

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
कोनी, बिलासपुर - 495009 (छ.ग.)



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Department : Botany		
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01.	311	M.Sc. Botany

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A

Dissertation report on

**Antibacterial and antibiotic resistance modifying activity of the
oil extracts against opportunistic microorganisms including
multidrug resistant phenotypes**

In partial fulfilment of the degree of

M.Sc. Botany IVth sem

(Session 2022-23)

Submitted by

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2023



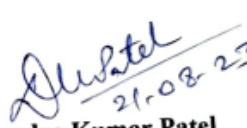
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Abstract

The escalating global threat of antibiotic resistance necessitates innovative approaches to combat opportunistic bacterial infections, especially those driven by multi-drug resistant phenotypes. This study explores the potential of oil extracts of dried mace of *M. fragrans* and fresh leaves of *C. citratus* as agents to counteract bacterial growth and antibiotic resistance. Antibiotic resistance of *E. coli* and *Pseudomonas* was checked through the implementation of a variety of antibiotic discs through disc diffusion assay. Subsequently, the antibacterial efficiency of the oil extracts of *M. fragrans* and *C. citratus* yielded befitting results which was confirmed through the application of well diffusion assay. Furthermore, the study delves into the capacity of *M. fragrans* extracts to modify antibiotic resistance in bacterial strains exhibiting multi-antibiotic-resistance. *M. fragrans* oil also demonstrated limited antifungal properties. This phenomenon suggests a potential synergistic relationship between oil extracts and conventional antibiotics, offering a strategy to mitigate the challenges posed by multi-drug resistant bacterial strains. The chemical constituents in *M. fragrans* seeds were analyzed using gas chromatographic-mass spectrometric (GC-MS) methods. The findings highlight the antibacterial prowess of these extracts and their capability to modulate antibiotic resistance, thus paving the way for further exploration of their clinical applications as adjunct therapies to conventional antibiotics.

Keywords: antibacterial, antifungal, *C. citratus*, GC-MS analysis, *M. fragrans*



**Bioactive secondary metabolites of an endophytic fungus
Pestalotiopsis sp. isolated from *Phyllanthus embilca* L.**

Dissertation Report

Submitted

For the partial fulfillment of the degree of

**MASTER OF SCIENCE
IN
BOTANY**



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Content

S. No.	Content	Page No.
1.	Abstract	1
2	Introduction	2
3.	Review of Literature	4
4.	Material and method	9-11
4.1	Sample collection	9
4.2	Isolation of endophytic fungus	9
4.3	Identification of the endophytic fungi	9
4.4	Fermentation and extraction of fungal secondary metabolites	10
4.5	GC-MS analysis of crude extract	10
4.6	Determination of antibacterial test	11
5.0	Results	12-22
5.1	Isolation and characterization of endophytic fungi	12
5.2	GC-MS Analysis	14
5.3	Antibacterial activity	22
6.0	Discussion	23
7.0	Conclusion	24
8.0	Reference	24
9.0	Media Used	28

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**IN SILICO APPROACH OF CYANOBACTERIAL BIOACTIVE
COMPOUNDS AS POTENTIAL INHIBITORS OF CANCER
INDUCING PROTEINS**

Dissertation Report

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For the partial fulfillment of the degree of

**MASTER OF SCIENCE
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CONTENTS

	<i>Page No.</i>
List of Tables	i
List of Figures	ii
Abstract.....	iii
1. Introduction.....	1
2. Review of literature.....	4
3. Objective.....	9
4. Materials and Method.....	10
4.1 Selection and analysis of macromolecules	10
4.2 Protein structure evaluation.....	10
4.3 Ligand selection and analysis.....	11
4.4 Docking procedure with Autodock MGL tool.....	11
4.5 Analysis of linkplot and protein ligand interaction using Biovia discovery studio.....	13
4.6 Interpretation and visualization of docking result with UCSF chimera.....	13
5. Result.....	14
6. Discussion.....	34
7. Conclusion.....	38
8. References.....	39

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(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
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Organic mulching of weed control (*Lycopersicon esculentum* Mill.)



Dissertation submitted

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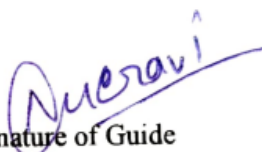


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CONTENTS

TABLE OF CONTENTS

Abstract	7-8
----------------	-----

Chapter

1. INTRODUCTION	9-16
1.1- mulching	
1.2- types	
1.3- importance of mulch	
1.4- uses	
2. LITERATURE REVIEW	17
2.1- mulching method result discuss	
3. OBJECTIVES	18-23
Collection growth	
4. MATERIAL AND METHOD	
.....	
4.1- sample collection	
4.2- experiment area	
4.3- experiment design	
5. RESULT	24-27
6. Number weed per mulching	
Observation table	
Plant growth	
7. DISCUSSION.	28
8. CONCLUSION	29-31
9. REFERENCES	32-33



Deciphering of Seed borne Fungi on Vigna radiata of Odisha



A Dissertation Report for the Fulfillment of the Degree

MASTER OF SCIENCE IN BOTANY

By

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2021-2023



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ABSTRACT:

