



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

“Seroprevalence of leptospirosis among cattle and dairy farmworkers”

A DISSERTATION SUBMITTED TO

RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

D SOZA AKSHAY RAJAN

UNDER THE GUIDANCE OF

Dr. RAJENDRA PALKHADE

RESEARCH CENTRE

INDIAN COUNCIL OF MEDICAL RESEARCH-

NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH

10TH, JULY 2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled “**Seroprevalence of leptospirosis among cattle and dairy farmworkers**” has been carried out by **Mr. Akshay Rajan D Soza**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Internal Guide

Principal



icmr **NIOH**
INDIAN COUNCIL OF MEDICAL RESEARCH NATIONAL INSTITUTE OF
OCCUPATIONAL HEALTH

आई सी एम आर-राष्ट्रीय व्यावसायिक स्वास्थ्य संस्थान

स्वास्थ्य अनुसंधान विभाग,

स्वास्थ्य और परिवार कल्याण मंत्रालय, भारत सरकार

ICMR - National Institute of Occupational Health

Department of Health Research,

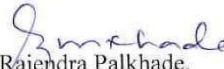
Ministry of Health and Family Welfare, Government of India

Certificate

This is to certify that the work incorporated in the dissertation/ review entitled "Seroprevalence of leptospirosis among cattle and dairy farmworkers" for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Mr. D Soza Akshay Rajan at Indian Council of Medical Research- National Institute of Occupational Health during the period from 16/01/2021 to 30/06/2021 under the guidance of Dr. Rajendra Palkhade.

Date: 10th July, 2021

Place: ICMR-NIOH


Dr Rajendra Palkhade,
Scientist-C & Head
Animal House Division

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DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “Seroprevalence of leptospirosis among cattle and dairy farmworkers” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is an original piece of work carried out by me under the supervision of Dr. Rajendra Palkhade. I further declare that it has not been submitted to this or any other university or institution for the award of any degree or diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: Surat

Date: 10th July, 2021

D Soza Akshay Rajan
M.Sc. Biotechnology
IV semester
Rajiv Gandhi Institute of IT and
Biotechnology, BVDU, Pune



Signature



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

“ABC cloning: An efficient, simple, and rapid restriction/ligase-free method”

A DISSERTATION SUBMITTED TO

RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

ANKITA JITENDRA GUPTA

UNDER THE GUIDANCE OF

MR. ALOK VAIDYA

RESEARCH CENTRE

SLS RESEARCH PVT. LTD.

SURAT, GUJARAT.

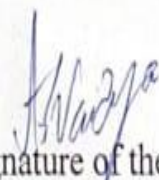
10TH of JULY, 2021.

Certificate

This is to certify that the work incorporated in the dissertation/ review entitled “**ABC cloning: An efficient, simple, and rapid restriction/ligase-free method**” for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Ms. Gupta Ankita Jitendra** at **SLS Research Pvt. LTD**, Surat, Gujarat, during the period from 01/01/2021 to 31/05/2021 under the guidance of Mr. Alok Vaidya.

Date: 10th July, 2021

Place: Surat


Signature of the guide

(Name of the guide with stamp and seal of the institute)

Mr. Alok Vaidya

SLS RESEARCH PVT. LTD.
406, Nathubhai Towers,
Opp. Dhru Motors,
Udhna Main Road,
Surat-395002 (GJ.)



CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled "ABC cloning: An efficient, simple, and rapid restriction/ligase-free method" has been carried out by Mr./ Ms. Ankita Jitendra Gupta, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Rama Bhadkar

Dr. Rama Bhadkar

Internal Guide

HOD

Dept. of Microbial Biotechnology
BVU, Rajiv Gandhi Institute of IT & B.T.
Katrai, Pune - 411 046.



Shamim Shaikh

Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “ABC cloning: An efficient, simple, and rapid restriction/ligase-free method” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Mr. Alok Vaidya. I further declare that it has not been submitted to this or any other university or institution for the award of any degree or diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledge. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: Surat.

Date: 10th of July, 2021.

Ankita Jitendra Gupta

M.Sc. Biotechnology

IV semester

Rajiv Gandhi Institute of IT and
Biotechnology, BVDU, Pune.



Signature:

ABC cloning: An efficient, simple, and rapid restriction/ligase-free method.

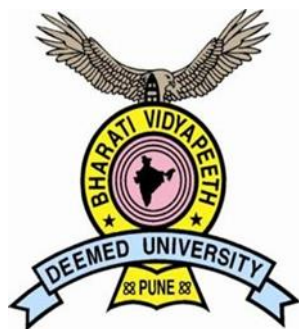
ABSTRACT:

DNA cloning is the key step for advanced research in molecular biology & recombinant DNA technology. The basic technique for gene cloning includes restriction digestion of the gene of interest and the vector to generate compatible ends and ligation of the two fragments using the T4 DNA ligase enzyme. This restriction and ligation-based method is broadly used. Some restriction-free and ligase-free cloning techniques are present as a substitute. Over here we outline a PCR-based cloning technique named ABC-Cloning; a restriction & ligation-free technique. In this technique, we use PCR to anneal three overlapping DNA fragments into a recombinant vector which can be directly transformed into component cells. This approach makes use of a high fidelity DNA polymerase for the amplification and annealing of three fragments A, B, and C. It is quicker and more efficient than formerly defined strategies.

INTRODUCTION:

Gene cloning is also known as molecular cloning and can be referred to as the process of amplifying DNA fragments containing the entire gene or gene to be cloned, but it can also be used to amplify any DNA sequence, such as coding sequences, promoters and non-promoter coding sequences. The steps associated with genetic cloning are as follows: -

- The first step is to isolate the target DNA fragments (often called inserts).
- The second step is the ligation of inserts into an appropriate cloning vector by generating recombinant molecules (e.g. Plasmids).



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

“ To determine lifestyle factors causing cardiovascular disease, diabetes and cancer”

A Review Submitted To

BHARATI VIDYAPEETH DEEMED UNIVERSITY

RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY, PUNE

FOR A AWARD OF DEGREE OF

MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

ANKITA RAJENDRA PADOLE

UNDER THE GUIDANCE OF

DR. PRASAD WADEGAONKAR

RESEARCH CENTRE

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI



**SANT GADGE BABA
AMRAVATI UNIVERSITY**
AMRAVATI - 444602
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☎ : 2662206, 2662207, 2662208, 2662249, 2662358. FAX NO. 0721-2660949, 2662135
website : www.sgbau.ac.in

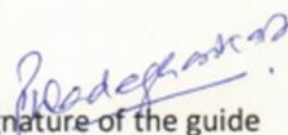
Certificate

This is to certify that the work incorporated in the review entitle "To determine lifestyle factors causing cardiovascular disease, diabetes and cancer" for the degree of Master of Science in the subject Biotechnology under the Faculty of Science has been carried out by Ms Ankita Rajendra Padole at Department of Biotechnology, Sant Gadge Baba Amravati University, Amravati during the period from January to April under my guidance and supervision.

Date: 02/07/2021

Place: Amravati

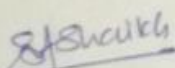


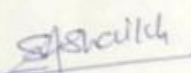

Signature of the guide

(Dr. Prasad. A. Wadegaonkar)
Professor & Head
Department of Biotechnology,
Sant Gadge Baba Amravati University
Amravati

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled "To determine lifestyle factors causing cardiovascular disease, diabetes and cancer" has been carried out by Ms. Ankita Rajendra Padole, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Shamim Shaikh
Internal Guide


Dr. Shamim Shaikh
Principal



PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the review entitled “To determine lifestyle factors causing cardiovascular disease, diabetes and cancer” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. Prasad Wadegaonkar.

I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implication of any such act which might have been committed by me advertently or inadvertently.

Place: Amravati

Date: 10/07/2021

A handwritten signature in purple ink, appearing to read 'Adole', written over three horizontal lines.

**Name & signature of
Research Student**



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY
COMPREHENSIVE REVIEW ON CATHETER ASSOCIATED URINARY
TRACT INFECTIONS

A DESERTATION SUBMITTED TO

RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE.

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
Miss. ANUJA SUNIL YADAV

UNDER THE GUIDANCE OF
Dr. MILIND CHAUDHARI

Name of co- guide –
Dr. PRASAD PAGAT

Name of RESEARCH INSTITUTE-
WEINNOVATE BIOSOLUTIONS Pvt. Ltd.

10/07/2021

CERTIFICATE

This is to certify that the work incorporated in the review Entitled Comprehensive overview on catheter associated urinary tract infections for the degree of Master of Science.in the subject Biotechnology under the faculty of Science has been carried out by Miss. Anuja Sunil Yadav at Weinnovate Biosolutions Pvt. Ltd, Shivaji Nagar, Pune during the period from 1 February 2021to 10 April 2021 under the guidance of Dr. Milind Chaudhari.

