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BOOKS AND CHAPTERS IN  
EDITED VOLUMES/BOOKS  
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## Research Column-I

Multi-disciplinary



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25, Vajrapur, Pimpri, Maharashtra, India  
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Phone: +91 22 27081084  
Email: info@researchfoundation.org  
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Price: ₹50.00

ISBN 978-81-947764-3-7



## Research Column-I

Multi-disciplinary

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***Published by:***

**Recherche Foundation**

25, Ganga Puram, Rajpura Road, Near Yashoda Kunj,

Meerut, Uttar Pradesh, India-250001

Mobile: +91-8630997785

Email: [rechefoundation@gmail.com](mailto:rechefoundation@gmail.com)

## **Research Column-I (Multi-disciplinary)**

First Edition- 2021

ISBN: 978-81-947764-3-7

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**Price: Rs 950/-**

***Printed by:***

Metro Printing Press

B.K. Market, Budhana Gate

Meerut, Uttar Pradesh

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## Chapter-20

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### **A Study on the Growth and Development of Women's Empowerment through Education in the District of Bankura**

**Paramita Adhikari<sup>1</sup>, Sreyam Roy<sup>2</sup> & Krishnendu Sen<sup>3</sup>**

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#### **Abstract**

*While a majority of the women still face discrimination and gender bias, in the last few decades, the number of women successful in politics, technology and business etc. is definitely on the rise. Society has started seeing women in a different perspective. They work as lawyers, nurses, doctors, social workers, teachers, secretaries, managers and officers etc. There is no profession today where women are not employed. However, it is true that working women have to face problems by virtue of their sex. For centuries women have been subjected to exploitation and torture, physically, sexually and mentally. There are innumerable challenge and problems faced by them both at home and workplace. What we generally see today, in addition to various media and journal reports is that in the workplace women generally face mental stress, sexual harassment, discriminatory practices, safety and security issues etc (Martin, 1989). India's patriarchal society thinks of women only as homemakers and sexual objects and is generally subjected to exploitation and torture (Dube, 2001). All over the world women remain beyond the reach of development project. In all components of human development, women's position is lower than men. In this part of our study is intended to estimate, empirically, the empowerment level of women of Bankura District. Using a set of primary data the significant determinants of the women's empowerment to be*

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*explored. In this study, we examine the effects of several 12 individual and community characteristics like age, education, occupation, income, financial inclusion, membership in SHGS, caste etc. on women's empowerment.*

**Keywords:** *Women empowerment, Development, Society.*

#### **Objectives of the Study**

Empowerment is not only qualitative in nature; it has a number of definitions also depending on the context of the study. Meaning of empowerment varies from person to person and region to region, caste to caste, ethnicity to ethnicity. So, it is not very easy to propose a common measure for empowerment or quantify it. We want to divide our whole study into three steps. First, we have tried to quantify women's empowerment. Second, we assess the impact of women's empowerment on household welfare and third step is the exploration of the determining factors of women's empowerment in the district of Bankura, West Bengal. There are several dimensions of women's empowerment at the household level as well as at the community level. Therefore, it is necessary to





# THE CONTEMPORARY ISSUES IN ECONOMICS, BUSINESS AND ACCOUNTING

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EDITOR

**DR. KAJALBARAN JANA**

## **THE CONTEMPORARY ISSUES IN ECONOMICS, BUSINESS AND ACCOUNTING**

*Editor: Dr. Kajalbaran Jana*



**RED'SHINE PUBLICATION PVT. LTD.**

Headquarters (India): 88, Patel Street, Navamuvada,  
Lunawada, India-389 230

Contact: +91 76988 26988

Registration no. GJ31D0000034

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Text © *EDITOR*, 2021

Cover page ©RED'SHINE Studios, Inc, 2021



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ISBN: 978-93-90937-79-0

ISBN-A: 10.9390937/795

DIP: 18.10.90937/795

DOI: 10.25215/9390937795

Price: ₹ 700/-

June, 2021 (First Edition)



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Printed in India | Title ID: 90937790

## Chapter 12

### A Study of Corporate Social Responsibility Practices in India with Respect to Changing Global Scenario

Sreyam Roy, Krishnendu Sen, Manisha Choudhury

#### Abstract

In recent times, there has been an emergence of Corporate Social Responsibility (CSR) in the corporate sector globally. Majority of the world organizations (UNDP, OECD, European Commission, MNCs & World Bank) today have actively supported the CSR campaigns that have been initiated by various corporates over the world. Though practices of CSR are still philanthropic, now there has been a recognition of the relevance of CSR initiatives in community development, institutional growth and nation-building. CSR has a major role in synergizing the efforts of organizations and the social sector agencies towards the development and growth of societal objectives at large. In India too the corporate sector is well aware of its CSR objectives and its direct influence on the stakeholders as necessary provisions have been made mandatory following an amendment to the Companies Act, 2013 in April, 2014. The new Companies (Amendment) Act, 2019 has also mandated certain provisions for CSR and monetary penalty as well as imprisonment in case of non-compliance of such provisions.

This paper will discuss the various emerging CSR initiatives that are being undertaken by the Indian companies and suggest a standard set

of CSR practices leading to global convergence and coherence among such practices.

**Key Words:** CSR, Community Development, Institutional Growth, Stakeholders, Convergence

CSR can be regarded as a self-regulating and voluntary mechanism by which the corporates give back to the society from which it has extracted many benefits for its development. The companies need to abide by a set of legal, social, ethical and ecological standards and also at the same time measure the impact it has on the society encompassing different social, economic and environmental aspects. CSR acts as a bridge between the society and corporate business practices through various social interactions.

Corporate Social Initiatives are major activities undertaken by a corporation to support social causes and to fulfil commitments to CSR (Kotler & Lee). Simply stated, CSR is a concept which suggests that commercial corporations must fulfil their duty of providing care to the society (S.K. Agarwal).

According to this concept a merger of business practices and social investment initiatives is made while fulfilling its profit and revenue targets. For example, steps taken by a corporate entity to



# **COVID-19 & YEAR 2020**

**Volume I**

**Editor**

**Dr. Smritiratan Tripathy**

**Associate Editors**

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NOTION PRESS

India. Singapore. Malaysia.

ISBN 9798885300049

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# Effects of Nutrition on Immunity and COVID-19 Susceptibility

Soma Majumder

Assistant Professor, Department of Physiology  
Vijaygarh Jyotish Ray College, Kolkata - 700032

## Abstract

While all age groups are affected by the COVID-19 pandemic, the elderly, the under nourished people, and those with underlying medical conditions are at great risk. The high rate of consumption of saturated fats, sugars, and refined carbohydrates contribute to the prevalence of obesity and Type-2 diabetes that poses increased risk for severe COVID-19 mortality. Besides respiratory failure, other features have also been described as common in critically ill patients of COVID-19, among them infiltration of immune cells into lung injuries, high levels of inflammatory response, thrombosis, and multi-organ failure. Research findings state that nutrition influences immune strength thereby protecting our body from the attack of pathogens. Some findings have confirmed that the significance of adequate and appropriate nutrients for the proper functioning of the cells in the immune system. These nutrients improve resistance to infection by restoring immune function. Diet rich in zinc, magnesium, iron and Vitamins A, B complex, C, D and E are responsible to support immune function. Fruits and vegetables like spinach, carrots, peaches, ginger, garlic, turmeric, etc, that contain the highest micronutrients are especially recommended.

