

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI, KARNATAKA



Project report on

**In Silico Docking Analysis to Identify Therapeutic Benzoic Acid Derivatives for
Acute Myeloid Leukemia**

Submitted in partial fulfilment of the requirements for the award of Degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

Under Visvesvaraya Technological University

Belagavi -590014.

Submitted by

PRANESH KULASEKHAR [1MV19BT017]

SHRUTHI P [1MV19BT023]

VRITHI RAJU [1MV19BT032]

DEPARTMENT OF BIOTECHNOLOGY

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

BANGALORE-562157



Under the guidance of

Internal Guide

Dr. H G Nagendra

Head of Department

External Guide

Ms. Susha Dinesh

Bionome

Department of Biotechnology

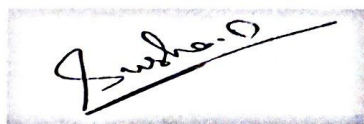
Sir M Visvesvaraya Institute of Technology

Bangalore- 562157

CERTIFICATE

This is to certify that the project work entitled **In Silico Docking Analysis to Identify Therapeutic Benzoic Acid Derivatives for Acute Myeloid Leukemia** is a bonafide work carried out by **Mr. PRANESH KULASEKHAR [1MV19BT017], Ms. SHRUTHI P 1MV19BT023 AND Ms. VRITHI RAJU 1MV19BT032**, in fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2019-2023.

It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed by Visvesvaraya Technological University, Belgaum.



Signature of External Guide

Ms. Susha Dinesh



Signature of internal guide

Dr. H. G. Nagendra (HOD)



PRINCIPAL

Signature of Principal

Krishnadever

Hunasamaranahalli

International A

Dr. Rakesh S. G

Name of the Students in the Team

PRANESH KULASEKHAR [1MV19BT017]

SHRUTHI P [1MV19BT023]

VRITHI RAJU [1MV19BT032]

External Viva

Name of Examiners

1. Dr. Salma Kaveri. M
Dr. H. G. Nagendra

Signature with date

Shree 23/5/23
Dr. H. G. Nagendra
3/5 2

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA, BELAGAVI- 590018



MAJOR PROJECT PHASE-2 REPORT (18BTP83)

***“Identification of Common Molecular pathways and drug targets
Shared between Alzheimer’s and Parkinson’s Diseases”***

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

For the Academic Year 2019-2023

Submitted by

1MV19BT027

1MV19BT028

THEJASHREE M

TRISHA C

Under the guidance of

Dr. JAGADEESH KUMAR D

Associate Professor, Dept of Biotechnology, Sir MVIT

DEPARTMENT OF BIOTECHNOLOGY



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

HUNASAMARANAHALLI, BENGALURU – 562157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

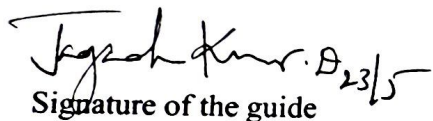
HUNASAMARANAHALLI, BENGALURU - 562157

DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the project work entitled "*Identification of Common Molecular pathways and drug targets Shared between Alzheimer's and Parkinson's Diseases*" is a bonafide work carried out by Ms. THEJASHREE M (1MV19BT027), and Ms. TRISHA C (1MV19BT028) in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2019-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.


Signature of the guide

Dr. Jagadeesh Kumar D

Associate Professor

Dept of Biotechnology


Signature of HOD

Dr. H. G. Nagendra

Prof & Head

Dept of Biotechnology


PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
K. R. HUNASAMARANAHALLI
International Airport Road, Bangalore-562 157
Prof. Rakesh S. G

Principal

Sir MVIT


THEJASHREE M

1MV19BT027


TRISHA C

1MV19BT028




Dr. Selma Kouser M.



23/5/23

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA BELGAVI- 590018



PROJECT REPORT ON

**"Screening of Synaptic Drug Targets Implicated in
Neurological disorders (Epilepsy)"**

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY



DEPARTMENT OF BIOTECHNOLOGY

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bengaluru -562157

Submitted by

AASHITHA C SHEKAR - 1MV19BT006

DEEPIKA BHAT -1MV19BT006

Under the guidance of

DR. JAGADEESH KUMAR D

**Associate Professor, Dept of Biotechnology, Sir MVIT
Bengaluru -562157**

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

HUNSAMARANAHALLI, BENGALURU - 562157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU - 562157
DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the project work entitled "Screening of Synaptic Drug Targets Implicated in Neurological disorders (Epilepsy)" is a bonafide work carried out by **Ms. Aashitha C Shekar (1MV19BT001)** and **Ms. Deepika Bhat (1MV19BT006)** in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2019- 2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli
International Airport Road, Bangalore-562157

Signature of the
Principal:
Prof. S.G. Rakesh

Signature of the Project Guide:
Dr. Jagadeesh Kumar D

Signature of HOD:

Dr. H.G. Nagendra
Professor & Head

Department of Biotechnology
Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157

Name of Examiners Signature of Examiners

1. Dr. Salma Kousar M. - 22/5/23
2. Dr. H.G. Nagendra - 22/5/23

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
Jnana Sangama, Belagavi- 590018



PROJECT REPORT

ON

**“COMPARATIVE STUDY OF EFFICIENCY OF DIFFERENT
PLANTS IN BIOREMEDIATION OF DOMESTIC
WASTEWATER”**

Submitted in partial fulfillment of the requirements for the award of degree of
BACHELOR OF ENGINEERING

IN

BIOTECHNOLOGY

For the Academic Year 2019-2023

SUBMITTED BY

CHATURTHY (1MV19BT005)

ROHAN THOMAS CHERIAN (1MV19BT019)

VIDHYA SHREE S (1MV19BT031)

Under the guidance of

Dr. SUDEVI BASU

Assistant Professor, Department of Biotechnology, Sir MVIT



DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNASAMARANAHALLI, BENGALURU-562157

**SIR M. VISVESVARAYA INSTITUTE OF
TECHNOLOGY KRISHNADEVERAYA NAGAR,
HUNASMARANAHALLI,
BANGALORE-562157**

DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the report of the project entitled “**COMPARATIVE STUDY OF EFFICIENCY OF DIFFERENT PLANTS IN BIOREMEDIATION OF DOMESTIC WASTEWATER**” is a bonafide work carried out by Ms. Chaturthy, Mr. Rohan Thomas Cherian and Ms. Vidhya Shree bearing the USN 1MV19BT005, 1MV19BT019 and 1MV19BT031 respectively, in partial fulfillment for the completion of BACHELOR OF ENGINEERING in BIOTECHNOLOGY under the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM during the year 2019-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

Signature of Project Guide
Dr. Sudevi Basu
Assistant Professor
Dept of Biotechnology
Sir MVIT

Signature of HOD
Dr. H.G. Nagendra
HOD & Professor
Dept of Biotechnology
Sir MVIT

PRINCIPAL
Signature of Principal
Prof. Rakesh S. G.
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadeveraya Nagar, Hunasmaranahalli
International Airport Road, Bangalore-562157
Sir MVIT

Name of the Examiners

1. **Dr. Sudevi Basu**
2. **Dr. H.G. Nagendra**

Signature with Date



MAJOR PROJECT REPORT ON

***"COMPARISON OF MICROFLORAL AND BIOCHEMICAL PARAMETERS FROM THE SALIVA
OF USERS AND NON-USERS OF TOBACCO PRODUCTS"***

Submitted in partial fulfillment of the requirement for the award of the degree of

**Bachelor of Engineering
In
Biotechnology**



**DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bengaluru-562157**

Submitted by

**NIHARIKA K S-1MV19BT016
SHREYA P-1MV19BT022
UMA MAHESHWARI A-1MV19BT029**

Under the guidance of

Dr. MRINALINI MENON

Associate Professor, Department of Biotechnology, Sir.MVIT

And

Dr. RADHIKA M B

Professor and Head, Department of Oral Pathology, Krishnadevaraya college of Dental Sciences.

DEPARTMENT OF BIOTECHNOLOGY



2022-2023
CERTIFICATE

This is to certify that the project undertaken by Niharika K.S, Shreya P, Uma Maheshwari A in Krishnadevaraya college of Dental Sciences and Sir M. Visvesvaraya Institute of Technology of VIII Semester, bearing the USN No. 1MV19BT016, 1MV19BT022, 1MV19BT029 of the Department of Biotechnology is a bonafide work carried out in partial fulfillment for the award of Bachelor's degree in Biotechnology Engineering prescribed by the Visvesvaraya Technological University, Belgaum during the year 2022-2023. It is certified that all the corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project prescribed for Bachelor of Engineering degree


23/5/23

Dr. Mrinalini Menon
Assoc. Prof, Dept. of
Biotechnology, Sir MVIT



Dr. RADHIKA M B
Prof. & HOD, oral
pathology, KCDS,
External guide




Dr. HG Nagendra
Prof. & HOD,
Biotechnology
Sir MVIT



PRINCIPAL
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevaraya, Hunasamaranahalli
International Road, Bangalore-562 157
Prof. S G Rakesh
Principal, Sir MVIT

Name and Signature of external examiners:

- 1 
- 2 


23/5/23

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA BELGAVI- 590018



PROJECT REPORT ON

**"REPURPOSING ANTIDIABETIC DRUG METFORMIN FOR CANCER:AN INSILICO
APPROACH"**

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY



DEPARTMENT OF BIOTECHNOLOGY

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bengaluru -562157

Submitted by

GURURAJ A

1MV19BT009

KAVYA BAI O P

1MV19BT011

SAMARTH RAJE URS P

1MV19BT021

Under the guidance of

DR. JAGADEESH KUMAR D

**Associate Professor, Dept of Biotechnology, Sir MVIT
Bengaluru -562157**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU - 562157**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU - 562157**

DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the project work entitled "REPURPOSING ANTIDIABETIC DRUG METFORMIN FOR CANCER:AN INSILICO APPROACH" is a bonafide work carried out by Mr. Gururaj A (1MV19BT009), Ms. Kavya Bai O P (1MV19BT011) and Mr. Samarth Raje Urs P A (1MV19BT021) in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2019-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.