The present study was conducted to study the total Mycobiota and its phytopathogenic potential on mung bean seeds of the Western Odisha region. The collected seed samples from 4 different districts (a total of 40 seed samples) were investigated for seed-borne fungal species. Two techniques agar plate and as well as blotter techniques were used for the isolation of Mycobiota from the seed sample. The two fungi, *Aspergillus niger*, and *Aspergenius flavus*, showed the highest percentage of occurrence by the unsterilized and sterilized method, in Bargarh district followed by Sambalpur, Sundargarh, and Nuapada, respectively. After 8-9 months of storage, it is clear that the stored seed of *Vigna radiata* is found to be associated with more than 14 fungus species and found that among those two *Aspergillus spp.*, the most prevalent species was *A. flavus*, which was confirmed through molecular identification. The finding of our present study reveals that the fungal infestation in mung bean seeds results in lowering of total protein and carbohydrate content in the *A. flavus* and *A. niger* infected group. And the two *Aspergillus spp.*, are involved in the production of aflatoxin B1, B2, and G1. These are associated with a reduction in seed germination and seedling vigor, which was clearly shown in our present study, also the toxins cause various disease conditions in humans when fungal-infected seeds are consumed. In view of the above harmful effects of fungal infection, preventive and diagnostic methods should be applied for the improvement of the dietary stored seed.

Keywords: *Vigan radiata*, *Aspergillus species*, Aflatoxin, Agar plate method, Blotting technique, Pure culture,

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**SCREENING AND OPTIMIZATION OF DYE DEGRADING
BACTERIA ISOLATED FROM TEXTILE INDUSTRY**

**A Dissertation Thesis
Submitted**

In partial fulfillment of the requirement for the award of the degree of

Master of Science

In

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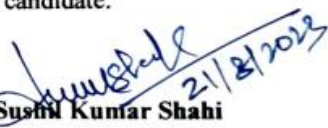


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CONTENTS

1. INTRODUCTION.....	1
2. REVIEW OF LITERATURE	3
2.1. Dyes:.....	3
2.2. Dye classification.....	3
2.2.1. Azo dyes	3
2.2.2. Anthraquinone dyes:	4
2.2.3. Acid dyes:.....	4
2.2.4. Reactive dyes:.....	4
2.2.5. Metal complex dyes:	4
2.2.6. Direct dyes.....	4
2.2.7. Basic dyes:.....	4
2.2.8. Disperse dyes:.....	5
2.2.9. Pigment dyes:	5
2.2.10. Vat dyes:	5
2.2.11. Sulfur dyes:	5
2.2.12. Solvent dyes:.....	5
2.3. Different method of textile waste water treatment:	5
2.3.1. Chemical treatments:.....	6
2.3.2. Physical method of treatment:	6
2.3.3. Biological treatment:.....	6
3. MATERIALS AND METHODS	8
3.1. Materials.....	8
3.1.1. Dyes and chemicals:	8
3.1.2. Culture media:	8
3.1.3. Glassware and instruments:.....	8
3.2. Methods	8
3.2.1. Collection of textile effluent sample:.....	8
3.2.2. Isolation of Textile dye degrading bacteria from effluent samples:	8



**Antimicrobial Effect of Tridax Procumbens on
Different Microbes**

**A DISSERTATION REPORT
SUBMITTED FOR THE PARTIAL FULFILLMENT OF
THE DEGREE OF MASTER OF SCIENCE
IN BOTANY**



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CONTENT

1. ABSTRACT	3
1. INTRODUCTION	4
3. REVIEW OF LITERATURE	8
3.1 MICROORGANISM	8
3.2 PATHOGENS	8
3.2.1 BACTERIAL PATHOGENS	8
3.2.2 FUNGAL PATHOGENS FOR PLANTS	10
3.3 Anticoagulant activity:	11
3.4 NATURAL MEDICATIONS OR HERBAL MEDICINES	12
3.5 <i>Tridax procumbens</i>	13
4. Materials and Methods	16
4.1 Materials Required	16
4.1.1. Glassware	16
4.1.2. Chemicals	16
4.1.2. Instrument	17
4.1.3 Media preparation	18
4.1.4 Reagent preparation	19
4.2 METHOD	19
4.2.1 Plant materials collection site	19
4.2.2 Extraction of plant material	20
4.2.3 Secondary metabolites present in <i>Tridax Procumbens</i>	20
4.3 Antimicrobial assay	20
4.3.1 Sample collection	20
4.4. Bacterial identification	21
4.4.1 Morphological analysis	21
4.4.1. Biochemical identification	21
4.4.3. Molecular identification	22
4.5 Pathogenic fungus isolation	22
4.6 Antimicrobial activity tested on other microbes	22
4.7 AGAR WELL DIFFUSION ASSAY	22
4.7.1 Principle	22
4.7.2 Procedure	23
4.8 Quantitative analysis	23
4.8.1 Total activity (TA) determination:	23
4.9 Anti-coagulant Activity Test:	23
5. Results	25
5.1. Preparation of plant extract	25
5.1.1 Secondary metabolites of <i>T. Procumbens</i>	26
5.3 Isolation of pathogens	27

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A
DISSERTATION
ON
"AN ECO-FRIENDLY PERSPECTIVE ON THE EXTRACTION AND USE OF
NATURAL DYES ON NATURAL FIBRES"
FOR THE PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD
OF
MASTER OF SCIENCE
IN
BOTANY
TO
GURU GHASIDAS VISWAVIDYALAYA, BILASPUR



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2022-2023



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Contents

1. Abstract	01
2. Introduction	02
3. History	03
4. Sources of natural dyes	05
5. Classification of natural dyes	07
5.1 Plant dyes	17
5.2 Animal dyes	17
5.3 Mineral dyes	18
6. Mordants for natural dyes	21
7. Dye extraction	22
8. Principle of dyeing with natural dyes	24
9. Fastness properties of natural dyes	25
10. Advantage of natural dyes	26
11. Disadvantage of natural dyes	28
12. Conclusion	29
13. References	30

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(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur - 495009 (C.G.)

