

अनकही मन कही

डॉ. लक्ष्मी श्रीवास्तव
मीरा श्रीवास्तव



डॉ. लक्ष्मी श्रीवास्तव
 पिता : स्व श्री लालजी लाल श्रीवास्तव
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- "संबद्ध" समूह चित्रकला प्रदर्शनी ललित कला अकादमी नई दिल्ली। 2011
- अखिल भारतीय कालिदास एवं मूर्तिकला प्रदर्शनी उज्जैन मध्य प्रदेश 1977, 1978 एवं 1979
- अखिल भारतीय चित्र एवं मूर्तिकला प्रदर्शनी, महाकोशल कला परिषद, रायपुर, मध्य प्रदेश 1978/79
- मध्य भारतीय हिंदी साहित्य सभा ग्वालियर, मध्य प्रदेश, "काव्य चित्र प्रदर्शनी" 1981।
- चित्रकार स्व डी. पी. शर्मा स्मृति कला प्रदर्शनी मध्यप्रदेश कला परिषद ग्वालियर, मध्यप्रदेश। 1982
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- जवाहर कला केन्द्र जयपुर राजस्थान "जश्र ऑफ कलर्स" समूह चित्र प्रदर्शनी जयपुर, राजस्थान। 2010
- भारतीय ललित कला संस्थान अमृतसर पंजाब "वाइब्रेशन साउण्ड ऑफ कलर्स एंड फॉर्म्स" समूह चित्र प्रदर्शनी 2010
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रुचियाँ : चित्रकला के साथ संगीत, नृत्य एवम लेखन कार्य में विशेष रुचि।



सुश्री पीरा श्रीवास्तव
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सेवा : के. जी. चिल्ड्रन हा. सेकेंडरी स्कूल भोपाल ग्वालियर में 42 वर्षों तक प्राचार्य पद पर तथा वर्तमान में के. जी. चिल्ड्रन महाराजपुर ग्वालियर में डायरेक्टर पद पर कार्यरत

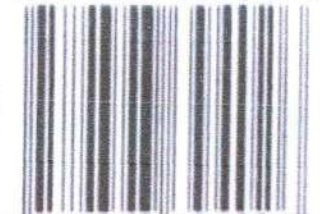
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डॉ. लक्ष्मी श्रीवास्तव और मीरा श्रीवास्तव द्वारा रचित 'अनकही मनकही' पुस्तक का होटल राजहंस अभिनंदन में हुआ। कार्यक्रम में साहित्यकार डॉ. विनय राजा राम, शायर मदन मोहन दानिश, अपेक्स बैंक भोपाल के एमडी पीएस तिवारी

उपस्थित थे। अनकही मनकही पुस्तक, चित्रों और कविताओं का संयोजन है। डॉ. लक्ष्मी श्रीवास्तव ने अपने बनाए चित्रों पर कविताएं और अपनी लिखी कविताओं पर चित्र सृजन किए हैं। शासकीय सरोजिनी नायडू कॉलेज में चित्रकला विभाग में प्रोफेसर हैं। पुस्तक का विमोचन महाविद्यालय की प्राचार्य डॉ. प्रतिभा सिंह द्वारा किया गया।

Sanjay Sahay *Editor*

Extremophilic Fungi

Ecology, Physiology and Applications

 Springer

Editor

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Sanjay Sahay
Editor

Extremophilic Fungi

Ecology, Physiology and Applications

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Gender and Feminism

UNDERSTANDING AND EMPOWERING WOMEN

Editors

Dr. Yogesh Kumar Sharma

Dr. Susheela B.

Dr. Anupama Rawat



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Gender and Feminism

UNDERSTANDING AND EMPOWERING WOMEN

Prof. Yogesh Kumar Sharma is a poet, story writer, essayist, blogger and an author. Prof. Yogesh Kumar Sharma (M.A., MPhil, PhD) is presently working as Professor in Swami Shraddhanand College, (University of Delhi), Alipur, Delhi-110036. He was also Associate NCC Officer (ANO) in his college. His early education was held at Khurja and higher education, (M.A., M.Phil., Ph.D.) at Institute of Advanced Studies, Meerut University Meerut, U. P., INDIA. His research work "Influence of *The Bhagavad Gita*" on Matthew Arnold is considered as outstanding scholarly work in literary circles. He has published several articles and his poems on different topics have found place in a number of newspapers, magazines and journals. He has written many poems (more than 700), short stories (around 50), articles and essays (200) on different aspects of society concerning day to day life of the people. As a poet he has authored a book *Voices: Dharohar: The Glory of the North-East* is another book written by him, based on travelogue

About the Book

The definition of 'Feminism' is not about strengthening gender diversity by standing on the side of a woman; it is a common struggle for human freedom marred by gender inequality.

This book is a noble attempt by the academic scholars to unlearn and dismantle the normative structures and identify the difference. Multiple social, religious, caste and ethnic identities have tried to negotiate themselves through uprisings, protests, movements to fight against oppression espousing their cause as marginalised and the less privileged. To universalise but to contextualise the difference and to bring into forefront diverse grievances, needs and expectations and make each and every campaign more inclusive is the need of the hour. This book creates a bench mark by focusing on differences and not on similarities. It is a trail marked for inclusivity.



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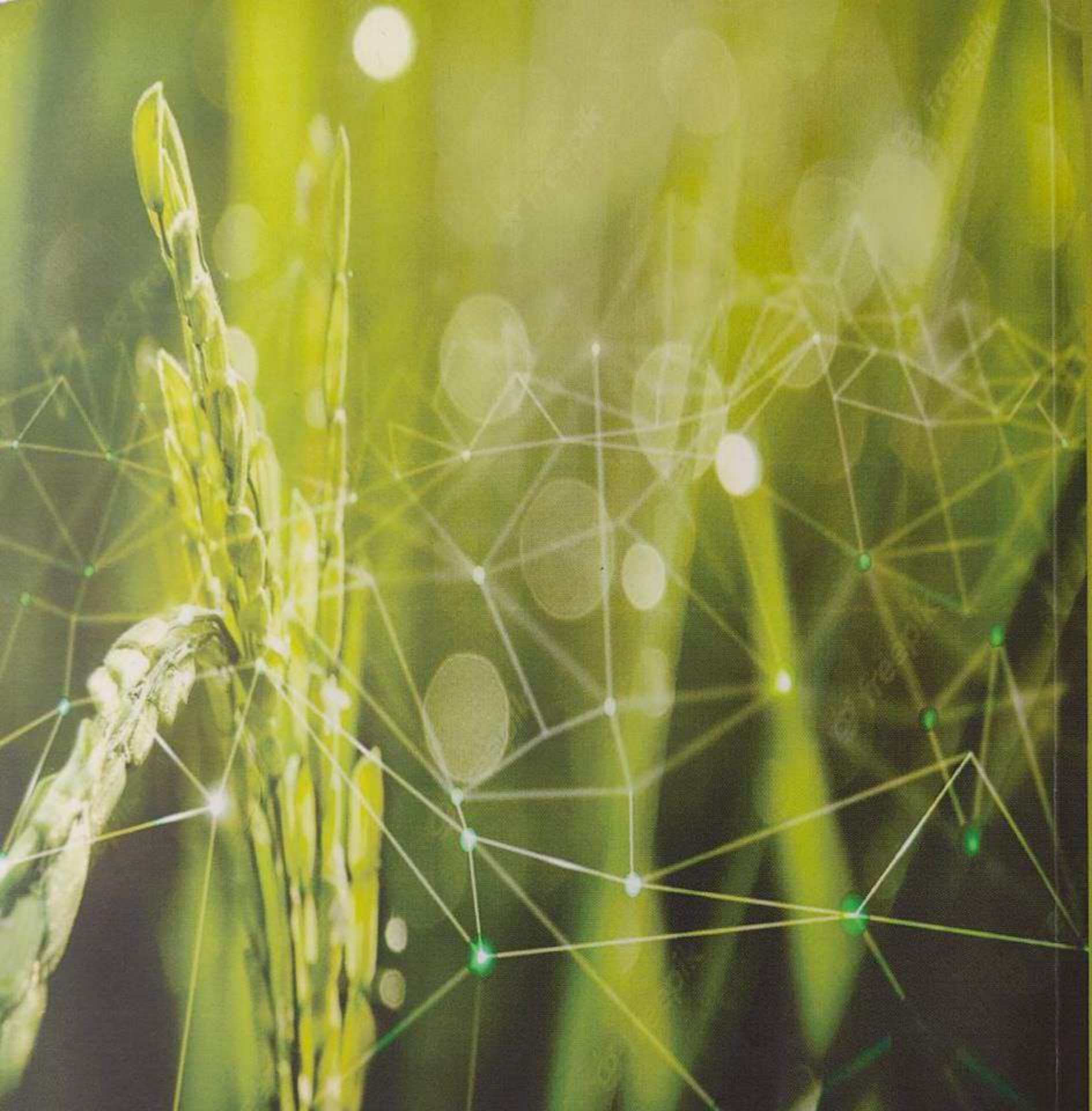


DR. SHOBHA SHRIVASTAVA

DR. SAURABH PAGARE

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- ✦ सितार की शिक्षा - विश्व विख्यात सितार वादक एवं पूर्व प्रोफेसर काशी हिन्दू विश्वविद्यालय स्व. डॉ. राजभान सिंह जी,

- ✦ प्रारम्भिक शिक्षा - सेंट्रल हिन्दू गर्ल्स स्कूल, वाराणसी
- ✦ बी.ए.बी.म्यूज (आनर्स सितार) - मंच कला संकाय एवं महिला महाविद्यालय काशी हिन्दू विश्वविद्यालय
- ✦ एम. म्यूज - 1984, काशी हिन्दू विश्वविद्यालय
- ✦ डी. म्यूज - (डॉक्टर ऑफ म्यूजिक) 1987, काशी हिन्दू विश्वविद्यालय
- ✦ उपलब्धियाँ - काशी हिन्दू विश्वविद्यालय में रिसर्च Scholarship, शोध परख लेख, उत्तर प्रदेश संगीत नाटक अकादमी की शोध पत्रिका, "छायानट" में प्रकाशित Research Hunt प्रकाशन, ओमनाद द्वारा अन्तरराष्ट्रीय संगोष्ठी में शोधवाचन एवं प्रकाशन, म.प्र. हिन्दी ग्रन्थ अकादमी की शोध पत्रिका "रचना" में अनेक प्रकाशन, अनेक अन्य पत्रिकाओं में वाचन एवं प्रकाशन
डॉ. भीमराव अम्बेडकर विश्वविद्यालय, देवी अहिल्या बाई विश्वविद्यालय में R.D.C. विषय विशेषज्ञ, वर्तमान में राजा मान सिंह तोमर संगीत एवं कला विश्वविद्यालय, ग्वालियर में महामहिम राज्यपाल द्वारा मनोनित कार्यपरिषद सदस्य, अखिल भारतीय महिला परिषद द्वारा शिक्षा के क्षेत्र में महत्वपूर्ण योगदान हेतु सम्मानित
- ✦ मंच प्रदर्शन - विगत 25 वर्षों से शास्त्रीय रागों पर आधारित वाद्य वृन्द की रचना तथा स्वयं एवं छात्राओं द्वारा मंच प्रदर्शन, भारत भवन, राज भवन, दूरदर्शन की 50वीं वर्षगांठ पर प्रदर्शन एवं प्रसारण, रविन्द्र भवन में म.प्र. उत्सव, माण्डू उत्सव, लगातार तीन वर्ष पंचमड़ी उत्सव में प्रदर्शन Indian council for cultural relation (Ministry of external affairs Govt. of India) Invited to perform vadya vrinda 2012, स्वयं एवं छात्राओं द्वारा फ्यूजन संगीत की सी.डी. जो विगत वर्षों से न्यूजीलैण्ड के रेडियो "तरना" द्वारा प्रसारित की जाती है। आर्ट ऑफ लिविंग द्वारा विश्व के 1200 सितार वादकों के सामूहिक वादन कार्यक्रम में भारत की एक मात्र संस्था से सर्वाधिक छात्राओं की भगागीदारी "गिनीज बुक" ऑफ वर्ल्ड रिकॉर्ड" में कार्यक्रम दर्ज किया गया, 2016 में World cultural festival में स्वयं एवं छात्राओं द्वारा दिल्ली में सामूहिक वादन।
- ✦ प्रकाशन
"राग रजन" (वाद्य संगीत की रचनाएँ)
"राग दर्शन" ब्रेल लिपि में (वाद्य संगीत की रचनाएँ)
वर्तमान में सरोजिनी नायडू शासकीय कन्या स्नातकोत्तर महाविद्यालय में प्राध्यापक एवं विभागाध्यक्ष संगीत के पद पर कार्यरत।



समाज कार्य की अवधारणा एवं तकनीकी

CONCEPT & TECHNIQUES OF SOCIAL WORK

डॉ. शैलजा दुबे

डॉ. आरती श्रीवास्तव

डॉ. शशांक शेखर ठाकुर

डॉ. शीबा जोसफ

आरती पब्लिशिंग हाऊस एण्ड डिस्ट्रिब्यूटर्स

समाज कार्य की अवधारणा एवं तकनीक

लेखक

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प्रकाशक द्वारा

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santoshtiwari05712@gmail.com; www.theyugantar.in

Mob.: 9818156392, 9455251733

इस पुस्तक का कोई भी भाग किसी भी रूप में या किसी भी अर्थ में प्रकाशक की अनुमति के बिना प्रकाशित नहीं किया जा सकता है। इस पुस्तक का सर्वाधिकार सुरक्षित है।



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राष्ट्रीय शिक्षा नीति
के कार्यक्रमानुसार

आरपी यूनीफाइड

जन्तु विज्ञान

ZOOLOGY

प्रथम वर्ष

डॉ. एस. एम. सक्सेना | डॉ. मुकेश दीक्षित



राम प्रसाद एण्ड संस

आरपी यूनीफाइड

जन्तु विज्ञान ZOOLOGY

राष्ट्रीय शिक्षा नीति, बी.एस-सी. प्रथम वर्ष पाठ्यक्रमानुसार

प्रथम प्रश्न-पत्र : जन्तु विविधता : अकशेरुकी
द्वितीय प्रश्न-पत्र : कोशिका विज्ञान, प्रजनन विज्ञान एवं परिवर्धन जैविकी

लेखक

डॉ. एस.एम. सक्सेना

एम.एस-सी., पीएच.डी.

पूर्व विभागाध्यक्ष, जन्तु विज्ञान विभाग

शासकीय सरोजनी नायडू कन्या स्नातकोत्तर (स्वशासी) महाविद्यालय, भोपाल

पूर्व अध्यक्ष, जन्तु विज्ञान अध्ययन मण्डल

बरकतउल्लाह विश्वविद्यालय, भोपाल

डॉ. मुकेश दीक्षित

एम.एस-सी., पीएच.डी., एफ.एस.एल.एल.सी.