Jagadeesh Kumar D 23/5/23
Signature of Project Guide
DR. JAGADEESH KUMAR D

H. G. Nagendra
Signature of HOD
Dr. H. G. Nagendra

Signature of Principal.
Prof. Rakesh S.G

Name of Examiners

Dr H.G. Nagendra
Professor & Head

Signature of Examiners

Department of Biotechnology

**Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157**

1.

2. *Dr. Salma Kausar M-* *Shrushti*
23/5/23

Dr H.G. Nagendra *H. G. Nagendra*
23/5

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM-590014



Major Project on

**Screening and purification of EPA from soil bacteria/fungi and evaluation
of its therapeutic potential against atherosclerosis**

Submitted in Partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

BIOTECHNOLOGY



Under the guidance of

Dr. Hariharan P

Assistant professor, Department of BIOTECHNOLOGY

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Krishnadevaraya Nagar, Hunasmaranahalli,

Bengaluru-562157

Submitted by:

Achyuth S V – 1MV19BT002

Madhumitha K – 1MV19BT012

Maithri B M – 1MV19BT014

Richard Stephen S – 1MV19BT018

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA



MAJOR PROJECT REPORT ON
“DEVELOPMENT OF QSAR MODEL FOR MAJOR HUMAN LIVER
PROTEINS TO ACCESS THE SAFETY PROFILE OF LIGANDS”

Submitted in partial fulfillment of the requirement for the award of the degree of
Bachelor of Engineering

In
Biotechnology



DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bengaluru-562157

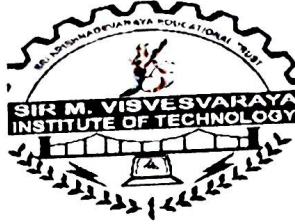
Submitted by
SRINJANA RAHA-1MV19BT025

Under the guidance of
Dr. H.G. Nagendra
Professor and Head, Department of Biotechnology, Sir.MVIT

And
Dr. Vidya Niranjana

Professor and Head, Department of Biotechnology, RV College of Engineering

DEPARTMENT OF BIOTECHNOLOGY



2022-2023

CERTIFICATE

This is to certify that the project undertaken by **Srinjana Raha** in RV College of Engineering and Sir M. Visvesvaraya Institute of Technology of VIII Semester, bearing the **USN No. 1MV19BT025** of the Department of Biotechnology is a bonafide work carried out in partial fulfillment for the award of Bachelor's degree in Biotechnology Engineering prescribed by the **Visvesvaraya Technological University, Belgaum** during the year 2022-2023. It is certified that all the corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project prescribed for Bachelor of Engineering degree

Vidya Niranjana
Signature of External guide
Head of the Department
Dept. of Bio-Technology
R.V. College of Engineering
BANGALORE - 560 059

Dr. Vidya Niranjana

Professor and Head

Department of Biotechnology

RV College of Engineering

H. G. Nagendra
Signature of Internal guide and
HOD with date

Dr. H.G. Nagendra

Professor and Head

Department of Biotechnology

Sir MVIT

S. Rakesh S.G.
Signature of Principal with
date

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli
International Airport Road, Bangalore-562 157

Dr. Rakesh S.G.

Principal Sir MVIT

Name and Signature of external examiners:

1 *Dr. Salma Kausar H* *22/5/23*

2 *Dr. H.G. Nagendra* *22/5/23*

Department of Biotechnology, SMVIT, May 2023

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY JNANA
SANGAMA BELGAVI- 590018**



MAJOR PROJECT REPORT (18BTP83)

**“TOPICAL FORMULATION USING
ACALYPHA INDICA AND CURCUMA AROMATICA
FOR FUNGAL INFECTION”**

Submitted in partial fulfilment of the requirements for the award of degree of
BACHELOR OF ENGINEERING IN BIOTECHNOLOGY
For the Academic Year 2019-2023

Submitted by

EMILEE GRACIA DOMNIC
1MV19BT007

GOWDA SNEHA DEVE
1MV19BT008

SYEDA DANIYA IMAN
1MV19BT026

UPPU AISHWARYA
1MV19BT030

Under the guidance of

DR. PRIYA NARAYAN
Professor, Dept of Biotechnology, Sir MVIT

DEPARTMENT OF BIOTECHNOLOGY




SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU – 562157

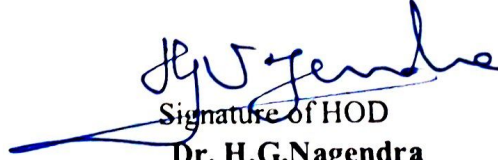
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU – 562157
DEPARTMENT OF BIOTECHNOLOGY




CERTIFICATE


This is to certify that the project work entitled “Topical formulation using *Acalypha indica* and *Curcuma aromatica* for fungal infection” is a bonafide work carried out by Ms. Emilee Gracia Domnic (1MV19BT007), Ms. Gowda Sneha Deve (1MV19BT008), Ms. Syeda Daniya Iman (1MV19BT026) and Ms. Uppu Aishwarya (1MV19BT030) in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2019-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.



Signature of Guide
Dr. Priya Narayan
Professor
Dept of Biotechnology

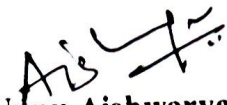

Signature of HOD
Dr. H.G. Nagendra
Prof & Head
Dept of Biotechnology

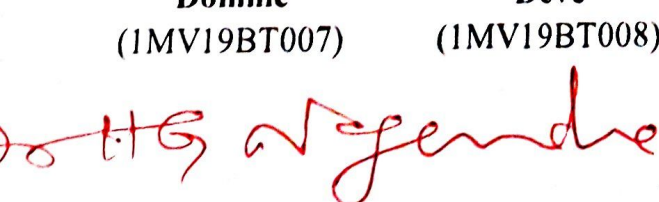

Signature of Principal
Dr. Rakesh S.G.
Principal
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevaraya, Hunsamaranahalli
International Airport, Bangalore-562 157
Sir MVIT


Emilee Gracia Domnic
(1MV19BT007)


Gowda Sneha Deve
(1MV19BT008)


Syeda Daniya Iman
(1MV19BT026)


Uppu Aishwarya
(1MV19BT030)





VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA



MAJOR-PROJECT REPORT ON

Phytochemical Analysis & Antiproliferation Activity of Ethanolic Extract of Baby Coconut

Submitted in partial fulfilment of the requirement for the award of
degree of Bachelor of Engineering in Biotechnology

Submitted by
APARNA BS
1MV19BT004

Under the guidance of
Dr. Rajendra Singh C

Associate Professor, Department of Biotechnology, Sir MVIT




DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bangalore, Karnataka

CERTIFICATE


This is to certify that the project work entitled "Phytochemical Analysis & Antiproliferation of Ethanolic Extract of Baby Coconut" is a bonafide work carried out by Ms. Aparna BS bearing USN 1MV19BT004, bonafide students of SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY in partial fulfilment for the award of Bachelor of Engineering in Department of Biotechnology of the Visveswaraya Technological University, Belgaum during the year 2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library.


The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.


PRINCIPAL
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Name & Signature of the Principal
Prof. Rakesh S G


Name & Signature of the HOD
Dr. H. G Nagendra

Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visveswaraya Institute of Technology
BANGALORE - 562157


Name & Signature of the Guide
Dr. Rajendra Singh C 29/5/23

① Dr. Solwa Koneg m
20/5/23

Name and Signature of
External

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA



MAJOR-PROJECT REPORT ON

Phytochemical Analysis & Antiproliferation Activity of Ethanolic Extract of Baby Coconut

Submitted in partial fulfilment of the requirement for the award of
degree of Bachelor of Engineering in Biotechnology

Submitted by
K.S. Lasya
1MV15BT015

Under the guidance of
Dr. Rajendra Singh C

Associate Professor, Department of Biotechnology, Sir MVIT



DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bangalore, Karnataka

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157
DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE

This is to certify that the project work entitled “**Phytochemical Analysis & Antiproliferation of Ethanolic Extract of Baby Coconut**” is a bonafide work carried out by **Ms. K S Lasya** bearing **USN 1MV15BT015**, bonafide students of **SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY** in partial fulfilment for the award of Bachelor of Engineering in **Department of Biotechnology** of the Visveswaraya Technological University, Belgaum during the year 2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library.