**Barnawapara Wildlife Sanctuary Villages: Uncovering
Ethnobotanical Wonders and Cultural Ecosystem Services in
Balodabazar District, Chhattisgarh, India.**

Dissertation Report

Submitted

For the partial fulfillment of the degree of

**MASTER OF SCIENCE
IN BOTANY**



By

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2022-23

Under the supervision of

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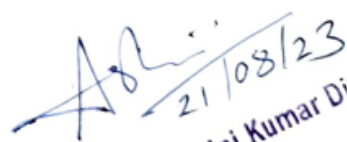

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ABSTRACT

The Barnawapara Wildlife Sanctuary, nestled in Chhattisgarh's Balodabazar District, thrives as a habitat for diverse flora, fauna, and thriving human settlements. This study focuses on the villages around the sanctuary, investigating their ethnobotanical marvels and cultural ecosystem services. Particularly emphasizing ethnobotany, the research delves into local traditions, revealing reliance on plants for sustenance, medicine, crafts, and rituals. Through engagement and fieldwork, insights into the intricate human-nature relationship emerge. These findings underscore the immense cultural and ecological value villages contribute to the sanctuary. Recognizing these treasures and services becomes pivotal for conservation, resource management, and tradition preservation. The research establishes a foundation for future endeavors, fostering collaborations among communities, the Forest Department, and stakeholders to safeguard Chhattisgarh's rich ethnobotanical heritage. This compilation underscores the nexus of nature, culture, and human well-being in Chhattisgarh, spotlighting the Barnawapara Wildlife Sanctuary. It delves into ecosystem services, bridging nature's benefits and informed decisions. Ethnobotany's significance surfaces as it reflects locals' deep link with plant resources, aiding livelihoods and conservation. Cultural ecosystem services at the sanctuary embody spiritual enrichment, heritage preservation, aesthetics, inspiration, and education, cultivating harmony between nature and culture. The relationship between ethnobotany and these services emerges, centering on humans, plants, and environment. Ethnobotany's exploration aligns with ecosystem advantages, nurturing spiritual bonds and sustainability. This connection sustains practices and cultural value. In essence, these passages encapsulate an abstract highlighting Barnawapara's dual significance, spotlighting cultural and ecological wonders. Collaborative efforts, immersive research, and insights contribute to the fusion of ethnobotany and conservation, resonating with the balance between humanity and nature.

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ORGANIC MULCHING METHOD, AN EMERGING WATER SAVING TECHNIQUE

A DISSERTATION REPORT

**SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE DEGREE OF MASTER
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Contents

I. Abstract.....	6
II. Introduction.....	7
III. Review of literature.....	11
IV. Methodology.....	15
V. Result.....	17
VI. Discussion.....	20
VII. Reference.....	22

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EFFECT OF ACIDIFICATION ON POND ECOSYSTEM PRODUCTIVITY

**A DISSERTATION REPORT
SUBMITTED FOR THE PARTIAL FULFILLMENT OF
THE DEGREE OF MASTER OF SCIENCE
IN BOTANY**



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CONTENTS

Introduction	01-03
Methodology	04-06
Result	07-13
Discussion	14-15
Reference	16



A

Dissertation report on

Lichen based fabrication and characterization of silver nanoparticles and their use as potential antimicrobial agents

In partial fulfilment of the degree of

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CONTENT

S.No.	TITLE	Page No.
1	INTRODUCTION	1-5
2	REVIEW OF FLITERATURE	5-10
3	OBJECTIVE	10
4	MATERIAL AND METHOD	11-16
4.1	SAMPLE COLLECTION	11
4.2	PREPARATION OF LICHEN EXTRACT	11-12
4.3	SYNTHESIS OF SILVER NANOPARTICLES	12
4.4	CHARACTERIZATION	12-15
4.4.1	UVVISIBLE SPECTROSCPY	13
4.4.2	XRD	13
4.4.3	SIZE AND ZETA POTENTIAL	14
4.4.4	FOURIER TRANSPFORM INFRARED SPECTROSCOPY	14
4.4.5	SEM	14-15
4.5	ANTIBACTERIAL TEST	15
4.6	MIC	15-16
5	RESULT	16-22
6	ANTIBACTERIAL ACTIVITY	22-25
7	MIC	25
8	DISCUSSION	25-27
9	CONCLUSION	27-28
10	REFERENCE	33-35



“Decolourization of synthetic dyes used in paper and textile industry by isolated *Pseudomonas aeruginosa*”

Dissertation Report

Submitted

For the partial fulfillment of the degree of

**MASTER OF SCIENCE
IN
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**Decolourization of synthetic dyes used in paper and textile industry
by isolated *Pseudomonas aeruginosa***