Corresponding author : majumdersoma9@gmail.com

Key words: Nutrition, Immune system, Vitamins, Micronutrients, COVID-19

## Introduction

Covid-19 Virus was first identified in Wuhan, China, in December 2019, and recognized as a pandemic on March 11, 2020, by World Health Organization (WHO). COVID-19 pandemic has affected the human population around the globe. It has been

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First Published : April, 2021

Jacket Design : Ritodip Ray

D. T. P. Compose  
Progressive Publishers  
37A, College Street  
Kolkata-700 073

Price : ₹ 000.00  
*Rupees ..... only*

ISBN : 978-81-8064-379-8

PRINTED IN INDIA

Published by Sri Kamal Mitra for Progressive Publishers  
37A, College Street, Kolkata-700 073 and printed at  
Narayan Printing, 3, Muktarambabu Lane, Kolkata-700 007

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# Sino-Indian Relations: Historical Perspective and Contending Contemporary Dynamics

*Critical Analysis on the Changing  
Dimensions: Ancient Period to  
Galwan Valley Crisis*

*Edited By*

Utpal Roy  
Chandan Roy  
Tilottama Mukherjee



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## Sino-Indian Relations: An Indian Perspective

Samiparna Rakshit

### Abstract:

*The article would focus primarily on the Sino-Indian relations dating back from the birth of the People's Republic of China (PRC) till 2019. It will discuss vividly and critically all the issues of bilateral relationship between these two large nations of the world, India and China, decade wise. The fascinating part of this article is discussion on some less known facts of Sino-Indian relations from military perspective. As an obvious culmination the overall logical purview would definitely portray the Indian point of view.*

**Key Words:** Bilateral relation, Border dispute, Economic competition, Global and regional governance

Sino-Indian relations or Indo-Chinese relations refers to the bilateral relationship between the People's Republic of China (PRC) and India. Although the relationship has been cordial, there are border disputes and economic competition between the two countries that have at times led to strained relations. The modern



The edited volume mainly highlights the bilateral relations and crises between India and China from the ancient period to Galwan Valley Crisis (1st April 2020). Authors mainly from different specializations have contributed their best thought, findings, and observations on this particular issue. The book will also help to understand the changing historical dimensions of the bilateral relations between the same. The book explores the historical perspective of the Sino-Indian relations and highlights the present bilateral diplomatic crisis, and also indicates the further way out from the crisis. The book as well signifies the post-Galwan bilateral crisis and its effect on the bilateral trade relation between India and China.

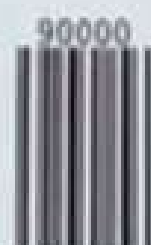
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ISBN 9798719383378



9 798719 383378

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DR. SUKANTA KUMAR PRADHAN  
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# **Education in Emerging Indian Society**

Dr. Sukanta Kumar Pradhan  
Dr. Tage Yama

© Editor

First Published 2021

ISBN: - 978-81-953203-6-3

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***Published in India by***

**RUDRA PUBLISHERS & DISTRIBUTORS**

C-293A, Street No. 3, West Karawal Nagar, New Delhi - 110094

Cell : 9312442975 E-mail : [rudrapublishers@yahoo.com](mailto:rudrapublishers@yahoo.com)

Printed at Research Press India New Delhi.



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# Inclusive Educational Policies for Disabled Children in India

Dr. Samiparna Rakshit<sup>1</sup>

## ABSTRACT

The present paper traces all the acts, laws and provisions initiated by the Government of India and private enterprises for the disabled children in India. Moreover, all the legal and institutional facilities will be critically analysed to find out whether these policies were properly implemented in India. In order to get a holistic understanding of the educational scenario of the children with special needs, some vital terms related to inclusive education, disability and special needs have also been defined. The paper tries to find out the crux of the practical problem that the disabled children usually face in everyday life. The impediments that pose as an enormous obstacle in front of the disabled children in the ground reality in receiving formal education, has been discussed vividly. The outstanding part of the paper is that it not only brings out all the probable practical barriers that hinder successful implementation of the educational policies promulgated by the Government of India but also presents a bunch of practical solutions to these difficulties. The paper will also throw a light on how far commitment towards education for children with disabilities has been successful in the country.

**Keywords:** Policies of Government of India, Disability, Education for the children with special needs

According to a recent UN report, 75 per cent of children with disabilities in India do not attend any educational

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## Antimicrobial Activity of Spices <sup>†</sup>

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<sup>†</sup> Presented at Virtual symposium to observe World Antimicrobial Awareness week “Applications of biotechnology and microbiology with special emphasis on Antimicrobial resistance”, 18-24 November 2020, Chennai, India

Received: 10.11.2020; Revised: 15.11.2020; Accepted: 17.11.2020; Published: 10.01.2021

**Abstract:** Spices not only enhance the taste of our food but also increase their shelf life. During cooking and grinding, essential oils of spices are released into the medium, responsible for the taste and antimicrobial properties. The samples of our choice for the investigation were Clove and Black pepper, two of the most commonly used spices in Indian cuisine. Methanol, Ethanol, Acetone, and Aqueous extract were prepared using mortar and pestle, which were subjected to agar well diffusion against some of the known pathogens, which are *S. aureus*, *B. subtilis*, *K. pneumoniae*, *E. coli*, *A. niger*, and *P. notatum*. Methanol extract of Black pepper showed effectiveness against *S. aureus*, *B. subtilis*, and *K. pneumoniae*, whereas Ethanol and Acetone extract showed activity only against *S. aureus* and *B. subtilis*. Methanol, Ethanol, and Acetone extract of clove inhibited all the test organisms, whereas the Aqueous extract inhibited only the fungal strains. Phytochemical analysis of Black pepper extracts revealed the presence of Saponins and Glycosides as the compounds responsible for the antimicrobial property. Whereas in the case of clove, Flavonoids and Resins were detected to be responsible for the antimicrobial property. Alkaloids, Glycosides, Steroids, and Terpenoids were common in Methanol, Ethanol, and Acetone extract. Infrared spectroscopy was used to confirm the presence of these compounds. Hence, it can be concluded that these are the compounds responsible for the samples' antimicrobial properties, and they can be further investigated for the development of nutraceuticals.

**Keywords:** phytochemical analysis; infrared spectroscopy; Alkaloids; Glycosides; Steroids; Terpenoids; Saponins; Flavonoids; Resins.

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### Funding

This research received no external funding.

### Acknowledgments

At first, I would like to express my deepest gratitude to Dr. Prasenjit Das (Head of the Dept.) and Ms. Sahana Ghosh, Faculty of the Department, who guided me throughout this project. His worthy suggestions, symbolic optimism, and unremitting inspiration have compassed me in the right direction. I would like to thank the honorable Principle of Vijaygarh Jyotish Ray College, Dr. Rajyasri Neogy, all the teachers, scholars, and laboratory assistants of the Department of Microbiology and Chemistry of Vijaygarh Jyotish Ray College, for cooperating with me throughout. Lastly, I would like to thank the Department of Chemistry, Jadavpur University, for their co-operation.



### **Conflicts of Interest**

The authors declare no conflict of interest.

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Bygyapan Prasanga (Bengali Version)  
by Arnab Kr. Banerjee & Sri Sunandit Chaudhury

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Edition : 10th, September, 2021

ISBN :978-81-949780-9-1

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Alpana Enterprise  
9, Bir Ananta Ram Mondal Lane,  
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Mobile : 9836821125 / 9804135725  
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Type Setting :  
Ad-Wave Communication  
Kolkata-700050

Printed by :  
S. I. Pvt. Ltd.,  
Kolkata- 700 009

Cover Design By :  
Chandra Mondal

Price : 190.00



**Television Sangbadikata**  
**By Sunandit Chaudhury**

*Published by*

Sunandit Chaudhury, Microsyst Videotronix  
A/130, Bagha Jatin, Kolkata - 700092

**প্রথম প্রকাশ:** ২১ মে, ২০২১

**গ্রন্থস্বত্ব:** © সৃজনী চৌধুরী

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**ISBN: 978-93-5457-906-6**

**মূল্য: ১৯০ টাকা**

**BHARATIYA SAMBADIKATAR ITIHAAS,**

*History of Indian Journalism.*

*Edited by Dr. Sabyasachi Chattopadhyay, Arnab Bandyopadhyay, Anirban Basu R Chowdhuri.*

*Published by Surjendu Bhattacharya, Rupasi Bangla, 20A Radhanath Bose Lane, Kolkata-700 006.*