The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.



PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Name & Signature of the Principal
H. G. Nagendra, H. H. Samaranahalli
International Airport Road, Bangalore-562 157
Prof. Rakesh S G



Name & Signature of the HOD

Dr. H. G Nagendra

Dr H.G. Nagendra

Professor & Head

Department of Biotechnology

SIR M Visvesvaraya Institute of Technology
BANGALORE - 562157



Name & Signature of the Guide

Dr. Rajendra Singh C

19/5/23



Department of Biotechnology, SIRMVT

Name and signature of
External

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELGAUM- 590014



PROJECT REPORT ON:

***IN VITRO* COMPARATIVE AND SYNERGISTIC STUDIES OF
PHYTOCHEMICAL AND PHARMACOLOGICAL PROPERTIES OF
Piper betel and *Piper nigrum***

*Submitted in partial fulfilment for the requirement of the award of
Bachelor of Engineering in Biotechnology*



Department of Biotechnology

Sir M. Visvesvaraya Institute of Technology

Bangalore-562157

Submitted by:

Janvi Roni (USN: 1MV18BT015)

Urvija Umesh Dubey (USN: 1MV18BT042)

Advaith K.G. (USN: 1MV19BT003)

Under the guidance of:


Dr. Priya Narayan

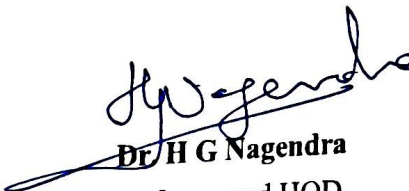
Professor, Dept. Of Biotechnology, Sir M.VIT


DEPARTMENT OF BIOTECHNOLOGY
SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE-562157

CERTIFICATE

This is to certify that the project work entitled "IN VITRO COMPARATIVE AND SYNERGISTIC STUDIES OF PHYTOCHEMICAL AND PHARMACOLOGICAL PROPERTIES OF *Piper betel* and *Piper nigrum*" is a bonafide work carried out by Ms. Janvi Roni (1MV18BT015), Ms. Urvija Umesh Dubey (1MV18BT042) and Mr. Advait K.G. (1MV19BT003) in partial fulfilment for the award of Degree of Bachelor of Engineering in Bio-Technology under Visvesvaraya Technological University, Belgaum during the year 2019-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said Degree.


Dr. Priya Narayan
 Professor and Project
 guide,
 Department of
 Biotechnology
 Sir M.VIT


Dr. H G Nagendra
 Professor and HOD,
 Department of Biotechnology
 Sir M.VIT


PRINCIPAL
 SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
 Krishnadevarayana Hall, Hosur Road, Bangalore-562 157
Prof. Rakesh S.G.
 Principal
 Sir M.VIT

Name and Signature of
 Examiners:

1.  22/3/23

2.  

Aashitha C Shekar 1MV19BT001



JAWAHARLAL NEHRU CENTRE FOR ADVANCED
SCIENTIFIC RESEARCH,
Jakkur, Bangalore – 560064 Karnataka. India

James P Clement, Ph.D.,
Associate Professor,
Neuroscience Unit
clement@incsr.ac.in
+91-80-2208 2613

01 Dec 2022

To whomsoever it may concern

This is to certify that Miss Aashitha C Shekar a Student of Sir M. Visvesvaraya Institute of Technology, Bengaluru pursuing VI Semester Bachelor of Engineering (Biotechnology) having University Seat No **1MV19BT001** has successfully undergone an internship training from 22nd August to 18th September 2022 in Neuroscience Unit, Jawaharlal Nehru Centre for Advance Scientific Research, Bengaluru.

Through-out the internship, her overall conduct and attitude towards work was satisfactory. She was hardworking, punctual, and committed in carrying out her assignments.

Wishing her all success for her bright future.

Thank you.

Sincerely,

Dr. James P Clement
Associate Professor
Neuroscience Unit
Jawaharlal Nehru Centre for Advanced
Scientific Research, Jakkur
Bengaluru - 560 064, Karnataka, India



THE UNIVERSITY OF TRANS-DISCIPLINARY
HEALTH SCIENCES & TECHNOLOGY
Karnataka State Private University

Date: 18-10-2022
Bengaluru

This is to certify that **Mr. Achyuth S V**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the "Skill Based Internship" under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, he was provided hands-on training on "Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQ1 and SF36 questionnaire" and we wish him all the best in his future endeavors.

Srividya Venkatesh

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru

Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru

Advait 1MV19BT003



Prof. Usha Vijayraghavan

Dean
Division of Biological Sciences

+91 80 2293 2809
+91 80 2293 2478
+91 80 2293 2681 (MCB)
dean.bio@iisc.ac.in
uvr@iisc.ac.in

www.iisc.ac.in

27 Oct 2022

To Whomsoever it may concern,

This is to certify that **Mr. Advait KG**, an BE Biotechnology student of Sir M Visvesvaraya Institute of Technology has completed his internship, for **four weeks** under my supervision in the Department of **Microbiology and Cell Biology** at the **Indian Institute of Science, Bangalore**. During his internship he worked with a Ph. D. student and has learned at microbiology and recombinant DNA methodologies. These methods are being used to create mutants in a pre-mRNA splicing factor from the fungal species *Cryptococcus neoformans*. These analyses are part of ongoing project in the laboratory studying post transcriptional gene regulation and its impact on cell division cycle and the study done in collaboration with a PhD student under my guidance in my laboratory.

Professor Usha Vijayraghavan

Email: uvr@iisc.ac.in

Phone: +918023600168 (Office, Lab)

Professor
Dept. of Microbiology & Cell Biology
Indian Institute of Science
Bangalore - 560 012

Aparna BS (1MV19BT004)

CIN : CSE110KA1980SGC003871



ಕರ್ನಾಟಕ ಸೋಪ್ಸ್ ಅಂಡ್ ಡಿಟರ್ಜೆಂಟ್ಸ್ ಲಿಮಿಟೆಡ್
(ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಒಂದು ಉದ್ಯಮ)

Karnataka Soaps & Detergents Limited
(A Government of Karnataka Undertaking)



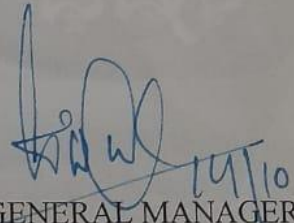
NO: KSDL /HRD/59[C]-A/22-23/ **144**

Date: 14.10.2022

CERTIFICATE

This is to certify that Ms. Aprana B S, USN No. 1MV19BT004, Student of BE Bio-Technology, Sir M Visvesvaraya Institute of Technology, Krishnadevarayanagar, Hunasamaranahalli, off International Airport Road, Bengaluru-562157, has completed her Internship on “A Study on Manufacturing and Production Process & Quality Analysis” at Karnataka Soaps & Detergents Limited Bengaluru-560055 from: 01.09.2022 to 30.09.2022.

Wishing her all the best for future Career.

✓ 
ASST. GENERAL MANAGER
[Human Resource & Development]
Karnataka Soaps & Detergents Limited
27 Industrial Suburb,
Bengaluru-Pune Highway,
Rajajinagar, Bengaluru-560 055



ASPARTIKA BIOTECH PRIVATE LIMITED

Reference No: ASP/11/HR-004/22-23

Date: 10-11-2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the internship entitled “**HANDS ON TRAINING ON EXTRACTION OF PHYTOCOMPOUNDS AND ITS APPLICATIONS**” is a bonafied work carried out by **Ms. Chathurthy** (USN:1MV19BT005) student of B.E Biotechnology from Sir M Visvesvaraya Institute of Technology, Bangalore. She has successfully completed one month (22nd Aug 2022 - 22nd Sep 2022) internship programme. During the period of her internship programme with us, her performance was appreciable.

We wish her success in all her future endeavours.

Authorized Signatory

For ASPARTIKA BIOTECH PRIVATE LIMITED


DIRECTOR

GSTIN: 29AANCA3338F1ZK

CIN: U24232KA2015PTC079484

R & D UNIT:
TECHNOLOGY INCUBATION CENTRE, SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY CAMPUS,
HUNASAMARANAHALLI, INTERNATIONAL AIRPORT ROAD, BANGALORE-562 157
PH: 080-28467735

www.aspartika.com

Email: aspartika.india@gmail.com

info@aspartika.com



JAWAHARLAL NEHRU CENTRE FOR ADVANCED
SCIENTIFIC RESEARCH,
Jakkur, Bangalore – 560064 Karnataka. India

James P Clement, Ph.D.,
Associate Professor,
Neuroscience Unit
clement@incasr.ac.in
+91-80-2208 2613

01 Dec 2022

To whomsoever it may concern

This is to certify that Miss Deepika Bhat a Student of Sir M. Visvesvaraya Institute of Technology, Bengaluru pursuing VI Semester Bachelor of Engineering (Biotechnology) having University Seat No **1MV19BT006** has successfully undergone an internship training from 22nd August to 18th September 2022 in Neuroscience Unit, Jawaharlal Nehru Centre for Advance Scientific Research, Bengaluru.