Contents

S. No.	Content	Page No.
1.	Abstract	1
2	Introduction	2
3.	Review of Literature	4
4.	Material and method	10-14
4.1	Effluent Sampling	10
4.2	Dye and chemicals	10
4.3	Isolation of bacterial strains	10
4.4	Inoculum preparation of isolated bacteria	11
5.5	Decolourization experiments	11
4.6	Decolourization efficiency to other dyes	11
4.7	Molecular identification of potent decolorizing bacteria	12
4.8	Development of consortium	13
4.9	Biodegradation Analysis	13
4.10	Phytotoxicity studies	13
4.11	Statistical analysis	14
5.0	Results	15-22
5.1	Isolation of bacteria from effluent of different paper industry	15
5.2	Decolorization efficiency of isolated bacteria	16
5.3	Percent decolorization of different dye	17
5.4	Identification of potent bacteria	18
5.5	Consortia construction	20
5.6	Biodegradation study	21
5.7	Phytotoxicity test	22
6.0	Discussion	24
7.0	Conclusion	27
8.0	Reference	28-33
9.0	Media Used	35



Study to find relation between plasmid and antibiotic resistance in mine's soil bacteria

Dissertation Report

Submitted

For the partial fulfillment of the degree of

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IN BOTANY



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CONTENT

<i>List of figures</i>	vii-viii
<i>List of Table</i>	viii
<i>Abstract</i>	ix
<i>Key words</i>	ix
1. INTRODUCTION	1-2
2. REVIEW OF LITERATURE	3-5
3. MATERIALS AND METHOD	6-9
4. RESULT	10-21
5. DISCUSSION AND CONCLUSION	22-23
6. REFERENCES	24-25

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IMPACT OF RUSSIA UKRAINE WAR ON ENVIRONMENT

Dissertation Report

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CONTENTS

Page No.

<i>List of Figures</i>	<i>i</i>
<i>Graphical Abstract</i>	<i>ii</i>
1. INTRODUCTION.....	3
2. ORIGIN OF RUSSIA-UKRAINE WAR	5
3. ENVIRONMENTAL DAMAGE DURING THE CONFLICT	8
4. IMPACT ON BIODIVERSITY AND ECOSYSTEM.....	21
5. HUMANITARIAN IMPACTS OF THE WAR	25
6. DESTRUCTION OF SOCIO-ECONOMIC INFRASTRUCTURES	30
7. MITIGATION AND RESTORATION EFFORTS.....	34
8. CONCLUSION	37
9. BIBLIOGRAPHY	39



A

Dissertation on

**Effect of Water Stress on Seed Germination and
early Seedling Growth of Spinach**

(*Spinacia oleracea* L.)

Submitted for

**Partial fulfilment of the requirement for the award of the
degree of**

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in

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TABLE OF CONTENTS

	PAGE
Abstract	1
CHAPTER	
1. INTRODUCTION.....	2-6
1.1- Stress	
1.2- Biochemical	
1.3- Water stress Drought and water logged condition	
1.4- Spinach plant	
1.5- Role of water in plants	
1.6 -Seed germination	
2. LITERATURE REVIEW.....	7-11
2.1- Paper 1	
2.2- Paper 2	
2.3- Seed germination under drought stress	
2.4- Water stress and early seeding growth	
2.5- Mechanism of water stress tolerant in plant	
2.6- Future work	
3. AIM AND OBJECTIVES.....	12
4. MATERIAL AND METHOD.....	13-18
4.1- Sample collection	
4.2- Experiment area	
4.3- Experiment design	
4.4- Measurement of morphological parameter	
4.5- Measurement of biochemical parameter	
5. DATA ANALYSIS.....	19
6. RESULT.....	20-33
7. DISCUSSION.	34-35
8. CONCLUSION.....	36-37
9. REFERENCE.....	38-42



**Dynamics of Extra Floral Nectar Production: A case
study of *Leucaena leucocephala* (Lam.) De Wit
(Caesalpinioideae DC.)**



**Dissertation Report Submitted
for the partial fulfilment of the degree of
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TABLE OF CONTENTS

	<i>Page No.</i>
<i>List of Figures</i>	<i>i-iv</i>
<i>List of Tables</i>	<i>v</i>
<i>Abstract</i>	<i>vi</i>
1. Introduction	1-3
2. Materials and Methods	4-6
2.1 Study Sites	
2.1.1 Study Design	
2.1.2 Statistical Analysis	
3. Results	7-26
3.1 EFN Morphology	
3.2 EFN anatomy with different developmental stages	
3.2.1 Petiole anatomy	
3.2.2 Nectary	
3.3 Nectar composition	
3.4 Faunal diversity	
3.5 Correlation of EFN nectar composition and faunal diversity	
4. Discussion	27-33
4.1 Morphology and diversity of EFN	
4.2 Anatomical variations in different developmental stages of EFN	
4.3 Influence of herbivory on nectar volume and composition	
4.4 Faunal diversity and adaptive role of EFN	
5. Conclusion	34
6. References	35-39

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**ISOLATION AND CHARACTERIZATION OF PGPR FROM
DIFFERENT RHIZOSPHERE SOIL OF DIFFERENT CROPS FROM
KALAHANDI, ODISHA**

**A DISSERTATION REPORT
SUBMITTED FOR THE PARTIAL FULFILLMENT OF
THE DEGREE OF MASTER OF SCIENCE
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This is to certify that the dissertation “Isolation and characterization of PGPR from different Rhizosphere soil of different crops from Kalahandi, Odisha”, is based on the review of literature work done by **Nihar Ranjan Nayak** (Enrollment No.- GGV/21/03714) Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G. and this has not previously formed the basis of the award of any degree, diploma, associate ship and any other similar title and it represent entirely an independent work on the part of the candidate.