*Distributor : Rupali, 206 Bidhan Sarani, Kolkata-700 006*

*Rs. 280.00*

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প্রথম প্রকাশ

২২ ডিসেম্বর ২০০৯

দ্বিতীয় সংস্করণ

জুলাই ২০১১

পরিমার্জিত পরিবর্ধিত তৃতীয় সংস্করণ

জুলাই ২০১৬

পরিমার্জিত পরিবর্ধিত চতুর্থ সংস্করণ

নভেম্বর ২০২১

প্রকাশক

সূর্যেন্দু ভট্টাচার্য

২০এ রাধানাথ বোস লেন

কলকাতা : ৭০০০০৬

দূরভাষ : ৯৪৩২০ ৬২৯২৮

পরিবেশক : রূপালী, ২০৬ বিধান সরণী, কল-৬

প্রচ্ছদ : বিপ্লব মণ্ডল

মুদ্রণ

রবীন্দ্র প্রেস

১১এ জগদীশ নাথ রায় লেন, কলকাতা ৭০০০০৬

মূল্য : ২৮০.০০ টাকা

ইতিহাস, সাহিত্য ও সাংবাদিকতার বিশিষ্ট অধ্যাপক ও গবেষকবৃন্দের যৌথ প্রয়াসে ভারতীয় সাংবাদিকতার বর্ধমান বিকাশের কালানুক্রমিক ইতিহাসকে গ্রন্থিত করার চেষ্টা হয়েছে এই বইতে। সামগ্রিকতাকে মাথায় রেখে কোনো কোনো সাংবাদিক সম্পাদকের অবদান কিংবা কোনো তাৎপর্যপূর্ণ দেশীয় পত্রিকার ইতিহাস যেমন ঠাই পেয়েছে এই বইয়ের এক-একটি অধ্যায়ে, তেমনই আবার কোনো কোনো লেখায় নির্দিষ্ট একটি সময়কালের সংবাদপত্র তথা সাংবাদিকতার ইতিহাস তুলে ধরা হয়েছে। আলোচিত হয়েছে সংবাদ-সংস্থার কথাও। হিকির বেঙ্গল গেজের থেকে আধুনিক অনলাইন সাংবাদিকতার ইতিহাস — ভারতীয় সাংবাদিকতার এই বিশাল প্রেক্ষাপটকে বাংলা ভাষায় দুই মলাটের মধ্যে তুলে ধরার চেষ্টা করা হয়েছে এই বইতে।

—ড. সব্যসাচী চট্টোপাধ্যায়—

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—ড. অর্ণব বন্দ্যোপাধ্যায়—

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রূপসী বাংলা



ISBN 978-81-909990-4-5



Introduction to New Media  
*by: Dr. Arnab Kumar Banerjee, Dr. Bakul Srimany*

First Published  
2021

Published by  
RUPALI  
Surjendu Bhattacharya  
Subhaspally, Khalisani,  
Chandannagar, Hooghly.  
Mob : 9432062928  
E-mail : rupalipublication@gmail.com

©  
Dr. Arnab Kumar Banerjee, Dr. Bakul Srimany

Cover Designed by  
Dr. Bakul Srimany

**Printed By :**  
New Kalimata Printers  
19A/H/2 Goabagan Street  
Kolkata-700 006

Price : Rs. 200/-



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Dr. Bakul Srivastava has worked in many national and international media houses and has been engaged in the media industry for a decade. She holds PhD in digital media and science communication. Her research interests include digital media communication, science communication, web journalism, and multimedia content development and design. She has a longstanding track record of working as an editor for many well-known web portals and e-magazines. She has worked as a media educator at a range of Indian and international institutions, colleges, and universities. She has published papers on digital media communication in various national and international journals. As a media educator and researcher, she has garnered several honours, including state, national, and international recognition for her work on an online platform with digital learning multimedia tools and its various approaches. She is currently employed as a faculty at the Department of Journalism and Mass Communication, Vijaygarh Jyotish Roy College (affiliated with the University of Calcutta).



+91 9432062928

ISBN 978-81-932224-7-9



9 788195 222476 >

# REFLECTION

*Edited by*  
**Rajyasri Neogy**



**Vijaygarh Jyotish Ray College, Kolkata**



**Scholars' Book Hub**  
**Kolkata, West Bengal**



**Reflection**

**Editor - Dr. Rajyasri Neogy**

1st Edition : 24th January, 2022

Scholars Book Hub Paper Back

ISBN: 978-81-955982-2-9

Published by: Santanu Banerjee, Scholars Book Hub, 45,  
Devinibad Road, Dumdum, Kolkata. Pin : 700 074 on behalf  
of Vijaygarh Jyotish Ray College, 8/2 Bejoygarh, Kol-74.

Phone No. 9231923292

Printed by : Kalachand Vidyalankar Publisher and  
Distributor, 24, Gaurinath Sastri Road,  
Kolkata - 700 055

Price :Rs.300 INR

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## *preface*

Vijaygarh Jyotish Ray College is a multi facility college. This college has a long history of providing quality education to all sections of the students irrespective of caste, creed and economic condition of the students. All teachers are well qualified, about fifty percent of teachers have doctoral degree, some are pursuing ph.d. Most of the teachers regularly presenting their articles in different seminar and conferences, publish their articles in journal, books etc. The college authority has taken initiative with the help of publication cell to publish a book reflecting different area to give recognition and to encourage faculties. IQAC, Research and Guidance cell and publication cell encourage each individual faculty to convert their thinking to writing form. Also college authority is taking initiatives with IQAC, Research and Guidance cell to organize many research oriented programmes, programmes on research methodology, to sensitize young faculties to pursue research work. The present book " Reflection" is an another outcome of these efforts. This book truly reflect the thinking of different area. Any reader of any definite specialization will be satisfied with this edited book. I believe that this initiative will be an another feather of the publication initiative of Vijaygarh Jyotish Ray College. I hope that faculties will get energised to contribute more and more. With this not only teachers and students but also academics will be rich. Congratulations to all contributors.

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# **Diet , Immunity and Infectious Diseases**

*Edited by*

**Rajyosri Neogy**



**Vijaygarh Jyotish Ray College**



**Scholars Book**



## **Diet,Immunity and Infectious Immunity**

1st Edition : 24th January,2022

Sholars Book Hub Paper Back

1st Edition

ISBN:

**Editor -Rajyosri Neogy**

Published by: Santanu Banerjee on behalf of scholars  
Book Hub,45, Devinibad Road, Dumdum, Kolkata -  
700 074

Printed by : Kalachand Vidyalankar Publisher and  
Distributor, 24, Gaurinath Sastri RToad, Kolkata -  
700 055

Price :Rs.300 INR

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1st Edition :2nd December,2021  
Sholars Book Hub Paper Back

ISBN : 978-81-95598-9-8

**Editor in Chief- Dr. Rajyasri Neogy**

**Published by:** Published by: Santanu Banerjee, **Scholars Book Hub**,45, Devinibad Road, Dumdum, Kolkata. Pin : 700 074 on behalf of Vijaygarh Jyotish Ray College, 8/2 Bejoygarh, Kol-32.

**Printed by :** Kalachand Vidyalankar Publisher and Distributor, 24, Gaurinath Sastri RToad, Kolkata - 700 055

Price :Rs.300 INR

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## **Diet, Immunity and Infectious Diseases**

1st Edition : 24th December, 2021

Scholars Book Hub Paper Back

1st Edition

ISBN : 978-81-955982-3-6

**Editor in Chief- Dr. Rajyasri Neogy**

### **Editorial Board :**

**Prosenjit Das, Gargi Saha Kesh, Sampa Debnath,  
Saswati Gayan, Shilajit Barua, Sudep Samadder,  
Surajit Bagh, Pinaki hazra, Sahana Ghosh.**

Published by: Santanu Banerjee, **Scholars' Book Hub**,  
45, Devinibad Road, Dumdum, Kolkata. Pin : 700 074  
on behalf of **Vijaygarh Jyotish Ray College**, 8/2,  
Bejoygarh Kol-74.