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राम प्रसाद एण्ड संस

प्रकाशक

राम प्रसाद एण्ड संस

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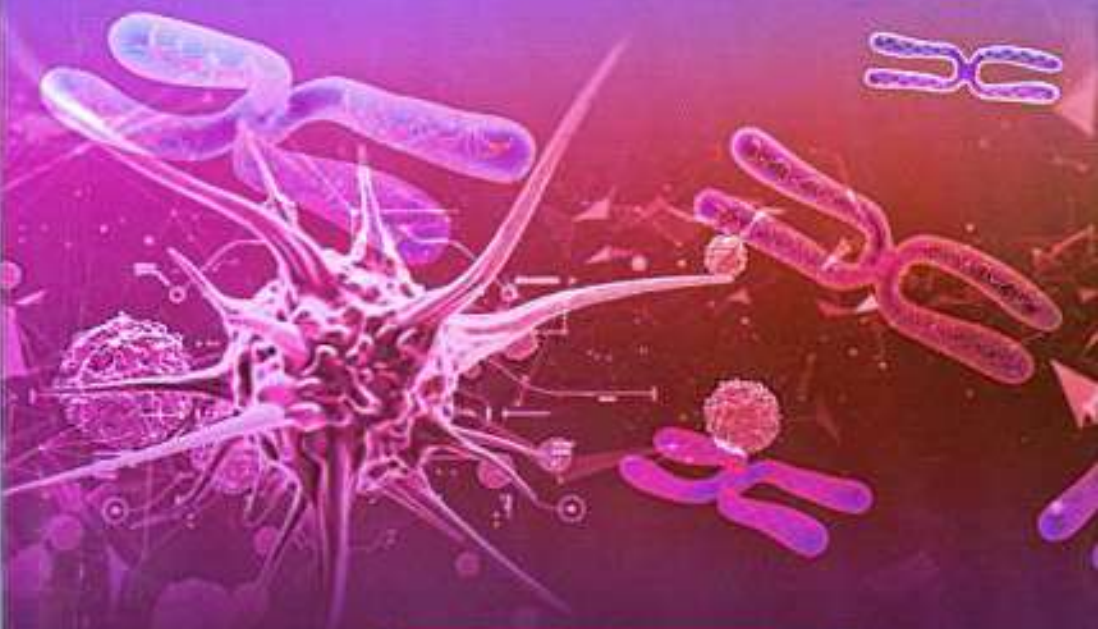
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ZOOLOGY

CELL BIOLOGY, REPRODUCTIVE BIOLOGY
& DEVELOPMENT BIOLOGY

FIRST YEAR : MINOR

Dr. S. M. SAXENA | Dr. MUKESH DIXIT



RAM PRASAD & SONS

MINOR

RP United

ZOOLOGY

According to National Education Policy
First Year Syllabus

Cell Biology, Reproductive Biology
and Developmental Biology

Publisher

Ram Prasad & Sons

Bal Vihar, Hamidia Road, BHOPAL-1

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PART A : INTRODUCTION

Program : Certificate Course	Class : B.Sc.	Year : 1 Year	Session : 2021-2022
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Subject : ZOOLOGY

1.	Course Code	SI-ZOOL21
2.	Course Title	Cell Biology, Reproductive Biology and Development Biology (Paper II)
3.	Course Type	Core Course
4.	Pre-requisite (if any)	To study this course a student must have had the subject Biology in 12th Class
5.	Course Learning Outcomes (CLO)	Upon completion of the course students should be able to : 1. Develop deeper understanding of what life is and how it functions at cellular level 2. Understand the nature and basic concepts of Cell biology, Reproductive and Developmental biology. 3. Understand structure and functions of cell membrane and cellular organelles. 4. Understand the importance of latest reproductive trends, reproductive techniques to be applied for human welfare. 5. Understand the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multi-cellular organisms. 6. Understand about the evolutionary development of various animals.
6.	Credit Value	Theory 6
7.	Total Marks	Max. Marks : 25 + 75 Min. Passing Marks : 33

PART B : CONTENT OF THE COURSE

Total No. of Lectures-Tutorials-Practical (in hours per week) : 2 hours per week I-T-P

Unit	Topics	No. of Lectures
I	Cell Biology	13
	1.1 Concept of Prokaryotic and Eukaryotic Cells, difference between Prokaryotic and Eukaryotic Cells	
	1.2 Structure and functions of Plasma membrane	
	1.3 Structure and functions of Golgi body, Mitochondria, Endoplasmic reticulum, Ribosome and Lysosome	
	1.4 Structure and functions of Nucleus	
	1.5 Structure and functions of Chromosome and special type of Chromosomes- Lampbrush and Polyene chromosome	
	1.6 Cell cycle, Mitotic and Meiotic cell division and their significance.	
	Keywords/Tags: Prokaryote, Eukaryote, Cell organelles, Chromosomes, Cell Cycle	
II	Reproductive Biology	13
	1.1 Structure of Male reproductive system of Lepus	
	1.2 Structure of Female reproductive system of Lepus	
	1.3 Histology of Testis, and Ovary of Lepus	
	1.4 Gametogenesis - Spermatogenesis and oogenesis, difference between spermatogenesis and oogenesis	

राष्ट्रीय शिक्षा नीति के
पाठ्यक्रमानुसार

आर पी यूनीफाइड

जन्तु विज्ञान

कोशिका विज्ञान, प्रजनन विज्ञान
एवं परितर्धन जैविकी

CELL BIOLOGY, REPRODUCTIVE BIOLOGY & DEVELOPMENT BIOLOGY

प्रथम वर्ष : गौण विषय

डॉ. एस. एम. सक्सेना ■ डॉ. मुकेश दीक्षित

राम प्रसाद एण्ड संस

प्रकाशक

दृष्टांतानिष्ठ विज्ञान

नादवी ज्ञान

ZOOLOGY

कौशल विकास केन्द्र, नादवी ज्ञान, नादवी ज्ञान (Cell Biology, Microbiology & Developmental Biology)

महाराष्ट्र राज्य शासन, विज्ञान विभाग, नादवी ज्ञान

प्रकाशक

राम प्रसाद एण्ड संस

बाल विहार, हमीदिया रोड, भोपाल-1

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भाग ए - परिचय

कार्यक्रम : प्रमाण-पत्र	कक्षा : बी.एस.सी.	वर्ष : प्रथम वर्ष	वर्ष : 2021-22
विषय - प्राणी शास्त्र			
1.	कोर्स कोड	SI - ZOOL2T	
2.	कोर्स शीर्षक	कोशिका विज्ञान, प्रजनन विज्ञान एवं परिवर्धन जैविकी (प्रश्न-पत्र 2)	
3.	कोर्स टाइप (कोर विषय/इलेक्टिव/जेनेरिक इलेक्टिव/वोकेशनल..)	कोर कोर्स	
4.	पूर्व अपेक्षित (यदि कोई)	इस पाठ्यक्रम का अध्ययन करने के लिए छात्र ने 12वीं में जीव विज्ञान विषय का अध्ययन किया हो।	
5.	कोर्स अधिगम उपलब्धि (लर्निंग आउटकम) (CLO)	<p>पाठ्यक्रम पूरा होने पर छात्रों को सक्षम होना चाहिए :</p> <ol style="list-style-type: none"> 1. जीवन क्या है और कोशिकीय स्तर पर कैसे कार्य करता है की समझ विकसित होगी। 2. कोशिका विज्ञान, प्रजनन और परिवर्धन जैविकी की प्रकृति और आधारभूत अवधारणाओं को ज्ञान। 3. कोशिका झिल्ली और कोशिकांग की संरचना तथा कार्यों की समझ। 4. मानव कल्याण के लिये लागू की जाने वाली नवीनतम प्रजनन तकनीकों के महत्व की समझ। 5. भ्रूण के विकास का सामान्य अध्ययन एवं क्रमिक विकास के विभिन्न चरणों का ज्ञान, साथ ही किस तरह बहुकोशिकीय जीव में विकासात्मक प्रक्रियाएं होती हैं के ज्ञान का विकास। 6. विभिन्न जन्तुओं के विकासवादी विकास की समझ। 	
6.	क्रेडिट मान	4	
7.	कुल अंक	अधिकतम अंक 25+75 न्यूनतम उत्तीर्णांक : 33	

भाग बी - कोर्स की सामग्री

व्याख्यान की कुल संख्या ट्यूटोरियल-प्रायोगिक (प्रति सप्ताह घंटे में) : L-T-P. 02 घंटे प्रति सप्ताह

इकाई	विषय	व्याख्यान की संख्या
I	कोशिका विज्ञान	13
	1.1 प्रोकेरियोटिक एवं यूकेरियोटिक कोशिकाओं की अवधारणा, प्रोकेरियोटिक एवं यूकेरियोटिक कोशिकाओं में अन्तर	
	1.2 प्लाज्मा झिल्ली की संरचना एवं कार्य	
	1.3 गालगीकाय, माइटोकान्ड्रिया, एन्डोप्लाज्मिक रेटीकुलम, राइबोसोम तथा लाइसोसोम की संरचना और कार्य	

आर पी यूनीफाइड

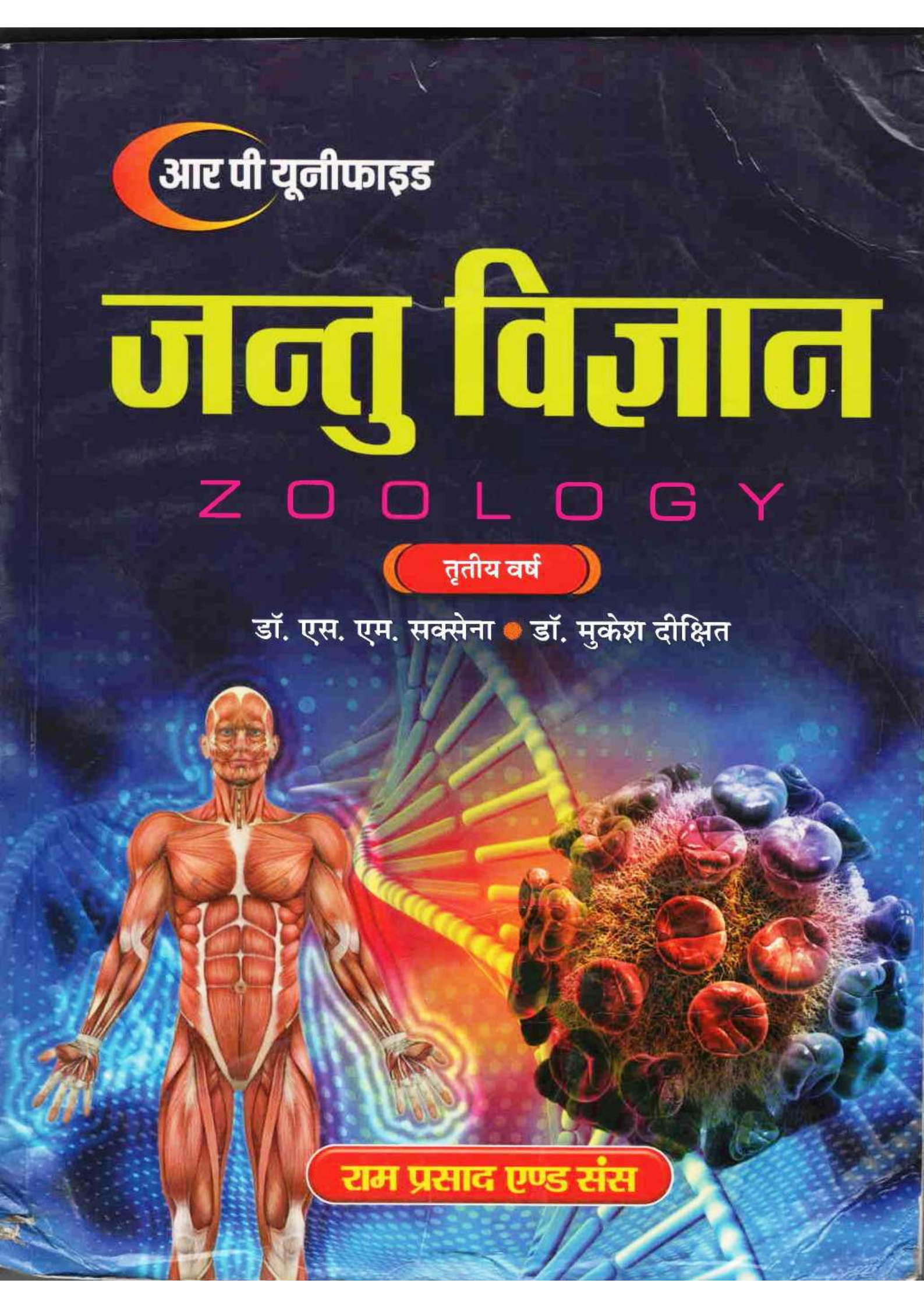
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As recommended by Central Board of Studies in Zoology

Session : 2021-22

Class	:	B.Sc. III year
Paper	:	I.
Subject	:	Zoology
Title of Paper	:	Genetics
Max. Marks	:	40

Unit -I Heredity and Genetic Material

1. Mendel's laws of heredity.
2. Variations- sources and types.
3. Structure, molecular organization and function of DNA and RNA and types of RNA
4. DNA replication in Prokaryotes.
5. Nucleosome (Solenoid model)

Unit -II Gene Expression

1. Genetic Code
2. Transcription in Prokaryotes
3. Translation in Prokaryotes
4. Gene expression: Regulation of protein synthesis and Lac operon model.
5. Split gene, overlapping gene, pseudo gene

Unit -III Linkage and Chromosomal aberration

1. Linkage and crossing over- Types and significance
2. Sex determination- Chromosomal and genetic balance theory.
3. Sex linked inheritance (Haemophilia, colour blindness)
4. Structural and numerical changes in chromosomes
5. Mutation- Types and Mutagens

Unit -IV Human Genetics

1. Human Karyotype
2. Human Genome Project
3. Multiple allele and inheritance of blood group
4. Autosomal and Sex Chromosome Syndromes in human
5. Genetic diseases in human- Sickle cell anaemia, Albinism and Thalassaemia

Unit -V Genetic Engineering

1. Recombinant DNA technology and Gene Cloning
2. Polymerase chain reaction.
3. Blotting- Southern and Northern
4. DNA finger printing
5. Gene therapy and Genetic Counseling

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FIRST YEAR

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PART A: INTRODUCTION

Program : Certificate Course	Class : B.Sc.	Year : I Year	Session : 2021-2022
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Subject : ZOOLOGY

1	Course Code	S1-ZOOLIT
2.	Course Title	Animal Diversity : Non-Chordata (Paper 1)
3.	Course Type	Core Course
4.	Pre-requisite (if any)	To study this course a student must have had the subject Biology in 12th Class.
5.	Course Learning Outcomes (CLO)	<p>Upon completion of the course will students should be able to :</p> <ol style="list-style-type: none"> 1. Learn about the importance of systemic, taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla. 2. Understand the various morphological, anatomical structures and functions of animals of different phyla. 3. Get the knowledge about economic, ecological and medical significance of various animals in human welfare. 4. Understand the important parasites and their control measures.
6.	Credit Value	Theory 6
7.	Total Marks	Max. Marks : 25 + 75 Min. Passing Marks : 33

PART B : CONTENT OF THE COURSE

Total No. of Lectures-Tutorials-Practical (in hours per week) : 2 hours per week L-T-P

S. No.	Topics	No. of Lectures
I.	Taxonomy, Phylogeny and Protozoa	11
	1. Taxonomy	
	1.1 Elementary knowledge of Zoological Nomenclature and International Code	
	1.2 Classification of Animal Kingdom upto Phylum of acoelomate and coelomate non-chordates according to Parker and Haswell 7th edition	
	2. Phylogeny	
	2.1 Definition and Examples	
	3. Protozoa	
	3.1 Phylum Protozoa: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples	
	3.2 Structure, life history and pathogenicity of malarial parasite (<i>Plasmodium vivax</i>)	
	3.3 Protozoa and disease	
	Keywords/Tags: ICZN, Classification, Protozoa, Plasmodium	
II.	Porifera, Coelenterata	11
	1. Porifera	
	1.1 Phylum Porifera : General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples	
	1.2 Type study of Sycon	
	1.3 Canal system of Sponges	
	2. Coelenterata	
	2.1 Phylum Coelenterata: General characters of the phylum and outline classification up to classes with distinctive characters and suitable examples	

आर पी यूनीफाइड

राष्ट्रीय शिक्षा नीति के
पार्यक्रमानुसार

जैविक खेती

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प्रकाशक

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भाग अ - परिचय

पाठ्यक्रम : प्रमाण-पत्र	वर्ष : 2021	सत्र : 2021-2022
1. पाठ्यक्रम का कोड :	VI-HOR-ORGT	
2. पाठ्यक्रम का शीर्षक :	जैविक खेती	
3. पाठ्यक्रम का प्रकार :	व्यावसायिक	
4. पूरुषिका (Prerequisite) (कौन से होंगे)	इस कोर्स का अध्ययन करने के लिए छात्र को किसी भी विषय में 12 वीं कक्षा पास होना चाहिए।	
5. पाठ्यक्रम अध्ययन की परिणामिताएँ (कोर्स लर्निंग आउटकम) (CLO)	इस कोर्स का अध्ययन करने के बाद छात्र निम्न कर सकने में सक्षम होगा- <ul style="list-style-type: none"> ● संरक्षित खेती के लिए मीडिया तैयार करना। ● सिंचाई और फर्टीगेशन, ग्रीन हाउस संचालन, संरक्षित संरचना की देखभाल और रखरखाव। ● संरक्षित खेती में विशेष बागवानी प्रक्रियाओं को समझना। ● कीट-नाशकजीवों और बीमारियों की पहचान और नियंत्रण फसल और कटाई के बाद की प्रक्रियाओं को समझना। 	
6. अपेक्षित रोजगार करियर के अवसर	सरकारी क्षेत्र के साथ-साथ निजी क्षेत्र में नौकरी के अवसर एवं स्वरोजगार	
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भाग ब - पाठ्यक्रम की विषय-वस्तु

व्याख्यानों की कुल संख्या + प्रैक्टिकल (प्रति सप्ताह घंटों में):
 व्याख्यान - 1 घंटे / प्रैक्टिकल अवधि-1 प्रायोगिक घंटे

इकाई	विषय	कुल व्याख्यान
I	परिचय और सिद्धांत, जैविक खेत का विकास, मिट्टी को जैविक मिट्टी की खेती और जुताई में बदलना, अच्छी बढ़ती परिस्थितियों का निर्माण, मिट्टी का संघनन, मिट्टी की खेती के प्रकार।	5
II	फसल योजना और प्रबंधन, फसल चक्र, अंतरफसल, कवर फसलें, फसल-पशु संघ मल्लिचंग: परिभाषा, उपयोग, मल्लिचंग सामग्री का चयन, मल्लिचंग सामग्री का स्रोत, मल्लिचंग का अनुप्रयोग।	8
III	जैविक रूप से खेत का प्रबंधन करें, लाइव बाड़ लगाना, जल और पोषक तत्व प्रबंधन, खरपतवार प्रबंधन, कीट और रोग प्रबंधन। पौध प्रसार, बीज मूल्यांकन के लिए मानदंड, लक्षण वर्णन और गुणन, पारंपरिक किस्मों का महत्व, बीज संरक्षण।	10
IV	जैविक प्रबंधन के अन्य रूप, बायोडायनामिक कृषि, ऋषि कृषि, प्राकृतिक खेती, पंचगव्य कृषि, नाटुको खेती, होमा खेती।	7



Handbook of
Biofuels

Edited by **Sanjay Sahay**



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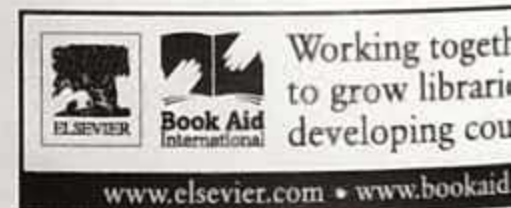
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Handbook of Biofuels

Edited by **Sanjay Sahay**

Key Features

- Reviews all existing and emerging technologies for the production of advanced biofuels
- Includes biofuel applications with compatible global application case studies
- Offers new pathways for converting biomass

Handbook of Biofuels looks at the many new developments in various types of bioenergy as well as the significant constraints in their production and/or applications, and the hurdles to overcome. Beyond introducing current approaches and possible future directions of research, this book covers sources and processing of raw materials to downstream processing, constraints involved and research approaches to address and overcome these needs.