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CONTENT

1. ABSTRACT	3
2. INTRODUCTION	4
3. REVIEW OF LITERATURE	6
3.1. PGPR as biofertilizer	6
3.2 Commercialization	7
3.3 PGPR mechanisms	10
3.3.1 Direct Mechanisms	10
3.3.1.1 Nitrogen Fixation	10
3.3.1.2 Solubilization of phosphate	11
3.3.1.3 Phytohormones	12
3.3.1.3.1 Indole-3-acetic acid	12
3.3.2 Indirect Mechanisms	13
3.3.2.1 Antibiotics	14
3.3.2.2 Lytic enzymes	14
3.4 Future Prospects and Challenges	15
4. MATERIALS AND METHODS	17
4.1. Material Required	17
4.1.1. Glassware's	17
4.1.2. Chemicals	18
4.1.3. Instrument	19
4.1.3. Media preparation	20
4.1.4. Reagent Preparation	22
4.2. METHODS	24
4.2.1 Sample collection Site	24
4.2.2. Sample collection	24
4.2.3 Isolation of PGPR	25
4.2.4 Screening of most potent PGPR stains	25
4.2.4. Primary screening of PGPR strains	25
4.2.4.1.1 Phosphate solubilization test	25
4.2.4.2 Secondary screening of selected bacteria	26
4.2.4.2.1 Auxin, i.e., Indole-3-acetic acid (IAA) production test	26
4.2.4.2.2 Hydrogen cyanide (HCN) production	26
4.2.4.2.3 Catalase activity	27
4.2.5 Final selection of potent strain for further studies	27



**A SURVEY ON USAGE OF ETHENOMEDICINAL PLANTS FOR THE
TREATMENT OF COMMON COLD AND INFLUENZA BY THE RURAL
RESIDENCE OF BILASPUR DISTRICT, CHHATTISGARH**

**A DISSERTATION REPORT
SUBMITTED
For the fulfillment of the degree
of
MASTER OF SCIENCE
IN
BOTANY**



**By
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Roll no-21059124
Under the supervision of
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Sl.no.	CONTENTS	PAGE NO.
1.	Introduction	1-3
2.	Review of literature	4
3.	Study area	5-7
4.	Methodology	8
5.	Result	9-47
6.	Discussion	48
7.	Conclusion	48
8.	References	49-52

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Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
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**AN INVESTIGATION ON FUNGAL DETERIORATION
OF *Lens culinaris* OF BILASPUR REGION AND
MOLECULAR IDENTIFICATION OF DOMINANT
FUNGAL SPECIES**

**A DISSERTATION REPORT SUBMITTED FOR THE PARTIAL
FULFILLMENT OF**

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Table for list of content

S/No.	Content	Page no.
1	Introduction	1-3
2	Review of literature	4-5
3	Material and methods	5-14
4	Result	15-24
5	Discussion	25-26
6	Conclusion	26
7	References	27-28



Biofilm formation in *Rhodococcus equi* under varying conditions: metal stress and glucose effect

Dissertation Report

Submitted

For the partial fulfillment of the degree of

MASTER OF SCIENCE

IN BOTANY



By

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CONTENTS

	Page No.
<i>List of Tables</i>	viii
<i>List of Figures</i>	ix
<i>Abstract</i>	x
1. Introduction	1-3
2. Review of literature	4-6
3. Methods and Materials	7-11
3.1 Source of Sample & culture media.....	7
3.2 Culture of bacteria.....	7
3.3 Detection of biofilm formation.....	8
3.4 Qualitative assessment of biofilm	9
3.5 Quantitative assessment through the formula.....	9
3.6 Stock metal and metalloid solutions.....	10
3.7 Metal resistance test of planktonic <i>R. equi</i>	10
3.8 Effect of metal on test tube biofilm assay	10
3.9 Biofilm formation with additional glucose assay.....	11
4. Result	12-23
4.1 Bacterial culture.....	12
4.2 Metal resistance test of planktonic <i>R. equi</i>	12-13
4.3 Qualitative assessment.....	14-16
4.4 Quantitative assessment.....	17-19
4.5 Effect of additional glucose assay.....	19-23
5. Discussion	24-25
6. Conclusions	26
7. Reference	27-31

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Guru Ghasidas Vishwavidyalaya
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**PRIMING *Vigna radiata* SEEDS WITH
CALCIUM NITRATE ENHANCES TOLERANCE
IN SALT STRESS CONDITION**

A DISSERTATION WORK

SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE DEGREE OF MASTER OF SCIENCE
IN BOTANY



BY

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SESSION (2021-2023)



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Table of Contents

Introduction	6
Material and Methods	8
Plant material.....	9
Experimental settings and details.....	9
Seed surface sterilization.....	9
Priming treatment.....	9
Seed germination assay.....	9
Transfer of germinated seeds to soil.....	10
Physiological studies.....	10
Germination percentage.....	10
Measurement of root shoot length.....	10
Seedling vigour index.....	10
Biochemical studies.....	11
Estimation of proline.....	11
Estimation of carotenoid and chlorophyll content.....	11
Result.....	11
Germination percentage.....	11
Root shoot length.....	13
Seedling vigour index.....	15
Proline estimation.....	15
Chlorophyll content.....	16
Discussion.....	17
Conclusion.....	18
References.....	19

