durán *et al.*, 2019) [8], all are reported from India.

There have been no ultrastructural studies of any *Quadruspinospora* species reported from India. In the current study we aim to investigate the surface morphology of both trophozoite and gamont stage of *Q. indoaiolopii* Haldar and Chakraborty, 1976 by scanning electron microscopy.

Materials and methods

Adult host grasshoppers (*A. thalassinus tamulus*) were collected from the agricultural fields, grasslands, and margins of the Sal forests of Bankura district (23°20'49.4"N 87°14'09.8"E, 23°18'59.6"N 87°12'25.9"E, and 23°17'58.6"N 87°11'51.1"E). From July 2021 to June 2022,

Susobhan Mondal
15.02.23



PRICING STRATEGY IN AN INTERVAL-VALUED
PRODUCTION INVENTORY MODEL FOR HIGH-TECH
PRODUCTS UNDER DEMAND DISRUPTION
AND PRICE REVISION

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(Communicated by Gerhard-Wilhelm Weber)

ABSTRACT. Due to continuous development in technology, new and updated products are launching in the market more frequently in the area of some high-tech products such as smartphones, laptops, etc. It is noticed that after a certain period of releasing a new product by a particular company some other company develops a similar type of product at a lesser selling price. Customers generally become attracted to buy that updated product causing a sudden disruption in the demand for the first product. The demand for a normal product may also suddenly vanish as we have experienced during the COVID-19 lockdown period. The manufacturer is then compelled to reduce the selling price to sell the remaining products. This paper aims at developing a single period production inventory model addressing this particular market condition. This paper also considers carbon emissions from different inventory processes and examines the optimal inventory policies under the cap and trade regulatory policy. Again, in a real-life production system, the various inventory cost components and the carbon emission rates from different inventory processes are not fixed always. To incorporate this issue, the proposed model considers these quantities as interval numbers. The resulting optimization problem is thus also interval-valued and has been solved by using the quantum-behaved particle swarm optimization technique. A numerical illustration is provided to validate the proposed model. Finally, a sensitivity analysis with respect to key inventory parameters is performed to derive some key managerial implications. It is found that the frequency of launching new products is inversely proportional to the optimum profit of the manufacturer. Also, a higher carbon tax rate is found to be beneficial from an environmental point of view.

1. Introduction. Technology is developing continuously at a rapid rate in recent times. In the manufacturing industry, it has a huge impact on some products like smartphones, tablets, laptops, PCs, etc. We frequently witness the launching of

2020 Mathematics Subject Classification. Primary: 90B05, 90B30; Secondary: 49N30, 90C59.
Key words and phrases. Single period production inventory model, high-tech products, carbon emission, cap and trade mechanism, interval number, quantum-behaved particle swarm optimization technique.

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An interval-valued green production inventory model under controllable carbon emissions and green subsidy via particle swarm optimization

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Accepted: 29 December 2022 / Published online: 7 January 2023
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Abstract

It is a challenging task to develop appropriate realistic production inventory models due to the presence of imprecision in the data available in the current market situation. In addition, increasing environmental concerns around the world have led to a shift toward green products. There are subsidy programs implemented by governments in several countries for green products. In a real-life production system, the various inventory cost and carbon emission parameters are imprecise in nature. Interval number theory is an efficient tool for handling such impreciseness. This study investigates the effects of a simultaneous investment in greening innovation (GI) and emission reduction technologies (ERTs) in a green production inventory model where the various inventory cost components and the carbon emission parameters are interval-valued. Using the cap-and-trade carbon regulation policy, the optimal inventory decision is investigated based on a price and greenness level sensitive demand. Two models are developed depending on whether the manufacturer wishes or not to invest in ERTs. Both models consider the chances of imperfect production and their reworking process. The resulting interval optimization problems are solved using the quantum-behaved particle swarm optimization technique to derive the interval-valued optimum profit. Numerical illustrations for both models are presented. Several managerial insights are identified through a sensitivity analysis over the optimal solution regarding the main inventory parameters. The result shows that the greenness level of the product increases with the intensity of the subsidy offered by the government. Again, it is found that the manufacturing company of the green product as well as our environment benefit from joint investment in GI and ERT.