Printed by : Kalachand Vidyalkar Publisher and  
Distributor, 24, Gaurinath Sastri Road, Kolkata - 700 055

**Price :Rs.300 INR**

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# **Healthy Lifestyle: The Key To Boost Immunity Against Infectious Diseases**

**Barbie Chaudhury<sup>1\*</sup> and Saswati Gayen<sup>2\*</sup>**

<sup>1\*</sup>Students of 5<sup>th</sup> Semester M.Sc., Department of  
Microbiology

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**\*Corresponding**

**Abstract:** Malnutrition and infections have always gone hand in hand. Malnutrition is the primary cause of immunodeficiency across the globe, and we are learning more and more about the pathogenesis of this interaction. Five infectious diseases account for more than one-half of all deaths in children aged less than 5 years, most of whom are undernourished. Micronutrient deficiencies have repercussion such as poor growth, impaired comprehension, escalated mortality rate and susceptibility to infection. Nutritional lack associated with pregnancy are associated with poor immune response to infection. Immune deficiency is partly compensated by breast-feeding, so it is the single best way to protect infants from infection. In this review article we have tried to explore the relation between undernutrition or overnutrition with immunodeficiency disorders along with the role of human microbiome immune status of the host. There is a general belief that following any natural disaster the rate of transmission of infectious diseases increases but in this



# **ENVIRONMENT AND BEYOND**



**Edited by :  
Pinakiranjan Chakrabarti  
Sudeshna Ghoshal**

## **Environment and Beyond**

**1st Edition** : 24th January, 2022

Scholars' Book Hub Paper Back

**ISBN** : 978-81-955982-1-2

**Cover Design** : Tousif Khan, Suvam Karmakar

**Editor:**

**Pinakiranjan Chakrabarti**

**Sudeshna Ghoshal**

**Published by** : On behalf of **Rajyasri Neogy**, Principal,  
Vijaygarh Jyotish Ray College, Santanu Banerjee, Scholars  
Book Hub, 45, Devinibas Road, Dumdum, Kolkata - 700 074

**Contact** : 9231923292

**Printed by** : Kalachand Vidyalandkar Publisher and Distributor,  
24, Gaurinath Sastri Road, Kolkata - 700 055

**Price** : Rs.400 INR

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# **An Emerging Social Crisis with Deeper and Under Crisis Potential : A Firsthand Report from the Field**

**Abhijit Das**

Department Economics, Vijaygarh Jyotish Ray College,  
West Bengal, India

**Abstract :** A social crisis can worsen faster if continuing unattended scientifically for longtime in poor, marginalized community. A number of focus group discussions were conducted in each village in order to get more qualitative data and group behaviour. Group discussions were conducted to evaluate the socio-economic impact of arsenic contamination on the poor rural society. The present paper shows that different types of social and psycho-social problems from arsenic poisoning-community is leading to superstition, discrimination, unhappy condition in conjugal life, problems in child development etc.

**Key words:** Arsenic, Health effects, Social impacts, Economic impacts.

## **I. Introduction :**

Arsenic has been acknowledged as a poison. Arsenic contamination of groundwater can be regarded as a major threat to sustainable development as access to drinking water and human

# **A Study on the Effect of Urban Pollution and Lifestyle on Human Sperm Quality in Kolkata, West Bengal, India**

**Lopamudra Mukherjee**

Department of Zoology, Asutosh College, West Bengal, India

**Ranita Bhattacharya and Pinakiranjan Chakrabarti**

Department of Zoology, Vijaygarh Jyotish Ray College,  
West Bengal, India

**Abstract :** As the urban pollution continues to increase at a rapid rate it exerts significant adverse effect on reproductive health of people in developed, developing and underdeveloped countries. Environmental and air contamination along with modern lifestyle approaches are degrading the condition furthermore. The situation is significantly different in rural and urban areas, as vehicular emission and other forms of air pollution is higher in cities and urbanized areas compare to rural areas. Studies reveal that ambient pollution levels and urban lifestyle choices affect the reproductive health, especially male health. Addressing the problem of rapidly increasing urban pollution is becoming the need of the time.

A detailed analysis conducted on semen samples of 502 men from in and around Kolkata, correlating key sperm parameters like total sperm count, sperm motility and normal sperm morphology and urban pollution levels

# **Alternative Eco-Friendly Microbial Approaches for Agro-Waste Management - A Review**

**Prasenjit Das**

Department of Microbiology, Vijaygarh Jyotish Ray College,  
West Bengal, India

*Abstract :* Burning agro residues in the field is considered a cheap and easy means of disposal in many parts of the world including India. This practice causes severe air pollution, increases soil erosion and decreases soil fertility. A significant amount of organic carbon, nitrogen, phosphorous, potassium, sulphur etc. are lost from the soil owing to this practice. Direct incorporation of these residues in field solves the problem of air pollution and improves soil health significantly. However, it involves additional cost of labour, irrigation and extra tillage along with reduction in subsequent crop yields due to production of microbial phytotoxins and immobilization of the available nitrogen. Besides, direct incorporation increases emission of greenhouse gases like  $\text{CH}_4$ . Organic amendments in the form of agricultural wastes and crop residues activate the resident microorganisms in the soil, thereby indirectly stimulating biogeochemical cycles and provide various minerals essential for plant nutrition.



# **Environmental Pollutants and their Adverse Effects on Reproductive Health - A Review**

**Soma Majumder**

Department of Physiology, Vijaygarh Jyotish Ray College,  
West Bengal, India

## **Introduction:**

The ability of an organism to reproduce is essential for its survival and the reproductive process is particularly vulnerable to adverse environmental conditions. Reproductive health is defined as a condition in which the reproductive process is accomplished in a state of complete physical, mental and social well being (1). Reproductive health encompasses a wide area of health and environmental concerns. Surprisingly, while experiencing a population explosion, especially in developing countries, a large part of that population suffers from infertility which can often be traced to environmental causes(1,2). With increased industrial development and modernized lifestyle, people are constantly being exposed to natural and synthetic environmental pollutants that act as reproductive toxins and cause serious reproductive and developmental health impacts including infertility, miscarriage or spontaneous abortion, impaired fetal growth, and low birth weight. These exposures occur in workplaces as well as at home (2,3). These chemicals include a wide variety of substances, such as Dioxins, Poly-chlorinated



# Thermoduric Bacteria in Pasteurized Milk - A Review

Sonali Saha and Gargi Saha Kesh

Department of Microbiology, Vijaygarh Jyotish Ray College  
West Bengal, India

**Abstract :** Pasteurization of milk was designed to provide a time and temperature combination required to inactivate the most pathogens associated with raw milk. Thermoduric bacteria are microorganisms able to withstand the Pasteurization time- temperature combination. These bacteria may be responsible to decrease self-life, quality of product and create health hazards. Some of them are found to be antibiotic resistant (AR). Therefore they may spread antibiotic resistance to other bacteria via consumers. Thermoduric bacteria in Pasteurized milk are *Bacillus*, *Microbacterium*, *Micrococcus*, *Enterococcus*, *Lactobacillus*, *Lactococcus*, *Streptococcus* and *Corynebacterium*. Most thermoduric strains are not capable to replicate in Pasteurized milk when refrigerated. But those can, are known as thermoduric psychrotrophs.

**Key Words:** Thermoduric Bacteria, Pasteurization, Milk, Spoilage, Pathogen.

## Introduction :

Thermoduric bacteria in Pasteurized milk are the microorganisms that can withstand the Pasteurization temperature. They are responsible to decrease self-life and quality

# **Pregnancy Outcome in Genital Tuberculosis Emphasizing on the Effectiveness of RT-PCR of Menstrual Blood in Females**

**Ipsita Maity**

Department. of Zoology, Vijaygarh Jyotish Ray College,  
Bijoygarh, West Bengal, India

**Jyotirmay Chaudhuri**

Sri Sitaramdas Research Clinic for Woman's  
Health and Infertility, West Bengal, India

**Abstract:** Tuberculosis is one of the major health problems in India and other developing countries. Genital Tuberculosis (GTB) is caused by an obligate pathogenic human bacterium, *Mycobacterium tuberculosis* responsible for causing female infertility. A chronic disease in women, GTB in India causes 30% infertility and 39% of women suffer from pelvic tuberculosis with tubal factor. The present study revealed that females of the age group 25-30 years suffered most from GTB. With a sample size of 130 female patients, 115 were tested positive in the RT-PCR test. Of the later, 69% had been treated for primary infertility for a period ranging from one to eight years and 31% treated for secondary infertility. After treatment, 25 cases of pregnancies were achieved, of which three underwent ectopic pregnancies with consequent abortions. Early detection of GTB by positive RT-PCR test

# Environmental Kuznet's Curve and Sustainable Development

Palashpriya Halder

Department of Economics

Vijaygarh Jyotish Ray College, West Bengal, India

The fundamental debate regarding sustainable development is whether we choose to adopt a strong or a weak conception of sustainability. Weak sustainability postulates the full substitutability of natural capital whereas the strong conception demonstrates that this substitutability should be severely seriously limited due to the existence of critical elements that natural capital provides for human existence and well-being. The 'weak sustainability' paradigm states that man-made capital is more important than natural capital (Neumayer, 2003). 'Strong sustainability,' on the contrary, is based on the idea of non-substitutable natural capital.