Date: 10/07/2021

Place: Shivajinagar, Pune



Dr. Milind Chaudhari

(Founder and CEO)

CERTIFICATION OF GUIDE

This is to certify that Miss, Anuja Sunil Yadav, MSc Biotechnology student of Rajiv Gandhi Institute of I.T & Biotechnology, BVDU, have successfully completed review entitle “Comprehensive overview on catheter associated urinary tract infections” Carried out in R&D lab of Weinovate Biosolutions Pvt. Ltd, Pune during period from 1February 2021 to 10 April 2021 under my direct guidance and to the best of my knowledge, this dissertation work has not been previously formed the basis of award or any degree or diploma elsewhere.

Place: Shivajinagar, Pune

Date: 10/07/2021

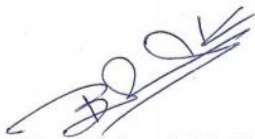
Dr. Milind Chaudhari
(Founder and CEO)

Dr. Prasad Bhagat
(Cofounder & CTO)

Dr. Bipinraj. N. K
(Assistant professor, RGITBT)

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **“Comprehensive Review on Catheter Associated Urinary Tract Infection”** has been carried out by **Ms. Anuja Sunil Yadav**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.



Dr. Bipinraj. N. K

Internal Guide



Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth

(Deemed to be University)

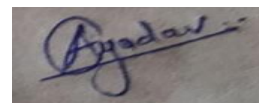
Rajiv Gandhi Institute of I.T. & B.T.

Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the Review entitled “Comprehensive overview on catheter associated urinary tract infections” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. Milind Chaudhari and Dr. Prasad Bhagat. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.



Place : Pune

Date : 10/06/2021

Anuja Sunil Yadav



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**A COMPREHENSIVE REVIEW ON ROLES OF RAPID
DIAGNOSTIC TOOLS TO COMBAT AMR**

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T AND BIOTECHNOLOGY,
BHARATI VIDHYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

Aparna Anand Naik

MSc Biotechnology

UNDER THE GUIDANCE OF

Dr. Milind Choudhari

Co-Guide **Dr. Anupama Engineer**

Dr. Bipinraj. N. K

(Rajiv Gandhi Institute of I.T & Biotechnology, Pune)



WeInnovate Biosolutions Pvt. Ltd., Pune

10 JULY 2021

CERTIFICATE

This is to certify that the work incorporated in the review entitle A comprehensive Review on Roles of RAPID Diagnostic Tools to Combat AMR for the degree of Master of Science in the subject of Biotechnology under the faculty of science has been carried out by Ms. Aparna Anand Naik at R&D lab of WeInnovate Biosolutions Pvt. Ltd, Pune during the period from 1 February 2021 to 8 April 2021 under the guidance of Dr Milind Choudhari.



Date: 10 July 2021

Place: Shivaji Nagar, Pune

(Dr. Milind Choudhari, Founder & CEO)



(Dr. Anupama S. Engineer, Cofounder & COO)
(Research Co-Guide)

Dr. Bipinraj . N. K



(Dr. Bipinraj. N. K, Assistant Professor RGITBT)
(Research Co-Guide)

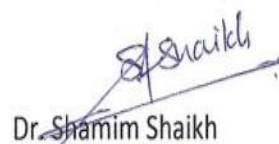
CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled "Comprehensive Review on Roles of RAPID diagnostic tools to combat AMR" has been carried out by Ms. Aparna Anand Naik, student of Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.



Dr. Bipinraj .N.K

Internal Guide



Dr. Shamim Shaikh

Principal

PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled A Comprehensive Review on Roles of RAPID diagnostic Tools to Combat AMR submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of interdisciplinary Science is the original place of work carried out by me under the supervision of Dr. Milind Choudhari and Co-guide Dr. Anupama S. Engineer and Dr. Bipinraj Kunchiraman. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that the material which I have borrowed from other sources and incorporated in the dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, It is entirely my responsibility. I am fully aware of the implication of any such act which might have been committed by me advertently or inadvertently.



Place: Shivaji Nagar, Pune
Date: 10/7/2021

(Aparna A. Naik, Research Student)



**DIFFERENT METHODS FOR EXTRACTION OF HIGH QUALITY TOTAL RNA
FROM ADIPOSE TISSUE OF OBESE RATS**

**EFFECT OF TRIPHALA ON MODULATION OF LIPID METABOLISM GENES
ON HIGH FAT DIET INDUCED OBESITY RAT MODEL**

A REVIEW & DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

Ms. Brishty Roy

UNDER THE GUIDENCE

OF

Dr. Suresh P Khadke

At

**OBESITY – DIABETES RESEARCH LAB
INTERACTIVE RESEARCH SCHOOL FOR HEALTH
AFFAIRS (IRSHA), PUNE-43**

10/07/2021

Bharati Vidyapeeth
(Deemed to be University)
Interactive Research School for Health Affairs (IRSHA)
Pune Satara Road, Pune - 43

Ref. No: BVDU/IRSHA/2021-22/

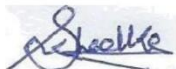
Date: 10/07/2021

CERTIFICATE

This is to certify that the work incorporated in the Review entitled **“Different Methods for Extraction of High Quality Total RNA from Adipose Tissue of Obese Rats”** and Dissertation entitled **“Effect of Triphala on Modulation of Lipid Metabolism Genes on High Fat Diet Induced Obesity Rat Model”** for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Ms. Brishty Roy** at Obesity-Diabetes Research Laboratory, Interactive Research School for Health Affairs (IRSHA), Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune during the period from **1st February 2021 to 6th April 2021** under the guidance of **Dr. Suresh P. Khadke.**

Place: Pune

Date: 10/07/2021


Dr. Suresh P. Khadke
Research Guide





Chancellor

Prof. Dr. Shivajirao Kadam

M.Sc., Ph.D.

Principal

Dr. Shamim Shaikh

M.Sc., Ph.D.

BHARATI VIDYAPEETH
(Deemed to be University), Pune, (India).
Founder Chancellor : Dr. Patangrao Kadam

**RAJIV GANDHI INSTITUTE OF INFORMATION
TECHNOLOGY AND BIOTECHNOLOGY, PUNE**

★ Accredited with 'A+' Grade (2017) by NAAC ★

★ Category-I University Status by UGC ★

★ 'A' Grade University Status by MHRD, Govt. of India ★

★ Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC ★

★ NIRF Ranking - 62 ★



Pune-Satara Road,
Near Katraj Dairy,
Katraj, Pune-411046.

Ref. No. : BVDU/RGIITBT/ — / 2021 -20 22

Date : 16/08/2021

CERTIFICATE

This is to certify that the work incorporated in the Review entitled “**Different methods for extraction of high quality total RNA from Adipose tissue of Obese rats**” and Dissertation entitled “**Effect of Triphala on modulation of lipid metabolism genes in rat model of High Fat Diet induced obesity**” has been carried out by **Ms. Brishty Roy**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

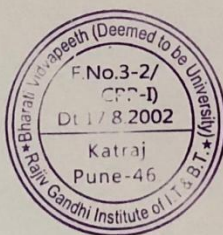
Dr. Rama Bhadekar

Dr. Rama Bhadekar

Internal Guide

HOD

Dept. of Microbial Biotechnology
BVDU, Rajiv Gandhi Institute of I.T. & B.T.
Katraj, Pune - 411 046.



Dr. Shamim Shaikh

Dr. Shamim Shaikh

Principal
PRINCIPAL

Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

Phone : +91-20-24379013, 24365713 FAX : +91-20-24365713

DECLARATION BY THE CANDIDATE

I hereby declare that the review entitled “**Different methods for extraction of high quality total RNA from Adipose tissue of obese rats**” and dissertation entitled “**Effect of Triphala on modulation of Lipid metabolism genes on High Fat Diet induced Obesity rat model**” submitted by me to the **Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc.)** in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. Suresh P. Khadke**. I further declare that this has not been submitted to any other University or Institution for the award of any degree or diploma. I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation and review is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation and review, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: Obesity-Diabetes Research Lab,
Interactive Research School For Health Affairs (IRSHA)
Bharati Vidyapeeth Deemed to be University, Pune.

Date: 10/07/2021



Brishty Roy
(Name & signature of
Research Student)



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“EXTRACTION OF FLAVONOIDS AND PHENOLICS FROM THE
FRUIT OF *EMBLICA OFFICINALIS* AND EVALUATION OF THEIR
ANTIOXIDANT ACTIVITY”**

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

CHARU SAXENA

UNDER THE GUIDANCE OF

PROF. NALINI SRIVASTAVA

RESEARCH CENTRE

**SCHOOL OF STUDIES IN BIOCHEMISTRY
JIWAJI UNIVERSITY, GWALIOR**

10th JULY 2021

CERTIFICATE



SCHOOL OF STUDIES IN BIOCHEMISTRY JIWAJI UNIVERSITY

Gwalior - 474011, INDIA

Ref.