Keywords Interval number · Green production inventory model · Greening innovation · Emission reduction technology · Particle swarm optimization

1 Introduction

The world is experiencing a progressive rise of worries about the loss of non-renewable resources and environmental harms caused by diverse industrial operations. The problem is getting worse due to the greenhouse gases released by conventional home appliances and transportation-related activities. At the same time, consumers are becoming more and more conscious of the environment every day. Also, Governments are encouraging manufacturing companies to

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EMPOWERMENT OF MUSLIM WOMEN IN WEST BENGAL

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Abstract:

According to the 2011 census, 48.2% of India's total population is female. We know that the goal of human development is inextricably linked with the empowerment of women in our country. For the sustainable development of the Indian economy, women empowerment is highly prioritized. Women are a valuable human resource of any country in the world. Women's empowerment has been recognized as a central issue since independence. Now in the 21st century women empowerment has become a global issue. Although many women in our country are empowering themselves, but still there are some Muslim women in our country who are lagging behind in education and development. Muslim women have always been socially and economically backward in our country. Their low participation in education is a hindrance in achieving the goal of universal education. Indian Muslim women are far behind in attaining the status of literacy due to their poor economic status and prejudice. The Constitution of India provides for equality in educational rights and the right to freedom of religion and the right to protect the interests of minorities. Apart from providing all facilities, Muslim girls and women are still lagging behind in the whole field and deprived of all opportunities especially in the state of West Bengal. Empowerment of Muslim women is an important issue when talking about the rights and development of Muslim women. This paper highlights the empowerment of Muslim women in West Bengal.

Keywords: Empowerment, Development, Education, Muslim Women

The word 'woman' has different forms and roles in our society. Women are the creators of the new generation and the transformer of the great society. Thus, women's empowerment has become a major challenge in the 21st century, which aims to increase women's self-reliance, confidence and inner strength to determine their own choices in life. Education is one of the means of empowering women by imparting proper knowledge, skills and confidence. Muslim women have been exploited in all spheres of life for years. Hence it is the duty of a nation to empower Muslim women educationally. The main objective of the study is



Environmental History of Bankura District

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Abstract:

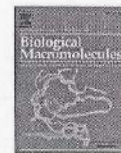
This work focuses on the Environmental History of Bankura District: A Study of the historical relationship of man and nature in Bankura. It discusses the interface between ecology and society in Bankura district. The study examines the socio-economic activities of the people of Bankura and also the interaction between their culture and nature which is influenced to a great extent by Environment. There is an inseparable relationship between the overall activities and achievements of man and his position and environment. The overall human activities are organized in a particular geographical environment. The political change, social and cultural evolution of any country depends on the geographical conditions. The geographical location of a country - mountains, rivers, climate- affects the way of life and political aspirations of the people of that country as a whole. Bankura is a diverse district and the diversity of this environment has been influencing the society, economy and culture of different regions.

Keyword: Environment, Bankura District, development, Geographical condition, Socio-economic activity.

The term Environment traces its origin from the French word 'environ' which means surroundings. The environment comprises of the surroundings including the air, the water and the earth. It refers to the surrounding (both living and non-living) of the living species. The human-beings, plants, animals and other living beings operate in the environment. Environment is also sometimes referred to as habitat. Living things such as animals and plants interact with both living and non-living things. Similarly, non-living things such as soil, water, climate, temperature, sunlight and air interact with other non-living and living things. There is an intimate and harmonious relationship between living organisms and environment. The interaction of living beings including human beings brings changes in the environment. Similarly, living beings also display changes within them with the change in the environment. Environment is very essential in every aspect of life. Human beings utilize natural resources for development of civilization. For the betterment of human life, men use the environment in different sectors of developmental activities. The plant and animals also depend upon the environment. Therefore, the survival, reproduction, growth and development etc. of living organisms are done under the environment.

The Encyclopaedic definition of Environment are:- The sum total of all condition , agencies and influences which effect the development , growth , life and death of an organism , species or race (The Universal Encyclopaedia).

