

**AYURVEDIC CHEWABLE CANDIES: FORMULATION,  
NUTRITIONAL PROFILING, AND FUNCTIONAL COMPARISONS**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**ALEENA PAULY**  
Reg No: CRAWMBT001

Under the guidance of  
**Dr. Dhanya Thomas T T**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA

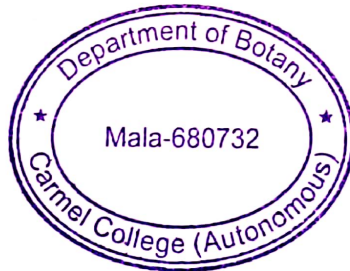


**CERTIFICATE**

This is to certify that the dissertation entitled “Ayurvedic Chewable Candies: Formulation, Nutritional Profiling, and Functional Comparisons” is a record of bonafide project work successfully completed by ALEENA PAULY with Reg No. CRAWMBT001, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Dhanya Thomas T T, Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

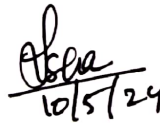
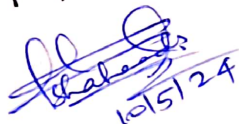
**Supervising Teacher**  
Dr. Dhanya Thomas T T

**Head of the Department**  
Dr. Bindhu K. B.



Head  
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**Examiners:**

1. Dr. Jisha Kc   
10/5/24
2. Shaladha T. M   
10/5/24

## DECLARATION

I hereby declare that the dissertation entitled “**Ayurvedic Chewable Candies: Formulation, Nutritional Profiling, and Functional Comparisons**” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Dhanya Thomas T T, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08/05/2024



Aleena Pauly

II M.Sc Botany

Carmel College (Autonomous), Mala

**LAND USE CHANGE DETECTION STUDIES IN CHERPU GRAMA PANCHAYAT,  
THRISSUR DISTRICT, KERALA**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**ALMA ROSE**

**Reg No: CRAWMBT002**

Under the guidance of  
**DR. ROBY T J**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA 2023-2024**

RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA

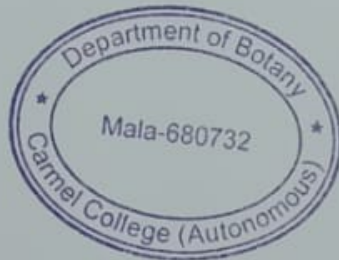


**CERTIFICATE**

This is to certify that the dissertation entitled “**Land Use Change Detection Studies in Cherpu Grama Panchayat, Thrissur District, Kerala**” is a record of bonafide project work successfully completed by **ALMA ROSE** with Reg No. **CRAWMBT002**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr.Roby T J, Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

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**Head of the Department**

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**Head**  
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**Examiners:**

1.   
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2.   
Dr. Jeetha Elizabeth Thomas

## DECLARATION

I hereby declare that the dissertation entitled "**Land Use Change Detection Studies in Cherpu Grama Panchayat, Thrissur District, Kerala**" submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Roby T J, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08-05-2024



Alma Rose

II M.Sc. Botany

Carmel College (Autonomous), Mala

**DEVELOPMENT AND EVALUATION OF IMMOBILISED MICROBIAL  
CONSORTIA FOR ENHANCED PLANT GROWTH**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**AMINA PARVEEN S**  
Reg No: CRAWMBT003

Under the guidance of  
**Dr. Sr.Kochuthressia K.P.**



**RESEARCH AND POSTGRADUATE DEPARTMENT OF BOTANY  
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THRISSUR, KERALA  
2023-2024**



RESEARCH AND POSTGRADUATE DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



**CERTIFICATE**

This is to certify that the dissertation entitled “Development and Evaluation of Immobilized Microbial Consortia for Enhanced Plant Growth” is a record of bonafide project work successfully completed by **AMINA PARVEEN S** with Reg No. **CRAWMBT003**, Research and Postgraduate Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Sr. Kochuthressia K. P, Principal of Carmel College (Autonomous), Mala, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

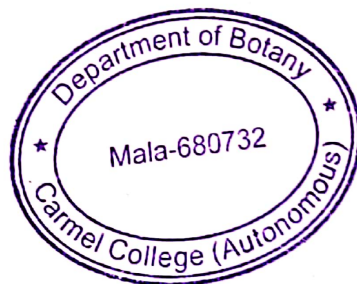
Supervising Teacher

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Head of the Department

Dr. Bindhu K. B.