Date

Certificate

This is to certify that the work incorporated in the dissertation entitled "**Extraction of flavonoids and phenolics from fruits of *Emblica officinalis* and evaluation of their antioxidant activity**" is an original work carried out by Ms Charu Saxena under my supervision in School of Studies in Biochemistry, Jiwaji University, Gwalior 474 011 for the degree of Master of Science in the subject Biotechnology under the Faculty of Science, Rajiv Gandhi Institute of IT and Biotechnology, Bharti Vidyapeeth Deemed to be University, Pune, from 20th February, 2021 to 30th June, 2021. The work included in this dissertation has not been submitted for any other degree of this university at any previous occasion.

Place: Gwalior
Date: 10.07.2021

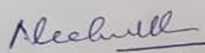
Nalini Srivastava

Name and Signature of the Supervisor
Prof Nalini Srivastava
School of Studies in Biochemistry
Jiwaji University, Gwalior 474 011

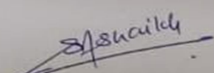
Prof. Nalini Srivastava
School of Studies in Biochemistry
Jiwaji University
Gwalior-474011

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled *"Extraction of flavanoids and phenolics from natural plant sources and evaluation of their antioxidant activity"* has been carried out by **Ms. Charu Saxena**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Neelambika Meti
Internal Guide




Dr. Shamim Shaikh
Principal
PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

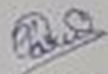
DECLARATION BY THE CANDIDATE

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled "Extraction of flavonoids and phenolics from fruit of *Embluca officinalis* and evaluation of their antioxidant activity" submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Prof. Nalini Srivastava. I further declare that it has not been submitted to this or any other university or institution for the award of any degree or diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: *Gwalior, M.P.*
Date: *10/07/2021*


Signature
Charu Saxena
M.Sc. Biotechnology
IV semester
Rajiv Gandhi Institute of IT and
Biotechnology, BVDU, Pune



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“MOLECULAR CHARACTERIZATION OF *GOSSYPIUM HIRSUTUM* L. USING
MOLECULAR MARKERS”**

**A REVIEW SUBMITTED TO
RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

**FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY**

**SUBMITTED BY
DHURUVISH SONI**

**UNDER THE GUIDANCE OF
DR. RAJKUMAR B.K**

**CO-GUIDE
DR. H.R. RAMANI**

**RESEARCH CENTRE
MAIN COTTON RESEARCH STATION**

SEAT NO: 2119110009



Chancellor

Prof. Dr. Shivajirao Kadam

M.Sc., Ph.D.

Principal

Dr. Shamim Shaikh

M.Sc., Ph.D.

BHARATI VIDYAPEETH
(Deemed to be University), Pune, (India).
Founder Chancellor : Dr. Patangrao Kadam

**RAJIV GANDHI INSTITUTE OF INFORMATION
TECHNOLOGY AND BIOTECHNOLOGY, PUNE**

★ Accredited with 'A+' Grade (2017) by NAAC ★

★ Category-I University Status by UGC ★

★ 'A' Grade University Status by MHRD, Govt. of India ★

★ Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC ★

★ NIRF Ranking - 62 ★



Pune-Satara Road,
Near Katraj Dairy,
Katraj, Pune-411046.

Ref. No. : BVDU/RGIITBT/ — / 2021 -2022


Date : 12/08/2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled “Biochemical and molecular characterization of cotton (*Gossypium hirsutum* L.) genotypes” has been carried out by Mr. Dhruvish Soni, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be university), Dhankawdi, Pune for the fulfilment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Rakhi Dangi




Dr. Shamim A. Shaikh
PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

Certificate

This is to certify that the work incorporated in the dissertation along with compiled review entitled Molecular characterization of *Gossypium hirsutum* using molecular markers for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Mr. Dhruvish Soni at Main Cotton Research Station (MCRS), Navsari Agricultural University (NAU), Surat during the period from February to June under the guidance of Dr. Rajkumar B.K

Date: 3/7/2021

Place: Surat



Assistant Research Scientist
Plant Biotechnology
Main Cotton Research Station
N. A. U., Surat-395007

DECLARATION BY THE CANDIDATE

I hereby declare that the review entitled “**Molecular Characterization of *Gossypium hirsutum* L. Using Molecular Markers**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. Rajkumar B.K** and **Dr. H.R Ramani**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this review is duly acknowledged. If any material is not duly acknowledged and found incorporated in this review, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.



Place: Surat

Date: 10/07/2021

Dhruvish Soni



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

“MICROBIAL TRANSFORMATION OF LIGNIN: ENZYMES INVOLVED AND APPLICATIONS”

A REVIEW SUBMITTED TO

RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

DIKSHA RAMTEKE

UNDER THE GUIDANCE OF

DR. (MRS.) SAVITHA SANTOSH

RESEARCH CENTRE

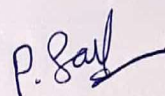
ICAR- CENTRAL INSTITUTE OF COTTON RESEARCH, NAGPUR

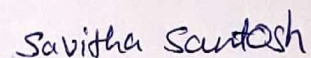
SUBMITTED ON:- 10/07/2021

CERTIFICATE

This is to certify that the work incorporated in the review entitled **Microbial Transformation of Lignin: Enzymes Involved and Applications** for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Miss Diksha Vijay Ramteke** at **ICAR- Central Institute for Cotton Research, Nagpur** during the period from January 2021 to March 2021 under the guidance of **Dr. (Mrs.) Savitha Santosh**

Date: 09/07/21


Signature of the guide


Scientist
Division of Crop Production
ICAR-Central Institute for Cotton Research
Nagpur-440010, Maharashtra, India

Place: Nagpur

(Name of the guide with stamp and seal of the Institute)

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **“Microbial Transformation of Lignin: Enzymes involved and Applications”** has been carried out by Mr./Ms. Diksha Vijay Ramteke, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Rama Bhadekar

Dr. Rama Bhadekar

Internal Guide

Shamim Shaikh

Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth

(Deemed to be University)

Rajiv Gandhi Institute of I.T. & B.T.

Pune Satara Road, Pune - 411 046.



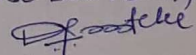
DECLARATION BY THE CANDIDATE

I hereby declare that the review entitled “**Microbial Transformation of Lignin: Enzymes Involved and Applications**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. (Mrs.) Savitha Santosh**. I further declare that it has not been submitted to any other university or Institution for the award of any degree or Diploma. I also confirm that all the material which I have borrowed from other sources and incorporated in this work is duly acknowledged. If any material is not duly acknowledged and found incorporated in this work, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: Nagpur

Date: 09/07/21

DIKSHA RAMTEKE
(M.Sc BIOTECH)


Name & signature of Research



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“EFFECT OF TRIPHALA ON NITRIC OXIDE RELEASE FROM
PALMITIC ACID TREATED NEURONAL CELLS”**

”A REVIEW/DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI VIDYAPEETH
DEEMED TO BE UNIVERSITY, PUNE**

**FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in MEDICAL BIOTECHNOLOGY**

SUBMITTED BY

Mr. Dipesh Narendra Jadiye

UNDER THE GUIDENCE OF

Mrs. Shital Giramkar

RESEARCH CENTRE

Obesity and Diabetes Lab

**Interactive Research School for Health Affairs (IRSHA) Bharti Vidyapeeth
Pune.**

Submission Date : 10th July 2021

Bharati Vidyapeeth
(Deemed to be University)
Interactive Research School for Health Affairs (IRSHA)
Pune Satara Road, Pune - 43

Ref. No: BVDU/IRSHA/2021-22/

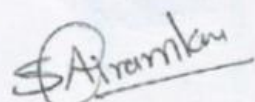
Date: 10/07/2021

CERTIFICATE

This is to certify that the work incorporated in the Review entitled "**Effect of Hebal Drugs on Nitric Oxide Release from Palmitic Acid Treated Neuronal Cells**" and Dissertation entitled "**Effect of Triphala on Nitric Oxide Release from Palmitic Acid Treated Neuronal Cells**" for the degree of Master of Science in the subject Biotechnology under the Faculty of Science has been carried out by **Mr. Dipesh Narendra Jadiye** at Obesity-Diabetes laboratory, Interactive Research School for Health Affairs (IRSHA) Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune during the period from **1st February 2021 to 6th April 2021** under the guidance of **Mrs. Shital Giramkar**.

Place: Pune

Date: 10/07/2021


Mrs. Shital Giramkar

Research Guide



CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **“Effect of Triphala on nitric oxide release from palmitic acid treated neuronal cells”** has been carried out by Mr. **Dipesh Narendra Jadiye**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Dr. Shamim Shaikh

Internal Guide

Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth

(Deemed to be University)

Rajiv Gandhi Institute of IT & Biotechnology

Pune Satara Road, Pune - 411 046, 046, 046.



DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “**Effect of Triphala on nitric oxide release from palmitic acid treated neuronal cells**” and Review entitled “**Effect of Herbal drugs on nitric oxide release from palmitic acid treated neuronal cells**” submitted by me the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Medical Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Mrs. Shital Giramkar**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma. I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not dulyacknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.



Dipesh Narendra Jadiye

Place: Obesity - Diabetes Lab

Interactive Research School for Health Affairs
(IRSHA) Bharati Vidyapeeth Pune.

**Name and Signature of
Research Student**

Date: 10/07/2021



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY
BIO COLORS FROM PLANT-BASED WASTE AS FABRIC DYES

A DISSERTATION SUBMITTED TO
RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
DIVYA DESHMUKH

UNDER THE GUIDANCE OF
DR. RAMA BHADKAR

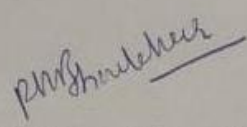
RAJIV GANDHI INSTITUTE OF IT & BIOTECHNOLOGY BHARATI
VIDHYAPEETH DEEMED UNIVERSITY, PUNE-46 APRIL-2021

July 10, 2021

CERTIFICATE

This is to certify that the work incorporated in the Review entitled "**Bio colors from Plant-Based Waste as Fabric Dyes.**" for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Miss. Divya Deepak Deshmukh** at Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune. during the period from April 2021 to July 2021 under the guidance of Dr. Mrs. Rama Bhadekar.

Date: 10/07/2021


Signature of the guide

(Dr. Mrs. Rama Bhadekar)

Place: Pune

(Name of the guide with stamp and seal of the institute)
HOD
Dept. of Microbial Biotechnology
BVU, Rajiv Gandhi Institute of I.T. & B.T.
Katraj, Pune - 411 046.

CERTIFICATE

This is to certify that the work incorporated in the review entitled "**Bio Colors from Plant-Based Waste as Fabric Dyes**" has been carried out by **Ms. Divya Deepak Deshmukh**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Rama Bhadekar

Dr. Rama Bhadekar

Internal Guide

HOD

Dept. of Microbial Biotechnology
BVU, Rajiv Gandhi Institute of I.T. & B.T.
Katraj, Pune - 411 046.



Shamimi Shaikh

Dr. Shamimi Shaikh

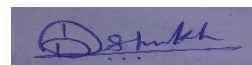
Principal

PRINCIPAL

Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 045.

DECLARATION BY CANDIDATE

I hereby declare that the Review entitled “**Bio colors from Plant-Based Waste as Fabric Dyes.**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. Rama Bhadekar. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma. I also confirm that the material which I have borrowed from other sources and incorporated in this Review is duly acknowledged. If any material is not duly acknowledged and found incorporated in this review, it is entirely my responsibility. I am fully aware of the implication of any such act which might have been committed by me advertently or inadvertently.



Divya Deepak Deshmukh

Place: Pune
Date: 10/07/2021

Name & signature of
Research Student



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“A SYSTEMATIC REVIEW: PROBIOTICS AS ANTIBIOFILM
AGENTS AGAINST VARIOUS PATHOGENIC MICROBIAL
BIOFILM”**

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE IN BIOTECHNOLOGY

SUBMITTED BY

GAYATRI MOHITE

UNDER THE GUIDANCE OF

DR. ASIFA QURESHI

(Principal Scientist)

(Environmental Biotechnology & Genomics Division)

Name of Co-Guide

Ms. Anuja P. Maitreya

(AcSIR Ph.D. Scholar-JRF)

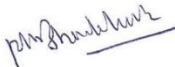
Research Centre

**CSIR – NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE,
NAGPUR**

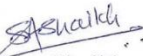
06/07/2021

CERTIFICATE

This is to certify that the work incorporated in the review entitled “**A systematic review: Probiotics as antibiofilm agents against various pathogenic microbial biofilm**” has been carried out by **Ms. Gayatri Sanjay Mohite**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

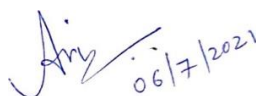

Dr. Rama Bhadekar
Internal Guide




Dr. Shamim Shaikh
Principal
PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

CERTIFICATE OF GUIDE

This is to certify that the work incorporated in the dissertation/ review entitled “ **A systematic review: Probiotics as antibiofilm agents against various pathogenic microbial biofilm**” for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Ms. Gayatri Sanjay Mohite** at CSIR- National Environmental Engineering Research Institute, Nagpur during the period from January 2021 to June 2021 under the guidance of Dr. Asifa Qureshi (Principal Scientist - Environmental Biotechnology and Genomics Division).



Date: 06/07/2021

Signature of the guide

(Name of the guide with stamp and seal of the institute)

Place: Nagpur

डॉ.आसिफा कुरेशी / Dr. Asifa Qureshi
प्रधान वैज्ञानिक / Principal Scientist
पर्यावरण जीवपीछोगिकी एवं जीनोमिक्स विभाग
Environmental Biotechnology & Genomics Division
राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान
सी.एन.आई.आर.-नोरी, नेहरू मार्ग / CSIR-NEERI, Nehru Marg,
नागपुर-440 020 / Nagpur-440 020

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “**A systematic review: Probiotics as antibiofilm agents against various pathogenic microbial biofilm**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (MSc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. Asifa Qureshi and Ms. Anuja P. Maitreya. I further declare that it has not been submitted to this or any other university or institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.



Date: 06/07/2021

Gayatri Sanjay Mohite

Place: Nagpur



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

MANDARIN GENOMICS (PRESENT & FUTURE PROSPECTUS)

REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY), PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
Ms. Gunjan Mahajan

UNDER THE GUIDANCE OF
Dr. J. P. Tej Kumar

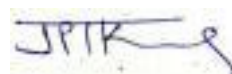
SUBMISSION DATE:-12-07-2021

CERTIFICATION OF GUIDE

This is to certify that the work incorporated in the Review entitled “**Mandarin Genomics (Present & Future Prospectus)**” and Research proposal entitled “**Genetic diversity Analysis of Mandarin using SSR & InDel marker.**” for the degree of ‘Master of Science’ in the subject of Biotechnology under the faculty of Science has been carried out by **Ms. Gunjan Mahajan** at Indian Council of Agriculture Research – Central Citrus Research Institute under my supervision and guidance.

Place: Nagpur

Date: 12-07-2021



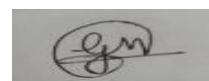
Dr. J. P. Tej Kumar

(Scientist)

DECLARATION BY THE CANDIDATE

I hereby declare that the Review entitled “**Mandarin Genomics (Present & Future Prospectus)**” and the Research proposal entitled “**Genetic diversity Analysis of Mandarin using SSR & InDel marker.**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is an original piece of work carried out by me under the supervision of **Dr. J. P. Tej Kumar**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.



Place: Nagpur


Date: 12-07-2021

Ms. Gunjan Mahajan

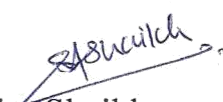
Research Student

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **"Genetic Diversity Analysis of Mandarin using SSR & InDel Marker"** has been carried out by **Ms. Gunjan Manoj Mahajan**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Rakhee Dangi
Internal Guide




• Dr. Shamim Shaikh
Principal
PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Satara Road, Pune - 411 046.



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**TITLE: FUNCTIONAL CHARACTERIZATION OF *CAENORHABDITIS*
ELEGANS HPD-1 GENE.**

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE.**

FOR AWARD OF DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY

SUBMITTED BY

HIMANGI SINGH

UNDER THE GUIDANCE OF

DR. ARUNA SATISH

SENIOR SCIENTIST

CSIR-IITR


RESEARCH CENTER

CSIR- INDIAN INSTITUTE OF TOXICOLOGY RESEARCH

LUCKNOW

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled "Functional Characterization of *Caenorhabditis elegans* hpd-1 gene" has been carried out by Ms. Himangi Singh, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Rama Bhadekar
Internal Guide

HOD
Dept. of Microbial Biotechnology
BVU, Rajiv Gandhi Institute of I.T. & B.T.
Katraj, Pune - 411 046.


Dr. Shamim Shaikh
Principal

PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.



Certificate

This is to certify that the work incorporated in the dissertation/ review entitled “Functional characterization of *Caenorhabditis elegans* HPD-1 gene” for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Ms. Himangi Singh at CSIR-Indian Institute of toxicology research (IITR), Lucknow during the period from February 2021 to July 2021 under the guidance of Dr. Aruna Satish.