Sahajahan Zamadar



Chitosan based micro and nano-particulate delivery systems for bacterial prodigiosin: Optimization and toxicity in animal model system

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ARTICLE INFO

Keywords:
Prodigiosin
Drug delivery system
Zebrafish

ABSTRACT

Prodigiosin, a red bacterial pigment is a compound with promising therapeutic properties. Major hindrance in applying prodigiosin in pharmaceuticals is the insolubility in water and lack of bioavailability. This study aims to optimize two different types of chitosan based delivery systems, microspheres and nanoparticles for prodigiosin derived from *Serratia marcescens* NITDPER1 through Taguchi method and determine toxicity perspectives. The results revealed 0.5 % chitosan, 1 % sodium-alginate and 5 % CaCl₂ optimum for microsphere and 0.1 % chitosan, 1.5 % TPP and 1.5 % acetic acid for nanoparticle with the entrapment efficiency and maximum release of 89.27 ± 1.2 % and 87.42 ± 1.9 % for microspheres and 96.36 ± 1.7 % and 91.58 ± 2.1 % for nanoparticles. Particle size was 93.03 ± 0.3 μm and 75.1 ± 1.4 nm for micro and nanoformulations. Kinetic parameters of release fitted best with Korsmeyer-Peppas model. Swelling index of microsphere and nanoparticles in pH 6.8 was 799 ± 7.1 % and 35.3 ± 2.1 % respectively. FESEM, FT-IR and XRD revealed spherical morphology, preservation of prodigiosin functional groups and amorphous nature of the formulations. Anticancer IC₅₀ values were (μg mL⁻¹) 11.7 ± 1.2, 10.8 ± 1.4 and 9.4 ± 0.8 for free prodigiosin, microsphere and nanoparticles respectively. Toxicity studies on HEK-293 cell line, *Daphnia magna* and zebrafish model determined non-toxic nature of the bacterial prodigiosin and its formulations revealing suitability of animal system application.

1. Introduction

The everyday appearance of multi-drug resistant pathogens, oxidative stress due to lifestyle changes and increased incidence of diseases like cancer, endures to be a vital problem in pharmaceuticals and this makes new generation alternative drugs high in demand [1]. Prodigiosin, a red bacterial pigment mainly found in the Genera *Serratia*, is a natural compound with promising antibacterial, antioxidant and anticancer properties [2–4]. This compound has proven enormous potential as antimalarial and anti-inflammatory agent in recent years [5]. The major hindrance in the path of application of this compound as a therapeutic agent is the insolubility in water leading to lack of bioavailability [5]. As a result, for successful utilization of this compound, it is a necessity that proper delivery vehicles are designed with biocompatible properties [6]. Drug formulations like microspheres have become lucrative as delivery vehicles due to consistent distribution of the drug in the GI-tract, better drug absorption, lesser irritation, and lesser intestinal

retention of wall material [7]. On the other hand, polymeric nanoparticles are lucrative drug delivery systems which provide better solubility, permeability and stability in GI environment [8]. However, for both microspheres and polymeric nanoparticles, to reach up to the desired level of drug entrapment and release, optimization studies are in demand [9,10]. Among the various optimization tools, Taguchi methodology is one of the most beneficial ones, which can provide optimization of multiple factors concurrently and generate quantitative data through fewer experimental trials [11].

Another important factor while considering delivery system for any natural compound is the toxicological evaluation of such formulations before they can be applied in living system [12]. *In vitro* toxicology screening methods are important to reduce the attrition of novel drugs during discovery and development stages [13,14]. Yet for application of any drug, *in-vivo* models are also important for safety assessment to bring the same to market. There has been shift in the preference of *in-vivo* drug toxicity models hugely in recent times where in place of the

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<https://doi.org/10.1016/j.ijbiomac.2022.10.072>

Received 27 July 2022; Received in revised form 29 September 2022; Accepted 8 October 2022

Available online 12 October 2022

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Subhasree Majumdar



Challenges in developing strategies for the valorization of lignin—a major pollutant of the paper mill industry