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**Enhancing Seed Germination and
Seedling Growth in *Cucumis sativus*
Under Salinity Stress through
Hydrogen Peroxide and Sodium
Nitroprusside Priming**

DISSERTATION REPORT

**SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE DEGREE OF
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This is to certify that the project entitled "**Enhancing Seed Germination and Seedling Growth in *Cucumis sativus* Under Salinity Stress through Hydrogen Peroxide and Sodium Nitroprusside Priming**" submitted to Guru Ghasidas Vishwavidyalaya in partial fulfillment of the requirements for the award of the degree of Masters of Science in Botany is a Bonafide research work carried out by **Ms. R. Akhila, M.Sc. IVth Semester GGV/21/03721, Roll No: 21059130**, Department of Botany, Guru Ghasidas Vishwavidyalaya, under the supervision of **Dr. Deepanker Yadav**, Assistant professor, Department Of Botany. I further certify that no part of this project has been submitted for any other degree or diploma in this University or any other University.

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Table of Contents

Introduction	6
Why salinity is a serious concern?	7
Chemical priming	7
Materials and methods	8
Experimental Procedures.....	8
Seed Assay.....	12
Germination percentage	12
Germination Index	12
Coefficient of velocity of germination	12
Biochemical Assay.....	13
Chlorophyll Estimation	13
Estimation of Proline	14
Estimation of carbohydrate	15
Malondialdehyde (MDA) Assay.....	16
Results	17
Seed Germination Assay	17
Germination Percent	17
Germination Index	19
Coefficient of velocity of Germination.....	20
Biochemical Assay	21
Chlorophyll Content	21
Proline Content	23
Carbohydrate Content	25
Malondialdehyde (MDA) Content	27
Discussion	29
Conclusion	30
Reference.....	31

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**Antimicrobial potential of copper oxide nanoparticles synthesized
by *Azadirachta indica* Leaf and their characterization.**

Dissertation Report

Submitted

For the partial fulfillment of the degree of

MASTER OF SCIENCE

IN

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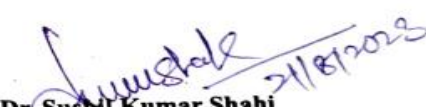
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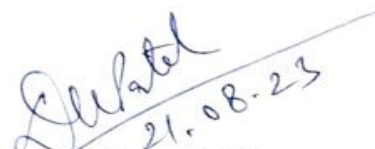
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CONTENTS

	<i>Page No.</i>
<i>List of Tables</i>	v
<i>List of Figures</i>	vi
1. INTRODUCTION.....	1
2. REVIEW OF LITERATURE.....	4
2.1 Synthesis of nanoparticles.....	4
2.1.1 Physical method.....	4
2.1.2 Chemical method.....	4
2.1.3 Biological method.....	5
2.1.3.1 Green synthesis from enzymes.....	5
2.1.3.2 Green synthesis from vitamins.....	6
2.1.3.3 Green synthesis from algae.....	6
2.1.3.4 Green synthesis from fungi.....	7
2.1.3.5 Green synthesis from bacteria.....	8
2.1.3.6 Green synthesis using plant extract.....	9
2.2 Factors affecting the green synthesis of NPs.....	14
2.2.1. Temperature.....	14
2.2.2 Reaction duration.....	15
2.2.3 pH of reaction.....	15
2.2.4 Reactant concentration.....	16
2.3 Characterization.....	17
2.3.1 UV-Vis Spectra Analysis.....	17

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**AN INVESTIGATION ON SEED MYCOFLORA OF *VIGNA MUNGO* IN
BILASPUR REGION AND ITS PHYTOPATHOGENIC POTENTIAL**

**Dissertation Report Submitted for the partial fulfilment of the degree of
MASTER OF SCIENCE
IN
BOTANY**



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Contents

INTRODUCTION.....	1
1.1 Background and Rationale	1
1.2 Objectives of the Study	2
1.3 Scope and Significance	3
2.REVIEW OF LITERATURE	5
3.MATERIALS AND METHEDOLOGY	8
3.1 Sample collection	8
3.2 Isolation and Identification of Fungi	9
3.3 Pathogenicity Testing	12
4.RESULTS	18
4.1 Diversity of fungal species and their percentage frequency	18
4.2 Fungal Species Distribution	19
4.3 Phytopathogenic Potential.....	19
4.4 Molecular Identification of Dominant fungi.	24
4.5 Seed germination rate.....	25
4.6 Measurement of radicle and plumule length	25
4.7 Protein content.....	27
4.8 Carbohydrate content estimation.....	29
5.DISCUSSION	32
6. Conclusion:	34
REFERENCE	35



**A SURVEY ON ETHNOMEDICINAL PLANTS TO CURE THE
DERMATOLOGICAL DISEASES IN BILASPUR DISTRICT, CHHATTISGARH**

**A DISSERTATION REPORT
SUBMITTED
For the fulfillment of the degree
of
MASTER OF SCIENCE
IN
BOTANY**



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Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur (C.G.)