Date: 08-07-2021

Place: Lucknow

Official certificate is attached
(Signature of the guide)



सीएसआईआर-भारतीय विषविज्ञान अनुसंधान संस्थान
CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH



वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

डा. वी.पी. शर्मा

Dr V. P. Sharma

मुख्य वैज्ञानिक एवं प्रोफेसर एसीएसआईआर
Chief Scientist & Prof. AcSIR

To Whomsoever it May Concern

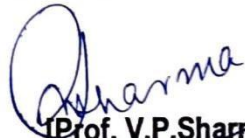
यह प्रमाणित किया जाता है कि सुश्री हिमांगी सिंह [Registration No: 1916020116] एम.एस.सी, बायोटेक्नोलॉजी, राजीव गांधी इंस्टीट्यूट ऑफ इन्फोरमेशन टेक्नोलॉजी एव बायोटेक्नोलॉजी, पुणे, में अध्ययन कर रही है। उन्होंने "Functional Characterization of *Caenorhabditis elegans* hpd-1 gene" विषय पर दिनांक 03/02/2021 से 06/07/2021 तक शोधकार्य का प्रशिक्षण डॉ अरुणा सतीश, वैज्ञानिक, सीएसआईआर-आईआईटीआर के पर्यवेक्षण में प्राप्त किया है। इस दौरान कोविड-19 के कारण कुछ कार्य निवास स्थान से ऑनलाइन करना पड़ा। इस कार्य या इसके किसी अंश को अधोहस्ताक्षरी की बिना लिखित अनुमति के प्रकाशित नहीं किया जाएगा।

मैं उज्जवल भविष्य की कामना करता हूं।

To Whomsoever it may Concern

This is to certify that Ms Himangi Singh [Registration No: 1916020116] student of M.Sc, Biotechnology, Rajiv Gandhi Institute of Information Technology and Biotechnology, Pune dissertation training on Functional Characterization of *Caenorhabditis elegans* hpd-1 gene during 03/02/2021 to 08/07/2021 under Dr Aruna Satish Scientist of CSIR-Indian Institute of Toxicology Research, Lucknow. During this period, due to COVID-19 some work was conducted online from residence by the candidate. The work should not be published, even in part without the prior written permission of the undersigned.

We wish success in her career.


[Prof. V.P.Sharma]
8/07/2021

Place: Lucknow

Date: July 08th, 2021

विषविज्ञान भवन, 31, महात्मा गाँधी मार्ग
पोस्ट बॉक्स नं० 80, लखनऊ-226001, उ.प्र., भारत
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एनएबीएस द्वारा रासायनिक एवं
जैविक परीक्षण हेतु प्रत्यापित
Accredited by NABL for chemical
and biological testing



विषाक्तता परीक्षण और जीव विषय
Toxicity Testing: GLP Test Facility

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “Functional characterization of *Caenorhabditis elegans* HPD-1 gene” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. Aruna Satish. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of any such act which might have been committed by me advertently or inadvertently.



Himangi Singh

Place: Lucknow
Date: 8-07-2021

(Name & signature of Research Student)



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“EVALUATION OF BIOCHEMICAL PARAMETERS
AND GENETIC CHARACTERIZATION OF SELECTED
COTTON (*Gossypium hirsutum* L.) GENOTYPES”**

A REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
KARAN ANILBHAI DARJI

UNDER THE GUIDANCE OF
DR. HITESH RAMANI

RESEARCH CENTRE
**MAIN COTTON RESERCH STATION,
NAVSARI AGRICULTURAL UNIVERSITY, SURAT**

10th July, 2021



Chancellor
Prof. Dr. Shivajirao Kadam
M.Sc., PhD.

Principal
Dr. Shamim Shaikh
M.Sc., PhD.

BHARATI VIDHYAPEETH
(Deemed to be University), Pune, (India).

Founder Chancellor : Dr. Patangrao Kadam
**RAJIV GANDHI INSTITUTE OF INFORMATION
TECHNOLOGY AND BIOTECHNOLOGY, PUNE**

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ 'A' Grade university Status by MHRD, Govt. of India ★
★ Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC ★
★ NIRF Ranking - 62 ★



Pune-Satara Road,
Near Katraj Dairy,
Katraj, Pune-411046.

Ref No. : BVDU/RGITBT/ - / 2021-2022

Date : 12/08/2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled "Evaluation of Biochemical Parameters and Genetic Characterization of selected cotton (*Gossypium hirsutum* L.) genotypes" has been carried out by Mr. Karan Anilbhai Darji, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankawadi, Pune for the fulfilment of the degree of Master of Science in the subject of Biotechnology under the faculty of science.

Dr. Rakhi Dangi

Internal Guide

Dr. Shamim A Shaikh

Principal

PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.



Phone : +91-20-24379013, 24365713 FAX : +91-20-24365713

Certificate

This is to certify that the work incorporated in the dissertation along with compiled review entitled Biochemical and genetic characterization of selected cotton (*Gossypium hirsutum*) genotypes for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Mr. Karan Darji at Main Cotton Research Station (MCRS), Navsari Agricultural University (NAU), Surat during the period from February to June under the guidance of Dr. H.R Ramani

Date: 3/7/2021

Place: Surat



Assistant Research Scientist
Chemistry Section
Main Cotton Research Station
N. A. U., Surat-395007

DECLARATION BY THE CANDIDATE

I hereby declare that the review entitled “Evaluation of Biochemical Parameters and Genetic Characterization of selected cotton (*Gossypium hirsutum* L.) genotypes” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M.Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of Dr. H.R. Ramani. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implication of any such act which might have been committed by me advertently or inadvertently.



Place: Surat

Date: 10/07/2021

Name & signature of
Research Student



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

METAL NANOPARTICLES IN DISEASE DIAGNOSIS

A REVIEW PAPER SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI VIDYAPEETH
DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
MANSHI PUNETHA

UNDER THE SUPERVISION AND GUIDANCE OF
DR. RASHMI SHRIVASTAVA
Laser Biomedical Applications Division
Raja Ramanna Centre for Advanced Technology, Indore



July 2021



RAJA RAMANNA CENTRE FOR ADVANCED TECHNOLOGY
DEPARTMENT OF ATOMIC ENERGY
INDORE (M.P) – 452013

CERTIFICATE

This is to certify that the work incorporated in the review entitled “**Metal Nanoparticles in Disease Diagnosis** ” submitted by **Ms. Manshi Punetha**, in partial fulfilment of the requirements for the degree of **Master of Science** in the subject of **Biotechnology** under the faculty of **Interdisciplinary Science** has been carried out by her at **Laser Biomedical Applications Division, Raja Ramanna Centre for Advanced Technology, Indore**, under my supervision during the period from Feb 2021 to June 2021.

Place: Indore
Date: 9th July, 2021

Project Guide:

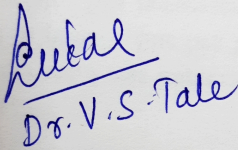
Rashmi Shrivastava
08.07.21
Dr. Rashmi Shrivastava
Scientific Officer/F

Laser Biomedical Applications Division
Raja Ramanna Centre for Advanced Technology
Indore
India

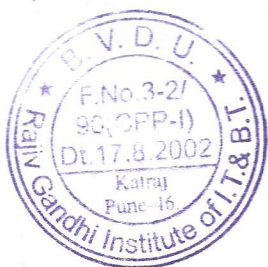
डॉ. रश्मि श्रीवास्तव / Dr. Rashmi Shrivastava
वैज्ञानिक अधिकारी-एफ / Scientific Officer-F
भारत सरकार / Government of India
परमाणु ऊर्जा विभाग / Department of Atomic Energy
राजा रामन्ना प्रगत प्रौद्योगिकी केन्द्र, इन्दौर (भारत)
Raja Ramanna Centre for Advanced Technology, Indore (India)

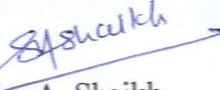
CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled "**Metal Nanoparticles in Disease Diagnosis**" has been carried out by **Ms. Manshi Punetha**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be university), Dhankawdi, Pune for the fulfilment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. V.S. Tale

Dr. Vidya Tale
Internal Guide




Dr. Shamim A. Shaikh
Principal

PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

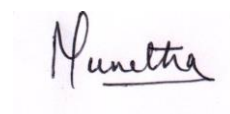
DECLARATION BY THE CANDIDATE

I hereby declare that the review paper entitled, “**Metal Nanoparticles in Disease Diagnosis**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. Rashmi Shrivastava** at Laser Biomedical Applications Division, Raja Ramanna Centre for Advanced Technology Indore. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place: Indore

Date: 09/07/2021



Manshi Punetha



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

MICRO-PROPAGATION OF TURMERIC AND SMALL CARDAMOM

REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY), PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

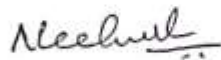
SUBMITTED BY
Ms. Meghna Varshney

UNDER THE GUIDANCE OF
Dr. Neelambika T. Meti

SUBMISSION DATE:-10-07-2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled "Micro-Propagation Turmeric & Small Cardamom" has been carried out by Ms. Meghna Varshney, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.