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Received: 3 August 2022 / Accepted: 1 November 2022
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Abstract

Apart from protecting the environment from undesired waste impacts, wastewater treatment is a crucial platform for recovery. The exploitation of suitable technology to transform the wastes from pulp and paper industries (PPI) to value-added products is vital from an environmental and socio-economic point of view that will impact everyday life. As the volume and complexity of wastewater increase in a rapidly urbanizing world, the challenge of maintaining efficient wastewater treatment in a cost-effective and environmentally friendly manner must be met. In addition to producing treated water, the wastewater treatment plant (WWTP) has a large amount of paper mill sludge (PMS) daily. Sludge management and disposal are significant problems associated with wastewater treatment plants. Applying the biorefinery concept is necessary for PPI from an environmental point of view and because of the piles of valuables contained therein in the form of waste. This will provide a renewable source for producing valuables and bio-energy and aid in making the overall process more economical and environmentally sustainable. Therefore, it is compulsory to continue inquiry on different applications of wastes, with proper justification of the environmental and economic factors. This review discusses current trends and challenges in wastewater management and the bio-valorization of paper mills. Lignin has been highlighted as a critical component for generating valuables, and its recovery prospects from solid and liquid PPI waste have been suggested.

Keywords Biorefinery approach · Carbon dots · Lignin nanoparticles · Pulp and paper industry wastewater · Paper mill sludge (PMS) · Microbial treatment

Responsible Editor: Guilherme L. Dotto

Highlights

- Biorefinery approach for valorization of paper mill wastes.
- Conventional treatment strategies.
- Need for microbial treatment of paper mill wastewater.
- Biological methods of solid waste utilization.
- Usage of lignin into specialized valuables.

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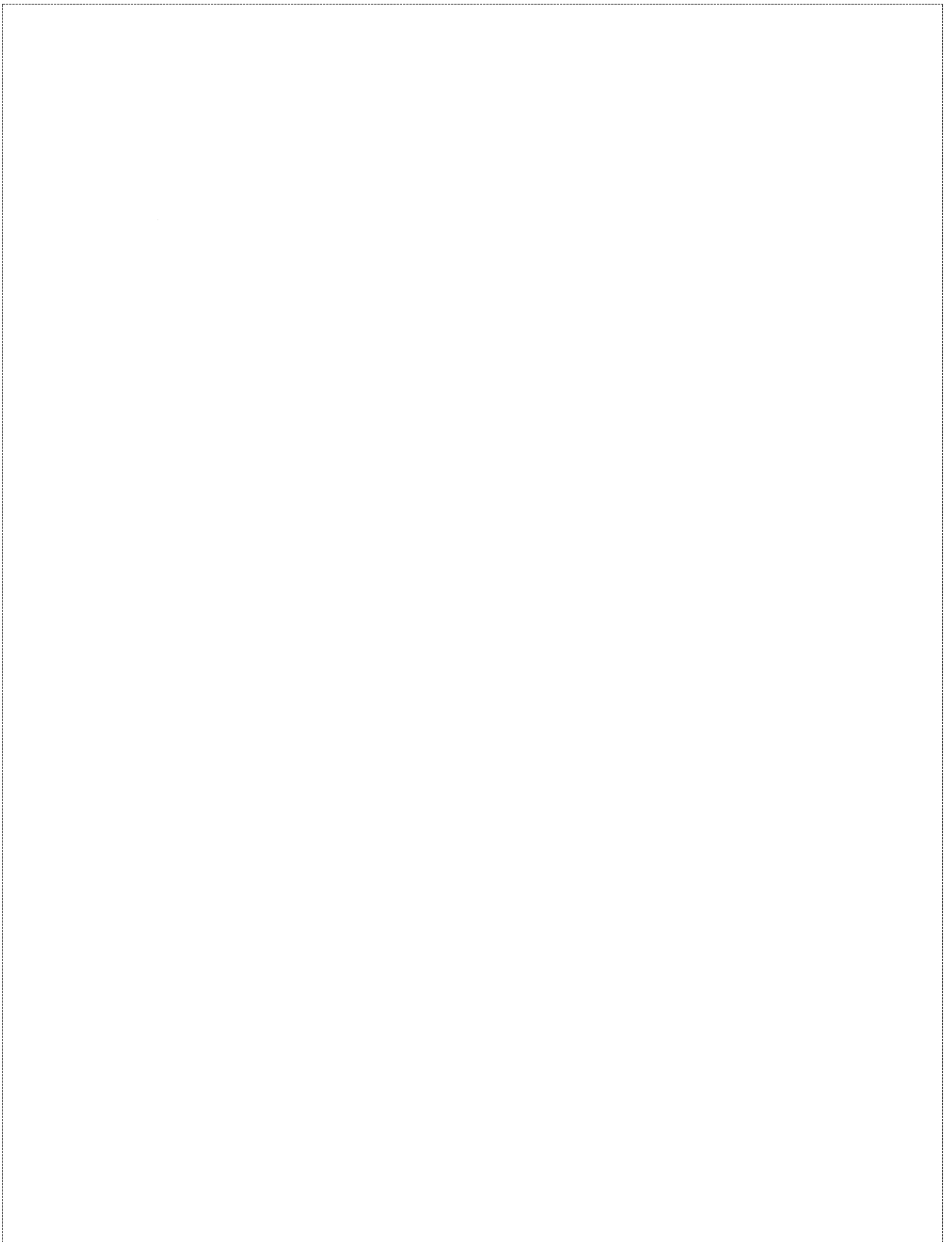
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Introduction