## Weak and Strong Sustainability

Capital is defined as "stock that provides current and future utility" (Neumayer, 2003: 8), with natural capital being the totality of nature (resources, plants and ecosystems that can be put to human use – Baker, 2006: 21), or that which is capable of providing humans with "material and nonmaterial utility" (Neumayer, 2003: 8). Man-made capital, in contrast, includes factories, machinery and roads. There is a third type of capital, however, which is human capital; this differs from man-made capital as it is viewed as 'knowledge' – essence rather than practice (Neumayer, 2003: 8).





**Concerns and Reorientation**  
**in**  
**Women's History of India**

**Edited By:**

**Dr. Samiparna Rakshit**



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in Women's History of India**

**Edited by : Dr. Samiparna Rakshit**

**1st Edition : 10.08.2022**

**Scholars' Book Hub Paper Back**

**ISBN: 978-81-956878-2-4**

Published by: Santanu Banerjee, Scholars' Book Hub,  
45, Devinibas Road, Dumdum, Kolkata 700 074, on behalf  
of **Dr. Rajyasri Neogy, Principal, Vijaygarh Jyotish  
Ray College, Kolkata.**

Printed by : Kalachand Vidyalankar Publisher and  
Distributor, 24, Gaurinath Sastri Road, Kolkata-55.

**Layout & Designing : Sandipa Mondal**

**Price :Rs. 400 INR**

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# Women Rights and Empowerment: an Indian Perspective

Anindita Sarker

[Research Scholar, Department of International Relations, Jadavpur University]


Ruma Ray

[Assistant Professor, Department of Political Science, Vijaygarh Jyotish Ray College.]

**Abstract:** The ultimate quest of human knowledge is to constitute the egalitarian society for mankind. Despite of the development of concept of the egalitarian society – a large number of people are facing elimination from the social mainstream. This social elimination has been reflected in the form of strong reactions and unrest, especially from the deprived sections of the society, all over the world. Among the deprived sections of the society, women constitute almost half of the population, but they can visibly be identified as socially eliminated, economically exploited and politically deprived sections of the society mainly in the developing countries. In general, there have been more catastrophic implications of growing inequality for women as compared to men.

India, being the possessor of rich cultural heritage confers a lot of importance and respect to women. Women are considered as strength for development of our society. Pandit Jawaharlal Nehru once said “to

Home > Bioscience > Immunology > COVID-19 and SARS-CoV-2 > Challenges and Innovations in Mathematical Modelling of COVID-19



**Challenges and Innovations in Mathematical Modelling of COVID-19**  
By Swarnali Sharma, Malay Banerjee\*

Book [COVID-19 and SARS-CoV-2](#)

Edition	1st Edition
First Published	2022
Imprint	CRC Press
Pages	16
eBook ISBN	<a href="#">9781003178514</a>

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**ABSTRACT**

This chapter aims to construct some mathematical models containing different compartments while incorporating the factors of COVID-19 disease progression mechanisms to examine the challenges of disease modelling to some extent. Coronavirus disease 2019, the highly infectious disease caused by severe acute respiratory syndrome coronavirus 2, has had a catastrophic effect on the world's demographics.

Home > Bioscience > Immunology > COVID-19 and SARS-CoV-2



**COVID-19 and SARS-CoV-2**  
The Science and Clinical Application of Conventional and Complementary Treatments  
Edited By Srijan Goswami, Chiranjeeb Dey

Book

Edition	1st Edition
First Published	2022
eBook Published	14 July 2022
Pub. Location	Boca Raton
Imprint	CRC Press
DOI	<a href="https://doi.org/10.1201/9781003178514">https://doi.org/10.1201/9781003178514</a>
Pages	286
eBook ISBN	9781003178514
Subjects	Bioscience, Health and Social Care, Medicine, Dentistry, Nursing & Allied Health

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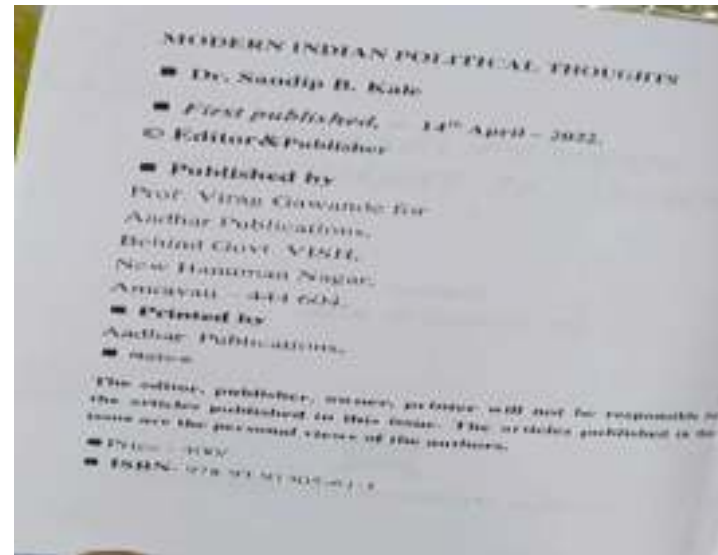
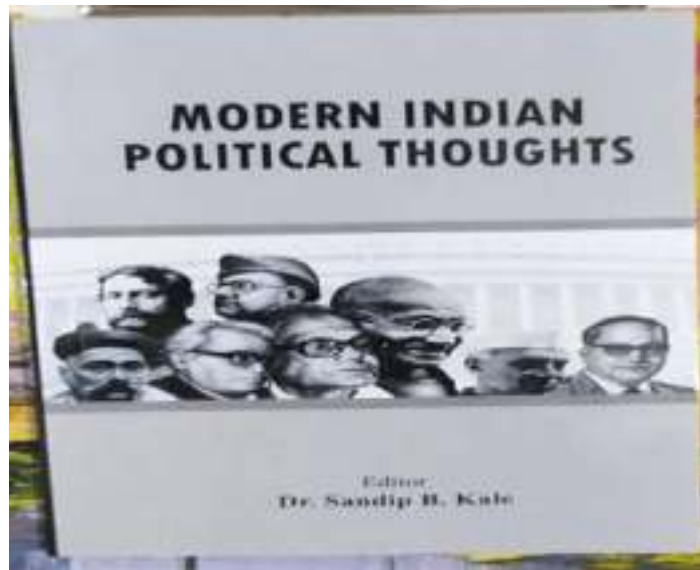
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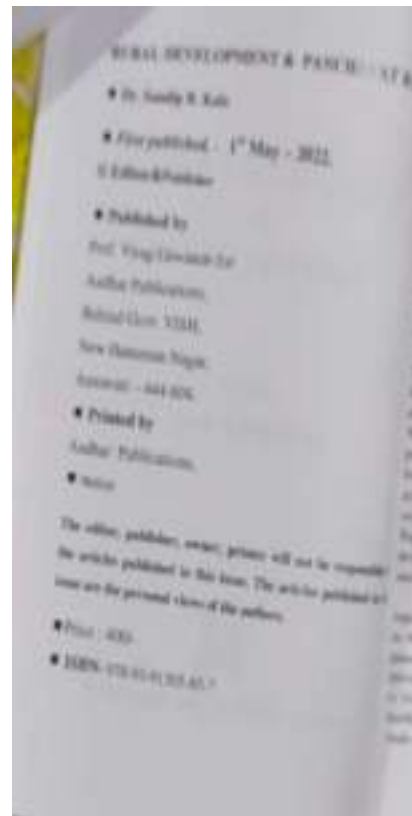
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2.Chapter In A Edited Book: ISBN- 978-93-91305-85-7

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## Role of Gram Panchayat in Rural Development