Dr. Neelambika Meti

Internal Guide





Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Kothara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the Review and Research proposal entitled “**MICRO-PROPAGATION OF TURMERIC AND SMALL CARDAMOM**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M. Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is an original piece of work carried out by me under the supervision of Dr. **Neelambika T. Meti**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this review is duly acknowledged. If any material is not duly acknowledged and found incorporated, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place : Pune

Date :10-07-2021



Ms. Meghna Varshney

Research Student A



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

BACTERIOCIN AND ITS INDUSTRIAL APPLICATIONS

REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY), PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
Ms. Moumita Nath

UNDER THE GUIDANCE OF
Dr. Vidya Tale

SUBMISSION DATE:-10-07-2021



Chancellor

Prof. Dr. Shivajirao Kadam

M.Sc., Ph.D.

Principal

Dr. Shamim Shaikh

M.Sc., Ph.D.

BHARATI VIDYAPEETH
(Deemed to be University), Pune, (India).
Founder Chancellor : Dr. Patangrao Kadam

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- ★ Category-I University Status by UGC ★
- ★ 'A' Grade University Status by MHRD, Govt. of India ★
- ★ Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC ★
- ★ NIRF Ranking - 62 ★



Pune-Satara Road,
Near Katraj Dairy,
Katraj, Pune-411046.

Ref. No. : BVDU/RGIITBT/ / 2021 -2022

Date : 12/08/2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled “**Bacteriocin and Its Industrial Applications**” has been carried out by Ms. **Moumita Nath**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.

Dr. Vidya Tale
Internal Guide

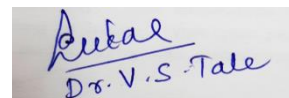


Dr. Shamim A Shaikh

Principal
PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

CERTIFICATION OF GUIDE

This is to certify that the work incorporated in the Review entitled “**Bacteriocin and Its Industrial Applications**” and Research proposal entitled “**Bio-preservative potential of lactic acid bacteria metabolites against foodborne pathogens**” for the degree of ‘Master of Science’ in the subject of Biotechnology under the faculty of Science has been carried out by **Ms. Moumita Nath** at Rajiv Gandhi Institute Of I.T. And Biotechnology, Bharati Vidyapeeth (Deemed To Be University), Pune under my supervision and guidance.

A handwritten signature in blue ink, reading "Dr. V.S. Tale". The signature is written in a cursive style with a horizontal line underneath the name.

Place: Pune

Date: 10-07-2021

Dr. Vidya Tale

(Asst. Professor)

DECLARATION BY THE CANDIDATE

I hereby declare that the Review entitled “**Bacteriocin and Its Industrial Applications**” and the Research proposal entitled “**Bio-preservative potential of lactic acid bacteria metabolites against foodborne pathogens**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is an original piece of work carried out by me under the supervision of Dr. **Vidya Tale**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Moumita

Place: Pune

Date: 10-07-2021

Ms. Moumita Nath

Research Student



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**LIPID PEROXIDATION OF RBCs AND ANTIOXIDANT PROPERTIES
OF MEDICINAL PLANTS**

A REVIEW/DISSERTATION SUBMITTED TO

RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF MASTER OF SCIENCE
in BIOTECHNOLOGY

SUBMITTED BY
Ms. Mrunal Ashokrao Kale

UNDER THE GUIDANCE OF
Dr. Poonam Gupte
OBESITY -DIABETES LAB
INTERACTIVE RESEARCH SCHOOL FOR HEALTH AFFAIRS

SUBMISSION DATE-10-07-2021

Bharati Vidyapeeth
(Deemed to be University)
Interactive Research School for Health Affairs (IRSHA)
Pune Satara Road, Pune - 43

Ref. No: BVDU/IRSHA/2021-22/

Date: 10/07/2021

CERTIFICATE

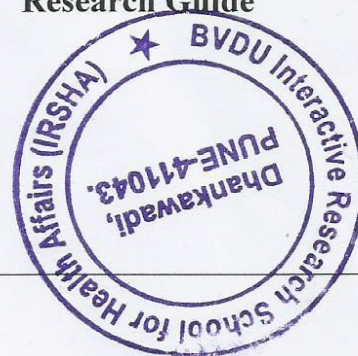
This is to certify that the work incorporated in the Review entitled “**Lipid Peroxidation of RBCs and Antioxidant Properties of Medicinal Plants**” and Dissertation entitled “**Effect of Polyherbal Formulation on Lipid Peroxidation of RBCs**” for the degree of Master of Science in the subject Biotechnology under the Faculty of Science has been carried out by **Ms. Mrunal Ashokrao Kale** at Obesity-Diabetes laboratory, Interactive Research School for Health Affairs (IRSHA) Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune during the period from **1st February 2021 to 6th April 2021** under the guidance of **Dr. Poonam Gupte**.

Place: Pune

Date: 10/07/2021


Dr. Poonam Gupte

Research Guide



DECLARATION BY THE CANDIDATE-

I hereby declare that the dissertation entitled "Lipid Peroxidation of RBC's and antioxidant properties of medicinal plants" submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the guidance of Dr. Poonam Gupte. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

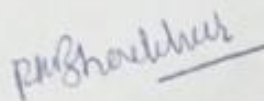
Mrunal Ashokrao Kale



Place: Pune
Research Student

CERTIFICATE

This is to certify that the work incorporated in the review entitled "**Lipid peroxidation of RBCs and antioxidant properties of medicinal plants**" and dissertation entitled "**Effect of polyherbal formulation on lipid peroxidation of RBCs**"- has been carried out by **Ms. Mrunal Ashokrao Kale** of Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.



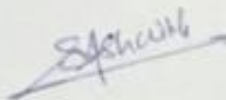
Dr. Rama Bhadekar

Internal Guide

HOD

Dept. of Microbial Biotechnology
BVU, Rajiv Gandhi Institute of IT & B.T.
Katrai, Pune - 411 046





Dr. Shamim Shaikh

Principal

PRINCIPAL

Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**TITLE OF REVIEW ARTICLE
ANTIVIRAL: CURRENT TREND OF DENGUE THERAPEUTICS**

**A REVIEW SUBMITTED TO
RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI VIDYAPEETH
DEEMED TO BE UNIVERSITY, PUNE**

**FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY**

SUBMITTED BY
Ms. Nisha Adhikari
Seat No. - 2119110008

UNDER THE GUIDANCE OF
DR. Sudha Ramkumar

**RESEARCH CENTRE
INTERACTIVE RESEARCH SCHOOL FOR HEALTH AFFAIRS (IRSHA)
BHARTI VIDYAPEETH (DEEMED TO BE UNIVERSITY)**

DATE OF SUBMISSION – 10 July, 2021

Certificate

This is to certify that the work incorporated in the review article entitled **“Antiviral: Current trend in Dengue Therapeutics”** for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Ms Nisha Adhikari at Interactive research school for health affairs (IRSHA) Bharati vidyapeeth (deemed to be university) during the period from January to June 2021 under the guidance of Dr. Sudha Ramkumar.

Date: 9/7/2021

Place: PUNE




Signature of the guide

Bharati Vidyapeeth
(Deemed to be University)
(Name of the guide with stamp and seal of the institute)
Pune-Satara Road, Pune - 411 043.

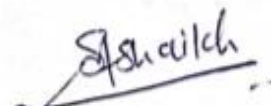
CERTIFICATE

This is to certify that the work incorporated in the review entitled “**Antiviral: Current trend in Dengue Therapeutics**” has been carried out by Ms. Nisha Adhikari, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankawadi, Pune for the fulfillment of the degree of **Master of Science** in the subject of **Biotechnology** under the faculty of Science.


Dr. Rakhi Dangi

Internal Guide




Dr. Shamim A. Shaikh

Principal

PRINCIPAL
Bharati Vidyapeeth
(Deemed to be University)
Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

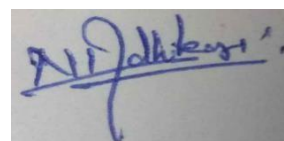
I hereby declare that the review article entitled “**ANTIVIRAL: CURRENT TREND IN DENGUE THERAPEUTICS**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science(M.Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **DR. SUDHA RAMKUMAR**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this review is duly acknowledged. If any material is not duly acknowledged and found incorporated in this review, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

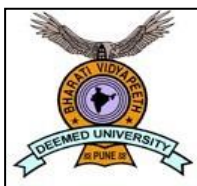
Place – Pune

Date – 10 July, 2021

NISHA ADHIKARI



**Name & Signature of
Research Student**



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**Antiglycation Antioxidant Antihyperlipidemic and
Insulin-Sensitizing Potential of *Trigonella foenum graceum***

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY
Pragati Sambhaji Salunkhe

UNDER THE GUIDANCE OF
Dr.Rakhee Dangi

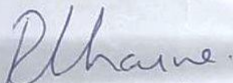
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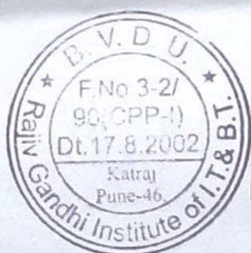
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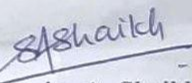
10th July 2021

CERTIFICATE

This is to certify that the work incorporated in the dissertation entitled "**Antiglycation Antioxidant Antihyperlipidemic & Insulin-Sensitizing Potential of *Trigonella foenum graceum***" has been carried out by **Ms. Pragati Sambhaji Salunkhe**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be university), Dhankawdi, Pune for the fulfilment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Rakhee Dangi
Internal Guide




Dr. Shamim A. Shaikh
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Pune Satara Road, Pune - 411 046

Certificate

This is to certify that the work incorporated in the dissertation/ review entitled “**Antiglycation, Antioxidant, Antihyperlipidemic and Insulin-Sensitizing Potential of *Trigonella foenum graceum***” for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by **Ms. Pragati Sambhaji Salunkhe** at Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune during the period from April 2021 to July 2021 under the guidance of **Dr. Rakhee Dangi**.