Sl.no.	CONTENTS	PAGE NO.
1.	Introduction	1-3
2.	Review of literature	4
3.	Study area	5-7
4.	Methodology	8
5.	Result	9-55
6.	Discussion	56
7.	Conclusion	56
8.	References	57-59

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**HEAVY METAL RESISTANCE IN BACTERIA ISOLATED
FROM BAILADILA IRON-ORE MINES, CHHATTISGARH**

Dissertation Report

Submitted

For the partial fulfillment of the degree of

MASTER OF SCIENCE

IN BOTANY



By

SHASHANK AGRAWAL

ROLL NO. 21059135; ENROLLMENT NO. GGV/18/3255

2021-23

Under the supervision of

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CONTENTS

S. No.	Topic	Page No.
1	Introduction	1
2	Review of literature	3
3	Material and Methods	7
4	Result	10
5	Discussion	19
6	Conclusion	20
7	References	21



**EVALUATION OF ISOTHERM MODELS FOR
THE SORPTION PROPERTIES OF BIOCHAR IN
CADMIUM CONTAMINATED SOIL**

**A DISSERTATION REPORT
SUBMITTED
For the partial fulfillment of the degree
OF
MASTER OF SCIENCE
IN
BOTANY**



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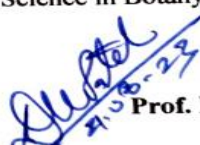
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CONTENTS

S. No.	Topic	Page No.
1	Introduction	7
2	Review of literature	9
3	Material and Methods	11
4	Result and Discussion	16
5	Conclusion	24
6	References	26



**Investigation of modulatory potential of angiogenesis and
anti-angiogenesis activity of *Emblica officinalis*, *Alstonia
scholaris* and *Solanum xanthocarpum***

**Dissertation Report Submitted for the partial fulfilment of the degree of
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Table of Content

Chapter no.	Chapters	Page no.
1	Introduction	1-5
2	Review of Literature	6-35
3	Methodology	36-44
4	Result	45-59
5	Discussion	60-62
6	Conclusion	63
7	Reference	64-76



Phytochemical Analysis and Antimicrobial Activity of the Selected Xerophytic Plants

Dissertation Report

Submitted

For the partial fulfillment of the degree of

MASTER OF SCIENCE

IN

BOTANY



Submitted By

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S.No	<u>Chapter</u>	<u>Pg. No</u>
1	Introduction	6-7
2	Review of Literature	8-12
3	Plant Description	13-16
4	Material and Method	17- 23
5	Result	24-32
6	Discussion	33-34
7	Conclusion	35
8	Reference	36-38

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**STUDIES ON THE VARIATIONS IN THE EPIDERMAL
FEATURES OF *CROTALARIA* SPECIES AND THEIR
TAXONOMIC AND ADAPTIVE SIGNIFICANCE**

**Dissertation Report Submitted
for the partial fulfilment of the degree of
MASTER OF SCIENCE IN BOTANY**



**By
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TABLE OF CONTENTS

	<i>Page No.</i>
<i>List of Figures</i>	<i>i</i>
<i>List of Tables</i>	<i>ii</i>
<i>Abstract</i>	<i>iii</i>
1. INTRODUCTION	1-2
2. MATERIALS AND METHODS	3-5
2.1 Sample collection and processing	3
2.2 Epidermal studies	4
2.3 Calibration of ocular micrometer	4
2.4 Calculation for stomata	4
3. RESULTS	6-11
3.1 Variations in Leaf Types and Attachments	6
3.2 Epidermal and Subsidiary Cells	6
3.3 Epidermal studies: Stomata	8
4. DISCUSSION	12-14
4.1 Diversity in Leaf types and Attachments	12
4.2 Nature of Epidermal Cells	12
4.3 Significance of Stomatal Distribution and their Adaptive Role	13
5. CONCLUSION	15
6. REFERENCES	16-17

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**AMENDMENT EFFECT OF BIOCHAR AND
COMPOST ON SOIL QUALITY AND PLANT
GROWTH**

**A DISSERTATION REPORT
SUBMITTED**

**For the partial fulfillment of the degree
OF
MASTER OF SCIENCE
IN
BOTANY**



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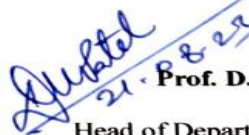
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Abstract

Biochar is an organic carbon-based environment friendly product. It is known globally for its soil conditioning properties and increasing plant productivity. The aim of this study was to investigate the effect of biochar and compost at different amendment rates (0%, 1% and 2%) in soil and plant. The application of biochar and compost alone and in combination were studied to determine the effect of biochar in soil and plant growth in potting experiment. The result showed that biochar in combination with compost at 2% amendment rate was beneficial for increasing soil functioning and plant productivity. Biochar addition helped in increasing pH of soil in all the treatments. The plant morphology, chlorophyll content, showed maximum increase in biochar + compost combination as compared to biochar or compost alone. Catalase activity and proline content showed no significant difference indicating absence of any stress due to amendment. It can be suggested that biochar in combination with compost showed positive impact on plant growth and soil functioning. However, more studies under field conditions are required in future to understand the combined application of biochar and compost more effectively.