Head  
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Examiners:

1. *Shahedha T.M*

*Shahedha T.M*  
10/5/24

2. *Dr. Jisha KC*

*Jisha KC*  
10/5/24





## DECLARATION

I hereby declare that the dissertation entitled “**Development and Evaluation of Immobilized Microbial Consortia for Enhanced Plant Growth**” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Sr. Kochuthressia K. P, Principal of Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08/05/2024



Amina Parveen S

2nd M.Sc Botany

Carmel College (Autonomous), Mala

**PRELIMINARY PHYTOCHEMICAL , *INVITRO* CYTOTOXICITY  
ANALYSIS AND PREPARATION OF VALUE ADDED PRODUCTS  
FROM *A.heterophyllus* Lam.**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by

**ANJANA T. S**

**Reg No: CRAWMBT004**

Under the guidance of

**Dr. Bindhu K. B**



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2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
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**CERTIFICATE**

This is to certify that the dissertation entitled “ Preliminary phytochemical , *in vitro* cytotoxicity analysis and preparation of value added products from *A.heterophyllus* Lam. ” is a record of bonafide project work successfully completed by ANJANA T. S with Reg No. CRAWMBT004, Research and Postgraduate Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Bindhu K. B, Associate Professor and Head, Research and Postgraduate Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

  
Supervising Teacher

Dr. Bindhu K. B

**Dr. BINDHU K.B.**

**Associate Professor & Research Guide  
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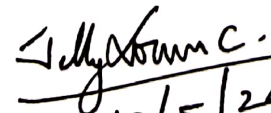
  
Head of the Department

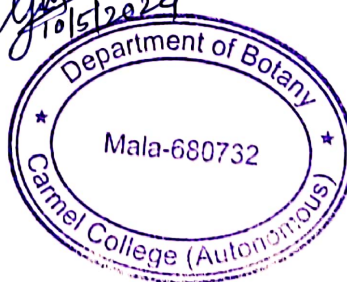
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**Head**  
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**Examiners:**

1. Dr. Geetha Elizabeth Thomas  10/5/2024

2.  10/5/24



## DECLARATION

I hereby declare that the dissertation entitled “ **Preliminary phytochemical , *invitro* cytotoxicity analysis and preparation of value added products from *A.heterophyllus* Lam. ” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Bindhu K.B., Associate Professor and Head, Research and Postgraduate Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.**

Place: Mala

Date: 8 | 5 | 2024



Anjana T. S

II M.Sc Botany

Carmel College (Autonomous), Mala

**DEVELOPMENT AND NUTRACEUTICAL CHARACTERIZATION OF  
*Moringa oleifera* Lam. - INFUSED PANEER**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfillment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by

**ANJANA U J**

**Reg No: CRAWMBT005**

Under the guidance of

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**RESEARCH AND PG DEPARTMENT OF BOTANY  
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THRISSUR, KERALA  
2023-2024**

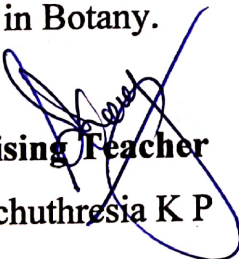



RESEARCH AND PG DEPARTMENT OF BOTANY  
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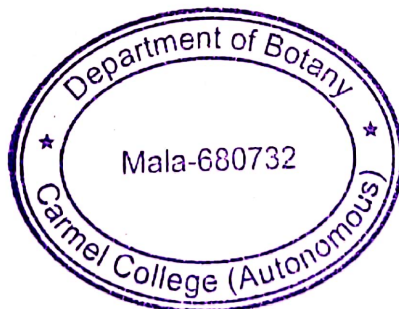