Date: 10/7/2021

Signature of the guide

Place: RGITBT Pune

(Name of the guide with stamp and seal of the institute)

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “**Antiglycation, Antioxidant, Antihyperlipidemic and Insulin-Sensitizing Potential of *Trigonella foenum graceum*”** submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr.Rakhee Dangi**.

I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

Place : RGITBT Pune

Date : 10/7 /2021



Pragati Sambhaji Salunkhe

Name & signature of
Research Student



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**“A COMPREHENSIVE REVIEW ON VARIOUS COVID
VACCINES”**

A DISSERTATION/ REVIEW SUBMITTED TO

RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY
SUBMITTED BY
PRERNA AGRAWAL

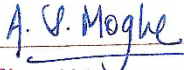
UNDER THE GUIDANCE OF
DR. ALPANA MOGHE

RESEARCH CENTRE
RGITBT, Pune.

Submission Date: 10/07/2021

CERTIFICATE

This is to certify that the work incorporated in the review entitled "A COMPREHENSIVE REVIEW ON VARIOUS COVID VACCINES" for the degree of Master of Science in the subject under the faculty Science has been carried out by Ms. PRERNA AGRAWAL at Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (deemed to be) University, Dhanakwadi, Pune during the period from April 2021 to July 2021 under the guidance of Dr. ALPANA MOGHE.


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Date: 10-07-2021

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Dr. Alpana Moghe

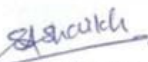
(Department of Cell and Molecular biology)

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This is to certify that the work incorporated in the dissertation/ review entitled “**A REVIEW ON VARIOUS COVID VACCINES**” has been carried out by **Ms. Prerna Agrawal**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


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Internal Guide




Dr. Shamim Shaikh
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Pune Satara Road, Pune - 411 046.

DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “**A REVIEW ON VARIOUS COVID VACCINES**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **DR. ALPANA MOGHE**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

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Place: RGITBT, Pune

Date: 10/07/2021

Name and signature of research student:

PRERNA AGRAWAL





RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY
“IMMUNOLOGICAL RESPONSES TO CANDIDATE RSV VACCINES IN MICE”

A REVIEW ARTICLE SUBMITTED TO
**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTERS OF SCIENCE IN BIOTECHNOLOGY

SUBMITTED BY
Ms. Riddhi Dilip Bhadja

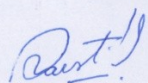
UNDER THE GUIDANCE OF
Dr. Harshad Padmanabh Patil

RESEARCH CENTRE
INTERACTIVE RESEARCH SCHOOL FOR HEALTH AFFAIRS(IRSHA)

Certificate

This is to certify that the work incorporated in the review article entitled **“Immunological response to candidate RSV vaccines in mice”** for the degree of Master of Science in the subject Biotechnology under the faculty of Science has been carried out by Ms Riddhi Dilip Bhadja at Interactive Research School For Health Affairs (IRSHA) Bharati Vidyapeeth (deemed to be university) during the period from January to June 2021 under the guidance of Dr. Harshad Padmanabh Patil.

Date: 08.07.2021

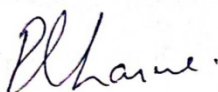

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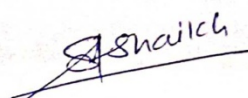
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CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **"Immunological Response to Candidate RSV Vaccines in Mice"** has been carried out by Ms. Riddhi Dilip Bhadja , Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Rakhee Dangi
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Dr. Shamim Shaikh
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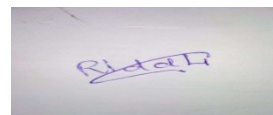
DECLARATION BY THE CANDIDATE

I hereby declare that the review article entitled “**IMMUNOLOGICAL RESPONSES TO CANDIDATE RSV VACCINES IN MICE**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Medical Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. Harshad Padmanabh Patil**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

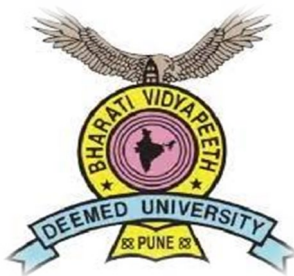
I also confirm that all the material which I have borrowed from other sources and incorporated in this review is duly acknowledged. If any material is not duly acknowledged and found incorporated in this review, it is entirely my responsibility.

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PLACE – Pune
DATE - 17 July 2021



Riddhi Dilip Bhadja
Name & Signature of
Research Student



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**ROLE OF NK CELL MEDIATED ANTIBODY DEPENDENT
CELLULAR CYTOTOXICITY IN VIRAL INFECTIONS**

A REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

**FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY**

Submitted by
Riddhita Deb
M.Sc Biotechnology
Semester IV
Seat No. - 2119110035

**UNDER THE GUIDANCE OF
Dr. Archana Kulkarni-Munje**

RESEARCH CENTRE
Interactive Research School For Health Affairs (IRSHA)
Bharati Vidyapeeth Deemed To Be University, Pune

DATE OF SUBMISSION :16th July 2021

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I would like to pay my sincere regards to Dr. Vidya Avinash Arankalle, Senior Scientist, IRSHA for giving me the opportunity to work in the Department of Communicable Diseases, IRSHA for the fulfilment of this project.

I would like to express my deep and sincere gratitude to my esteemed guide Dr. Archana Kulkarni-Munje, Assistant Professor, IRSHA for giving me the opportunity to work in this project under her supervision. The completion of this research and review could not have been accomplished without her guidance, motivation and immense knowledge. Her expertise and insight in the lab is invaluable and I shall be forever obliged for her advice at every stage of the composition.

I would also like to thank the laboratory technicians, fellow labmates and the research team in the Department of Communicable Diseases and NIBEC, IRSHA for sharing their knowledge and for their timely support.

Finally, I wish to thank my parents for their continuous encouragement and unfailing support throughout my years of postgraduate study.

CERTIFICATE

This is to certify that the review entitled “**Role of NK cell mediated Antibody Dependent Cellular Cytotoxicity in viral infections**” for the degree of Master of Science in the subject Biotechnology has been written by Ms. Riddhita Deb at Interactive Research School For Health Affairs (IRSHA) Bharati Vidyapeeth (Deemed to be University), Pune in the Department of Communicable Diseases during the period from January 2021 to April 2021 under the guidance of Dr. Archana Kulkarni-Munje. The proposed plan of research and preliminary work is also included.

Date: 15-07-2021



Signature of the guide

Dr. Archana Kulkarni-Munje

Place: Pune

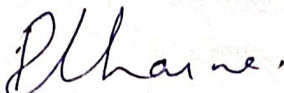
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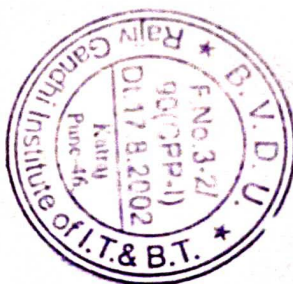
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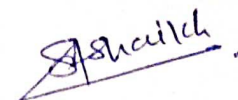


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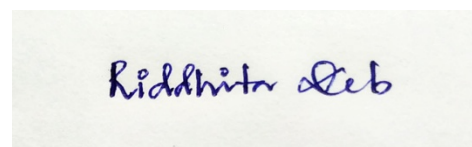
DECLARATION BY THE CANDIDATE

I hereby declare that the review article/proposed plan of research entitled Title “**Role of NK cell mediated Antibody Dependent Cellular Cytotoxicity in viral infections**” submitted by me to Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science in Biotechnology under the Faculty of Interdisciplinary Science is original piece of work carried out by me under the supervision of **Dr. Archana Kulkarni-Munje**. I further declare that it has not been submitted to this or any other university or institution for the award of any degree or diploma.

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Place – Pune

Date – 16th July, 2021



Riddhita Deb



Rajiv Gandhi Institute of I.T. And Biotechnology

***STUDIES ON MICROPROPAGATION OF SELECTED
ORNAMENTAL PLANTS***

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH (DEEMED TO BE) UNIVERSITY,**

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE IN BIOTECHNOLOGY

SUBMITTED BY

AKRITI JAISWAL

UNDER THE GUIDANCE OF


Dr. Mrs. Neelambika T. Meti

PLANT SCIENCE DIVISION


**RAJIV GANDHI INSTITUTE OF IT & BIOTECHNOLOGY
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JULY-2021**

CERTIFICATE

This is to certify that the work incorporated in the dissertation/ review entitled **"Micropropagation of Selected Ornamental Plants"** has been carried out by **Ms. Akriti Jaiswal**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.