With chapters on the techno-economic analysis of biofuel production and concepts and step-by-step approaches in bioenergy processing, the objective of this book is to present a comprehensive and all-encompassing reference about bioenergy to students, teachers, researchers, and professionals.

About the Editor

Dr. Sanjay Sahay, Professor of Botany, Sarojini Naidu Government Girl's Postgraduate College, Bhopal, India, obtained his PhD degree in fungal genetics from Patna University, Patna, India, and received his postdoctoral research experience in yeast molecular biology from the Indian Institute of Science, Bangalore, India. His research interests are 2G bioethanol, cold-active enzymes, and psychrophilic fungi. He has taught for 27 years, guided 18 PhD students, published more than 30 papers in peer-reviewed journals, contributed 3 book chapters, and submitted 2 patent applications (one granted) in 2G bioethanol. He has been selected as the Biotechnology National Associate by the Department of Science and Technology, Government of India and as a Research Awardee by the University Grants Commission, India.

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TEXT BOOK OF
**Cell Biology and
Biochemistry**
for undergraduates

1st Edition



Dr. Devika Dogra



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Girl's PG (Autonomous) College, Bhopal (M.P.)**

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VERSO

PALACIO



Dr. Anupama Rawat

Dr. Anita Evelyn

Miss. Riya Mary Peter

VERSO PALACCIO

Verso Palaccio

(An Anthology of Poems and Short Stories)

Compiled by

Dr. Anupama Rawat

Dr. S. Anita Evelyn

Miss. Riya Mary Peter

VERSO PALACCIO

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Dr. Anupama Rawat



Let's try Gandhi once again

*They wrote Gandhi
in text in words in pages in books,
on black boards, on walls, on posters, on pamphlets, on
LED screens, on the back of the buses, motor vehicles,
even trucks at times,*

*But could they ever underline and bother to decipher
deep in his writings of his words and give meaning to
each.*

They looked for Gandhi in khadi, in topis, in kurtas, in
bandis** and even in their loin cloth dhotis.
But could they ever find him in the very touch of all these
objects and their objectives.*

*They discussed Gandhi in meetings, in seminars, in
conferences, in workshops, in symposia and even in their
determined marches.*

*But never could they implement even one of his single
ideas in any of the successful schemes. Did they pose*

आरपी यूनीफाइड

राष्ट्रीय शिक्षा नीति के
प्राथमिक अनुसंधान

प्रायोगिक जन्तु विज्ञान

डॉ. एस. एम. सक्सेना
डॉ. मुकेश दीक्षित

प्रथम वर्ष



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Practical Zoology

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INDIAN ECONOMY

An Introduction

INDIAN ECONOMY

An Introduction

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Professor of Economics

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Bhopal (M.P.)



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*I dedicate this book to my Father
Prof. Prabhu Kumar Pachori and
my mother Mrs. Madhu Pachori.*

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Psychrotrophic Microfungi: Major Habitats, Diversity and Living Strategies

[Kanak Choudhary](#), [Najeeb Hussain Wani](#), [Farooq Ahmad Ahanger](#), [Suhaib Mohamad Malik](#), [Vinod Chourse](#), [Abdul Majid Khan](#) & [Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

289 Accesses

Abstract

Ecology of extreme cold areas with subzero temperatures at least in some part of the year is the subject of interest. Microfungi from these areas show special morphological and physiological adaptations to avoid cold stresses. Some of them are endemic, but majority are cosmopolitan in distribution. Except for a few, mostly fungi from these areas show a wide range of growth temperatures.



Extremophilic Fungi pp 245–252

Chaotolerant Fungi: An Unexplored Group of Extremophile

[Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

286 Accesses

Abstract

Chaophilic fungi constitute a small group of very special fungi that can complete their life cycle in the presence of macromolecule-destabilizing chemicals known as chaotropes, for example, $MgCl_2$, $CaCl_2$, etc. They, as concluded from the study of a limited number of isolated fungi of this group, exhibit halotolerance/halophilic and xerotolerance characters simultaneously. There is hardly any information about the unique physiological mechanism of chaotropicity that differentiates them from halotolerants. But the harsh conditions they are exposed to seem to be favorable for the evolution of exotic biomolecules in them. Thus, they may be potential sources of novel molecules of human uses.



Extremophilic Fungi pp 273–314

Extremophilic Enzymes: Catalytic Features and Industrial Applications

[Kanak Choudhary](#), [Mangesh Kumar Mankar](#) & [Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

297 Accesses

Abstract

Extremophilic microbes are those that are adapted to very harsh environmental conditions. Fungi constitute one of the important groups that by virtue of various adaptation strategies learn to live in extreme environment and serve important ecological functions. Their presence and activity are also essential for a large variety of flora and fauna of these harsh environments. Although microbes have developed a variety of strategies to successfully lead life in these extreme conditions, the enzymes with unique combination of catalytic features they have developed have especially enabled them to drive all metabolic and ecological under extreme conditions. The chapter highlights some important catalytic

features found across a large number of important enzymes.



Extremophilic Fungi pp 347–365

Extremophilic Fungal Cellulases: Screening, Purification, Catalysis, and Applications

[Sangita Chouhan](#), [Rajkumar Ahirwar](#), [Tejpal Singh Parmar](#), [Ashiq Magrey](#) & [Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

293 Accesses | **1** [Altmetric](#)

Abstract

Cellulases constitute a consortium of enzymes that by their coordinated activity hydrolyze cellulose to glucose. Commercially they are very important with their varied industrial applications.

Currently, *Trichoderma* and *Aspergillus* are the main sources of commercially available cellulases, but for certain applications more suitable enzymes are required that can be provided by extremophilic microbes including fungi. During the last few decades cellulases from extremophilic fungi exhibiting desirable features for specific applications such as psychrophilic enzymes for textile and detergent applications and highly sturdy polyextremophilic

cellulases for biofuel application have been reported that they have paved the way for the exploration and finally applications of cellulases from extremophilic fungi.



Extremophilic Fungi pp 581–614

Extremophilic Fungi: Potential Applications in Sustainable Agriculture

[Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

302 Accesses

Abstract

Food is the most basic requirement of life which has been hard hit due to climate change effect. Unfortunately, unsustainable agricultural practices pursued for many decades to produce more have left behind a substantial proportion of polluted and depleted water sources and highly affected soil concerning its structure, and chemical and microbiological composition. To ensure continued supply of food to billions of stomachs across the world, remediation of the so-called problem soils and sustainable use of soil in general have now become imperative. Fungi constitute an important part of soil microbiome which by their efficient secretomes and plant growth-promoting activities play a key role in soil structure and fertility maintenance. Extremophilic

fungi with their capacity to function under various stress conditions and to confer upon plants' tolerance to various abiotic and biotic stresses hold a key to bioremediate problem soils, restore soil fertility, and augment stress tolerance to the plants.



Extremophilic Fungi pp 171–193

Halophilic, Acidophilic, Alkaliphilic, Metallophilic, and Radioresistant Fungi: Habitats and Their Living Strategies

[Tuyelee Das](#), [Abdel Rahman Al-Tawaha](#), [Devendra Kumar Pandey](#), [Potshangbam Nongdam](#), [Mahipal S. Shekhawat](#), [Abhijit Dey](#) , [Kanak Choudhary](#) & [Sanjay Sahay](#)

Chapter | [First Online: 20 April 2022](#)

323 Accesses

Abstract




The magnificent stress-resistant mechanism, capacity to transform extreme abiotic factors as triggers for genetic modulation and physiological evolution, synced speciation in response to altered environment, and highly innovative succession cum resource management skill have crowned the microorganisms as the “specialist messenger of life” that thrive under extreme conditions. However, in recent decade, the ubiquitous fungi have gathered attention after archaea and bacteria for their versatile ecological adaptation, morphological resilience, and

biochemical flexibility that allowed them to sustain and flourish under nature's deadliest environmental conditions. The inhospitable temperature, pressure, radiation, desiccation, salinity, and pH (both acidic and basic)-induced stress has capacitated a large number of extremophilic fungi with better sustainability factors. The "extraterrestrial" type of existence has been reported from hostile and lethal niches like frozen world of Antarctic and Arctic, deep sea ice and hydrothermal vents, hot springs, areas of high salt concentration, barren desert with extreme climate, toxic heavy metal and organic matter polluted regions, ocean trenches with high pressure, radiation contaminated zones, etc. The phylogenetic diversity of extremophilic fungi is highly complex exactly as their multidimensional mechanism of primary and secondary resource management, niche utilization, and physiological metabolism. From the bed of life-enriched rainforests to barren worlds full of toxic materials and fluctuating climate, this eukaryotic group has manifested great evolutionary plasticity and molecular strategies that are the center of interdisciplinary research that connects evolutionary biology, astrobiology, biochemistry, molecular biology, ecology, and many related fields of science. The modification of genetic make-up and introduction of specialized survival technique controlled via manipulation of metabolic pathways are not only associated with successful colonization of these fungal members but also important in terms of exploration of natural products from unexplored sources.

Chapter 4 - Energy plants (crops): potential natural and future designer plants

MarioMotto¹SanjaySahay²

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


Abstract

Plants (both lower plants belonging to cyanobacteria and algae and higher plants belonging to angiosperms and gymnosperms) supplement various industries such as agroforestry, food, and municipal waste and can themselves be served as feedstock for various types of renewable biofuels, as well as function as an inexpensive manufacturing platform to provide a multiplicity of items. Although all plants may operate as a potential staple for producing energy and chemicals, some essential characteristics such as short life cycle, higher growth rate, ability to grow under various stress conditions, and above all, no competition exhibited with food crops for space are especially expected from plants designated as energy plants (crops). Also, plants with higher oil (oleaginous) and hydrocarbon (petroplants) contents are considered energy plants. Certain food crops that are grown for use in biofuel production (e.g., sugarcane in Brazil and corn in the United States) or certain other crops that produce large volumes of residues (e.g., wheat and rice straw, sugarcane bagasse, maize stover and cobs, and sorghum stalks) are considered as food as well as energy crops (plants). Although these natural energy plants are important feedstock for various types of biofuels, they have certain inherent constraints that have so far thwarted their large-scale application and the consequent commercialization of biofuel technology. Some important constraints are the recalcitrance of lignocellulosic biomass and the low contents of oil and hydrocarbons in oleaginous and petroplants, respectively. These have prompted the application of genetic approaches to remove these constraints and tailor these plants (designer plants) in such a way that facilitates the rapid commercialization of plant-based biorefinery technologies.

Chapter 10 - Deconstruction of lignocelluloses: potential biological approaches

SanjaySahay

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


Abstract

Lignocellulosic materials are composed of three main structural polymers: cellulose, hemicelluloses, and lignin. These three are drastically different chemically and are interconnected in a very intricate manner. While cellulose is a homopolymer of glucose that requires a small number of enzymes for its degradation, lignin is a complex polymer of phenylpropane, making its biochemical decomposition a difficult proposition. This is, however, an important renewable resource that can yield a number of platform chemicals for various products of human use. Its uses are also expected to replace many nonsustainable processes and products. But its efficient use for any application generally requires it to be separated into its components. Microorganisms are natural decomposers of dead organic matter, including lignocellulosics because of their ability to produce a wide range of hydrolytic enzymes including cellulase, xylanases, proteases, lipases, phosphatases, and laccase during the degradation of lignocellulosic materials. Apart from these, some fungi and bacteria also produce accessory enzymes and reactive oxygen that facilitate the enzymatic hydrolysis of lignocellulosic materials. Application of a suitable microbe or combination of microbes or their enzymes for the deconstruction of lignocellulosic materials, commonly called biological pretreatment, is a sustainable process. Biological pretreatment can also be combined with any of the physicochemical methods suitable to overcome some important constraints of both.

Chapter 34 - The pursuits of solar application for biofuel generation

SanjaySahay

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Abstract

The disadvantages associated with the use of fossil fuels have motivated various stakeholders to explore alternative energy sources. Solar energy, which is the source of energy for sustaining the ecosystem after being converted photosynthetically by the plants to chemical energy, is also looked upon as a renewable energy source for the generation of biofuels applying various approaches. For example, the so-called fourth-generation biofuels are expected to be produced by (1) designer photosynthetic microorganisms, (2) linking photovoltaics with microbial fermentation (electrobiofuels), (3) synthetic cell factories or synthetic organelles, and (4) artificial leaves. Advances in solar collector technology have also fueled the pursuits further. The existing “negative net energy return” biofuel technologies that are fueled by fossil fuels are also being refined to make them “positive net energy return” ones by replacing fossil fuels with renewable energy sources, especially solar energy. The chapter in the following sections will touch upon various approaches currently being tested/adopted to apply solar radiation for the generation of biofuels.

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EDITOR

DR. BASSA SATYANNARAYANA

MR. MUKUL BARWANT



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ABSTRACT

Nowadays, people are drawn to medicinal plants because of their enormous therapeutic potential and few negative effects. The aim of this study was to investigate the phytochemicals of a medicinally rich plant *Commiphora mukul*. Herbalists use it as a significant therapeutic plant. Soxhlet extraction method was used to get successive solvent extracts of *Commiphora mukul*. The crude chemicals were extracted using methanol, petroleum ether, and ethyl acetate. The presence of alkaloids, flavonoids, phenols, terpenoids, steroids, tannins, carbohydrates, glycosides, and proteins were shown by a qualitative phytochemical analysis of these extracts. This experimental work would substantiate the traditional knowledge scientifically to use the plant for controlling several diseases.

KEYWORDS: *Commiphora mukul*, phytoconstituents, pharmacognostical, phytochemical.

INTRODUCTION

Around the world, medicinal plants have been crucial in treating and preventing human ailments. Different medicinal plants, including those found in arid zones, herbal plants, and some shrubs, may be used to treat and prevent human ailments. Nutraceuticals are a variety of plants, food ingredients, and other ingestible compounds that have the potential to improve human health and function. It also includes elements obtained from plants and from animal services (Bopana *et al.*, 2007) Antioxidant components are microscopic substances that prevent oxidation of lipids by preventing the start or growth of oxidative chain reactions and also scavenge free radicals (Johnson *et al.*, 2005). Antioxidants have become increasingly used in clinical settings recently for the treatment of chronic degenerative illnesses, ageing, and neurodegenerative disorders (Sohal *et al.*, 2002).