Dr. Uttam Kumar Mukherjee

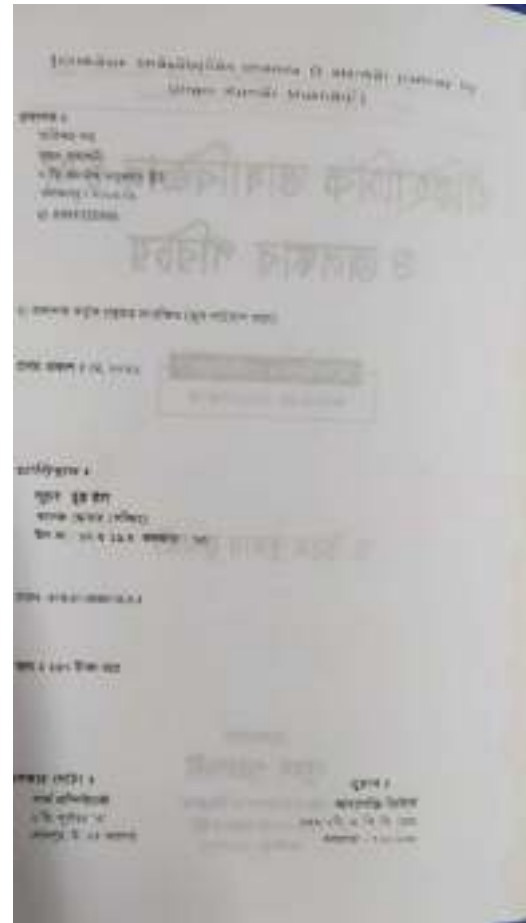
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### Abstract

India is the largest democracy in the world. The issue of local self-government is very relevant for the smooth running of this huge democratic system. The Panchayat system is also ideologically important for India's democratic structure. The purpose of the present article is to explore the role of panchayat in rural development in India and West Bengal. Panchayat, of course, does not have sovereign state power. It has to work within certain limits. However, through this system, it is possible to establish democratic governance, and social justice, fulfill the hopes and aspirations, and demands of the citizens. Local problems which can not be solved from the center or the state capital are solved by the village panchayats and the municipalities in the cities and suburbs.

**Keywords:** Gram Panchayat, Rural Development, West Bengal.

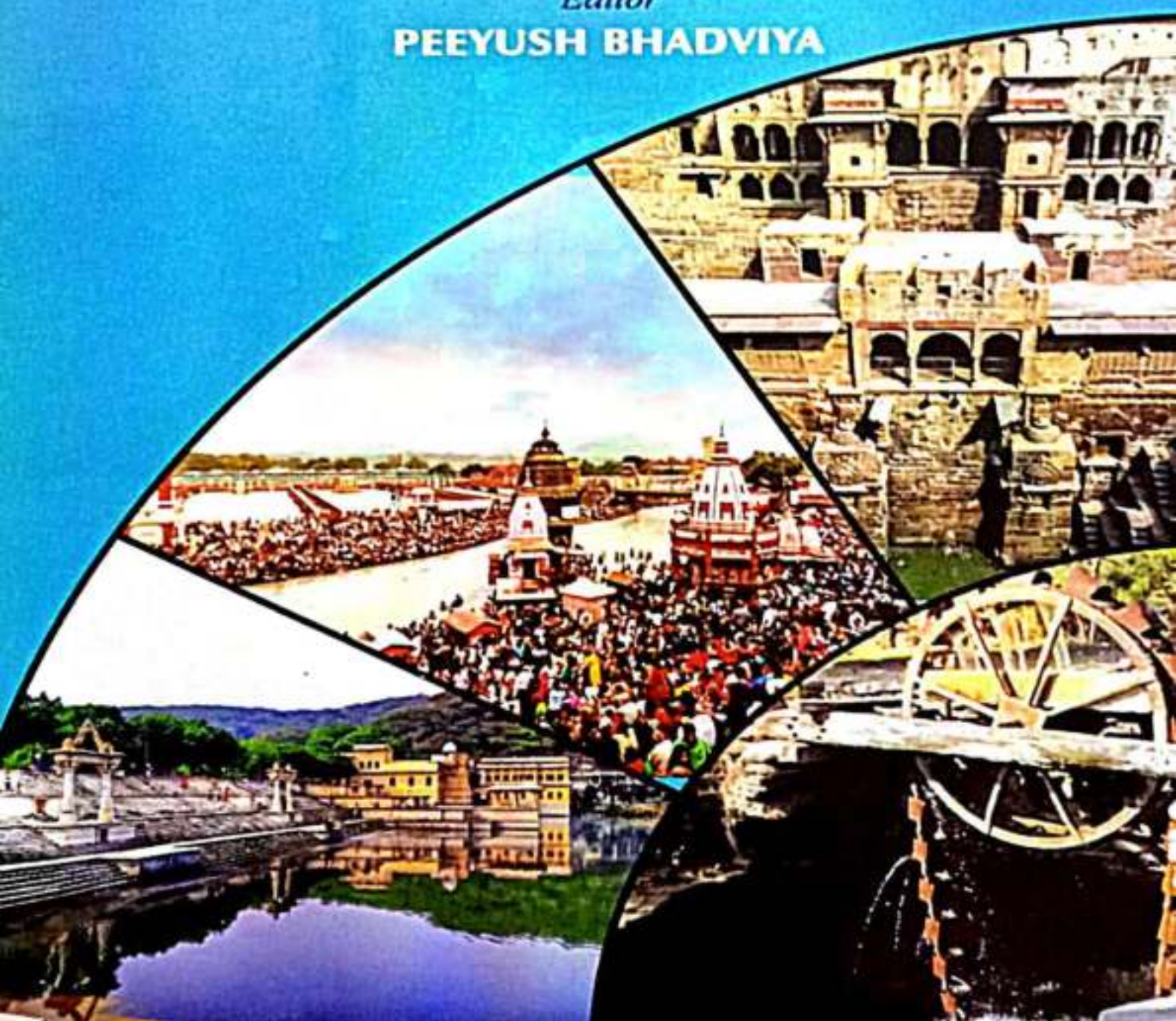
**Introduction:** The basis of the rural system of governance in ancient India was the Panchayat, a rural autonomous body consisting of five elected or nominated persons. This body was entrusted with the responsibility of administering the villages, enacting the law, and administering the judiciary. Until the Mughal period, villages in India were governed by this panchayat system. But after the fall of the Mughal Empire, the system of panchayat institutions was particularly damaged. During British rule, this glorious traditional system of governance in India came to an end. Instead, the British monarchy introduced a British-style system of self-government in rural and urban India to maintain its colonial interests. The modern Panchayat Raj system of government is an idea that came to the mind of Mahatma Gandhi. He wanted the modern new system of independent India to be based on the village. After the independence of India, following his ideology, rural development and the panchayat system were introduced in India. Over time, various government schemes have been taken in India and West Bengal to make the system more suitable and more effective in modern times. From the period of the Left Front government in West Bengal to the present day, the panchayat system has undergone a comprehensive improvement. Panchayat reform and the benefits derived from this system are largely





# WATER HERITAGE OF INDIA

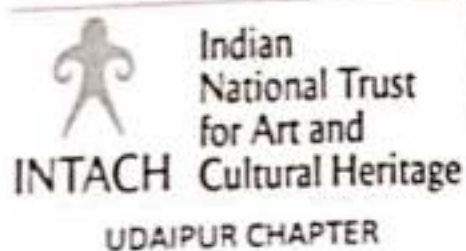
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ISBN : 978-93-92779-20-6

Edition : 2022

Price : ₹ 1295.00

Published by



**ARYAS PUBLISHERS DISTRIBUTORS (P) LTD.**

2-D, Hazareshwar Colony, Near Court Choraha, Udaipur (Raj.) - 313 001;

Phone : 0294-2526160; E-mail : apdpl.2012@gmail.com

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# Water Architecture of Jodhpur

Samiparna Rakshit

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Rajasthan is well known for its rich and colourful culture as well as diverse architectural forms. As it is the home to India's desert tracts and the Great Indian Thar Desert, it is also known for its rich water architecture. From simple wells and tanks that dot villages to ornate lakes commissioned by the elite, the elaborate, interconnected water architecture of this region once transformed the scant rainfall it received into a viable source of water that communities could rely on throughout the year.

Since it will be a huge topic to deal with the water architecture of this big state and that a mere paper cannot do justice with its limited length, the current paper would only try to concentrate on Jodhpur. Water architecture of Jodhpur is not restricted to reservoirs such as wells, tanks and ponds. The present paper would seek to find out the variations, characteristics of water architecture of Jodhpur. Most of these structures have now fallen into disuse and have been transformed into receptacles for trash, especially in urban and suburban areas where piped water has replaced traditional sources. This paper would try to throw some light on the necessity of conservation of these magnificent water architectures of Jodhpur.