Through-out the internship, her overall conduct and attitude towards work was satisfactory. She was hardworking, punctual, and committed in carrying out her assignments.

Wishing her all success for her bright future.

Thank you.

Sincerely,

Dr. James P Clement
Associate Professor
Neuroscience Unit
Jawaharlal Nehru Centre for Advanced
Scientific Research, Jakkur
Bengaluru - 560 064, Karnataka, India

Emilee Gracia 1MV19BT007



Sneha Gowda 1MV19BT008

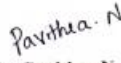


Date: 18-10-2022
Bengaluru

This is to certify that **Mr. Gururaj A**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the "**Skill Based Internship**" under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, he was provided hands-on training on "Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQ1 and SF36 questionnaire" and we wish him all the best in his future endeavors.


Srividya Venkatesh

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru


Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru

K HRUTHIK KUMAR RAJU (1MV19BT010)



THE UNIVERSITY OF TRANS-DISCIPLINARY
HEALTH SCIENCES & TECHNOLOGY

Karnataka State Private University

Date: 18-10-2022
Bengaluru

This is to certify that **Mr. K Hruthik Kumar Raju**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the "**Skill Based Internship**" under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, he was provided hands-on training on "Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQI and SF36 questionnaire" and we wish him all the best in his future endeavors.

Srividya Venkatesh

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru

Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru



No. 176/1, Horamavu Outer Ring Road,
Horamavu, Bengaluru 560 043
Phone: +91 80 4854 0716
E-mail: info@credora.in / Web: www.credora.in

INTERNSHIP CERTIFICATE

This is to certify that Mr/Ms.....KAVYA BAI...O.P.....
has successfully completed internship in our R&D Laboratory
from23rd AUG., 2022..... to23rd SEP., 2022..... on the following
areas : Microbiology/Molecular Biology/~~Genetics~~/.....
During the tenure, his/her conduct was good.



Authorised Signature

Date: 23.09.2022

Place: BENGALURU

Web: www.credora.in

Madhumitha K 1MV19BT012

	<p>No. 176/1, Horamavu Outer Ring Road, Horamavu, Bengaluru 560 043 Phone: +91 80 4854 0716 E-mail: info@credora.in / Web: www.credora.in</p>
<h3>INTERNSHIP CERTIFICATE</h3>	
<p>This is to certify that Mr/Ms.....<u>MADHUMITHA K</u>..... has successfully completed internship in our R&D Laboratory from<u>23rd AUG. 2022</u>..... to<u>23rd SEP. 2022</u>..... on the following areas : Microbiology/Molecular Biology/ Genetics/..... During the tenure, his/her conduct was good.</p>	
<div data-bbox="1021 695 1151 804"></div> <p>Authorised Signature</p>	
<p>Date: <u>23.09.2022</u> Place : <u>BENGALURU</u></p>	
<p>Web: www.credora.in</p>	

Mahalakshmi 1MV19BT013



आण्विक जैवभौतिकी ऐकक **Molecular Biophysics Unit**
उन्नत अधवयन यूजिसी केन्द्र UGC Centre for Advanced Study

भारतीय विज्ञान संस्थान / **Indian Institute of Science**
बैंगलूरु / BANGALORE - 560 012. (भारत / India)

CERTIFICATE

This is to Certify that, **Ms. MAHALAKSHMI N**, student of 7th semester **B.E Biotechnology**, Department of Biotechnology, Sir M Visvesvaraya Institute of Technology, Bangalore-57 has successfully completed a 2 months internship programme on "Conformational studies of calf thymus DNA with Polymyxin B Sulphate and Copper" using Biophysical Techniques under my Guidance and Supervision during the period of **August 2022 to October 2022** at **Molecular Biophysics Unit, Division of Biological Sciences, Indian Institute of Science, Bangalore-12**

During the internship Programme, **Ms. MAHALAKSHMI N**, has shown great interest and enthusiasm towards the work. Her commitment and inquisitive attitudes are worth appreciating. Her character and conduct were exemplary.

Dr. Govindaraju.M
Molecular Biophysics Unit
IISc, Bangalore

Maithri BM 1MV19BT014



Aten Porus

Lifesciences Pvt. Ltd.

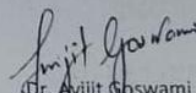
TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Maithri B. M. worked as an intern at Aten Porus Lifesciences Pvt Ltd., Bangalore during the period of August 22nd to September 21st 2022. During this period she was assigned to a research project in the Cell biology division that she completed and compiled as a scientific report that was submitted to us.

Warm Regards

For Aten Porus Lifesciences Pvt. Ltd.




Dr. Avijit Goswami
Senior Scientist

2nd Floor, # 545/6, Devarachikkanahalli Road, Bommanahalli, Bangalore - 68.

P : 080-41268499 E : info@atenporus.com W : www.atenporus.com

CIN-U73200KA2013PTC070323

NAGASHREE S (1MV19BT015)



THE UNIVERSITY OF TRANS-DISCIPLINARY
HEALTH SCIENCES & TECHNOLOGY
Karnataka State Private University

Date: 18-10-2022
Bengaluru

This is to certify that **Ms. Nagashree S**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the “**Skill Based Internship**” under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, she was provided hands-on training on “Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQ1 and SF36 questionnaire” and we wish her all the best in her future endeavors.

Srividya Venkatish

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru

Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru

Niharika K S 1MV19BT016



KRISHNADEVARAYA COLLEGE OF DENTAL SCIENCES & HOSPITAL

(Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka and Recognised by Dental Council of India, New Delhi)

Krishnadevaraya Nagar, Hunasamaranahalli, off International Airport Road, Bengaluru - 562 157

Phone : 2846 7083, 2847 7083, Fax : 080-2846 7084

e-mail : kris_dent_college@yahoo.co.in / www.kcdsh.org

(Managed by Sri Krishnadevaraya Educational Trust (R))

Ref : KCDS/ 913 /2022 – 2023

Date : 29.11.2022

Ref.

Date :

CERTIFICATE

This is to certify that Ms. Niharika K S, 7th semester student of Bachelors of Engineering Biotechnology from Sir M Visvesvaraya Institute of Technology, has successfully completed the "Skill Based Internship" under the guidance of Dr. Radhika Manoj Bavle, Professor and Head of the Department, Department of Oral and Maxillofacial Pathology, Krishnadevaraya College of Dental Sciences, Bengaluru from 5th September 2022 to 30th September 2022. During this period, she has

1. Run a short study on biochemical nature of tobacco products commercially marketed in the State/Country using multiple parameters.
2. Attended didactic lecture and demonstration of special stains
3. Attended hands-on on immunohistochemical staining procedure and their applications.
4. Biochemical, Hematological Investigations and their applications

We wish her best of luck for future endeavours.

(Dr. Radhika M.B.)

Head of the Department

Oral and Maxillofacial Pathology and Microbiology

DEPT. OF ORAL PATHOLOGY
KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE

(Dr. Ponnanna A.A.)

PRINCIPAL
PRINCIPAL

KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE - 562 157.

Pranesh Kulasekhar 1MV19BT017



No. 176/1, Horamavu Outer Ring Road,
Horamavu, Bengaluru 560 043
Phone: +91 80 4854 0716
E-mail: info@credora.in / Web: www.credora.in

INTERNSHIP CERTIFICATE

This is to certify that Mr/Ms.....PRANESH KULASEKHAR.....

has successfully completed internship in our R&D Laboratory

from23rd AUG, 2022..... to23rd SEP, 2022..... on the following

areas : Microbiology/Molecular Biology/ Genetics/.....

During the tenure, his/~~her~~ conduct was good.



Authorised Signature

Date: 23.09.2022

Place: BENGALURU

Web: www.credora.in

Richard Stephen S 1MV19BT018



No. 176/1, Horamavu Outer Ring Road,
Horamavu, Bengaluru 560 043
Phone: +91 80 4854 0716
E-mail: info@credora.in / Web: www.credora.in

INTERNSHIP CERTIFICATE

This is to certify that Mr/Ms.....RICHARD STEPHEN S.....
has successfully completed internship in our R&D Laboratory
from23rd AUG, 2022..... to23rd SEP, 2022..... on the following
areas : Microbiology/Molecular Biology/ Genetics/.....
During the tenure, his/~~her~~ conduct was good.



Authorised Signature

Date: 23.09.2022

Place: BENGALURU

Web: www.credora.in



ASPARTIKA BIOTECH PRIVATE LIMITED

Reference No: ASP/11/HR-005/22-23

Date: 10-11-2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the internship entitled “HANDS ON TRAINING ON EXTRACTION OF PHYTOCOMPOUNDS AND ITS APPLICATIONS” is a bonafied work carried out by **Mr. Rohan Thomas Cherian** (USN:1MV19BT019) student of B.E Biotechnology from Sir M Visvesvaraya Institute of Technology, Bangalore. He has successfully completed one month (22nd Aug 2022 - 22nd Sep 2022) internship programme. During the period of his internship programme with us, his performance was appreciable.