Guggul (oleo gum resin), an extremely valuable herbal remedy that has been used to treat a number of ailments, exudes from the bark plant *Commiphora mukul* (Burseraceae). It represents a phytochemical reservoir of heuristic medicinal qualities and has a long history in ethnomedicine. It is one among the components in a variety of Ayurvedic formulations, the

most of which have the suffix guggul in their names (Aruoma *et al.*, 1997). Gugulipid, an extract of the *Commiphora mukul* used to treat a range of human illnesses, contains the major active ingredient guggulsterone. (Sangle *et al.*, 2004). In view of the above, we designed the study to evaluate the phytochemical analysis of *Commiphora mukul*.

METHODOLOGY

PLANT MATERIAL COLLECTION:

COMMIPHORA MUKUL:

Plant material were collected in the month of march in 2021 from the suburban area of Bhopal. The plant that used for research were properly washed in water and then quench in distilled water. Then the subject is allow to dry at room temperature (Hanus *et al.*, 2005). The bark then cut into small pieces and dried for 8-10 days in sheded area without being contaminated. It taken care of that the material must not come in direct sunlight exposure. The shaded dried materials then grind into coarse powder with the help of electronics grinder. The powder of material were dried and stored in an airtight container in some dark place at room temperture for extraction and phytochemical analysis (Patil *et al.*, 1972).

DEFATTING OF MATERIAL:

Defating of material is a process of removal of dust, dirt, oil, fat and other foriegn material from plant material so that we can get the appropriate material for process. For defatting we keep plant material i.e. powder in petroleum ether for 24 hours at room temperature. After a period of 1 day the plant material filter with the help of spetula, funnel and filter paper. Spread tme filtered material on paper to dry and then keep tight in a container (Purushothaman *et al.*, 1976)

CHEMICAL REAGENT:

For phytochemical analysis we used some chemical reagents. They are hydrochloric acid(HCl), Picric acid , Fehling solution A, Fehling solution B, Ferric chloride, Lead acetate, Gelatin solution, Copper acetate.

EXTRACTION OF PLANT MATERIAL:

The process of separation of active plant materials from inactive plant material by the use of appropriate solvent and standard extraction method is known as extraction of plant material. The active plant materials alkaloids, flavonoids, terpenes, saponins, steroids, and glycosides. The common types of extraction method are maceration, infusion, digestion, soxhilation, percolation, decoctiona. For extraction of plant material here we use soxhilation method with the help of Soxhlet apparatus. In this method we use four solvent. They are chloroform (CH₃Cl), ethyl acetate (C₄H₈O₂), Ethanol (C₂H₅OH), Water (H₂O). We select these solvent on the basis of their polarity. The polarity of chloroform is least and the polarity of water is higher than all (Kakrani *et al.*, 1981)

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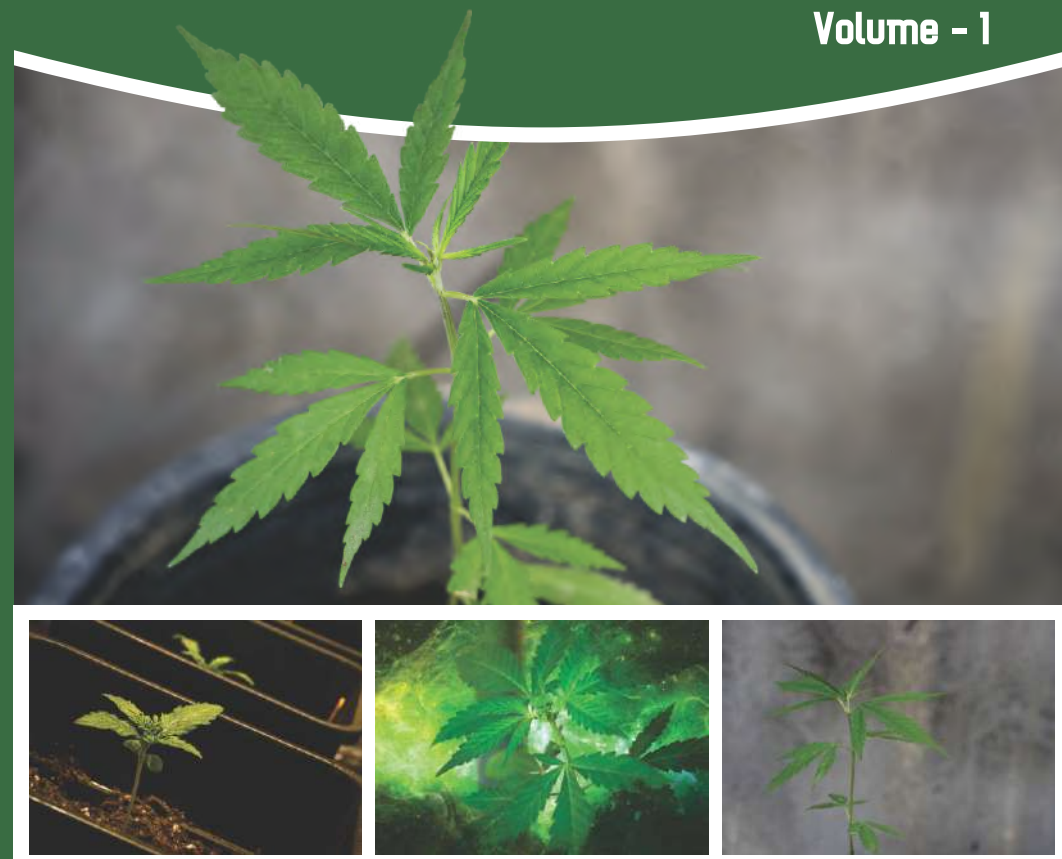
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And

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**Allergy and Antihistamine: The Significance of
Medicinal Plants and Their Relevance in Drug
Repurposing**

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Chapter - 2

Allergy and Antihistamine: The Significance of Medicinal Plants and Their Relevance in Drug Repurposing

Dr. Shalini Nema and Dr. Shobha Shrivastava

Abstract

Allergic disorders encompass skin, food and respiratory allergies. Study present here includes plant metabolites like Polyphenols, Quercetin, Gossypin, Saponin, Steroidal lactone, alkaloids and many others are such class of compounds that are found in foods and plant sources and have been investigated for their anti-allergic, antihistamine and anti-inflammatory properties. These plants display their antiallergic potential through affecting mast cell, immunoglobulin, histamine and inhibiting different cytokines and interleukins. Research into repositioning known drugs to treat off target diseases other than the originally intended disease continues to grow and develop for therapeutic purposes. Phytoconstituents and the recent knowledge about SARS-CoV and SARS-CoV-2 pathology, profess their use in the prevention and management of COVID-19 pandemic. It is, therefore, believed to be an emerging strategy where existing plant metabolites having already been tested safe in humans, are redirected based on a valid target molecule to combat particularly, rare, neglected and difficult-to-treat diseases.

Aim: This review provides an overview of antiallergic and antihistamine potential of respective plant extracts and also assess their use in drug repurposing against viral infections with focus on prevalent corona virus disease.

Keywords: Plant metabolites, Antiallergy, Antihistamine, Antiviral, Drug repurposing, SARS-CoV-2, Coronavirus.

Introduction

An allergy is an immune response, or reaction to substances that are usually not harmful. In someone with allergies, the immune response is oversensitive when it recognizes an allergens and induces the release of histamine. The substances that trigger the overreaction are called allergens.

The symptoms that result are called an allergic reaction. Histamine causes vessels to swell and dilate, leading to allergy symptoms.

The physiological mechanism of allergic reactions is the same in everyone. Allergens enter the body-either through ingestion, inhalation or contact with the skin or mucous membranes. This causes white blood cells to release an antibody which then binds to w mast cells. The mast cells rupture-and in the process, release biochemical substances including histamine.

Anaphylaxis and Allergen

Anaphylaxis is an allergic disease that occurs when the body is exposed to specific allergen. It could be caused by a variety of exogenous substances like allergens that include heterologous serum (such as tetanus antitoxin), certain animal proteins (such as that of fish, shrimp, and crabs), bacteria, viruses, parasites, animal fur, plant pollen, dust mites in the air, and chemicals and drugs. Allergens could stimulate human B cells to produce immunoglobulin E, which combines with antibodies on human mast cells and sensitized cells, damages the cell membrane and leads to degranulation, and releases histamine.

Histamine and its receptors

Histamine is synthesized and released by different human cells, especially basophils, mast cells, platelets, histaminergic neurons, lymphocytes, and enterochromaffin cells. It is stored in vesicles or granules released on stimulation. Histamine exerts its effects on target cells in various tissues by binding to its four receptors: histamine receptor (HR)₁, HR₂, HR₃, and HR₄. These receptors belong to the G protein-coupled receptors family (GPCRs) (Jutel, M. *et al.* 2005). H₁ receptor (HR₁) is codified in the human chromosome 3 and is responsible for many symptoms of allergic diseases, such as pruritus, rhinorrhea, bronchospasm, and contraction of the intestinal smooth. The presence of histamine stabilizes the receptor in its active form.

Antihistamines

Antihistamines are used in the management of allergic conditions. They are useful for treating the itching that results from the release of histamine. There fore, antihistamine are medicines that treat allergy symptoms by blocking the effects of histamine by stabilizing the inactive form of the receptor.

Mechanisms of action

Antihistamines are competitive inverse agonists at the H1 receptor that have preferential affinity for the inactive state of the receptor and stabilize it

in this conformation. Therefore, they are 'inverse agonists' that reduce the basal level of constitutive activity at histamine H1 receptors as well as blocking the agonist effects of histamine.

Antihistamines effects

- 1) Suppression of many of the vascular effects of histamine, with a reduction of vasodilation and oedema.
- 2) Inhibition of the accumulation of inflammatory cells in tissues.
- 3) Suppression of the immune response to antigens.

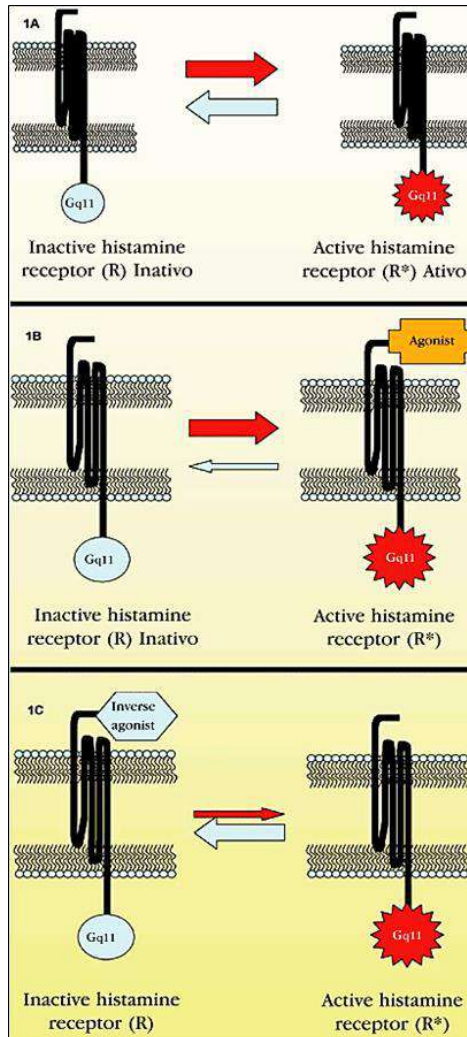


Fig 1: Mechanism of Action of active and inactive histamine receptor

Importance of medicinal plants: A review

Plant-derived substances have recently become of great interest owing to their versatile applications. Medicinal plants are the richest bioresource of drugs of traditional systems of medicine, modern medicines, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates and chemical entities for synthetic drugs.

Antihistamine have many drawbacks including side effects of drowsiness and significant anticholinergic side effects. As a result, many patients with chronic allergic conditions, such as asthma, seek complementary alternative medicine (CAM) in order to achieve better control of symptoms. CAM is a set of healing resources that includes herbs that are used in traditional medicine (Slader, C.A. 2007). Bioactive natural products have played a key role in discovery of many important drug molecules and therefore medicinal plants are considered as potential sources a of new chemical entities (NCE) including viral drugs.

Singh, *et al.* (2011), highlight the presence of polyphenols in the daily diet confer them a safety profile and justifies their recognition as anti-allergic agents. It is known that polyphenols can form insoluble complexes with allergenic proteins changing their structure or rendering it less bioavailable.

Okunade, *et al.* (2004) have observed that plant alkaloids have considerable biological activity. They are known to have pharmacological effects and are used in medication.

Flavonoids are a class of natural product that is most extensively found in food associated with anti-allergic activity (Kempuraj, *et al.* 2005). On the other hand, saponins which are frequently found in several food plants such as soybeans, peas, spinach, quinoa, licorice, ginseng, capsicum peppers, eggplant and yam, present glucocorticoid-like activity and have huge biologic potential (Francis, *et al.*, 2002).

Tannin contributes various medicinal properties such as antimicrobial, anti-inflammatory and astringent activity. They have been also reported to have anti-viral, antibacterial and anti-parasitic effect (Holvoet, *et al.* 2012).

Thymoquinone (TQ) is a chief bioactive constituent of black seed oil (*Nigella sativa*). TQ holds promising pharmacological properties against several diseases. It exhibits outstanding antioxidant, anti-inflammatory, anticancer, and other important biological activities, (Rahman, *et al.* 2020).

Drug Repurposing/drug repositioning

Drug repurposing is a process of identifying new uses for approved or investigational drugs and it is considered as a very effective strategy for drug discovery as it involves less time and cost to find a therapeutic agent in comparison to the de novo drug discovery process. Drug repositioning utilizes the combined efforts of activity-based or experimental and in silico-based or computational approaches to develop/identify the new uses of drug molecules on a rational basis. It is, therefore, believed to be an emerging strategy where existing medicines, having already been tested safe in humans, are redirected based on a valid target molecule to combat particularly, rare, difficult-to-treat diseases and neglected diseases.

Challenges

Drug repositioning is a complex process involving multiple factors such as technology, commercial models, patents, and investment and market demands. Another important issue is related to patent application and intellectual property rights (IPR). There are no provisions of IP protection of drug discovery by repositioning approach as per the IP and patent laws. For repositioned drugs, IP protection is limited (Rudrapal. M., 2020).

Significance and Benefits

This process do not require the initial processes of testing and approval thus saving time and resources. Most importantly, the already existing approved drugs have a known safety profile, which makes it an attractive proposition.

Drug repurposing has numerous advantages over conventional drug discovery approaches, including:

- 1) Considerably cuts research and development (R&D) costs.
- 2) Reduces the drug development timeline, as various existing compounds have already demonstrated safety in humans, it does not require Phase I clinical trials.
- 3) Potential for reuse despite evidence of adverse effects and failed efficacy in some indications.

Some popular drug repurposing approaches include

- 1) Repurposing oncology drugs.
- 2) Repositioning drugs across therapeutic areas.
- 3) **Aspirin:** Is a powerful drug that is not only being evaluated in the oncology field, but also in cardiac-related indications such as myocardial infarction.

- 4) Repurposing drugs to treat COVID-19: Drugs are also being repurposed as a treatment strategy against COVID-19, the disease caused by SARS-CoV-2. Several drugs are being evaluated including Lopinavir/ritonavir, Danoprevir plus Ritonavir and other combinations, Remdesivir etc.

Why phytoconstituents are a proven significant source?

Reasons

- 1) Demonstrate a broad spectrum of activity against pathogenic species.
- 2) Rarely have severe side effects.
- 3) Often possess the immunomodulatory action in humans.

Mechanism of action

Secondary Metabolites can affect the microbial cell in several different ways. These include the disruption of cytoplasmic membrane function and structure, interaction with the membrane proteins, interruption of DNA/RNA synthesis and function, destabilization of the proton motive force with leakage of ions, prevention of enzyme synthesis, induction of coagulation of cytoplasmic constituents, and interruption of normal cell communication ([Anand U. *et al.*, 2019; Radulovic, *et al.*, 2013). For example, Berberine (alkaloid group) from *Berberis* spp., can severely damage the structure of bacterial cell membranes and inhibit the synthesis of proteins and DNA under interaction with *Streptococcus agalactiae*.

Obviously, each compound that is extracted from a plant is not ready to be instantly used in routine clinical practice. We need antibacterial with sufficiently low inhibitory concentrations, minimal toxicity, and ease bioavailability for efficient and safe use in humans. Current advances in bio screening research, including the omics technologies, first of all metabolomics, will enable us to both catch and identify even very low-quantity active phytochemicals and clarify the specific molecular mechanisms underlying their effect(s) on bacterial targets (Cyrill. *et al.*, 2020).