Dr. Neelambika Meti
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Dr. Shamim Shaikh
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DECLARATION OF THE CANDIDATE

I hereby declare that the thesis entitled “*Studies on Micro propagation of selected ornamental plants*” submitted by us to **RAJIV GANDHI INSTITUTE OF I.T. & BIOTECHNOLOGY, BVDU, PUNE** for the fulfilment of the requirement for the award of degree of **M.Sc. Biotechnology** is a record of bonafide research work carried out by us under the guidance of **Dr. Mrs. Neelambika T. Meti**. We, further declare that the work reported in this thesis has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma of this University or of any other Institute of University.

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Place: Pune

Signature of the candidate

Date:



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**PRESENT AND FUTURE PROSPECTUS STUDY OF
ACID LIME GENOMICS**

REVIEW SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY,
BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY), PUNE**

**FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY**

**SUBMITTED BY
Ms. Ruchira Chilbule**

**UNDER THE GUIDANCE OF
Dr. J. P. Tej Kumar**

SUBMISSION DATE: -12-07-2021

CERTIFICATION OF GUIDE

This is to certify that the work incorporated in the Review entitled “**Present and Future prospectus study of Acid lime Genomics**” and Research proposal entitled “**Genetic diversity Analysis of Acid Lime (*Citrusaurantifolia*) using SSR & InDel markers.**” for the degree of ‘Master of Science’ in the subject of Biotechnology under the faculty of Science has been carried out by **Ms. Ruchira Chilbule** at Indian Council of Agriculture Research – Central Citrus Research Institute, Nagpur under my supervision and guidance.

Place: Nagpur

Date: 12-07-2021



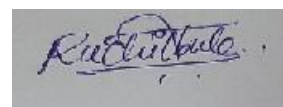
Dr. J. P. Tej Kumar

(Scientist)

DECLARATION BY THE CANDIDATE

I hereby declare that the Review entitled “**Present and Future prospectus study of Acid lime Genomics**” and the Research proposal entitled “**Genetic diversity Analysis of Acid Lime (*Citrusaurantifolia*) using SSR &InDel markers.**” submitted by me to the Bharati Vidyapeeth Deemed to be University, Pune for the degree of Master of Science (M Sc.) in Biotechnology under the Faculty of Interdisciplinary Science is an original piece of work carried out by me under the supervision of Dr. **J. P. Tej Kumar**. I further declare that it has not been submitted to this or any other university or Institution for the award of any degree or Diploma.

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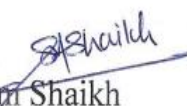
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Ms. Ruchira Chilbule
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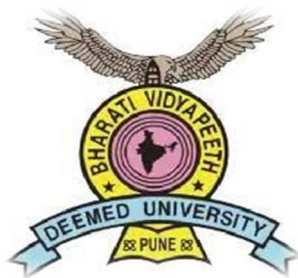

Dr. Rakhee Dangi
Internal Guide


Dr. Shamim Shaikh
Principal



PRINCIPAL
Bharati Vidyapeeth
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Rajiv Gandhi Institute of I.T. & B.T.
Pune Satara Road, Pune - 411 046.

**FIBER QUALITY AND BW IMPROVEMENT
IN UPLAND COTTON**



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**A REVIEW SUBMITTED TO
RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY, BHARATI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE
FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY**

**Submitted by
Rushita Roy
M.Sc Biotechnology
Roll No:1916020110**

**UNDER THE GUIDANCE OF
Dr. Satya Narayan Jena**



**CSIR-NBRI
Council of Scientific & Industrial Research–National Botanical
Research Institute**

CERTIFICATE

This is to certify that the review entitled "**Fiber Quality and BW Improvement**" for the degree of Master of Science in the subject Biotechnology under Department of Plant Genetics Resources and Improvement has been done by Ms. Rushita Roy at CSIR-National Botanical Research Institute, Lucknow, UP during her dissertation tenure from 9th February 2021 to 30th June 2021 under my guidance.

Date: 08.07.2021

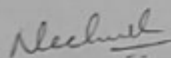

Signature of the Guide

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Lucknow-226001 (India)

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This is to certify that the work incorporated in the dissertation/ review entitled "**Fiber Quality and BW Improvement**" has been carried out by **Ms. Rushita Roy**, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth (Deemed to be University), Dhankwadi, Pune for the fulfillment of the degree of Master of Science in the subject of Biotechnology under the faculty of Science.



Dr. Neelambika Meti

Internal Guide



Dr. Shamim Shaikh

Principal

Bharati Vidyapeeth
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Pune Satara Road, Pune - 411 046.



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

**Biological advantages of consumption of omega-3 fatty acid and
food containing omega-3 fatty acid**

A DISSERTATION REPORT SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND BIOTECHNOLOGY BHARTI
VIDYAPEETH DEEMED TO BE UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF
MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

Mr. Saurabh k Metangale

UNDER THE GUIDANCE OF

Dr. MAHABALESHWAR HEGDE

(Director, Center for innovation in Nutrition Health and Disease)

**INTERACTIVE RESEARCH SCHOOL FOR HEALTH AFFAIRS
(IRSHA), PUNE**

CERTIFICATE


**This is to certify that the work incorporated in the dissertation/ review entitled
“Biological Advantages of consumption of Omega-3 fatty acids and food containing
Omega-3 fatty acids” for the degree of Master of Science in the subject Biotechnology
under the faculty of Science has been carried out by Mr. Saurabh k Metangale at
Center for innovation in Nutrition Health and Disease interactive research school for
health affairs (irsha), pune**

during the period from April 2021 to July 2021 under the guidance of **Dr Mahabaleshwar Hegde**

Date: 10/07/2021

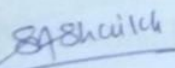
Place: Pune, Maharashtra

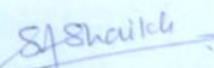
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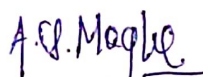

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RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

TECHNIQUES AND ASSAYS FOR THE STUDY OF ANGIOGENESIS

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND
BIOTECHNOLOGY,**

**BHARATI VIDYAPEETH DEEMED TO BE
UNIVERSITY, PUNE**

FOR AWARD OF DEGREE OF

MASTER OF SCIENCE in BIOTECHNOLOGY

SUBMITTED BY

SHARVAREE DILIP BURANGE

UNDER THE GUIDANCE OF

Dr. ALPANA MOGHE

(Department of cell and molecular Biology)

10/08/2021

CERTIFICATE

This is to certify that the work incorporated in the review entitled
“TECHNIQUES AND ASSAYS FOR THE STUDY OF ANGIOGENESIS”

for the degree

of ‘Master of Science’ in the subject of Biotechnology under the faculty of

Interdisciplinary Science has been carried out by Ms. SHARVAREE DILIP BURANGE

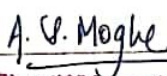
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Dr. ALPANA MOGHE (Department of Cell and Molecular Biology) Date: 10/07/2021

Place: Rajiv Gandhi Institute of IT & Biotechnology,

Katraj, Pune.


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Dr. Alpana Moghe

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DECLARATION BY THE CANDIDATE

I hereby declare that the dissertation entitled “TECHNIQUES AND ASSAYS FOR THE STUDY OF ANGIOGENESIS” submitted by me to the Bharati Vidyapeeth

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I also confirm that all the material which I have borrowed from other sources and incorporated in this dissertation is duly acknowledged. If any material is not duly acknowledged and found incorporated in this dissertation, it is entirely my responsibility. I am fully aware of the implications of any such act which might have been committed by me advertently or inadvertently.

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Date : 10/07/2021



SHARVAREE DILIP BURANGE



RAJIV GANDHI INSTITUTE OF IT AND BIOTECHNOLOGY

SCREENING FOR ANTI-ANGIOGENESIS ACTIVITY BY NATURAL PRODUCTS

A DISSERTATION SUBMITTED TO

**RAJIV GANDHI INSTITUTE OF I.T. AND
BIOTECHNOLOGY,**

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SUBMITTED BY

Surbhi Sunil Langare

UNDER THE GUIDANCE OF

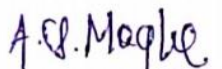
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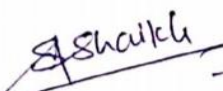
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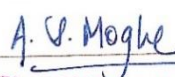



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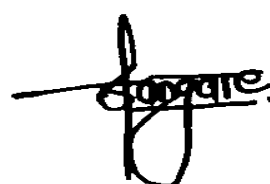
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