We wish him success in all his future endeavours.

Authorized Signatory

For ASPARTIKA BIOTECH PRIVATE LIMITED

A handwritten signature in blue ink, appearing to read 'Dr. V. V. V.', is written over a rectangular stamp. The stamp contains the word 'DIRECTOR' in capital letters.

GSTIN: 29AANCA3338F1ZK

CIN: U24232KA2015PTC079484

R & D UNIT:
TECHNOLOGY INCUBATION CENTRE, SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY CAMPUS,
HUNASAMARANAHALLI, INTERNATIONAL AIRPORT ROAD, BANGALORE-562 157
PH: 080-2846 7735

www.aspartika.com

Email: aspartika.india@gmail.com

info@aspartika.com

SAMARTH -1MV19BT021



THE UNIVERSITY OF TRANS-DISCIPLINARY
HEALTH SCIENCES & TECHNOLOGY
Karnataka State Private University

Date: 18-10-2022
Bengaluru

This is to certify that **Mr. Samarth Raje Urs P A**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the “**Skill Based Internship**” under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, he was provided hands-on training on “Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQ1 and SF36 questionnaire” and we wish him all the best in his future endeavors.

A handwritten signature in black ink, reading 'Srividya Venkatesh', is positioned above the name.

Srividya Venkatesh

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru

A handwritten signature in blue ink, reading 'Pavithra N', is positioned above the name.

Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru



KRISHNADEVARAYA COLLEGE OF DENTAL SCIENCES & HOSPITAL

(Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka and Recognised by Dental Council of India, New Delhi)

Krishnadevaraya Nagar, Hunasamaranahalli, off International Airport Road, Bengaluru - 562 157

Phone : 2846 7083, 2847 7083, Fax : 080-2846 7084

e-mail : kris_dent_college@yahoo.co.in / www.kcdsh.org

(Managed by Sri Krishnadevaraya Educational Trust (R))

Ref.

Ref : KCDS/ 910 /2022 – 2023

Date : 29.11.2022

Date

CERTIFICATE

This is to certify that Ms. Shreya P, 7th semester student of Bachelors of Engineering Biotechnology from Sir M Visvesvaraya Institute of Technology, has successfully completed the “Skill Based Internship” under the guidance of Dr. Radhika Manoj Bavle, Professor and Head of the Department, Department of Oral and Maxillofacial Pathology, Krishnadevaraya College of Dental Sciences, Bengaluru from 5th September 2022 to 30th September 2022. During this period, she has

1. Run a short study on biochemical nature of arecanut products commercially marketed in the State/Country using multiple parameters.
2. Attended didactic lecture and demonstration of special stains
3. Attended hands-on on immunohistochemical staining procedure and their applications.
4. Biochemical, Hematological Investigations and their applications

We wish her best of luck for future endeavours.

(Dr. Radhika.M.B)

Head of the Department

Oral and Maxillofacial Pathology and Microbiology

DEPT. OF ORAL PATHOLOGY
KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE

(Dr. Ponnanna.A.A)

PRINCIPAL

PRINCIPAL
KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE - 562 157.

Shruthi P 1MV19BT023

 No. 376/1
Horamaddur
Phone: 9845492135
E mail: info@credora.in / info@www.credora.in

INTERNSHIP CERTIFICATE

This is to certify that ~~Mr~~/Ms.....SHRUTHI P.....
has successfully completed internship in our R&D Laboratory
from23rd - AUG, 2022..... to23rd - SEP, 2022..... on the following
areas : Microbiology/Molecular Biology/ Genetics/.....
During the tenure, ~~his~~/her conduct was good.


Authorised Signature

Date: 23.09.2022
Place: BENGALURU

Web: www.credora.in



आण्विक जैवभौतिकी एकक **Molecular Biophysics Unit**
उन्नत अध्ययन शूनिसी केन्द्र UGC Centre for Advanced Study

भारतीय विज्ञान संस्थान / **Indian Institute of Science**
बैंगलूर / BANGALORE - 560 012, (भारत / India)

CERTIFICATE

This is to Certify that, **Ms. SMRITI HUNSIGI**, student of 7th semester B.E Biotechnology, Department of Biotechnology, Sir M Visvesvaraya Institute of Technology, Bangalore-57 has successfully completed a 2 months internship programme on "Conformational studies of calf thymus DNA with Polymyxin B Sulphate and Copper" using Biophysical Techniques under my Guidance and Supervision during the period of **August 2022 to October 2022** at **Molecular Biophysics Unit, Division of Biological Sciences, Indian Institute of Science, Bangalore-12**

During the internship Programme, **Ms. SMRITI HUNSIGI**, has shown great interest and enthusiasm towards the work. Her commitment and inquisitive attitudes are worth appreciating. Her character and conduct were exemplary.

Dr. Govindaraju.M
Molecular Biophysics Unit
IISc, Bangalore

Srinaja Raha 1MV19BT025



JIS INSTITUTE OF ADVANCED STUDIES AND RESEARCH KOLKATA
JIS UNIVERSITY



30th September, 2022
Ref. No. WI/CHeST/DG/2022-2

TO WHOM IT MAY CONCERN

This is to certify that Ms. Srinjana Raha, 6th semester BE in Biotechnology student of Sir M. Visvesvaraya Institute of Technology, Bangalore, India, has successfully completed a one month internship at the Centre for Health Science and Technology, JIS Institute of Advanced Studies and Research (JISIASR), Kolkata from 1st to 30th September, 2022 on techniques of pharmacophore modelling, virtual screening for molecular docking, quantitative structure-activity relationship under my supervision. During the period of her internship program with us she was found punctual, hardworking and sincere.

I wish her all success in her future endeavours.

Debabani Ganguly

Dr. Debabani Ganguly
Supervisor
Associate Professor
Centre for Health Science and Technology
JISIASR Kolkata

Syeda Daniya 1MV19BT026





आण्विक जीवभौतिकी एकक **Molecular Biophysics Unit**
उन्नत अध्ययन यूजिसी केन्द्र UGC Centre for Advanced Study

भारतीय विज्ञान संस्थान / **Indian Institute of Science**
बैंगलूर / BANGALORE - 560 012. (भारत / India)

CERTIFICATE

This is to Certify that, Ms. THEJASHREE M, student of 7th semester B.E Biotechnology, Department of Biotechnology, Sir M Visvesvaraya Institute of Technology, Bangalore-57 has successfully completed a 2 months internship programme on "Conformational studies of calf thymus DNA with Polymyxin B Sulphate and Copper" using Biophysical Techniques under my Guidance and Supervision during the period of August 2022 to October 2022 at Molecular Biophysics Unit, Division of Biological Sciences, Indian Institute of Science, Bangalore-12

During the internship Programme, Ms. THEJASHREE M, has shown great interest and enthusiasm towards the work. Her commitment and inquisitive attitudes are worth appreciating. Her character and conduct were exemplary.

Dr. Govindaraju.M
Molecular Biophysics Unit
IISc, Bangalore



ASPARTIKA BIOTECH PRIVATE LIMITED

Reference No: ASP/11/HR-006/22-23

Date: 10-11-2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the internship entitled "HANDS ON TRAINING ON EXTRACTION OF PHYTOCOMPOUNDS AND ITS APPLICATIONS" is a bonafied work carried out by **Ms Trisha C** (USN:1MV19BT028) student of B.E Biotechnology from Sir M Visvesvaraya Institute of Technology, Bangalore. She has successfully completed one month (22nd Aug 2022 - 22nd Sep 2022) internship programme. During the period of her internship programme with us, her performance was appreciable.

We wish her success in all her future endeavours.

Authorized Signatory

For ASPARTIKA BIOTECH PRIVATE LIMITED


DIRECTOR

GSTIN: 29AANCA3338F1ZK

CIN: U24232KA2015PTC079484

R & D UNIT:
TECHNOLOGY INCUBATION CENTRE, SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY CAMPUS,
HUNASAMARAHALLI, INTERNATIONAL AIRPORT ROAD, BANGALORE-562 157
PH: 080-2846 7735

www.aspartika.com

Email: aspartika.india@gmail.com

info@aspartika.com



KRISHNADEVARAYA COLLEGE OF DENTAL SCIENCES & HOSPITAL

(Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka and Recognised by Dental Council of India, New Delhi)

Krishnadevaraya Nagar, Hunasamaranahalli, off International Airport Road, Bengaluru - 562 157

Phone : 2846 7083, 2847 7083, Fax : 080-2846 7084

e-mail : kris_dent_college@yahoo.co.in / www.kcdsh.org

(Managed by Sri Krishnadevaraya Educational Trust (R))

Ref.