**CERTIFICATE**

This is to certify that the dissertation entitled "**Development and Nutraceutical Characterization of *Moringa oleifera* Lam.- Infused Paneer**" is a record of bonafide project work successfully completed by **ANJANA U J** with Reg No. **CRAWMBT005**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of **Dr. Kochuthresia K P**, Assistant Professor in Research and PG Department of Botany, for the partial fulfillment of requirement for the Degree of Master of Science in Botany.

  
**Supervising Teacher**  
Dr. Kochuthresia K P

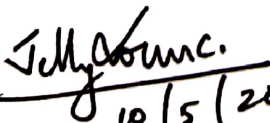
  
**Head of the Department**  
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**Examiners:**

1.   
Dr. Geetha Elizabeth Thomas 10/5/2024

2.   
Jolly 10/5/2024

## DECLARATION

I hereby declare that the dissertation entitled "**Development and Nutraceutical Characterization of *Moringa oleifera* Lam.-Infused Paneer**" submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Kochuthresia K P, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08-05-2024



Anjana U J

II M.Sc Botany

Carmel College (Autonomous), Mala



**PREPARATION OF ECO FRIENDLY CHOLESTEROL- LESS COOKIES  
USING JACKFRUIT SEED AND ANALYSIS OF ITS NUTRITIONAL  
PARAMETERS.**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by

**APARNA.N**

**Reg No: CRAWMBT006**

Under the guidance of

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**RESEARCH AND PG DEPARTMENT OF BOTANY**

**CARMEL COLLEGE (AUTONOMOUS), MALA**

**THRISSUR, KERALA**

**2023-2024**





RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



CERTIFICATE

This is to certify that the dissertation entitled "Preparation of eco-friendly cholesterol-less cookies using jackfruit seed and analysis of its nutritional parameters" is a record of bonafide project work successfully completed by APARNA.N with Reg No. CRAWMBT006, Research and Postgraduate Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor in Research and Postgraduate Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

Supervising Teacher

Dr. Sinjumol Thomas

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5/5/2024

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Assistant Professor & Research Guide  
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Head of the Department

Dr. Bindhu K. B.

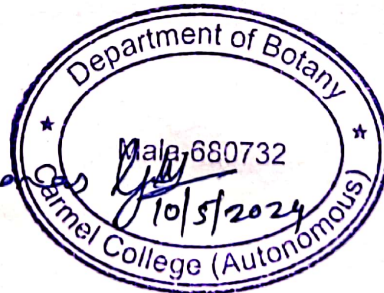
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Head  
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Carmel College (Autonomous)  
Mala-680732

Examiners:

1. Dr. Jyestha Elizabeth Thomas

2. *[Handwritten Signature]*  
10/5/24



## DECLARATION

I hereby declare that the dissertation entitled “**Preparation of eco-friendly cholesterol-less Cookies using jackfruit seed and analysis of its nutritional parameters**” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08-05-2024



Aparna.N

2nd M.Sc Botany

Carmel College (Autonomous), Mala



**SUSTAINABLE UTILISATION OF MUSA PARADISIACA L. (AAB)  
BANANA PEEL : EXPLORING PHYTOCHEMISTRY AND  
NUTRIENT ANALYSIS FOR RESOURCEFUL APPLICATIONS**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**ARYA GOPI**  
Reg No: CRAWMBT007

Under the guidance of  
**DR. SINJUMOL THOMAS**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



**CERTIFICATE**

This is to certify that the dissertation entitled “Sustainable utilisation of *Musa paradisiaca* L. (AAB) Banana peel: Exploring Phytochemistry and Nutrient Analysis for Resourceful Applications” is a record of bonafide project work successfully completed by **ARYA GOPI** with Reg No. **CRAWMBT007**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