## Water Architecture of Jodhpur: Its Variations

Jodhpur city, capital of the kingdom of Marwar, was founded in 1495 AD. The arid location of the city was probably the chief cause of sponsoring large waterbodies throughout its history by its rulers. These include a number of lakes, tanks and stepwells, those were built with Jodhpur's local red sandstone (Thilak, 2019). The aim of constructing water architecture was to harvest rainwater to make the region fertile and habitable throughout the year. Jodhpur is a place of diverse forms of water architecture such as the *kua* or *bera* (well), *jhalra*, *baori* and *kund* (stepped ponds, wells and hybrids) and *sagar* or *talab* (lakes and tanks).

The different types of water architecture of Rajasthan are identified by various local terms that differ from region to region. Simple wells with no steps where buckets are used to pull water from a deep cylindrical pit are called *kua* or *bera*. The common English term

**RECENT TRENDS IN MICRO BIOLOGY, Vol-I**

Editor in Chief : **Dr. Rajyasri Neogy**

Edited By : **Dr. Sampa Debnath**

**1st Edition:** 25th May, 2022

**Sholars' Book Hub Paper Back**

**ISBN:978-81-956878-9-3**

**Published by:** Santanu Banerjee, Scholars' Book Hub,  
45, Devinibas Road, Dumdum, Kolkata 700 074, on  
behalf of **Dr. Rajyasri Neogy, Principal, Vijaygarh  
Jyotish Ray College**, Kolkata.

**Printed by :** Kalachand Vidyalkar Publisher and  
Distributor, 24, Gaurinath Sastri Road, Kolkata-55.

**Cover : Pragyeta Ghosh and Dr.Shilajit Barua**

**Price : Rs. 430**

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# Nullifying The Nature's Noxious' with Nanotech

Subhajit Nath<sup>1</sup>, Arijit Saha<sup>1</sup>, Sahana Ghosh<sup>2</sup>

[<sup>1</sup>Students of Department of Microbiology,  
Vijaygarh Jyotish Ray College, Kolkata, West Bengal]

[<sup>2</sup>Faculty of Department of Microbiology,  
Vijaygarh Jyotish Ray College, Kolkata, West Bengal]

## Abstract

Throughout history , microorganisms has been a part of our daily lives. While, most of them are beneficial to human microflora, some are quite harmful . Examining such species, we also found that , with time, the same harmful organisms have become resistant to many antibiotics that we used to treat such disease causing microorganisms. So , if the microorganisms are becoming smarter, we need to expand our ideas too ! ... Creating new ways to beat them in the **Survival of the fittest** game. One such unique way to fight these things, is to make the use of Nanotech or better said - Nanoparticles. These teeny tiny specially designed particles are an absolutely unique discovery , in the whole century . They can be designed according to the patient's need ; to target against the specific set of microorganisms without endangering the native cells of human body. Their uniqueness also lies in their physicochemical properties for which they can interact in any and every



# **Biosynthesis of Organoarsenic Compounds: An Approach for Detoxification of Arsenic**

**Santanu Sardar, Pragyeta Ghosh, Sourav Pan and Dr.Shilajit Barua**

[Department of Microbiology, Vijaygarh Jyotish Ray College, 8/2, Bejoygarh , Jadavpur, Kolkata]

## **Abstract**

Groundwater contamination with arsenic from arsenic-rich sediments has been observed in both India as well as Bangladesh. Very few steps have been implemented to provide low-cost arsenic-free water to these areas, and numerous filters installed in these locations are now outdated, compelling thousands to purchase drinking water from wells that are contaminated. Different studies have revealed that phytoplankton, cyanobacteria, and algae have the capacity to absorb heavy metals that are toxic to the environment, leading to remediation of the toxic metals in the water surrounding them. Numerous microorganisms have resistance to arsenic, specifically to arsenate, whereas there are just a handful of bacterial strains that are resistant to arsenite. A low 20011M As(III) concentrations have been found to be fatal for a variety of bacteria. Arsenite with a low concentration directly may be methylated or prior to methylation, oxidation

# Isolation of Beneficial Microorganism from Tannery Effluent Drained Soil

<sup>1</sup> Dr. Sampa Debnath, Suman Sau<sup>2</sup>

[1 Department of Microbiology,  
Vijaygarh Jyotish Ray College, Kolkata]

[2 Department of Microbiology,  
Vijaygarh Jyotish Ray College, Kolkata]

## Abstract

Microorganism are not only harmful, they are beneficial too. Many microorganisms are used for bioremediation. These microorganisms can reduce the toxic effect of heavy metal. These dumping of industrial and urban wastes to soil and water bodies had led to disaster in ecosystems. Due to the presence of excess wastes in the environment, clean water for drinking and normal soils for crop production is unavailable. Among the organic and inorganic waste, inorganic waste like heavy metals are causing a great threat to the environment. Chromium is an important heavy metal which is widely used in chemical and tannery industry. From these industries chromium is disposed in the environment. Among the different oxidation state of Chromium,  $\text{Cr}^{+6}$  is most toxic and is most effective in creating health hazards. This study aims to isolate, investigate and identify naturally occurring bacteria capable of absorbing and reducing  $\text{Cr}^{+6}$  from tannery



# Environmental DNA and its Prospect: An Overview

Subham Karmakar<sup>1</sup>, Sayan Samanta<sup>1</sup>, Swarupa Banerjee,<sup>1</sup> Risika Debnath<sup>1</sup> and Sudeshna Ghoshal<sup>1</sup>

[<sup>1</sup>Department of Zoology,  
Vijaygarh Jyotish Ray College, Kolkata]

## Abstract

Since ecological communities at global scale are declining at faster rate due to climate change and various anthropogenic interventions for the last few decades, proper conservation strategies are required for restricting or cessation of further loss. Regular observation and monitoring of the available biodiversity and widespread data collection on it should be prioritized at this moment. Traditional survey methods may support the investigation but have several drawbacks especially with their time requirement and deficiency of taxonomic expertise for correct species identification. With the advancement of technology, alternative methods for biodiversity assessment at larger scale in shorter time should be encouraged and thus, environmental DNA (eDNA) analysis can be considered as the appropriate sampling approach. eDNA, which might represent the presence of the organisms are gathered directly from the environment and subsequent analysis of these by PCR, meta-barcoding and high-throughput sequencing approaches may reveal

# **Antibiotic Resistance Profile of Microorganisms Isolated from Boiled Pasteurized Milk**

Amreen Firoz<sup>1</sup>, Soumi Ghosh<sup>2</sup>, Dr. Gargi Saha Kesh<sup>3</sup>

[<sup>1</sup>Undergraduate student (6<sup>th</sup> semester),

<sup>2</sup>Research Scholar,

<sup>3</sup>Associate Professor, Department of Microbiology,

[Vijaygarh Jyotish Ray College, Kolkata]

## **Abstract**

Milk is often referred to as “complete food”, on account of its high nutritive value. Its richness in nutrients makes it an ideal medium of consumption for all living beings of the animal kingdom. It is also found to be an ideal medium for the growth of a large number of microorganisms.

Majority of these microorganisms come either from the normal microflora of the udders of milking animals, or are introduced into the milk when milking is not done hygienically, or from unsterile and unhygienic vessels used to keep the milk, or are introduced during careless transportation or packaging. Some of these microbes may be non-pathogenic, and sometimes may also add to the nutritional content of the milk. However, several others are found to be pathogenic and cause diseases.