Manufacturing enterprises have a significant role in strengthening the financial system of any nation. During the manufacturing process of different products, these industries yield harmful waste in the form of gasses, solids, and liquids which deteriorate the quality of the environment and directly impact human health (Murillo-Luna et al. 2011). As industrial development began in the late twentieth century, industrial wastewater generation increased significantly. Industrial wastewater contains many new organic compounds generated yearly due to industrial activities. Technological changes in the manufacturing unit also change the combination of discharged and, in turn, wastewater characteristics (Tchobanoglous et al. 1991). Several compounds generated from industrial processes are strenuous and expensive to treat by traditional wastewater processes.

Interestingly, the wastewater also represents a repository of valuable by-products. However, the trend toward converting waste into valuable materials is not practiced

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Journal of Bioscience and Bioengineering
VOL. XXX No. XXX, XXX, XXXX



REVIEW

Bacteria as biofactory of pigments: Evolution beyond therapeutics and biotechnological advancements

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Received 1 August 2022; accepted 18 January 2023
Available online xxx

Bacterial pigments are the wonder molecules of nature that have attracted the attention of industries in recent years. To date, various synthetic pigments have been in use in food, cosmetics, and textile industries that have not only shown a notoriously toxic nature but also posed threat to the ecosystem. Moreover, nutraceuticals, fisheries, and animal husbandry were highly dependent on plant sources for products that aid in disease prevention and improve stock health. In this context, the use of bacterial pigments as new-generation colorants, food fortifiers, and supplements can hold great prospects as low-cost, healthy, and eco-friendly alternatives. The majority of studies on these compounds were restricted to antimicrobial, antioxidant, and anticancer potentials to date. Each of these can be highly beneficial for the development of new-generation drugs, but their other potential niche in various industries that pose health and environmental risks needs to be explored. Recent advances in novel strategies of metabolic engineering, advancements in optimization tools for the fermentation process, and the design of appropriate delivery systems will greatly expand the market of bacterial pigments in industries. This review summarizes the current technologies for enhancing production, recovery, stability, and appreciable use of bacterial pigments in industries apart from therapeutics with proper financial aspects. The toxicity perspectives have been focused to emphasize that these wonder molecules are the need of the hour and their future prospects have been highlighted. Extensive literature has been studied to include the challenges of bacterial pigments from environmental and health risk perspectives.