Supervising Teacher

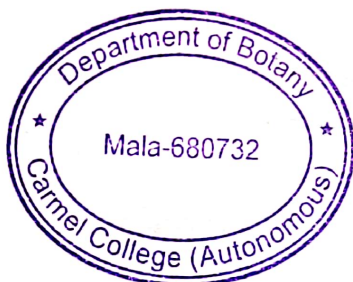
Dr. Sinjumol Thomas

**DR. SINJUMOL THOMAS**  
Assistant Professor & Research Guide  
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Thrissur - 680732, India

Head of the Department

Dr. Bindhu K. B.

Head  
Department of Botany  
Carmel College (Autonomous)  
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Examiners:

1. Dr. Julia KC

2. Shaheedha T.M

## DECLARATION

I hereby declare that the dissertation entitled “Sustainable utilisation of *Musa paradisiaca* L. (AAB) Banana peel: Exploring Phytochemistry and Nutrient Analysis for Resourceful Applications” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08/05/2024



Arya Gopi

2<sup>nd</sup> M.Sc. Botany

Carmel College (Autonomous), Mala



# **LAND USE CHANGE DETECTION STUDIES IN THRIKKUR GRAMA PANCHAYATH, THRISSUR DISTRICT, KERALA**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**GREESHMA K S**  
Reg No: CRAWMBT008

Under the guidance of  
**Dr. Roby T J**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**

RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



**CERTIFICATE**

This is to certify that the dissertation entitled “ Land use change detection studies in Thrikkur Grama Panchayath, Thrissur district, Kerala” is a record of bonafide project work successfully completed by **GREESHMA K S** with Reg No. **CRAWMBT008**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Roby T J , Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

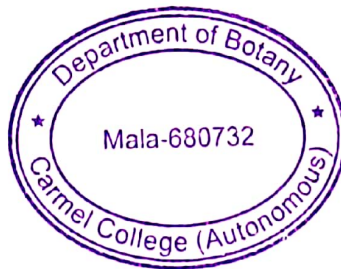
**Supervising Teacher**

Dr. Roby T J

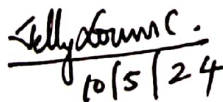
**Head of the Department**

Dr. Bindhu K. B.

Head  
Department of Botany  
Carmel College (Autonomous)  
Mala-680732



**Examiners:**

1.   
10/5/24

2. Dr.  Greeshma Elizabeth Thomas  
10/5/24

## DECLARATION

I hereby declare that the dissertation entitled “ Land use change detection studies in Thrikkur Grama Panchayath. Thrissur district, Kerala” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Roby T J, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08 - 05 - 2024



Greeshma k s

2nd M.Sc Botany

Carmel College (Autonomous), Mala





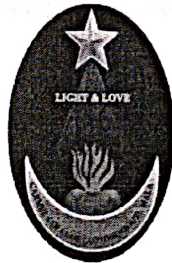
**PREPARATION OF ENHANCED-VALUE PRODUCTS FROM MALT  
HORDEUM VULGARE L. (BARLEY) AND ASSESSMENT ON IT'S  
ANTIBACTERIAL PROPERTIES AND SCREENING OF PHYTOCHEMICALS**

This dissertation is Submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**JAYALAKSHMI GOKULDAS**  
Reg No: CRAWMBT009

Under the guidance of  
**Dr. Sinjumol Thomas**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



CERTIFICATE

This is to certify that the dissertation entitled “Preparation of Enhanced-Value Products from Malt *Hordeum vulgare* L. (Barley) and Assessment on Its Antibacterial Properties and Screening of Phytochemicals” is a record of bonafide project work successfully completed by JAYALAKSHMI GOKULDAS with Reg No. CRAWMBT009 Research and Pg Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor in Research and Pg department of Botany, for the Partial fulfilment of requirement for the Degree of Master of science in botany.