Ethnomedicinal plants: Their role in Antiallergy and Drug Repositioning.

Given below is a brief description of some potential ethnomedicinal plants which are known to exhibit anti allergic and antihistamine activity and are used in Chinese traditional system of medicine, Ayurvedic system, Unani

and as Prophetic medicines. These plants are explored further for drug discovery and repurposing drugs for other ailments. (Table: 1).

Methodology

The available informations on the medicinal plants which characterized antimicrobial potential were collected from electronic scientific databases: Pub Med, Science Direct, Scopus, Web of Science and Google Scholar. A total of 11 plants were included in the present review. Reviews from Various researchers regarding natural compounds from various medicinal plants were studied (Table: 1).

Table 1: Antiallergic Effects of Plant Species, Biological Response and reposition

S. No.	Plants	Important phytoconstituents	Drug effect	Reference	Repurposing drug	Reference
1.	<i>Allium cepa</i> , <i>Malus domestica</i> , <i>Camellia sinensis</i> and <i>Fagopyrum esculentum</i> .	Quercetin (flavonoid)	Inhibition of histamine e release, decrease in pro-inflammatory cytokines suppressed interleukin IL-4 production.	Mlcek. J. <i>et al.</i> , 2016	Against SARS-CoV-2	-Zhang D.H. <i>et al.</i> , 2020 Lee H. <i>et al.</i> , 2015
2.	<i>Hibiscus vitifolius</i> Linn	(Gossypin) Bioflavonoid	Inhibit antipruritics, systemic anaphylaxis reactions reduced the histamine release	Ganapaty S, <i>et al.</i> , 2010	Against Herpes simplex virus	Lee j. <i>et al.</i> , 1999
3.	<i>Aristolochia bracteolata</i> Lamk.	Chloroform extract	Mast cell membrane stabilization, Inhibiting histamine pathway.	Chitme <i>et al.</i> 2010	Broad spectrum of antibacterial activity	Negi, <i>et al.</i> 2003
4.	<i>Camellia japonica</i> L. Theaceae Leaf.	Ethanol	Degradation of mast cell	Lee J-H, <i>et al.</i> , 2008	High antiviral activity on porcine epidemic diarrhea virus (PEDV) of corona virus family	Yang J.-L., <i>et al.</i> , 2015
5.	<i>Camellia sinensis</i> (L.) O. Kuntze	Saponin	Decrease histamine level	Morikawa T. <i>et al.</i> , 2007.	In various antivirus vaccines (saponin based adjuvants)	Sharma R. <i>et al.</i> , 2020
6.	<i>Cordia verbenacea</i> D.C.	Sesquiterpene	Decrease edema	Fernandes <i>et al.</i> , 2007	Antiviral activity on herpes simplex virus type 1 (<i>Cordia salicifolia</i>)	Hayasi K <i>et al.</i> , 1990
7	<i>Withania somnifera</i> (L.) Dunal.	Steroidal lactone	Decrease the expression of IFN-IL-2 and decreases IL-4 level	Malik F. <i>et al.</i> , 2007	Against SARS-CoV-2 S protein	Dhawam m. <i>et al.</i> , 2021

8	<i>Azadirachta indica</i>	Nimbin (Triterpene)	Fungicidal, antihistamine and antiseptic properties.	Naik. M. <i>et al.</i> , 2014.	Treatment for neurogenerative disease like Alzheimer's and Parkinson's disease, Type 2 Diabetes Mellitus and Polycythemia	(Dash <i>et al.</i> , 2017)
9	<i>Solanum nigrum</i> L.	Alkaloid, cinnamic acid ester, steroid derivative (spirostan)	Degranulation of mast cell	Cai X-F, <i>et al.</i> , 2010.	Anti-Hepatitis c virus v <i>et al.</i> , Accine	Javed <i>et al.</i> , 2011
10	<i>Glycyrrhiza uralensis</i>	glycyrrhizin	Antihistamines	Cao. w. <i>et al.</i> 2020	Against AIDS. (inhibit HIV replication).	Hatori. T. <i>et al.</i> , 1989.
11	<i>Nigella sativa</i>	Thymoquinone (TQ)	Reducing the release of histamine and leukotrienes, anti-inflammatory.	Alsamarai A.M, <i>et al.</i> , 2014	inhibit SARS-CoV-2 replication.	Rahman, M.T. 2020

Combating covid-19: Impact of antiallergic bioactive compounds on viral activity

***Camellia sinensis* (L.) O. kuntze**

Saponin-based adjuvants selectively stimulate Th1 and cytotoxic T cell responses because they direct antigens into endogenous processing pathways and enhance IFN- γ release by dendritic cells. As a result, a robust antibody and cell-mediated immune response is activated. Therefore, more research is needed to develop saponin adjuvanted recombinant spike or RBD protein subunit vaccine. Development of a saponin adjuvanted subunit vaccine for SARS-COV-2 would also help us in tackling future pandemics associated with other novel coronaviruses (Sharma R. *et al.*, 2020).

Withania somnifera

The medicinal attributes of *W. somnifera* are owing to a broad range of bioactive secondary metabolites including steroidal lactones [withanone, withanolide D, withanolide A, and withaferin A (WFA)]. Among these, WFA is one of the most interesting naturally occurring bioactive compounds that possess potent anti-tumorigenic, anti-inflammatory, pro-apoptotic, anti-angiogenic, and anti-invasive activities. WFA might bind to SARS-CoV-2 S protein and alter the S protein, thereby hindering its access into the host cells. Withanone and Withanoside V can impede the functional activities of SARS-CoV-2 main protease (Mpro). Withanolides have been found to control cytokine secretions during infection and could alleviate the cytokine storm in the lungs. The combined use of withanolides are several other drugs or therapeutic modalities, such as hydroxychloroquine and dexamethasone, has been demonstrated as an efficient strategy to improve the effectiveness of therapeutic regime for COVID-19 treatment (Dhawam. *et al.*, 2021).

Glycyrrhiza uralensis

Licorice root (*Glycyrrhiza uralensis*) has shown strong antiviral activity. It was observed that extracted substance, glycyrrhizin sulphate, inhibit HIV replication, interfere with virus-to-cell binding and cell-to-cell infection, and induce IFN activity (Hatori. T. *et al.*, 1989).

***Nigella sativa* (black seed)**

Nigella sativa could be considered for its bioactive components such as thymoquinone which was proven to have anti-viral activity. Further benefits to use *N. sativa* could be augmented by Zn supplement. Notably, Zn has been proven to improve innate and adaptive immunity in course of microbial infection. The effectiveness of the Zn salt supplement can be enhanced with

N. sativa as its major bioactive component might work as ionophore to allow Zn²⁺ to enter pneumocytes and inhibit SARS-CoV-2 replication by stopping its replicase enzyme system (Rahman, M.T. 2020).

Allium cepa, Malus domestica, Camellia sinensis and Fagopyrum esculentum

During the SARS-CoV-2 pandemic, Research based on molecular docking models with pharmacological network analysis for testing bioactive compounds have shown that quercetin from onions (*Allium cepa*), apples (*Malus domestica*), green tea (*Camellia sinensis*) and buckwheat (*Fagopyrum esculentum*) can inhibit the 6LU7 and 6Y2E proteases of SARS-CoV-2 by binding to them (Zhang D.H. *et al.*, 2020 and Lee H. *et al.*, 2015).

***Cordia salicifolia* extract**

Partially purified extract from whole plant of *Cordia salicifolia* showed an inhibitory effect on herpes simplex virus type 1 (HSV-1). The activity of on different steps of HSV-1 replication in HeLa cells was investigated. Under single-cycle replication conditions, extract exerted a greater than 99.9% inhibition in virus yield. The extract has been shown to have a direct virucidal activity (Hayasi K *et al.*, 1990).

Azadirachta indica

Nimbin (triterpene) has shown to have antipyretic, fungicidal, antihistamine and antiseptic properties. Also Nimbin is associated with anti-inflammatory and antioxidant effects, therefore reducing damage by mitigating the production of reactive oxygen species. Their metabolites found in Neem extracts are: limonoids, tannins, alkaloids, terpenoids, reducing sugar, catechins, sterols and gallic acid. Biochemical analysis done on leaf extracts has revealed high presence of proline, which is a current treatment for neurodegenerative diseases like Alzheimer's and Parkinson's disease, Type 2 Diabetes Mellitus and Polycythemia (Dash *et al.*, 2017).

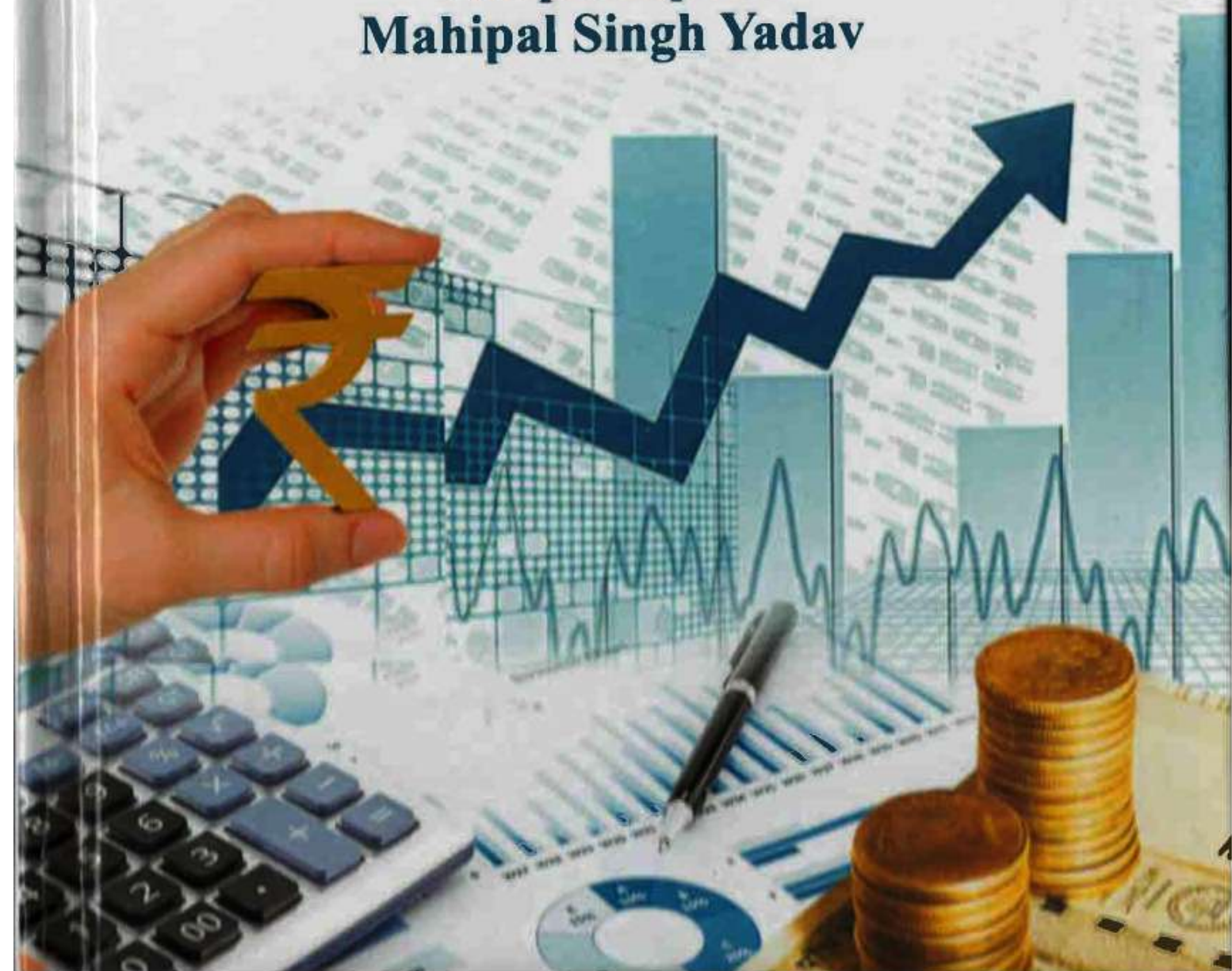
Solanum nigrum

Hepatitis c virus (HCV) infection is a serious global health problem necessitating effective treatment. Currently, there is no vaccine available for prevention of HCV infection due to high degree of strain variation. Methanolic and chloroform extract of *Solanum nigrum* seeds play a role in viral clearance during natural HCV infection. These data also suggest that therapeutic induction of extracts might represent an alternative approach for the treatment of chronic HCV infection or the present study leads to the

Contemporary Issues in Indian Economy

A Roadmap Ahead

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Economic Development and Gender Exclusion: The Indian Story with Special References to the Covid-19 Pandemic

Anupma Rawat¹ & Tanimu Dutta²

Abstract:

All the Developmental efforts and various paradigm shifts till now have been growth-oriented but not inclusive. The marginalised sections of society, particularly the women, in spite of being the most potent agents of change, remained to be Excluded throughout. The social aspect of development was never adopted in its true spirit of achieving the goals of gender equality. There exist huge gender differentials and gender gaps, be it in terms of education, skilling, income, wages etc. resulting in huge gender divide at every sphere of the economy. With the technological disruptions and ensuing 4th industrial revolution the gender and digital divide across economies' and India too has become more pronounced and got exacerbated due to the Covid-19 crisis. This urgently calls for more women and girls in STEM careers and courses respectively. Besides gender

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शहर, उसका वातावरण, उसके पात्र कथा को एक स्थानिकता प्रदान करते हैं, घटनाएँ वायवीय न होकर स्वाभाविक नज़र आती हैं और शहर के साथ-साथ चलती मनोजगत की यात्रा आपको भीतर से समृद्ध करती चलती है। कथावस्तु अंततः एक वैश्विक स्वरूप ग्रहण करती है। कहानी हमारे सामने उपस्थित यथार्थ का भाष्य करती है और एक विश्वसनीय संसार का निर्माण करती है, सॉमरसेट मॉम ने कहा भी है कि कहानी में लेखक 'सत्य' का चित्रण नहीं करता, वह जो चित्रण करता है, वह सत्य की तरह लगता है। स्थानिकता कहानी को वह आधार प्रदान करती है जो उसे विश्वसनीय बनाये। स्थानिकता से शुरू हुई यात्रा वैश्विकता पर समाप्त होती है।

इस यात्रा में मैं मुकेश वर्मा, महेंद्र गगन, बलराम गुमास्ता, कुणाल सिंह और ज्योति रघुवंशी जैसे अपने मित्रों से साथ चलने का अनुरोध करता हूँ। हम सब खुशी-खुशी इस यात्रा पर निकल पड़ते हैं, जिसे 'कथा मध्यप्रदेश' और 'कथादेश' के बाद अब 'कथा विश्व' तक जाना है। यह स्थानिकता का विश्वरंग होगा।

इस यात्रा के तीसरे पड़ाव के रूप में 'कथा भोपाल' आपके सामने है।

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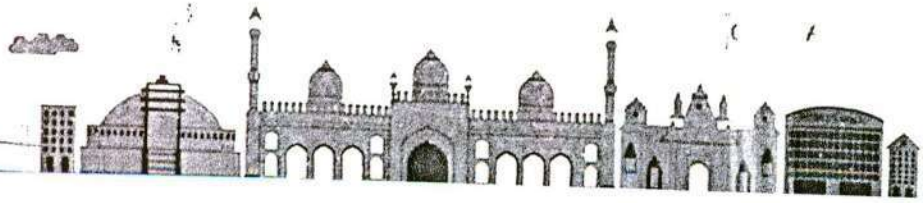
स्थानिकता का विश्वरंग



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कहानियाँ एवं आलेखों में प्रस्तुत विचार लेखकों के ही हैं, और उनसे संपादक मंडल तथा विश्वविद्यालयों के प्रशासन की सहमति अनिवार्य नहीं है। किसी भी विवाद की स्थिति में न्यायिक क्षेत्र, भोपाल हांगा।

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रेखा कस्तवार

जन्म : 17 मार्च 1957

प्रमुख कृतियाँ : किरदार जिन्दा है, स्त्री चिंतन की चुनौतियाँ, मुर्गीखाना।

जहाँ 'स्त्री चिन्तन की चुनौतियाँ' पुस्तक स्त्री विमर्श के अध्ययन अध्यापन में सदर्थ ग्रंथ के रूप में समादृत है, वहीं 'किरदार जिन्दा है' पहले दैनिक भास्कर में कॉलम के रूप में लोकप्रिय रहा, अब पुस्तकाकार में स्त्री अध्ययन की विशिष्ट शैली के लिए जाना जाता है। 'अपने होने का अर्थ' स्त्री विमर्श पर लिखे गए उन आलेखों का संकलन है जो देश की प्रतिष्ठित पत्र पत्रिकाओं में प्रकाशित होते रहे हैं।