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[Key words: Bacterial pigments; Eco-friendly alternative; Improvement strategies; Food colorant; Nutraceutical]

In the current global scenario, inclinations towards health and environmental concerns are on the rise and non-toxic resources are being taken into consideration in various industrial fields. In the last few decades, there has been an increasing trend toward the replacement of synthetic pigments with natural ones because of the strong consumer demand for the latter (1). Natural pigments can not only increase the marketability of products, but also have beneficial biological activities as antioxidants and anticancer agents (2). On the other hand, synthetic pigments cause considerable environmental pollution and adverse toxicological side effects which necessitate the exploration of various natural sources. Replacing synthetic pigments with microbial ones is an area of promise with large economic potential (3). Interestingly, various microorganisms give rise to such a variety of pigments with unique characteristics as a result of their connection with the ecosystem, but sadly their industrial applications are still scarce (4). Microorganisms have several advantages over plants as a source of these pigments in terms of availability, stability, and ease of downstream processing (5). Pigment production is also economically feasible and better yields can be obtained via bacterial gene manipulations (4). However, microbial pigments offer challenges due to their high

cost, lower stability, and variation in shades because of changes in pH, which can be overcome through biotechnological advancements in fermentation techniques and encapsulation methods (6). Among microbial sources, bacterial strains are advantageous over fungal species due to shorter incubation periods, easier fermentation, better product recovery and ease of genetic modification (1). Eventually, from an industrial perspective, bacteria come out as candidates of choice for natural pigments. Moreover, the simpler and faster bacterial culturing techniques allow continuous bioreactor operation, and the pigments can be extracted using a simple liquid-liquid extraction technique that aids in minimizing operation costs compared to fungi (3).

In the food industry, several synthetic pigments that offer vibrant hues are notoriously toxic for human consumption (6). Subsequently, the non-toxicity, biodegradability, and non-carcinogenicity of bacterial pigments have made them an attractive alternative in the food industry for coloration as well as fortification due to numerous health benefits (7). Similarly, the cosmetic industry is in no way lagging and bacterial pigment sources that can impart health benefits are also in demand (8).

Apart from minimizing health risks imposed by food coloring agents, bacterial pigments are also necessary to protect the environment. Textile industries produce and use approximately 1.3 million tonnes of dyes, pigments, and dye precursors, almost all of which are manufactured synthetically. In addition, their production process requires hazardous chemicals, raising concerns about

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1389-1723/\$ – see front matter © 2023, The Society for Biotechnology, Japan. All rights reserved.
<https://doi.org/10.1016/j.jbiosc.2023.01.008>

Please cite this article as: Dasgupta Mandal, D., and Majumdar, S., Bacteria as biofactory of pigments: Evolution beyond therapeutics and biotechnological advancements, *J. Biosci. Bioeng.*, <https://doi.org/10.1016/j.jbiosc.2023.01.008>

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Gender Discrimination in India: A Social Issue and its Solution

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ABSTRACT:

Gender is a common term whereas gender discrimination is only meant for women, because Women are the only victims of gender discrimination. Gender discrimination refers to unequal treatments or perceptions of individuals based on their gender. For gender discrimination, women do not have the same opportunities as men have regarding education, bright careers, political influence, and economic improvement. Gender discrimination is not determined biologically, but it is determined by socially and the discrimination can be removed by the proper and perpetuate efforts. Women are nearly fifty percent of the total population but their representation in public life is very poor. A Woman continues to bear the major load of the household work. Her primary role is often viewed by the society as housewife. Recognizing women's right and believing their ability are essential for women's empowerment and development. gender discrimination in Workplaces comes out in many different forms, but generally it means that an employee or a job applicant is treated differently or less favorably because of their sex, gender identity, or sexual orientation. Even though the words "sex" and "gender" have different meanings, laws against discrimination at work often use them interchangeably. This study deals with gender discrimination in India and its causes. Role of women in development, legislation and solution for gender discrimination will also discussed in this paper.

Key Words: Gender discrimination, Women's development, Education, Empowerment, and self confidence.