Supervising Teacher

Dr. Sinjumol Thomas

DR.SINJUMOL THOMAS  
Assistant Professor & Research Guide  
Department of Botany  
Carmel College Mala  
Thrissur - 680732, India

Head of the department

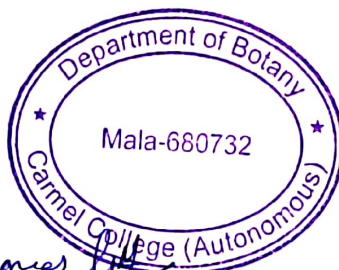
Dr. Bindhu K.B.

Head  
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Examiners:

1. Selly Thomas  
10/5/24

2. Dr. Geetha Shizabath Thomas  
10/5/2024

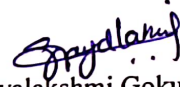


## DECLARATION

I hereby declare that the dissertation entitled “**Preparation of Enhanced-Value Products from Malt *Hordeum vulgare* L. (Barley) and Assessment on Its Antibacterial Properties and Screening of Phytochemicals**” submitted to University of Calicut for the award of the degree of Master of science in botany is a work of original and independent Research done by myself under the supervision and guidance of Dr. Sinjumol Thomas, Assistant Professor, Research and Pg department of Botany Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship, or other similar titles to any candidate from any university or institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 06-05-2024



Jayalakshmi Gokuldas

II M.Sc. Botany

Carmel College (Autonomous), Mala



**DEVELOPMENT AND NUTRITIONAL EVALUATION OF  
BEETROOT-CARROT-SOYA WHOLE WHEAT COOKIES**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**JESLINE MARIYA M S**  
Reg No: **CRAWMBT010**

Under the guidance of  
**Dr. Dhanya Thomas T T**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



**CERTIFICATE**

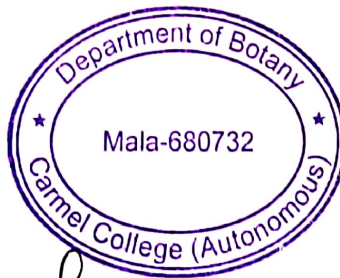
This is to certify that the dissertation entitled "Development and Nutritional evaluation of Beetroot-carrot-soya whole wheat cookies" is a record of bonafide project work successfully completed by JESLINE MARIYA M S with Reg No. CRAWMBT010, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Dhanya Thomas T T, Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

**Supervising Teacher**

Dr. Dhanya Thomas T T

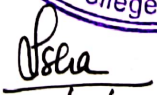
**Head of the Department**


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**Examiners:**

1. Dr. Jigla KC   
10/5/24

2. Shaheedha J.M   
10/5/24

## DECLARATION

I hereby declare that the dissertation entitled "development and nutritional evaluation of beetroot-carrot-soya whole wheat cookies" submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Dhanya Thomas T T, Assistant Professor, Research and PG Department of Botany, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08/5/2024



Jesline Mariya M S

II M.Sc Botany

Carmel College (Autonomous), Mala



**PRELIMINARY PHYTOCHEMICAL PROFILING, ANTIBACTERIAL POTENCY  
AND IN VITRO CYTOTOXIC EVALUATION OF AMPELOCISSUS LATIFOLIA  
PLANCH. STEM, LEAF EXTRACT**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by

**LINISHYA FRANCIS**

**Reg No: CRAWMBT011**

Under the guidance of

**Dr. Bindhu K.B.**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2023-2024**



RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA



CERTIFICATE

This is to certify that the dissertation entitled “Preliminary Phytochemical Profiling, Antibacterial Potency and *In vitro* Cytotoxic Evaluation of *Ampelocissus latifolia* Planch. Stem, Leaf Extract” is a record of bonafide project work successfully completed by **LINISHYA FRANCIS** with Reg No. **CRAWMBT011**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Bindhu K.B., Head & Associate Professor, Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

Supervising Teacher

Dr. Bindhu K.B.