सेमीनार, कार्यशालाएँ, दूरदर्शन, आकाशवाणी के ग्रुप डिस्कशन के अलावा अतिथि व्याख्यान हेतु विभिन्न विश्वविद्यालयों में भागीदारी।

संप्रति : सरोजनी नायडू कन्या महाविद्यालय, भोपाल में प्राध्यापिका।

अपने-अपने अलाव

रेखा कस्तवार

माँ के घर पिछवाड़े में छोटी-सी कच्ची जमीन। माँ उसमें अपने मन का खेल कर लेती। किसी कोने में मिर्च तो किसी कोने में धनियाँ के बीज बिखेर आती। कोई कोना कद्दू का, तो कोई गिल्ली, बरबटी, लौकी का। वह माँ से कहती थी, "उन्हें साँस लेने जगह तो दो।" हर बार वह एक ही तरह से मुस्करा कर कहती, "आने तो दे उन्हें फिर देखेंगे..." कहना चाहती थी, कि फिर देखना। उसे पता है वे दिन आएँगे तो मैं लडूँगी उनसे। हर साल वे दिन आते। झुंड के झुंड हरियाते। माँ तब तक मोटे काले पॉलीथीन ले आती। मिट्टी-खाद-रेत मिलाकर गाती हुई कुछ देर नम आँखों को जीती, फिर मुझे साथ लेकर एक-एक पौधे को रोपती, प्लास्टिक की पन्तियों में। कहती, जतन से उखाड़ना। पहले तो मुझे उखाड़ने भी नहीं देती थी फिर मैं धीरे-धीरे सीख गई। "आस-पास की कुछ मिट्टी साथ जरूर रखना। पौधे को अपनी जगह का एहसास दिलाए रखना होता है ना।" पौधे तैयार होते-होते उनके विदा होने के दिन आ जाते। बाबा जैसे मोहल्ले गढ़ते पौधों के-ये लौकी... ये बरबटी... ये कद्दू... फिर ठेले पर रखकर शहर की चौखट से सटी नर्सरी में बेच आते। जमीन, आँगन सब... फिर सूना। माँ मिट्टी-मिलाती कहती, "अभी उसे अपने पर आने दो पीछे मत जाना।" वक्त जाते-जाते धरती पुराना रूप लेने लगती तब तक फूलों की बारी आ जाती। बस सिर्फ तपती गर्मी में घर का पिछवाड़ा धरती की दरारों से कराहता। माँ के बचपन की भी अपनी दुनिया थी। पर उनके बाबा के पास छोटा-सा खेत था। क्यारियाँ बनाते समय पौधे जगह बदलते तो थे

पर जिला बदर नहीं होते थे। जहाँ गेहूँ चना की सुनहरी बालियाँ थीं, ये बालियाँ अन्न में तब्दील होकर सारे परिवार के पेट की आग बुझाती थीं। पेट की आग तो मेरी माँ के आँगन के पौधे भी बुझाती है पर पौधों की बेदखली...। क्या कोई और तरीका माँ जानती भी नहीं। या इसलिए कि उसके पास उतनी भी जमीन नहीं, जितने उनके बाबा के पास थी और अब मेरी बारी... जबकि घर में पेट की आग का सवाल नहीं है पर बेटे का कल तो मुँह बाएँ खड़ा है न...। थोड़ा-बहुत जान समझ के इतना तो जानी ही हूँ, घटते-घटते जमीन का कोई टुकड़ा भले ही मेरे पास बचा नहीं है पर बेटे को कहीं बेहतर जिन्दगी देने सपना तो पाला ही है मैंने।

"मम्मा मैं सीख लूँगा, आप छोटा बेबी को देख लो बेटे को यूनीफॉर्म पहना कर तैयार किया, दरवाजा खोलकर कैम्पस का नजारा देख, स्कूल भेजने का इरादा बदल दिया। पिण्डली-पिण्डली तक पानी... सारी रात बादलों ने धरती का पोर-पोर भिगोया था। तो जब मैंने बेटे से कहा कि आज स्कूल जाना कैसिल, 'छोटा बेबी' भी परेशान होगा, अगर मैं तुम्हें गेट तक छोड़ने जाऊँगी। (मेरा इशारा अपनी ईडब्ल्यूएस कालोनी के गेट से था।) मैंने अपने पेट पर हाथ रखते हुए बेटे को समझाइश दी। वह लगातार समझदार होता जा रहा है, इसलिए उसके जवाब-"नहीं मम्मा मैं स्कूल जा सकता हूँ, मैं धीरे-धीरे सीख लूँगा" ने उसके प्रति दुलार से भर दिया।

मुझे उम्मीद नहीं थी, बेटा इतनी समझदारी से स्थितियों का सामना करेगा। यही उसके स्कूल के



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प्रकाशक: श्री अशोक गोसांई और आशीष गोसांई द्वारा

हर-आनन्द पब्लिकेशन्स प्रा लि के लिये

मुद्रक: आकाश प्रेस।

महाराजा छत्रसाल एवं पेशवा बाजीराव प्रथम

डॉ. संजना शर्मा

प्राध्यापक, (इतिहास)

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बुन्देलखण्ड का सशक्तिकरण एवं स्वराज स्थापना का आरंभ शिवाजी के साथ महाराजा छत्रसाल की भेंट से ही आरंभ हो चुका था। महाराजा छत्रसाल बुंदेला शक्ति के प्रणेता कुछ इस तरह विजय-पथ पर चले कि उन्होंने मुगल शक्ति को लगभग हिला कर रख दिया था। 1707 ई. में औरंगजेब की मृत्यु से लगा कि अब बुन्देलखण्ड में शान्तिपूर्ण शासन रह सकेगा किन्तु शायद छत्रसाल के जीवन में वृद्धावस्था में भी संघर्ष का दौर था। अन्तिम समय में छत्रसाल को इलाहाबाद के मुगल सूबेदार मोहम्मद खाँ बंगश से कठोर संघर्ष करना पड़ा।

मोहम्मद खाँ बंगश एक पठान था। 21 वर्ष की आयु में बंगश यासीन खाँ के गिरोह में शामिल हो गया। यह गिरोह बुंदेलखंड में लूटपाट करता था। बाद में मोहम्मद खाँ बंगश ने खुद का गिरोह गठित कर लिया।¹ उसकी बढ़ती ताकत से प्रभावित हो सैय्यद बंधुओं ने उसे फर्रुखसियर की सेवा में आने को कहा। इस प्रस्ताव को उसने स्वीकार कर लिया। फर्रुखसियर (बंगाल का मुगल नवाब) ने बंगश की योग्यता

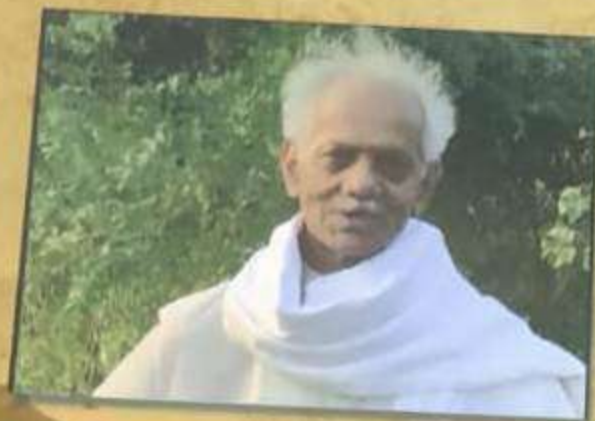
¹जर्नल ऑफ एशियाटिक सोसायटी ऑफ बंगाल, 1878, पृ. 270-72.



महाराजा छत्रसाल की प्रतिमा,
छत्रसाल पार्क, पन्ना (म.प्र.)

एक अमूल्य निधि

राष्ट्रीय स्तर पर मध्यप्रदेश के बुंदेलखंड क्षेत्र के इतिहास को गौरवपूर्ण स्थान मिलना अति महत्वपूर्ण है और ये पुस्तक उसी दिशा में एक बड़ा कदम है। छत्रसाल बुंदेला का चरित्र एक आदर्श है एवम् बड़ी प्रेरणा देता है। वर्तमान समय में भारतीय संस्कृति और परिवेश को संरक्षित रूप में प्राप्त कर पाना तभी संभव हो सका, जब भारत की धरती छत्रसाल जैसे वीरों को जन्म दे सकी। छत्रसाल में राज ऋषि और सुदर्शन चक्र-वीरना के गुण एक साथ थे जो इस पुस्तक में भली भाँति दर्शाये गये हैं। कठिन एवं विपरीत परिस्थितियों में साहस के साथ बुंदेलों को संगठित कर एक सशक्त राज्य का निर्माण मुगलिया दौर में करना अत्यधिक आश्चर्यचकित करता है। ये पुस्तक पाठकों की सोच को समृद्ध करेगी और बुंदेला इतिहास में मील का पत्थर साबित होगी।



एक समर्पित व्यक्तित्व

ब्रह्मविद्या धर्म उपदेशक पं. श्याम बिहारी दुबे का जीवन समाज के आध्यात्मिक उत्थान को समर्पित है। एक प्रवचनकर्ता और एक इतिहासकार के रूप में वे गहरी छाप छोड़ चुके हैं। पेशे से सफल इंजीनियर होने के साथ-साथ धर्म और समाज के स्तम्भ के रूप में स्थापित हो पाना पन्ना (म.प्र.) निवासी दुबे

जी के ही बस की बात है। उनका पूरा जीवन प्रभु प्राणनाथ और महेश्वर तंत्रग्रन्थ के पवित्र संदेश को जन सामान्य तक पहुंचाने में बीता है। इस पुस्तक में बुंदेलखंड और महाराजा छत्रसाल के जो पहलू सामने लाने का प्रयास किया गया है वो इतिहास के लिए एक अनुपम भेंट है।





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विज्ञान कथा या विज्ञान फंतासी का लेखन कोई हँसी-खेल नहीं समझना चाहिए कि कोई भी कल्पना की उड़ान भरकर चाहे जैसी विज्ञान फंतासी लिख दे। चार-छह विज्ञान कथाएं पढ़कर ऐसी कल्पना करके विज्ञान कथा या विज्ञान फंतासी लिखने के लिए विज्ञान का गहन अध्ययन और उसकी अच्छी समझ होना अनिवार्य है। साथ ही विज्ञान की किसी एक शाखा - भौतिकी, रसायन, जीव-विज्ञान, खगोल विज्ञान आदि में न केवल महारत हासिल हो, बल्कि उस विधा में हो रही नवीनतम खोजों और प्रगति की अच्छी जानकारी होनी चाहिए। आज विज्ञान के क्षेत्र में विशेषकर प्रौद्योगिकी में जितनी तेजी से प्रगति हो रही है, उसको ध्यान में रखे बिना विज्ञान कथा या विज्ञान फंतासी लिखना बेमानी है। इसके साथ ही विश्व के विज्ञान कथा, विज्ञान फंतासी लेखकों, भारतीय विज्ञान कथा लेखकों आदि की रचनाओं को गहराई से समझकर पढ़ना अनिवार्य है। तभी किसी सफल और सशक्त विज्ञान कथा या विज्ञान फंतासी को लिखना संभव हो सकता है।

-जयंत विष्णु नार्लीकर

 **.आईसेक्ट**
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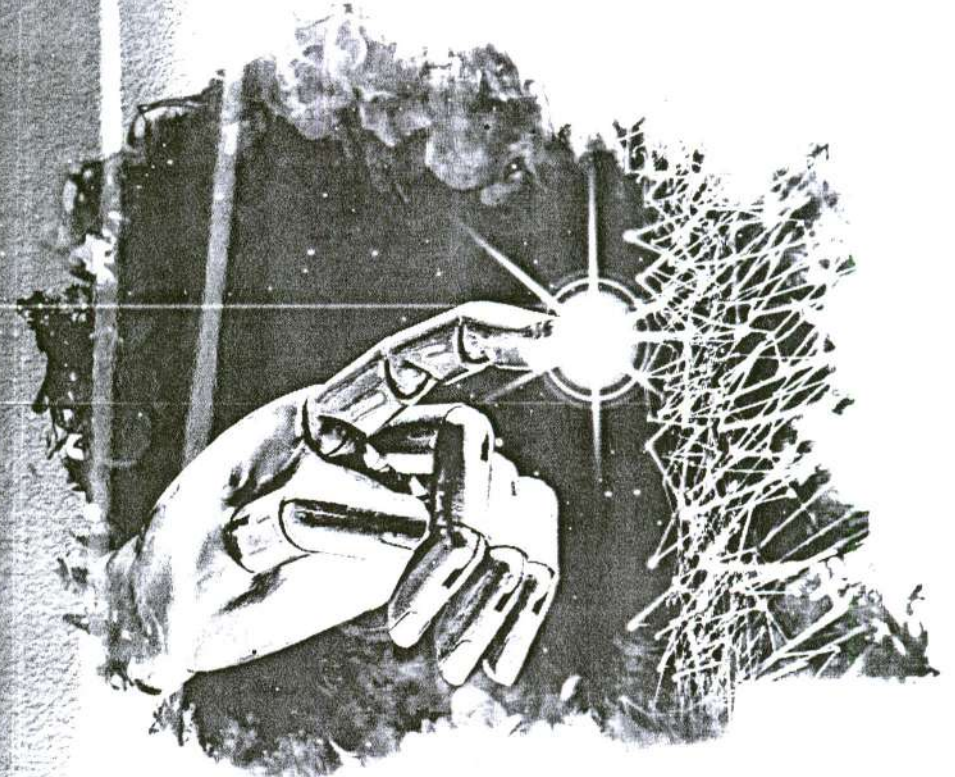
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विज्ञान कथा कोश

खण्ड-6

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शुकदेव प्रसाद



विज्ञान कथाओं का अद्भुत संसार

'विश्वरंग' के प्रारंभिक संकल्पों में से एक था हिन्दी में विज्ञान कथा लेखन को प्रोत्साहन देना तथा अब तक हुए विज्ञान कथा लेखन, कथा अनुवादों को सुचिन्तित रूप में पाठकों के समक्ष प्रस्तुत करना। हमें बहुत प्रसन्नता है कि 'कथा देश', 'कथा मध्यप्रदेश' एवं 'कथा भोपाल' के बाद अब हम छः खंडों में इस 'विज्ञान कथा कोश' को हिन्दी में प्रस्तुत कर पा रहे हैं। वास्तव में तो यह एक वैश्विक विज्ञान कथा कोश है क्योंकि इसमें विश्व के लगभग सभी बड़े विज्ञान कथा लेखकों की कहानियाँ सम्मिलित की गई हैं और भारतीय भाषाओं में हुए या हो रहे विज्ञान कथा लेखन को भी रेखांकित किया गया है। छः खंडों में लगभग 2000 पृष्ठों में छपी यह विज्ञान कथाएँ पाठक के लिए एक ऐसा अद्भुत संसार रचती हैं जिसमें वह अपना भूत और भविष्य दोनों देख सकता है, उसकी कल्पना का क्षेत्र विस्तृत हो सकता है और विज्ञान कथा लेखन के कुछ सूत्र भी उसके हाथ लग सकते हैं। यह भारतीय भाषाओं में हो रहे विज्ञान कथा लेखन का एक सिंहावलोकन तो है ही, यह हिन्दी के क्षेत्र में विज्ञान कथा संग्रह प्रस्तुत करने का लगभग पहला प्रयास है।

विज्ञान का सामान्य अर्थ समझा जाता है 'पश्चिमी विज्ञान' जिसने अनेक अद्भुत आविष्कारों और टेक्नोलॉजिकल यंत्रों को जन्म दिया है। किन्तु आधारभूत वैज्ञानिक सिद्धांत और

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कहानियों एवं आलेखों में प्रस्तुत विचार लेखकों के ही हैं, और उनसे संपादक मंडल तथा विश्वविद्यालयों के प्रशासन की सहमति अनिवार्य नहीं है। किसी भी विवाद की स्थिति में न्यायिक क्षेत्र, भोपाल होगा।