Ref : KCDS/ 912/2022 – 2023

Date : 29.11.2022

Date :

CERTIFICATE

This is to certify that Ms. Umamaheshwari A, 7th semester student of Bachelors of Engineering, Biotechnology from Sir M Visvesvaraya Institute of Technology, has successfully completed the “Skill Based Internship” under the guidance of Dr. Radhika Manoj Bavle, Professor and Head of the Department, Department of Oral and Maxillofacial Pathology, Krishnadevaraya College of Dental Sciences, Bengaluru from 5th September 2022 to 30th September 2022. During this period, she has

1. Run a short study on biochemical nature of **tobacco products mixed arecanut and other agents** commercially marketed in the State/Country using multiple parameters.
2. Attended didactic lecture and demonstration of special stains
3. Attended hands-on on immunohistochemical staining procedure and their applications.
4. Biochemical, Hematological Investigations and their applications

We wish her best of luck for future endeavours.

(Dr. Radhika.M.B)

Head of the Department

Oral and Maxillofacial Pathology and Microbiology

DEPT. OF ORAL PATHOLOGY
KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE

(Dr. Ponhanna.A.A)

PRINCIPAL

PRINCIPAL
KRISHNADEVARAYA COLLEGE OF
DENTAL SCIENCES & HOSPITAL
BANGALORE - 562 157.



ASPARTIKA BIOTECH PRIVATE LIMITED

Reference No: ASP/11/HR-003/22-23

Date: 10-11-2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the internship entitled “HANDS ON TRAINING ON EXTRACTION OF PHYTOCOMPOUNDS AND ITS APPLICATIONS” is a bonafied work carried out by **Ms. U Aishwarya** (USN:1MV19BT030) student of B.E Biotechnology from Sir M Visvesvaraya Institute of Technology, Bangalore. She has successfully completed one month (22nd Aug 2022 - 22nd Sep 2022) internship programme. During the period of her internship programme with us, her performance was appreciable.

We wish her success in all her future endeavours.

Authorized Signatory

For ASPARTIKA BIOTECH PRIVATE LIMITED

A handwritten signature in blue ink, appearing to read 'B. V. Prasad', is written over the printed name 'DIRECTOR'.

GSTIN: 29AANCA3338F12K

CIN: U24232KA2015PTC079484

R & D UNIT:
TECHNOLOGY INCUBATION CENTRE, SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY CAMPUS,
HUNASAMARANAHALLI, INTERNATIONAL AIRPORT ROAD, BANGALORE-562 157
PH: 080-28467735

www.aspartika.com

Email: aspartika.india@gmail.com

info@aspartika.com

Vidyahree 1MV19BT031



ಕೋಲಾರ ಜಿಲ್ಲಾ ಸಹಕಾರ ಹಾಲು ಉತ್ಪಾದಕರ ಸಂಘಗಳ ಒಕ್ಕೂಟ ನಿಯಮಿತ
Kolar District Co-operative Milk Producers Societies Union Ltd.

KMU : ADMN : 5043 : 2022-23 Date : 22.09.2022

CERTIFICATE

This is to certify that VIDHYA SHREE.S (Reg No : 1MV19BT031)
Sri M Visvesvaraya Institute of Technology, Bengaluru student studying
BE (Biotechnology) has undertaken Internship Project in dairy entitled as
"A STUDY ON NANDINI PRODUCTS QUALITY TEST" at Kolar District
Co-operative Milk Producers Societies Union Ltd., Kolar.

For Kolar Milk Union Limited,

Nandini 22/09
Manager (Admin)
Manager (Admin),
Kolar-Chikkaballapur Dist. Co-operative Milk
Producer's Societies Union Limited,
KOLAR.

ಕೋಲಾರ ದೇರಿ ಆವರಣ, ರಾಷ್ಟ್ರೀಯ ಹೆದ್ದಾರಿ - 75, ಹುತುರು ಅಂಚೆ, ಕೋಲಾರ - 563 102

Kolar Dairy, NH-75, Huttur Post, Kolar - 563 102.

(ISO-22000 ; 2005 Certified)

Ph : 08152-282300, Fax : 08152-282303

E-mail : komulmd@yahoo.co.in komulmd@gmail.com website : www.komul.coop

Vrithi Raju 1MV19BT032

	<p>No. 18/2, 1st Cross, 1st Stage, 1st Road, Hennur, Bengaluru - 560022 Ph: 080-26100000, 080-26100001 E-mail: hr@credora.in, info@credora.in Web: www.credora.in</p>
<h2>INTERNSHIP CERTIFICATE</h2>	
<p>This is to certify that Mr/Ms.....<u>VRITHI RAJU</u>..... has successfully completed internship in our R&D Laboratory from<u>23rd AUG. 2022</u>..... to<u>13th SEP. 2022</u>..... on the following areas : Microbiology/Molecular Biology/ Genetics/..... During the tenure, his/her conduct was good.</p>	
<div> Authorized Signature</div>	
<div><div>Date: <u>23.09.2022</u> Place: <u>BENGALURU</u></div><div>Web: www.credora.in</div></div>	

lasya (1MV15BT015)



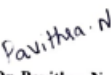
Date: 18-10-2022
Bengaluru

This is to certify that **Ms. K S Lasya**, 7th semester student of Bachelors of Engineering (Biotechnology) from Sir M Visvesvaraya Institute of Technology, has successfully completed the "Skill Based Internship" under the guidance of Dr. Pavithra N, Assistant Professor, TDU from 1st September 2022 to 30th September 2022. During this period, she was provided hands-on training on "Isolation of Genomic DNA, PCR, Primer Designing, In-Silico Drug Discovery, Basics of Linux commands and Development of Automated Data Form for PSQ1 and SF36 questionnaire" and we wish her all the best in her future endeavors.



Srividya Venkatesh

Human Resources Officer
The University of Trans-Disciplinary Health
Sciences and technology (TDU), Bengaluru



Dr. Pavithra N

Assistant Professor,
and Centre-in Charge, Centre for Functional
Genomics & Bio-informatics, TDU,
Bengaluru

Urvija Umesh Dubey(1MV18BT042)

CERTIFICATE FROM THE INDUSTRY

Shodhaka®

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Discoverers at your service!

Certificate ID: 1SLSP4597

Date: 7/10/2022

CERTIFICATE OF INTERNSHIP

This is to certify that Ms. URVIJA UMESH DUBEY a student of Sir M. Visvesvaraya Institute of Technology, Bangalore has successfully completed one-month internship programme from 20th August, 2022 to 23rd September, 2022.

She has worked on our ongoing project iAforCancerGER during which she has learnt and demonstrated good skills in bio-curation and Next Generation sequencing. She possesses a self-motivated attitude to learning new things and exceeded expectations which enabled her to finish the assigned tasks on time.

We wish her all the best in her future endeavours.

Shodhaka®

Warm regards,
TEAM Shodhaka.

 SHODHAKA LIFE SCIENCES PVT. LTD.,
Electronic City, Phase I,
Bangalore (Bangalore) - 560 100


www.shodhaka.net

 +91 9846027123
shodhaka.lv@gmail.com

Janvi Roni (1MV18BT015)

A UNIT OF QUILON MEDICAL TRUST	TRAVANCORE MEDICITY	 Travancore Medical College Hospital
---	------------------------	--

HR/TR/22/09/166	20 September, 2022
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TO WHOM IT MAY CONCERN

This is to certify that Ms. Janvi Roni, student in the Department of Biotechnology of Sir M. Visvesvaraya Institute of Technology, Krishnadevarayanagar, Hunasamaranahalli, Off. International Airport Road, Bangalore-562157, Karnataka, India, has successfully completed Internship training for a period of 4 weeks in the department of Pathology in Travancore Medical College from 20 August 2022 to 19 September 2022. She was hard working, punctual and responsible throughout the aforementioned period.

Travancore Medical College Hospital is the first fully NABH Accredited Medical College Hospital in Kollam granted by Quality Council of India as well as an ISO 9001-2008 Certified Health care Provider. We are expertise in the field of Medicine and Medical Research with Specialty & Super-Specialty Services, functioning under Quilon Medical Trust since 2007 branded as Travancore Medicity. We offer Medical schooling in Bachelor of Medicine and Bachelor of Surgery degree (MBBS) and Post-Graduations under Travancore Medical College and Bachelor of Nursing degree (BSc Nursing) under Travancore College of Nursing, functioning in the Travancore Medicity Campus.

We wish her all success for her future endeavors.


Rekha G.
Senior Manager-HR





NH BYPASS, MYLAPORE, THATTAMALA P.O., KOLLAM - 691 020, KERALA, INDIA
T: 0474 272 9893, 0474 272 6161 | F: 0474 272 1620 | tmc@tmc.ac.in | www.travancoremecity.com



**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA**



**PROJECT REPORT ON
CHARACTERIZATION AND FORMULATION OF MEDICATED MILK
FROM *Mucuna pruriens***

Submitted in partial fulfillment of the requirement for the award of the degree of

Bachelor of Engineering

In

Biotechnology

Submitted by

AAKRITI SHANKAR- 1MV20BT001

ADEEN-1MV20BT003

BHOOMIKA Y K-1MV20BT009

SYEDA AYESHA- 1MV20BT025

Under the guidance of

Dr. Rashmi K V

Associate Professor, Department of Biotechnology




**DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE, KARNATAKA**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157**

2023-2024

CERTIFICATE

This is to certify that the Project work entitled “**Characterization and formulation of medicated milk from *Mucuna pruriens***” is a bonafide work carried out by **Aakriti Shankar (1MV20BT001), Adeen (1MV20BT003), Bhoomika Y K(1MV20BT009) and Syeda Ayesha(1MV20BT025)** bonafide students of **SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY** in partial fulfillment for the award of **Bachelor of Engineering in Department of Biotechnology** during the year 2020-2024.