# **Biofilms in Heavy Metal Remediation: The Current Scenario**

**Adrija Banerjee, Anushree Hait, Dr. Shilajit Barua**

[Department of Microbiology, Vijaygarh Jyotish Ray  
College, 8/2, Bejoygarh, Jadavpur, Kolkata]

## **Abstract**

Continued modernization, development and industrialization of countries along with advanced agriculture have led to extensive environmental problems. Increased inputs of heavy metals (HMs) and synthetic chemicals coupled with inadequate environmental management in the developing country like India, has led to large-scale pollution of the environment. Trace concentrations of HMs are naturally present in the environment, but many industries across the globe such as metal plating facilities, mining operations, fertilizer industries, tanneries, battery manufacturing, pulp and paper mills and pesticide production are contributing to the increase of heavy metal concentrations in our environment. In a recent published report by Central Water Commission, Govt. of India, several heavy metals in different river water throughout the country have been found to be much higher than the permissible limit set by Bureau of Indian Standards (BIS). In aquatic environments, toxic metals are easily absorbed by

# **Effect of Microbial Diversity on Arsenate Reduction Potential in Aquifer Sediments of Bengal Delta Plain**

**Sreosi Chakraborty, Subhajit Nath and Dr. Shilajit Barua\***

[Department of Microbiology, Vijaygarh Jyotish Ray College, 8/2, Bejoygarh, Jadavpur, Kolkata]

## **Abstract**

Contamination of groundwater with geogenic arsenic poses a major health risk to millions of people throughout the world. Arsenic in aquifer environment predominantly exists in two different oxidation states: arsenite (AsIII: a more toxic species and mobilizable form) and arsenate (AsV: a lesser toxic and immobilized form). Microbial communities in aquifer sediments has often been associated with release of arsenic from sediments into ground water. Three physiologically different class: iron reducing bacteria, dissimilatory arsenate reducing bacteria (DARB) and iron reducing DARB has been documented responsible for arsenic release from sediments. 28–62% of the 125 million inhabitants of Bangladesh and more than 40 million people in West Bengal are at risk of arsenic poisoning from water abstracted from the subsurface and used for

**RECENT TRENDS IN MICROBIOLOGY (VOL- II)**

**Editor in Chief : Dr. Rajyasri Neogy**

**Edited By: Dr. Sampa Debnath**

**1st Edition:** 27th June, 2022

**Sholars' Book Hub Paper Back**

**ISBN: 978-81-956878-7-9**

Published by: **Santanu Banerjee** on behalf of Scholars'  
Book Hub, 45, Devinibas Road, Dumdum, Kolkata 700  
074, Ph. No. 9231923292

Printed by : Kalachand Vidyalankar Publisher and  
Distributor, 24, Gaurinath Sastri Road, Kolkata-55.

**Cover: Pragyeta Ghosh and Dr.Shilajit Barua**

**Price : RS. 430**

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# **Phytoremediation of Methotrexate Induced Genotoxicity in *Heteropneustes Fossilis* Using Extracts of *Centella Asiatica***

**Manjitha Deb<sup>1</sup>, Urbee Banerjee<sup>1</sup>, Debosmita  
Roy<sup>2</sup> and Pinakiranjan Chakrabarti<sup>1</sup>**

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## **Abstract**

The extracts of *Centella asiatica* (commonly known as Mandukaparni), are widely used in ethnobotanics. This study has first taken the initiative of assessing their chemo-protective properties against Methotrexate (MTX) insult. *Heteropneustes fossilis* was chosen as the model for this experiment and they were divided into three groups. Group 1 was kept as the control; Group 2 was given sub-lethal concentrations of MTX; Group 3 was administered *Centella asiatica* extract simultaneously with MTX. The extent of genotoxicity was monitored by micronucleus assay. This setup enabled us to clarify whether the extract had any remedial effect



# **Stress-induced Cortisol Causes Genomic Instability in Humans — An Overview**

**Ipsita Maity, Prachurjya Ghosh, Ankita Paul**

[Atmaja Ghosh, Department of Zoology,  
Vijaygarh Jyotish Ray College]

## **Abstract**

Any type of stress — be it physical or psychological, leads to an increase in adrenocorticotrophic hormone (ACTH) production by the adenohypophysis. ACTH in turn stimulates the cells of zona fasciculata of the adrenal cortex to synthesize glucocorticoids (GC), primarily cortisol in humans. Cortisol functions as the body's primary stress hormone, in addition to epinephrine and norepinephrine, and prepares the body for a fight-or-flight response. Recent studies focused on unearthing the effects of cortisol on the genome have related it to changes in DNA methylation patterns in CpG islands associated with the expression of glucocorticoid receptors. Exposure of 3T3 cell lines of mouse fibroblasts to physiological concentrations of cortisol for longer periods has shown enhanced DNA damage and impaired DNA repairability. These effects on the genome may, at high levels, have long-lasting, potentially malignant effects, like abnormal cell transformation, early onset of senescence, tumorigenesis, etc. Increased levels of



# **A Bioinformatics Approach to Identify The Role of Cdk1 in Cervical Cancer Progression**

**Palash Paul <sup>a</sup> and Sudip Samadder <sup>b</sup>**

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## **Abstract**

More than 95% of cervical cancer cases are Human Papilloma Virus (HPV) contamination positive (significantly HPV16 & 18). In presence of E6 oncoprotein of HPV, CDKs are fundamentally responsible for bypassing the postmitotic check point in cell cycle. This study aimed to deduce the role of CDK1 in cervical cancer progression and assess its prognostic qualities.

## **Methods**

Two microarray datasets of cervical cancer (GSE52903 and GSE39001) were retrieved from GEO database and analyzed with GEO2R tool to screen out significant differentially expressed genes (DEGs), using the parameters,  $|\log_2\text{-fold change}| \geq 2$  and adjusted p-value  $< 0.05$ . The common DEGs between the two datasets were identified by Venn diagram, followed by

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**Dr. Manju Rani**

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Paperback ISBN: 978-1-957302-34-8

eBook ISBN: 978-1-957302-36-2

First Published in May, 2022

Published by Walnut Publication (an imprint of Vyusta Ventures LLP)  
[www.walnutpublication.com](http://www.walnutpublication.com)

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6834 Cantrell Road #2096, Little Rock, AR 72207, USA

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# Fungal Bioremediation: An Effective and Alternative Eco-Friendly Method for Environmental Clean-Up

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## Abstract

Soil inhabiting fungi surrounding plant root systems exhibit pivotal role in improving soil fertility and plant health by various mechanisms including bioremediation of organic pollutants (petroleum hydrocarbons, aromatic amines, azo dyes etc.) and toxic heavy metals (cadmium, chromium, zinc, copper, nickel etc.). The mechanisms of fungal bioremediation involve adsorption, bioaccumulation, biovolatilization via enzymatic degradation processes (esterification, hydroxylation, deoxygenation, dehydrogenation, methylation etc.) and phytobial remediation. Fungi possess significant capabilities in degrading complex organic compounds by producing extracellular ligninolytic enzymes like laccase, xylanases, manganese peroxidase, lignin peroxidase, cytochrome P450 monooxygenases etc. Symbiotic Arbuscular Mycorrhizal Fungi (AMF) constitute an important bio-component intimately associated with plant root systems, which positively influence plant growth, often in combination with plant growth promoting rhizobacteria (PGPR), by bioremediating these pollutants. Apart from AMF, white rot fungi (*Pleurotus ostreatus*, *Pleurotus tuber regium* etc.) are also highly effective in degrading toxic organic pollutants. *Trichoderma* is another group of promising fungal bioremediator of recalcitrant pollutants including heavy metals, pesticides and polyaromatic hydrocarbons. However, research on commercial application of fungi as a natural bioremediator is still limited. This review focuses on recent findings regarding complex plant-fungal interactions along with PGPR for cost effective and eco-friendly phytobial remediation strategies to promote sustainable agriculture.

**Keywords:** Bioremediation, Phytobial Remediation, Arbuscular Mycorrhizal Fungi (AMF), White-rot fungi, *Trichoderma*, Plant Growth Promoting Rhizobacteria (PGPR), Organic Pollutants, Heavy Metals



**Life and Environment**

**Edited by: Dr. Swarnali Sharma**

**1st Edition:** 25th July, 2022

**Sholars' Book Hub Paper Back**

**ISBN:** 978-81-961355-0-8

**Published by:** For **Dr. Rajyasri Neogy**, Principal, Vijaygarh Jyotish Ray College, Jadavpur, Kolkata, by Santanu Banerjee, Scholars' Book Hub, 45, Debinibas Road, Kolkata -74.

**Printed by :** Kalachand Vidyalkar Publisher and Distributor, 24, Gaurinath Sastri Road, Kolkata-55.

**Layout & Designing : Sandipa Mondal**

**Price :** Rs. 300

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