Keywords: Soil; Biochar; Plant; Compost; germination; growth

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**EFFECT OF DIFFERENT CHEMICAL PRIMING ON PLANT SEED
GERMINATION AND SEEDLING GROWTH OF *Citrullus lanatus***

A DISSERTATION WORK

**SUBMITTED FOR THE PARTIAL FULFILMENT OF
THE DEGREE OF MASTER OF SCIENCE IN BOTANY**



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CONTENTS

1. INTRODUCTION: -	6
2. HEAT STRESS	6
2.1 EFFECTS OF HEAT STRESS	7
2.1.1 Seed germination and seedling establishment-	7
2.1.2 Vegetative growth: -	7
2.1.3 Photosynthesis: -	7
2.1.4 Reproductive phase and yield: -	7
2.1.5 Oxidative stress and antioxidant system: -	8
2.2 PLANT ADAPTATION TO HEAT STRESS: -	8
2.2.1 Avoidance Mechanisms: -	8
2.2.2 Tolerance Mechanisms: -	8
2.3 SEED PRIMING: -	9
2.3.1 Osmo-priming: -	10
2.3.2 Osmo-priming with Chemicals: -	10
3. MATERIALS AND METHODS: -	11
3.1 PLANT MATERIAL AND EXPERIMENTAL CONDITIONS -	11
3.2 PLANT STRESS ASSAY: -	11
3.2.1 Seedling growth and heat treatments: -	12
3.2.2 Acclimation recovery period: -	12
3.2.3 Transfer of seedlings into the soil: -	12
3.3 PHYSIOLOGICAL ASSAY:	12
3.3.1 Seed Germination Assay:	12
3.3.2 Measurement of shoot length:	13
3.4 BIOCHEMICAL ASSAY: -	13
3.4.1 Estimation of total chlorophyll content: -	13
3.4.2 Estimation of Proline:	13
3.4.3 Estimation of Membrane Lipid Peroxidation:	13
3.4.4 Estimation of Carbohydrates:	14
3.4.4.1 Preparation of standard curve for Carbohydrate Estimation by glucose:	14
3.4.4.2 Estimation of Carbohydrates from Leaves of Melon:	14
4 RESULTS: -	14
4.1) PHYSIOLOGICAL ASSAY	14
4.1.1 Germination percentage	14
4.1.2 Shoot length	16
4.2 BIOCHEMICAL ASSAY	18
4.2.1 Chlorophyll Content	18
4.2.2 Total Proline Content	19
4.2.3 Total MDA Content	19
4.2.4 Total Carbohydrate Content	20
5 DISCUSSION: -	21
6 CONCLUSION: -	22
7 REFERENCES: -	23

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***'Typha latifolia As A Sustainable Approach For Heavy Metal
Phytoremediation And Bioaccumulation'***

Dissertation Report

Submitted

For the partial fulfillment of the degree of

MASTER OF SCIENCE

IN

BOTANY



By

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Abstract

The majority of Par Pond's coastline, which serves as a cooling reservoir for the reactors of the Savannah River Plant near Aiken, South Carolina, is covered with *T. latifolia*. The flow of hot water from one end of the pond to the other creates a thermal gradient. To ascertain the biochemical and morphological effects of temperature on *Typha latifolia* clones coming from various points along this thermal gradient, this study was conducted. According to the research, "hot" and "cold" end plants respond to temperature in a comparable way. Forty-eight rhizome plants were transplanted into tanks at 20 C and 30 C from both ends of Par Pond. Total levels of malic dehydrogenase activity, proportions of mitochondrially bound MDH and growth rates were significantly different in plants grown. However, no discernible changes were found between plants from the "hot" and "cold" ends inside each of the two tanks. In the publication, it is explored how these data relate to assumptions about quantitative methods of enzyme adaptation.

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BIOCHAR AS AMENDMENT FOR DECREASING CADMIUM CONTAMINATION IN SOIL

**A DISSERTATION REPORT
SUBMITTED FOR THE PARTIAL FULFILLMENT OF
THE DEGREE OF MASTER OF SCIENCE
IN BOTANY**



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CERTIFICATE

This is to certify that "Biochar as amendment for decreasing cadmium contamination in soil" is based on the original work done by "Shibani Choudhury" (Enrolment no: GGV/21/03732), Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur and this has not previously formed basis of award of any degree, diploma, associated ship and other similar title and it represents entirely an independent work of the candidate.

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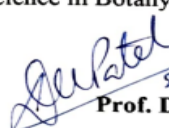
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CONTENTS

S. No.	Topic	Page No.
1	Introduction	2
2	Review of literature	3
3	Material and Methods	5
4	Result and Discussion	8
5	Conclusion	15
6	References	16

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A
DISSERTATION
ON

"AN ECO-FRIENDLY PERSPECTIVE ON THE EXTRACTION AND USE OF
NATURAL DYES ON NATURAL FIBRES"

FOR THE PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD

OF
MASTER OF SCIENCE

IN
BOTANY

TO

GURU GHASIDAS VISWAVIDYALAYA, BILASPUR



BY

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2022-2023



CERTIFICATE

This is to certify that the dissertation report entitled "AN ECO-FRIENDLY PERSPECTIVE ON THE EXTRACTION AND USE OF NATURAL DYES ON NATURAL FIBRES" is based upon original work done by Ms. B P Lipsa, student of MSc. (Botany) of Department of Botany, Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur (C.G.) and this has not been previously formed the basis for the award of any degree, diploma, associate ship, fellowship or any other similar title and it represents entirely on independent work of the candidate.

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Contents

	01
1. Abstract	02
2. Introduction	03
3. History	05
4. Sources of natural dyes	07
5. Classification of natural dyes	17
5.1 Plant dyes	17
5.2 Animal dyes	18
5.3 Mineral dyes	21
6. Mordants for natural dyes	22
7. Dye extraction	24
8. Principle of dyeing with natural dyes	25
9. Fastness properties of natural dyes	26
10. Advantage of natural dyes	28
11. Disadvantage of natural dyes	29
12. Conclusion	30
13. References	