12/7/2023
Signature of guide

Dr. Rashmi K V

Associate Professor

Department of Biotechnology

Sir MVIT



Signature of HOD

Dr. H G Nagendra

Professor and Head

Department of Biotechnology

Sir MVIT


PRINCIPAL
Signature of Principal
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishna Jayaramaiah Road, H. S. N. S. Nagar, Bangalore-562 157
Prof. Rakesh S G
Principal Sir MVIT

Situnal

1). Dr. Chaitra. B.S


13/7/23

2). Dr. Ishwar Chandra 
17/8/23.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA BELGAVI- 590018



MINI PROJECT REPORT (18BTMP68)

“Preparation of Wine from Japanese cherry and examining its suitability for the development as a health drink”

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

For the Academic year 2020-2024

Submitted by

AKSHATHA V
1MV20BT007

CHETHANA R C
1MV20BT012

ROIHTH T R
1MV20BT020

ROIHTH JOHN CHERIAN
1MV19BT020

Under the guidance of

DR ISHWAR CHANDRA

Assistant professor, Department of Biotechnology ,Sir MVIT

DEPARTMENT OF BIOTECHNOLOGY



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNASAMARANAHALLI, BENGALURU-562157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU – 562157
DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the project work entitled **“Preparation of wine from Japanese cherry and examining its suitability for development as a Health drink”** is a bonafide work carried out by **Ms. Akshatha V (1MV20BT007)**, **Ms. Chethana R C (1MV20BT012)**, **Mr. Rohith T R (1MV20BT020)** and **Mr. Rohith John Cherian (1MV19BT020)** in partial fulfillment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.

Signature of Guide

Dr. Ishwar Chandra

Assistant Professor

Dept of Biotechnology

Signature of HOD

Dr. H.G. Nagendra

Prof & head

Dept of Biotechnology

Signature of Principal

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Prof. Rakesh S C
Krishnadevaraya Road, Hunsamaranahalli
International Airport Road, Bangalore-562 157
Principal

Sir MVIT

External

1). *Dr. Chaitra B.S*

Chaitra
13/7/23

2). *Dr. Ishwar Chandra*

13/7/23

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA BELGAVI- 590018**



MINI PROJECT REPORT (18BTMP68)

**“UTILIZATION OF DAIRY SLUDGE FOR THE
PRODUCTION OF BIODIESEL”**

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

For the Academic year 2020-2024

Submitted by

**CHAITRA C MUDUKANAGOUDRA
1MV20BT010**

**CHANDINI P
1MV20BT011**

**DHEERAJ M R
1MV20BT013**

Under the guidance of

DR ISHWAR CHANDRA C

Mr MANJUNATH R

Assistant professor, Dept of Biotechnology ,Sir MVIT

DEPARTMENT OF BIOTECHNOLOGY



**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNASAMARANAHALLI, BENGALURU-562157**

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANAHALLI, BENGALURU - 562157
DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

This is to certify that the project work entitled "Utilization of dairy sludge for the production of biodiesel" is a bonafide work carried out by **Ms. Chaitra C Mudukanagoudra**(1MV20BT010), **Ms. Chandini P** (1MV20BT011) and **Mr. Dheeraj M R** (1MV20BT013) in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.

Signature of Guide

Dr. Ishwar Chandra

Assistant Professor

Dept of biotechnology

Signature of the Guide

Mr. Manjunath R

Assistant professor

Dept of biotechnology

Signature of HOD

Dr. H G Nagendra

Prof & head

Dept of Biotechnology

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunsamaranahalli
International Airport Road, Bangalore-562157
Signature of Principal

Prof. Rakesh S G

Principal

Sir MVIT

2110 department of BT, Sir MVIT, July 2023

1) Dr. Chaitra. B.S. 13/7/23
2) Dr. Ishwar Chandra 17/7/23

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA**



**PROJECT REPORT ON
THERAPEUTIC PROPERTIES OF HERICIAM ERINACEUS (LION'S
MANE MUSHROOM)**

Submitted in partial fulfilment of the requirement for the award of the degree of
Bachelor of Engineering

In

Biotechnology

Submitted by

ABHINAV G KASHYAP- 1MV20BT002

PRITHVI RAVI-1MV20BT019

Under the guidance of

Dr. P Hariharan

Assistant Professor

Department of Biotechnology



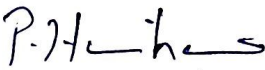
**DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE, KARNATAKA**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157**

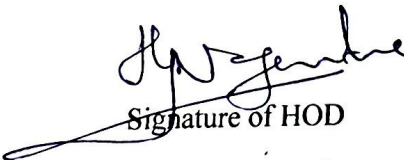
2022-2023

CERTIFICATE


This is to certify that the Project work entitled “**THERAPEUTIC PROPERTIES OF HERICIUM ERINACEUS (LION’S MANE MUSHROOM)**” is a bonafide work carried out by **Abhinav G Kashyap (1MV20BT002)** and **Prithvi Ravi (1MV20BT019)**, bonafide students of **SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY** in partial fulfilment for the award of **Bachelor of Engineering in Department of Biotechnology** during the year 2020-2024.


Signature of guide

Dr. P Hariharan
Assistant Professor
Department of Biotechnology
Sir MVIT


Signature of HOD

Dr. H.G. Nagendra
Professor and Head
Department of Biotechnology
Sir MVIT


Signature of Principal
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnaiah Road, Bangalore-562 157
Principal Sir MVIT

External
1) Dr. Chaitra B.S  13/7/23

2) Dr. Ishwar Chandra  13/7/23



CERTIFICATE

This is to certify that the report of the project entitled "Assessment of Salivary Antioxidant Levels in Vegetarian and Non-Vegetarian Adults- Relation to Oral Health" is a bonafide work carried out by Kangan M bearing the USN 1MV20BT029 respectively, in partial fulfillment for the completion of BACHELOR OF ENGINEERING in BIOTECHNOLOGY under the VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELGAUM during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

Signature of Project Guide

Dr. Mrinalini Menon

Associate professor,

Department of
Biotechnology,

Sir MVIT, Bengaluru

Signature of External Project
Guide

Dr. Radhika M B

Head of the Department,

Oral Pathology,

KCDSh, Bengaluru

Signature of HOD

Dr. H G Nagendra

Head of Department,

Department of

Biotechnology,

Sir MVIT, Bengaluru

PRINCIPAL

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunsur,
Tamil Nadu

Prof. Rakesh S.G.

Principal,

Sir MVIT, Bengaluru

Examiner

1) Dr. Chaitra. B.S. 14/7/23

2) Dr. Ishwar Chandra 14/08/23

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157
DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE

This is to certify that the project work entitled “Extraction and Bioactivity studies of *Cassia spectabilis*” is a bonafide work carried out by Ms. Hitha M bearing USN 1MV20BT015, bonafide student of SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY in partial fulfilment for the award of Bachelor of Engineering in the Department of Biotechnology of the Visvesvaraya Technological University, Belgaum during the year 2020-2024. It is certified that all corrections/suggestions indicated for the Internal Assessment have been incorporated in the Report deposited in the department library.

The project report has been approved as it satisfies the academic requirements in respect of the Project work prescribed for the said Degree.



PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Chinesemaranahalli
International Airport Road, Bangalore-562 157

Name & Signature
of the Principal

Prof. Rakesh S G



Name & Signature
of the HOD

Dr. H.G Nagendra

Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157



Name & Signature
of the Guide

Dr. Rajendra Singh C

Examine -
A) Dr. Chaitra B.S.  14/7/23

B) Dr. Bhavar Chander  14/7/23.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA



(18BTMP68)

MINI-PROJECT REPORT ON

Phytochemical Extraction and Bioactivity

Studies of *Cassia spectabilis*

*Submitted in partial fulfilment of the requirement for the award of degree of
Bachelor of Engineering in Biotechnology*

Submitted by

HITHA M - (1MV20BT015)

Under the guidance of

Dr. Rajendra Singh C

Associate Professor, Department of Biotechnology, Sir MVIT



DEPARTMENT OF BIOTECHNOLOGY

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bangalore, Karnataka

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY JNANA
SANGAMA BELGAVI- 590018**



MINI PROJECT REPORT (18BTMP68)

**“SYNTHESIS AND CHARACTERIZATION OF CERIUM AND
ZIRCONIUM OXIDE NANOPARTICLES AND ITS ANTIMICROBIAL
ACTIVITY”**

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

For the Academic year 2020-2024

Submitted by

KEERTHANA S K
1MV20BT016

NITHIN B M
1MV20BT018

S LAVANYA RAJU
1MV20BT021

SAHANAL
1MV20BT022

Under the guidance of

Dr HARIHARAN P

Assistant professor, Department of Biotechnology, Sir MVIT

DEPARTMENT OF BIOTECHNOLOGY



**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNASAMARANAHALLI, BENGALURU-562157**



CERTIFICATE

This is to certify that the project work entitled "Synthesis and Characterization of Cerium and Zirconium Nanoparticles and its Antimicrobial Activity" is a bonafide work carried out by Ms. Keerthana s k (1MV20BT016), Mr. Nithin B M (1MV20BT018), Ms. S. Lavanya Raju (1MV20BT021) and Ms. Sahana L (1MV20BT022) in partial fulfillment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.