Introduction: Gender discrimination means discrimination based on a person's gender or sex, which more often affects women. For gender discrimination, women do not have the same opportunities as men have regarding education, bright careers, political influence, and economic improvement. Gender discrimination refers to unequal treatment or perceptions of individuals based on their gender. Nature doesn't discriminate men from women. But women worldwide have been the victim of inequality not only in terms of social and political rights but also on grounds of employment opportunities. In India, discriminatory attitude towards men and women have existed for generations and effect the lives of both genders. Although the constitution of India has granted men and women equal rights, gender disparity still remains. Gender discrimination violates human rights. These are mostly seen in family land sharing among sisters and brothers.

Ramprasad Kanrar



Role Of Women In The Rituals Of Smiriti And Dharmashastra

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Abstract

Smiriti and Dharmashastra are thriving-acknowledged fictitious gem in the Sanskrit Literature. The minute illustration of the ethos, conviction and social amalgamation of the era is manifest that endowed a lot to apprehend tangible enormousness of the incarnation of people. It is alleged that role of women was alluring upright at that stint. The encryption of hallowed byelaw stance notorious after appellation of Smriti and Dharmashastra are illustrious cipher of demeanor of that stint. It is palpable from these Smritis that bloke was considering women as his precise paraphernalia because of ascendancy of Pitrusattmak ordering in civilization. The ailment of women was accurate, appalling and perplexing. There is allusion of particular rigid imperatives for the women and ensured few veracious and convinced no yearning. They were victimized on the basis of gender. The patriarchy under Hindu concord has been a concern of discerning role of female in contemporary civilization. Their chunk in the clan and in the headway. This study has envisioned at analyzing the role of women within the eminences of Hindu convention, ceremonial confederationsand social prominence. This artefact has been fortified the diagnostic appraisal of Hindu antediluvian literatures and dogmata along with communal concords and conventions. The magnitude has concord that the Hindu accordance has a middling assenting sway on communal conscription that have a sturdy progressive stimulus on women life. The Smriti and Dharmashastratranscripts are impact that encumbered the Hindu women to yield chunk the prominent role in their clan and the communal.

Keywords: women's ailment, Dharmashastra's enigma, Smriti's orations.

Anupam Mandal



ISSN : 0975-1769

संस्कृतविमर्शः

(यू.जी.सी. केयर-मानिता विद्वत्परिशीलिता अन्तराष्ट्रीय शोधपत्रिका)

(An UGC-CARE Listed Peer-Reviewed International Research Journal)

नवोत्कर्षः

अङ्कः 22

(जनवरी 2022 - जून 2022)

वर्षः 2023

प्रधानसम्पादकः

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संसदः अधिनियमेन स्थापितः

देहली

Sadhan Kumar Patil

Social Studies in Mudrārākṣasaṃ

Dr. Sadhan Kumar Patra*

Literature cannot be written without society and culture. We all know that poetry is a reflection of our social life- “तद् रूपारोपात्तु रूपकम्”। The form of reality is imposed in drama. Literature is formed with happiness, sorrow, hope, despair, laughter, tears, joy and pain of the people living in the society. Poets are the people of the society. So, the reflection of the society is inevitable in their poetic work, whether knowingly or unknowingly. The history of rise and fall of Nanda and Maurya dynasty in Pataliputra is the subject-matter of the play "Mudrārākṣasaṃ". In this play, these political events revolve around different characters. The characters represent different classes of people in the society. However, the direct role of the common people in the cycle of political change is not found in this play. But despite the lack of overall familiarity with public life, the dialogue of different characters gives a clear idea of the social, economic and political environment of the time.

Some of the verses in "Mudrārākṣasaṃ" have topics like social education. In the first act of the play, an excellent verse is reflected through the face of the sutradhara.

चीयते वातिशस्यापिसत्क्षेत्रपतिता कृषिः।
न शालेस्तम्बकारिता वपुर्गुणमपेक्षते॥ (Verse-3)

In the above verse it is said that although the farmer is foolish, the seeds sown in good land give good harvest. The richness of Shali paddy in a bunch of sheaves is not due to the sown of farmer but to the fertile land. Good land fertility is shown here. Good crops are possible only in fertile soil. In the social sphere too, there are meaningful indications that good people give good results and bad people have no hope for good.

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