VIGYANKATHAKOSH: VOLUME 6

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रहे थे। दूर हरे-भरे खेत नजर आ रहे थे जिनमें कई प्रकार की फसलें उगाई गई थीं। चारों ओर सभ्यता की रंगत जगमगा रही थी। प्रो. चंद्रा अपने सहायकों के साथ अदिति के धरातल पर उतरे। इस बार उन्होंने ऐसे कॉस्ट्यूम पहन रखे थे जिससे वे तो अदितिवासियों को देख सकें पर अदितिवासी उन्हें नहीं। सभी जगह अच्छी तरह घूम कर अब वे वापस अपने यान की ओर लौट रहे थे।

तभी अभिजित की नजर एक गुफा पर पड़ी। 'सर, वह क्या है?' वह जिज्ञासा भरे स्वरों में बोल उठा। 'चलिए न सर, वहाँ चल कर देखते हैं।' देवयानी के इस आग्रह को प्रो. चंद्रा टाल न सके। तीनों ने एक साथ उस गुफा में प्रवेश किया। वहाँ जाकर उनके मुंह खुले के खुले रह गए। गुफा की दीवारों पर प्रो. चंद्रा, देवयानी और अभिजित के चित्र बने हुए थे। स्पेस सूट पहने हुए उन तीनों के चित्र किसी ऐसी वनस्पति से बनाए गए रंग से निर्मित थे, जिससे लग रहा था कि वे कल ही बनाए गए हों। कुछ समय उस गुफा में व्यतीत करने के पश्चात् तीनों

यात्री अपने यान पुष्पक की ओर मुड़ चले।

तीनों में से कोई किसी से कुछ नहीं बोल रहा था। फिर चुप्पी को तोड़ते हुए प्रो. चंद्रा कहने लगे, 'देवयानी और अभिजित, क्या तुम्हें यह नहीं लगता कि हमारे ये भित्ति चित्र हजारों वर्ष पूर्व इस ग्रह के निवासियों के उनके पूर्वजों ने बनाए होंगे जिनके मस्तिष्क में हमने सभ्यता के बीज बोए।' 'निश्चित ही सर', दोनों एक साथ बोल पड़े।

'अब यहाँ आकर और यहाँ का सारा दृश्य देखकर मेरे मन में रह-रह कर एक ही विचार चक्कर काटे जा रहा है।' प्रो. चंद्रा बोले 'वह क्या सर?'' अभिजित ने उत्सुकता से कहा। 'वो यह, प्रो. चंद्रा कहने लगे कि कहीं ऐसा ही कुछ हमारी धरती के साथ हुआ हो। अंतरिक्ष से उच्च सभ्यता के मानव पृथ्वी पर आए, हमारे पूर्वजों के मस्तिष्क में सभ्यता के बीज बोए और अपने ग्रह वापस लौट गए।' देवयानी और अभिजित अवाक एक-दूसरे की ओर विस्फारित दृष्टि से देख रहे थे। पुष्पक धरती की ओर बढ़ता चला जा रहा था।

'विज्ञान प्रगति', सितम्बर 2018, नई दिल्ली

मुर्गीखाना

डॉ. रेखा कस्तवार

'बस एक बार और।'

मानव के मनुहार में आदेश था। वसुधा को लगा, उसका सपना फिर स्थगित हो जाएगा। वसुधा ने वस्तु स्थिति से अवगत कराना चाहा, अभी संभव नहीं, सब कुछ अभी रूटीन में नहीं आया है। कहने को यह बताया गया है कि यह वसुधा का रेस्ट पीरियड है पर वह जानती है यह आफ्टर इफेक्ट्स झेलने का वक्त है। उसके मूड स्विंग होते हैं। मानव जानता है, यह स्वाभाविक है। मानव कहता है यह अगला सपना देखने का समय है। मानव वर्तमान और भविष्य पर से क्षण भर भी अपनी नजरें नहीं डिगाता। सब कुछ सोचा-समझा, सुनियोजित। उसे कोई कन्फ्यूजन नहीं। फंडे एकदम क्लियर। उसकी दृष्टि विस्तार में वसुधा शामिल होनी ही चाहिए। ऐसा भी मानता है मानव। इसके कारण भी है। वसुधा ने अब तक उसका साथ दिया है। आंख बंद कर भले न किया हो, बहुत सोच-समझ कर भी नहीं किया है। मानव की बेहतरी में शायद यही उसका योगदान साबित हो, मानव की आंखों में उसके लिए प्यार और भरोसा जागे। मानव ने उसे शादी के लिए पसंद किया हो, बहुत सोच-समझ कर भी नहीं किया है। मानव की बेहतरी में शाद यही उसका योगदान साबित हो, मानव की आंखों में उसके लिए प्यार और भरोसा जागे। मानव ने उसे शादी के लिए पसंद किया उसके पहले उसने प्लानिंग कर ली थी कि वह अंडे बेचना चाहता है। टेक्निकल इंजीनियर होते हुए भी उसने इसकी शॉर्ट टर्म ट्रेनिंग ली थी। पूरी प्रक्रिया से अवगत था, फायदा-नुकसान सबका हिसाब-किताब चाक-चौबंद।

वसुधा को मानव ने न्यूजपेपर में फोटो देखकर पसंद किया। शहर के नामी कॉलेज की फ्रेशर्स पार्टी की खबर थी वह। क्राउन वाली 'मिस फ्रेशर' को दिपदिपाती आंखों से देखती वह लड़की यूं ही स्मृति से ओझल करने लायक नहीं लगी। रंगीन फोटो में वसुधा क सारे कोणों से परखा हो, ऐसे देखा मानव ने। पता लगाया, वसुधा बिना मां-बाप की इक्लौती बेटा है जो मामा के घर रह कर बी.एस-सी. फर्स्ट ईयर (बायो) में पढ़ रही है। उसको यह सुभीते की बात लगी। वसुधा इस घर में ही रच-बस जाएगी, मुड़कर देखने या अतीत

राजाराम सर, मेरी यादों में



डॉ. लक्ष्मी श्रीवास्तव

करिये... करिये... पेंटिंग करिए... शुरूआत तो करिये... अरे, सब आ जाएगा... सब बन जाएगा ... बस करते रहिये।

ये वाक्य हुआ करते थे - हमारे परम श्रद्धेय राजाराम सर के, ये वाक्य आज भी मुझे काम करते रहने को प्रेरित करता है। मैं अपने आपको सौभाग्यशाली मानती हूँ कि मुझे राजाराम सर जैसे गुरु

से शिक्षा और सतत् मार्गदर्शन मिला। उनकी उर्जावान सीखों और प्रेरणा ने मुझे मेरी मंजिल तक पहुंचाया। सर के लिए कुछ लिखना है तो बहुत असमंजस में हूँ - क्या लिखूँ और क्या छोड़ूँ? बहुत सारी यादें हैं - कोशिश करती हूँ कम शब्दों में ज्यादा से ज्यादा व्यक्त करने की।

सर से मैं पहली बार वर्ष 1976-77 में मिली थी, जब मैंने बी.ए. में चित्रकला विषय में प्रवेश लिया था और बी.ए. द्वितीय वर्ष पूरा भी नहीं हो पाया था कि भारत सरकार की ओर से सर चार वर्ष के लिए ग्रीस चले गये। मात्र डेढ़ वर्ष सर के मार्गदर्शन में चित्रकला की बारीकियों को समझा, जो आगे निरन्तर मुझे चित्रकला के क्षेत्र में मार्गदर्शन करती रहीं।

राजाराम सर की शिक्षण पद्धति के बारे में बात करें तो सर से जुड़ी कुछ महत्वपूर्ण बातें मुझे याद आ रही हैं। हमारी पेंटिंग क्लास के प्रवेश द्वार के समीप ही सर की कुर्सी और टेबिल लगी रहती थी। अंदर घुसते ही सर का पहला वाक्य होता था - बेंग में से रबर निकालो, यहां टेबिल पर रखों। उनका कहना था कि रबर से बार-बार मिटाकर मत बनाओ, बल्कि बार-बार बनाओ..... बनाते रहो..... बन जाएगा।

1977-78 में अखिल भारतीय कालिदास चित्र एवं मूर्तिकला प्रदर्शनी में कालिदास रचित अभिज्ञान शाकुन्तलम् पर पेंटिंग बनाकर भेजने के लिए सर ने हमें प्रेरित किया। सर का आदेश हमें मानना ही होता था क्योंकि उनके कहे शब्दों और समझाइश में

बहुत ताकत होती थी। मुझसे शकुन्तला और उसकी सखियां तो बन गयीं, मगर हिरण बार-बार बनाने पर भी बन ही नहीं रहा था उसकी आकृति गधे जैसी बन जा रही थी आखिरकार हिम्मत करके सर के सामने शीट रख दी सर, और तो बन गया, पर हिरण नहीं बन रहा, प्लीज सर आप बना दीजिए बस कहा ही था सर ने प्रश्न भरी आंखों से देखा कि जैसे ये क्या कह दिया। सर बोले, कल रविवार है सब स्टूडेंट्स चिड़ियाघर जाओ, वहां बहुत सारे हिरण हैं, स्केचिंग करो, उन्हें बार-बार बनाओ फिर भी ना बना पाओ तो फिर मैं जरूर बना दूंगा और फिर अंततः मैंने हिरण बना लिया था।

एक और किस्सा याद आ रहा है - जो उनके व्यक्तित्व का दूसरा पहलू था। एक दिन सर ने हमें कुछ ग्रीटिंग कार्ड्स दिखाए, जिनमें पीपल के सूखे पत्तों पर पेंटिंग, सूखे गुलाब के फूलों के साथ पेंटिंग और कुछ कार्ड्स पर पीले रंग की मृत तितलियाँ चिपकी हुई थीं, उनके आसपास पेंटिंग थी। सारे ही कार्ड्स बहुत सुन्दर लग रहे थे। बस फिर क्या था दूसरे ही दिन महाविद्यालय में आते ही हम सब जुट गये तितलियाँ तलाशने में - वो भी पीले रंग की। कॉलेज बिल्डिंग के पीछे अरहर के पौधों की खेती थी जिस पर छोटी-बड़ी पीली तितलियाँ मंडरा रही थीं। पीछे के क्लासरूम की खिड़कियाँ कुछ नीचे थीं, वहां से नीचे कूदकर तितलियाँ पकड़ीं और किताबों के बीच में दबा-दबाकर रख लीं। बाकी विषयों के क्लास में हम गए ही नहीं, तितलियाँ ही पकड़ते रहे। घर गये - किताबों में दबीं तितलियाँ मर चुकी थीं, उनसे ग्रीटिंग कार्ड बना लिये और अब इंतजार था कि सर इन्हें देखकर कितना खुश होंगे, शाबासी देंगे। फिर दूसरे दिन हम सभी सीधे पेंटिंग क्लास में आ गए ... सर को ग्रीटिंग्स दिखाने की जो जल्दी थी। सर ने जब हम सबके कार्ड्स और उन मरी हुई तितलियों को देखा तो सिर पर हाथ रख लिया ये क्या किया आप लोगों ने! तितलियों को मार कर कार्ड बनाया मैंने ऐसा कब बोला था? सर ने बहुत डाँटा, उनकी आंखें नम थीं और उनके चेहरे पर गहरा पश्चाताप। और हम सब तो बस पूछिये मत हमारी क्या हालत थी? ये सच है कि हमसे

ज्यादा अफसोस सर को हो रहा था, वो बार-बार कह रहे थे - ऐसा करने को मैंने कब कहा था ?

सर कहते थे - घर से कॉलेज आते समय हर चीज को ध्यान से देखो और फिर बनाओ। एक बार बारिश का महीना था - मैंने भैंसों को पानी में बैठे हुए देखा और बनाया। पता नहीं रंग भरते समय मैंने हर भैंस के अंदर अलग-अलग पैचेज बनाकर रंग भर दिया, फिर डरते-डरते सर को दिखाया ... अरे, ये क्या सर तो बहुत खुश हो गए .. बोले - ऐसे ही कुछ नया सोचो नया करो।

क्लास में स्टिल लाइफके लिए जो पॉट्स का समूह रखना होता था, वो हम विद्यार्थियों से ही रखवाते थे, जिससे हमारा कम्पोजिशन नॉलेज तो बढ़े ही, साथ में रंगों के संयोजन के ज्ञान में भी वृद्धि हो। जब मैं सर के साथ महारानी लक्ष्मीबाई कन्या स्नातकोत्तर महाविद्यालय, भोपाल में कार्यरत थी, वहां भी उन्होंने वो सीख जारी रखी। लाइफस्टडी के लिए मॉडल को बैठाने का काम वो मुझसे ही करवाते थे। एक बार मॉडल के लिए जो व्यक्ति आया था, उसकी बड़ी-बड़ी मूँछें थीं। मैंने उसको पगड़ी पहनवाई और हाथ में डंडा पकड़ाकर एक विशेष मुद्रा में बैठा दिया। सर को वो बहुत पसन्द आया, पूरे दिन तारीफ करते रहे... जो आते उससे कहते - अंदर जाकर देखिए, लक्ष्मी ने आज मॉडल बहुत अच्छा बैठाया है।

तो ऐसे थे हमारे परम श्रद्धेय कलागुरु और ऐसी थी उनकी

शिक्षण-पद्धति। उनकी सीखें मुझे 1976-77 से अब तक मुझे मिलती रहीं। मैं 16 वर्ष की थी, 61 वर्ष की हुई तब भी - उनके लिए उनकी शिष्या ही रही। वो हमेशा बोलते रहते - प्रदर्शनियां देखती रहा करो... म्यूजियम जाओ, कमरे से बाहर निकलकर काम करो, वो किताब पढ़ी थी ? ये करो .. ये पढ़ो ... ये सुनो, ये अपने विद्यार्थियों को समझाओ। बहुत सारी बातें हैं पर यहां शब्दों की सीमाएँ हैं, उन पर जितना भी लिखा जाए, शब्द कम ही पड़ जाएंगे।

सर, शरीर से भले ही इस दुनियाँ से चले गये हैं - पर वो आज भी हमारे साथ हैं, हमारी खींची रेखाओं और भरे हुए रंगों में सदा रहेंगे। ईश्वर मुझे हर जन्म में सर जैसे गुरु का सानिध्य प्रदान करे। राजाराम सर केवल गुरु के रूप में ही सर्वश्रेष्ठ नहीं थे, बल्कि उनका व्यक्तित्व और कृतित्व दोनों ही आदर्शवादी और प्रेरणादायी था, वे अप्रतिम थे। अन्त में, उनका एक और वाक्य याद आ रहा है, वो कहते थे - " किसी से डर के अपने को मत सुधारो बल्कि अपने आपसे डरो... कभी गलती नहीं होगी। "

परम आदरणीय सर को मेरा शत्-शत् नमन् और विनम्र श्रद्धांजलि।

- प्राध्यापक, चित्रकला, सरोजिनी नायडू शा.क.स्ना. स्वशास्त्री
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एक प्रयोग यह भी...

- डॉ. बिनय राजाराम

प्रो. राजाराम अपनी प्रयोग धर्मिता का एक मजेदार किस्सा सुनाते थे। जब वे वनस्थली में प्राध्यापक थे तब प्रायः पास की ढाणियों में जाकर वहाँ के जन-जीवन का स्केच तैयार किया करते थे। एक बार पास की किसी ढाणी के एक घर के बाहर ओटला पर बैठकर पेंसिल स्केच कर रहे थे। तभी घर के भीतर से कोई घूँघट वाली युवती बाहर आकर उनका चित्र बनाना देखकर खुश हो रही थी। फिर बातचीत करने लगी -

“थे कई करो ?”

“चित्र बनाऊँ।”

“और ?”

“पढ़ाऊँ।”

“कहाँ ते आया हो ?”

“बाहर गाँव से।”

थोड़ी देर की चुप्पी के बाद बात करने की गरज से चित्रकार महोदय ने उस युवती से कहा -

“बाई पाणी पिला दो।”

“हूँ! थें कई जात हो ?”

“म्हारी जात ये थांके कई लेना ?”

“जात तो पूछनी पडै।”

“मैं अछूत हूँ।”

“अछूत ? मैं थांके नी छिआँ ?”

“छीने को कई काम ? बस पाणी पिला दे।”

“ऊपर से पिलाएँगा।”

“ऊपर से पिला दीजै बाई सा।।”

वह बेचारी पानी लेने जो अंदर से गई तो वापस मुड़कर नहीं आई। अछूत को पानी कैसे पिलाती ?