P. H. h. 13/7/23
Signature of guide

Dr. Hariharan P

Assistant Professor

Department of Biotechnology

Sir MVIT

H. G. Nagendra
Signature of HOD

Dr. H.G. Nagendra

Professor and Head

Department of Biotechnology

Sir MVIT

Dr H.G. Nagendra

Professor & Head

Department of Biotechnology

Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157

S. Rakesh S G
Signature of Principal

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevaraya Nagar, Hunsamaramahalli
Internal No. 1, Bangalore-562 157

Professor Rakesh S G

Principal Sir MVIT

Examiners

Dr. Chaitra. B.S

2 | Department of BT SirMVIT, July 2023

Dr. Ishwar Chandra

Chaitra 14/7/23

14/7/23.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA**



MINI-PROJECT REPORT ON

**“ANTIOXIDANT, ANTIMICROBIAL AND PHYTOCHEMICAL
ANALYSIS OF THE INFLORESCENCE EXTRACT OF
STACHYTARPHETA MUTABILIS(JACQ.) VAHL”**

Submitted in partial fulfillment of the requirement for the award of the degree of
Bachelor of Engineering
In
Biotechnology

Submitted by

HARSHITHA. K (1MV20BT014)

VINEETH V. RAO (1MV20BT026)

YUKTA. S (1MV20BT027)

Under the guidance of

Dr. Mrinalini Menon

Associate Professor, Department of Biotechnology



DEPARTMENT OF BIOTECHNOLOGY

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

BANGALORE, KARNATAKA



CERTIFICATE

This is to certify that the report of the mini-project entitled “Antioxidant, Antimicrobial and Phytochemical analysis of Ethanolic Extract of Inflorescence of *Stachytarpheta mutabilis*” is a bonafide work carried out by Harshitha. K(1MV20BT014), Vineeth V. Rao (1MV20BT026) and Yukta.S (1MV20BT027) in partial fulfillment for the completion of Bachelor of Engineering in Biotechnology under the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of project work prescribed for the said degree.

Signature of Project Guide

Dr. Mrinalini Menon

Associate Professor,

Department of

Biotechnology,

Sir MVIT, Bengaluru

Signature of External Guide

Dr. Arul Selvan

Professor & HoD,

Department of

Microbiology,

KCDS, Bengaluru

Signature of HoD

Dr. H.G Nagendra

Head of Department,

Department of

Biotechnology,

Sir MVIT, Bengaluru

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli
Bengaluru-562 157

Signature of Principal

Prof. Rakesh S.G

Principal,

Sir MVIT, Bengaluru

Examiner

1) Dr. Chaitra. B-S

2) Dr. Ishwar Chaudhary

14/7/23

14/8/23

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
JNANA SANGAMA BELGAVI - 590018**



PROJECT REPORT (18BTMP68)

**“Compartitive Study on the Antibacterial, Antimitotic and
Anti-inflammatory Efficacy of Delonix regia flower extracts”**

Submitted in partial fulfilment of the requirements for the award of degree of
BACHELOR OF ENGINEERING IN BIOTECHNOLOGY

For the Academic Year 2020-2024

Submitted by

ADITI A IYENGAR
1MV20BT005

SHRIYA ANAND BHAMBORE
1MV20BT024

Under the guidance of

Dr. HARIHARAN P
Assistant Professor
Department of Biotechnology

Dr. ARUL SELVAN
Head of Microbiology Dept
Krishnadevaraya College of Dental
Sciences and Hospital



**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNSAMARANA HALLI, BENGALURU - 562157**

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BENGALURU

DEPARTMENT OF BIOTECHNOLOGY



CERTIFICATE

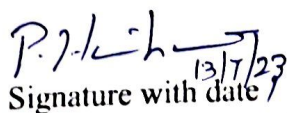
This is to certify that the project work entitled “Comparative study on the Antibacterial, Anti-inflammatory and Antimitotic efficacy of Delonix regia flower extracts” is a bonafide work carried out by Ms. Aditi A Iyengar (IMV20BT005) and Ms. Shriya Anand Bhamore (IMV20BT024) in partial fulfilment for the award of Degree of Bachelor of Engineering in Biotechnology under Visvesvaraya Technological University, Belgaum during the year 2020-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the department library. The mini project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelors of Engineering Degree.


Signature with date

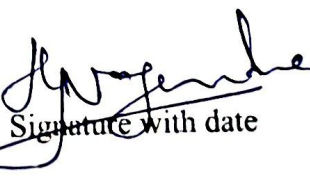
Dr. Arul Selvan
External Guide

Head


Dept. of Microbiology
KCDS


Signature with date 13/7/23

Dr. Hariharan P
Internal Guide
Assistant Professor
Dept. of Biotechnology


Signature with date

Dr. H G Nagendra
Professor & Head
Dept. of Biotechnology


Signature with date
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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
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Internat

Principal
Sir MVIT

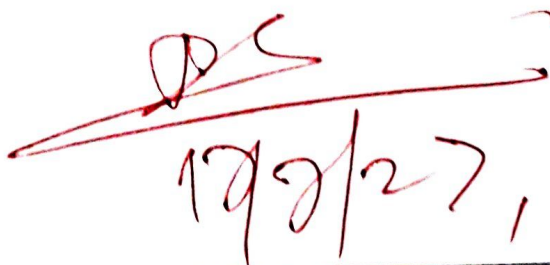
Name of the External Examiners:

1. *Dr. Chaitra B. S*

Signature of the External Examiners:


13/7/23

2. *Dr. Ishwar Chandra*


17/7/23

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI, KARNATAKA



PROJECT REPORT ON

**DEVELOPMENT OF PAPER BIOSENSOR FOR DETECTION OF
UREA IN MILK**

Submitted in partial fulfilment of the completion of the sixth semester

In

Biotechnology

Submitted by

ADITHYA SATHISH – 1MV20BT004

JEEVAN PRANAY U – 1MV20BT028

Under the guidance of

Dr Rajendra Singh C

Associate Professor

Department of Biotechnology



DEPARTMENT OF BIOTECHNOLOGY

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY


BANGALORE, KARNATAKA

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157**

2022-2023

CERTIFICATE

This is to certify that the Project work entitled “**Development of Paper Biosensor for Detection of Urea in Milk**” is a bonafide work carried out by **Adithya Sathish** (1MV20BT004) and **Jeevan Pranay U** (1MV20BT028), bonafide students of **SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY** in partial fulfilment for the award of **Bachelor of Engineering in Department of Biotechnology** during the year 2020-2024.

 
Signature of guide: 12/7/23 Signature of HOD

Dr Rajendra Singh C

Dr H.G. Nagendra

Associate Professor


Professor and Head

Department of Biotechnology

Department of Biotechnology

Sir MVIT

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Signature of Principal
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Prof. Rakesh S

Principal Sir MVIT

External

1) Dr. Chaitra. B.S Chaitra
13/7/23

2) - Ishwar Chandra Ishwar
14/7/23

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA**



**PROJECT REPORT ON
IMPACT OF LONG-TERM DRUGS ON HUMAN GUT MICROBIOME
(An In-Vitro Analysis)**

**Submitted in partial fulfillment of the requirement for the award of the degree of
Bachelor of Engineering**

In

Biotechnology

Submitted by

AHALYA P N - 1MV20BT006

AMRITA DE - 1MV20BT008

SAMHITA BHARATH SABANNAVAR - 1MV20BT023

Under the guidance of

DR. JAGADEESH KUMAR D.

DR. PRIYA NARAYAN

Department of Biotechnology



**DEPARTMENT OF BIOTECHNOLOGY
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE, KARNATAKA**

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU – 562157**

2022-2023

CERTIFICATE

This is to certify that the Project work entitled “**Impact of Long-Term Drugs on Human Gut Microbiome (An In-Vitro Analysis)**” is a bona fide work carried out by **Ahalya P N** (1MV20BT006), **Amrita De** (1MV20BT008), and **Samhita Bharath Sabannavar** (1MV20BT023), bona fide students of **SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY** in partial fulfillment for the award of **Bachelor of Engineering in Department of Biotechnology** during the year 2020-2024.



Signature of Guide

Dr. Priya Narayan

Professor

Department of
Biotechnology

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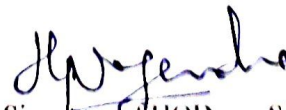
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Associate Professor

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1). Dr. Chaitra.B.S. 13/9/23

2). Dr. Ishwar Bhande 13/9/23