कार्यवाही पुस्तक

अंतर्राष्ट्रीय ई-सम्मेलन

विश्व में हिन्दी के बढ़ते चरण

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विषय : विश्व में हिंदी के बढ़ते चरण

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34.	हिन्दी के विकास में प्रवासी साहित्यकारों का योगदान	डॉ. अनिल कुमार सहायक प्रोफेसर, हिन्दी विभाग, महर्षि दयानन्द विश्वविद्यालय, रोहतक दीपक कुमार, गोधार्थी हिन्दी गोधार्थी, महर्षि दयानन्द विश्वविद्यालय, रोहतक, हरियाणा	

हिन्दी पत्रकारिता के स्वरूप विकास में भारतेन्दु युगीन पत्रिकाओं का योगदान

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सन् 1857 का वर्ष भारतीय इतिहास का महत्वपूर्ण वर्ष है। इस वर्ष अंग्रेजों के विरुद्ध क्रांति चिंगारी सुलगी जो निरंतर प्रज्वलित होती रही। लक्ष्य था देश को स्वाधीन कराना। इस अवसर साहित्यकारों, पत्रकारों, समाज सेवकों, राजनेताओं ने अंग्रेजों के विरुद्ध भारतीय जनता जागरूक किया। इस युग में समाज-सुधार तथा स्वाधीनता प्राप्ति के लिये पूरा देश प्रतिबद्ध होने लगा था। यद्यपि अंग्रेज अनेक प्रकार से भारतीय जनता को प्रताड़ित कर रहे थे तथापि अंग्रेजी सरकार विरुद्ध आक्रोश भी उतना ही तेजी से बढ़ता जा रहा था। पूरे देश में एकता, एकसूत्रता लाने के लिए हिन्दी, हिन्दू, हिन्दुस्तान के नारे लगा कर जनता को प्रेरित किया जा रहा था।

इन परिस्थितियों में अपनी सक्रिय भूमिका का निर्वाह करते हुए जन-जन में वैचारिक चेतना उदबुद्ध करना पत्र-पत्रिकाओं का मुख्य उद्देश्य बन गया। जनता को तत्कालीन विषम परिस्थितियों विरुद्ध दृढ़, निर्भीक, त्यागशील, देश भक्त बनाकर पुनर्जागरण लाना इस युग की पत्र-पत्रिकाओं का मुख्य प्रवृत्ति थी। हिन्दी-पत्रकारिता ने इस युग में विकास की गति तीव्र की तथा पत्रकारिता स्वाधीनता संग्राम के एक अनिवार्य हिस्से के रूप में स्वीकृति मिली। पत्रकारों एवं साहित्यकारों ने इस युग में स्वाधीनता की भावना को जीवंत बनाये रखा। इस प्रयास में हिन्दी पत्रकारिता को आदमी के बीच स्थापित होने का अवसर प्राप्त हुआ।

इस युग की साहित्यिक पत्रिकाएँ साहित्य एवं भाषा के विकास में सभी प्रकार से सहयोग करती हैं। हिन्दी की विविध विधाओं को पत्रिकाओं ने स्वरूप-विकास की दृष्टि से व्यवस्थित किया। इस युग की पत्रकारिता की कार्यप्रणाली और ध्येयपूर्ति का नेतृत्व भारतेन्दु हरिश्चन्द्र, बदरीनारायण चौधरी, प्रताप नारायण मिश्र, बालकृष्ण भट्ट इत्यादि संपादकों ने किया। भारतेन्दु हरिश्चन्द्र का पूरे युग प्रतिनिधित्व करने तथा नवजागरण में मुख्य योगदान रहा। उन्होंने पत्रकारिता को नया स्वरूप प्रदान किया। युग प्रवर्तक साहित्यकार एवं समर्पित पत्रकार के रूप में भारतेन्दु हरिश्चन्द्र ने कर्मठ पत्रकारिता तथा साहित्यसेवियों की एक पूरी मंडली तैयार की तथा उन्हें सदैव सहयोग देते हुए प्रेरित किया। अतः इस युग की हिन्दी पत्रकारिता पर भारतेन्दु हरिश्चन्द्र के व्यक्तित्व का अमिट प्रभाव दिखता है। उनकी लेखनी के चमत्कार ने हिन्दी भाषियों में पढ़ने की लालक पैदा की तथा पाठकों का व्यापक वर्ग तैयार किया। इस युग की प्रमुख पत्रिकाएँ इस प्रकार हैं।

**ANTAGONISTIC EFFECT OF LACTOBACILLUS SPECIES ISOLATED FROM DAIRY PRODUCTS AND FERMENTED FOOD ON INTESTINAL PATHOGENIC BACTERIAL SPECIES**

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ABSTRACT

The probiotic microorganisms especially Lactic acid bacteria (LAB) are reported to produce many metabolites including organic acids, hydrogen peroxide, diacetyl and bacteriocins; that could be utilized in vast number of applications. Besides the use of probiotic organism in variety of industrial food and feed fermentations, they possess strong antagonistic properties towards other related microorganisms, including food spoilage organisms and pathogens. Since microbial metabolites derived from probiotics have shown the inhibitory activity against the many pathogens including *E. coli*, *S. aureus*, *S. typhi*, *S. dysenteriae*, *B. anthracis* etc. In present investigation also different types of fermenting food stuffs and dairy products were used to isolate probiotic *Lactobacilli* with antimicrobial potential which probably may secrete antimicrobial proteinaceous substances which are collectively called as bacteriocins. The pure culture of indigenously isolated *Lactobacilli* were inoculated in sterile MRS broth and incubated at 37°C for 48 hours. The *Lactobacillus* isolates were cultured in the volume of 5 ml in test tube which were subjected to centrifugation at 10,000 RPM in a high speed centrifuge for 15 minutes at ambient temperature after the period of incubation when growth of microbes were observed in the form of turbidity. The procedure followed was with reference to the procedures suggested. Well diffusion method was adapted to check the antimicrobial potential of indigenously isolated *Lactobacilli* from different fermenting food and dairy products. Out of the 14 indigenously isolated *Lactobacillus* spp. the isolates which were observed to impart inhibitory effect at a concentration of 20 µl of fermentation extract in each well of media plates are LB-2, LB-5, LB-6, LB-7, LB-11, LB-12, LB-13 and LB-14 towards test microbial species used in present work.

KEYWORDS: Lactobacillus, Pathogens, Fermentation Antagonistic properties.**INTRODUCTION**

Several types of proteinaceous compound such as nisin, acidophilin, bulgaricin and diplococcin secreted by probiotic bacteria with antimicrobial properties which are collectively called as Bacteriocins. These bacteriocins are protein compounds with growth inhibition ability of sensitive pathogenic bacteria and different degradation system in digestive system compared with antibiotics.^[1-2] Thus the present investigation was intended to focus on the use of proteinaceous antimicrobial substances secreted by indigenous probiotic bacteria against intestinal pathogenic micro-organism. Nowadays, probiotics are used not only as a driver of growth but also as a stimulator of the immune system and prevention of many diseases.^[3] Nonetheless, there are huge technological difficulties for probiotics which, being of intestinal origin, are delicate to numerous environmental hassles. Microbes are able to produce metabolites which are

generally of secondary origin usually late in the growth cycle (idiophase). These metabolites with enormous range of biological activities find its use and applications in pharmaceutical and cosmetics, food, agriculture, farming etc. These include compounds with anti-inflammatory, hypotensive, anti-tumor, anti-cholesterolemic activities, and also insecticides, plant growth regulators and environmental friendly herbicides and pesticides. The probiotic microorganisms are generally employed in dairy products in general in order to have the therapeutic benefits of probiotic functional food.^[4] The present investigation involves the isolation of *Lactobacillus* spp. from dairy and other food products and the effect of their fermentation products on intestinal pathogenic bacterial spp.



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डॉ. सीमा पाठक

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शोध सार

सम्पूर्ण विश्व को सुख शांति और मानवीय गरिमा का संदेश हमारी धरती और हमारी संस्कृति युगों से दे रही है। मूल्यों पर आधारित राष्ट्रीय चरित्र अकस्मात् प्राप्त नहीं होता बल्कि सामाजिक चेतना का स्तर एवं स्वर जितना उत्कृष्ट होगा, हम उतना अपने राष्ट्र ध्येय की तरफ बढ़ेंगे। जन सामान्य की रचनात्मक शक्ति का उपयोग, राष्ट्र निर्माण के लिए होना चाहिए। यह पुनीत और पावन लक्ष्य हमें मूल्य आधारित नैतिक आचरण से ही प्राप्त होगा। हमारी संस्कृति का अधिष्ठान 'प्रेम' पर आधारित है। विचार भेद, मतभेद को हमने पूरा आश्रय दिया है, यह हमारी जीवनशैली है। इसी कारण विविधता, अनेकता के बीच एकता हैं। भेदों के बीच अभेद, का तत्त्व बोध हमारी सांस्कृतिक विरासत है। आज संसार के भिन्न-भिन्न देशों का संघर्ष पूर्ण स्थितियों में भारत ही आशा - उम्मीद की किरण है।

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Phonon and thermodynamical properties of CuSc: A DFT study

AIP Conference Proceedings 1953, 110033 (2018); <https://doi.org/10.1063/1.5033058>Ekta Jain^{1,a)}, Gitanjali Pagare^{2,b)}, Shubha Dubey²⁾, and S. P. Sanyal¹⁾[View Affiliations](#)[View Contributors](#)

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ABSTRACT



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Alpha Synuclein and Parkinson's Disease

Arti Parihar, Priyanka Parihar, Isha Solanki,
and Mordhwaj S. Parihar

1.1 Introduction

Parkinson's disease (PD) is the age-related neurodegenerative disorder diagnosed by tremor at rest, rigidity, and bradykinesia symptoms. The prevalence of PD increases with the increase in age and about 2–3% population worldwide suffer from the disease ≥ 65 years [1]. The major neuropathology of PD patients is the deficit of dopaminergic neurons the substantia nigra pars compacta (SNpc) region of the midbrain. The lesions caused in these brain regions cause severe depletion of striatal dopamine. Non-motor symptoms like dementia, depression, anxiety, insomnia, excessive daytime sleepiness, rapid eye movement sleep disorder, constipation, difficulty in swallowing, and dyspepsia may also be involved in PD symptoms and pathology. Histological characteristic of PD includes the occurrence of Lewy bodies (LBs) in existing neurons [2]. However, little is known about the formation of LBs. The rising

evidence revealed that LB biogenesis may involve neuroprotective reactions [3]. Numerous studies have been executed to elucidate the role of α -synuclein in the pathogenesis of PD.

Reports have shown the expression of α -synuclein in neurons which abundantly distributed in presynaptic neuronal terminals of synapses [4]. The distribution of α -synuclein in the synaptic terminals indicates that this protein may take an important role in synaptic plasticity, kinetics of vesicle, and in the dopamine synthesis and its release. The role of α -synuclein in the pathogenesis of PD has been extensively analyzed. The observation of fibrillar α -synuclein in LBs and the occurrence of mutations in the α -synuclein gene in familial forms of PD have led to the belief that this protein has a critical role in PD pathology. The relationship of α -synuclein and PD has been identified by a genetic finding of A53T mutation of α -synuclein gene (*SNCA*) in a family with autosomal-dominant familial PD [5]. Furthermore the implication of α -synuclein in PD has been corroborated by the discovery of the other mutations of *SNCA*, involving A30P and E46K in other families with inherited PD [6, 7]. The function of α -synuclein in PD was further strengthened by the investigation in which presence of this protein was found as the primary structural constituent of LBs [8]. Here, we present an overview of existing knowledge on the physiological functions, oligomerization, and aggregation of α -synuclein and its pathological

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Phytochemical investigation and determination of phytoconstituents in flower extract of *Nelumbo nucifera*

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ABSTRACT

The aim of this study seeks to investigate the presence of qualitative and quantitative analysis of phytoconstituents of the flower of the plant *Nelumbo nucifera*. The present study provides evidence that successive solvent extract of *Nelumbo nucifera* contains medicinally important bioactive compounds and this justifies the use of plant species as traditional medicine for treatment of various diseases. Maximum phenolic and flavanoid content was observed in ethanolic extract of *Nelumbo nucifera*. The DPPH scavenging potential of the ethanolic extracts of the herbs ranged from 33%-55%. In the present study analysis of free radical scavenging activity and total phenolic and flavonoid content showed that mainly the ethanolic extract of flower extract can be the potent source of natural antioxidants.

Keywords: Phytochemical, Ethanolic extract, Antioxidant activity, *Nelumbo nucifera*

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ANTIBACTERIAL ACTIVITY OF NELUMBO NUCIFERA AGAINST PROPIONIBACTERIUM ACNES

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ABSTRACT

Nelumbo nucifera belongs to family Nelumbonaceae was used as medicinal herb in many Asian countries like China & India. This study was carried out with an objective to investigate the antibacterial potential of *Nelumbo nucifera* flower against *Propionibacterium acnes* (*P. acnes*) bacteria. The antibacterial activity was examined in aqueous extract, ethanol extract and ethyl acetate extract of *Nelumbo nucifera* using well diffusion method. The antibacterial activity of the extracts with concentrations 25, 50 & 100 mg/l was tested against *P. acnes* bacteria. The results showed the remarkable inhibition of the bacterial growth against the tested organism.

Keywords: Antibacterial activity, *Nelumbo nucifera*, *P. acnes*, well diffusion method, zone of inhibition.

INTRODUCTION

Plants have been used as source of medicine by mankind since ancient times [1]. Drugs derived from natural source play significant role to treat various ailments. Use of traditional medicines is one of the primary healthcare systems in most of the developing countries [2, 3]. Now a days, due to our faulty lifestyle and food habits, we are more prone to various types of bacterial infections and to treat them, we use medicines commonly termed as Antibiotics. Thus, Antibiotics are proved as a weapon to fight against bacterial infections and revive the quality of human health since their introduction [4]. But these synthetic drugs also associated with several side effects. Over the last few decades, many of the common antibiotics prove less effective against infections due to the emergence of drug resistivity in bacteria. Thus, it becomes essential to develop herbal drugs which can be used as an alternative of these synthetic drugs with no side effects. Thus, natural products either as pure compounds or as standardize plant extracts provide new opportunities for new drug development from herbal origin to fight against microbial infections [5].

Acne is a common but serious skin disease, which affects approximately 80% adolescents and young adults in 11-30 age groups [6]. Due to the irrational use of antibiotics, increasing bacterial resistance in acne causing bacteria i.e. *Propionibacterium acnes* and *Staphylococcus epidermidis* is now at the alarming stage [7].

Biosorption of lead (Pb(II)) ions by active and inactive biomass of heavy metal tolerant fungal biomass isolated from the polluted sites

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ABSTRACT

Heavy metals impose a severe environmental and public health hazard because of their toxic effects and their ability to incorporate in terrestrial and aquatic food chains. Biosorption has many disadvantages over conventional technologies in significant metal removal performance from large volumes of effluents. Fungal biosorption can effectively be used for the removal of metals from contaminated water and soil. Heavy metal tolerant fungal species were isolated from the polluted sites and the most tolerant fungal strain FI-01 was selected. The FI-01 strain was identified as *Penicillium chrysogenum* on the basis of morphological and microscopic characterization. The live (active) and dead (inactive) biomass was prepared for biosorption assay. The operating parameters viz., pH, temperature and initial metal ion concentration was optimized to 5.0, 35°C and 100 mg/l for maximum biosorption. The dead biomass has shown 23.2 percent more biosorption capacity. The biosorption data of dead biomass shows good fit with the Freundlich adsorption isotherm.

Key words : Biosorption, Heavy metal, Fungal biosorbent

Introduction

The technological significance of heavy metals lead to the great emphasis on their use (Kumar *et al.*, 2014; Rao *et al.*, 2014; Saleem *et al.*, 2014) in industries resulting in generation of heavy metal laden waste contaminating the environment with metal pollution (Gautam *et al.*, 2014). Several studies have indicated the metal pollution through Industrial waste (Wang and Ren, 2014). Metal-containing wastewater is continuously produced, posing a major hazard to the environment and public health. This is primarily owing to their bioaccumulation and penetration into food systems (Malik, 2004; Chuah *et al.*, 2005). Because of their hazardous

behaviour in the environment, industrial effluents loaded with cadmium, chromium, copper, lead, mercury, nickel, palladium, and zinc are of special importance for treatment (Barakat, 2011).

Lead, one of the most extensively used heavy metals, is primarily utilized in the production of electric batteries, paint, lead melting, internal combustion engines, fueled aviation engines, and explosives. Lead is extremely hazardous, and exposure to high levels can result in encephalopathy, hepatitis, and nephritic syndrome (Ezzouhri *et al.*, 2010). The need of treating and removing heavy metals from such effluents to allowable levels before releasing into natural streams, rivers, and seas is quickly spreading over the world. Several conventional

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