**Dr. BINDHU K.B.**  
Associate Professor & Research Guide  
PG & Research Department of Botany  
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Head of the Department

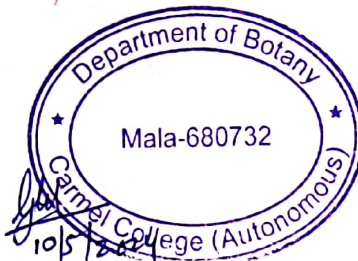
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Examiners:

1. Jelly Ann C.  
10/5/24

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10/5/24





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Place: Mala

Date: 8-5-24



Linishya Francis  
2nd M.Sc Botany  
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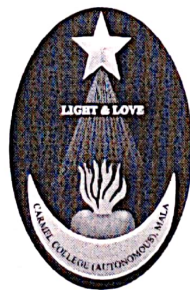
**DEVELOPMENT AND CHARACTERIZATION OF CAFFEINE-FREE  
ALTERNATIVE COFFEE FROM CHICKPEAS (CICER ARIETINUM L.)**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**MEGHA MUKUNDAN**  
Reg No: **CRAWMBT012**

Under the guidance of  
**Dr. Sr. Kochuthressia K.P.**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
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THRISSUR, KERALA  
2023-2024**



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CARMEL COLLEGE (AUTONOMOUS), MALA

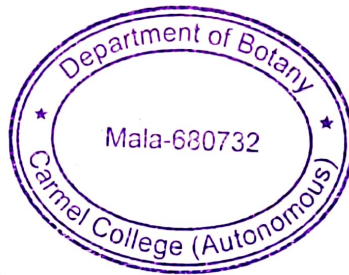


CERTIFICATE

This is to certify that the dissertation entitled “**Development and Characterization of Caffeine-free Alternative Coffee from Chickpeas (*Cicer arietinum* L.)**” is a record of bonafide project work successfully completed by **MEGHA MUKUNDAN** with Reg No. **CRAWMBT012**, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of **Dr. Sr. Kochuthressia K.P**, Principal, Carmel College (Autonomous), Mala, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.



Supervising Teacher  
Dr. Sr. Kochuthressia K.P.

Head of the Department  
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Examiners:

1. Dr. Susma KC   
10/5/24
2. Shaheedha T.M   
10/5/24

## DECLARATION

I hereby declare that the dissertation entitled “**Development and Characterization of Caffeine-free Alternative Coffee from Chickpeas (*Cicer arietinum* L.)**” submitted to the University of Calicut for the award of the Degree of Master of Science in Botany is a work of original and independent research done by myself under the supervision and guidance of Dr. Sr. Kochuthressia K.P, Principal, Carmel College (Autonomous), Mala and any part of this dissertation has not been submitted previously for the award of a degree, diploma, association, fellowship or other similar titles to any candidate from any University or Institution. All the sources of help received during the work have been acknowledged here.

Place: Mala

Date: 08-05-2024



Megha Mukundan

II MSc Botany

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**PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF  
FORMULATED CORN SILK – LEMON PEEL INFUSION**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**SNEHA E. S.**  
Register No: **CRAWMBT013**

Under the guidance of  
**Dr. GEO JOSEPH**



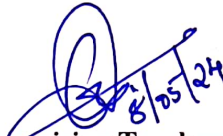
**RESEARCH AND PG DEPARTMENT OF BOTANY  
CARMEL COLLEGE (AUTONOMOUS), MALA  
THRISSUR, KERALA  
2022-2024**

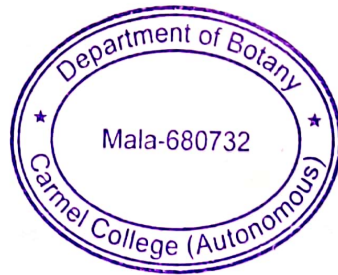
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CERTIFICATE

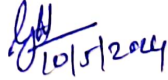
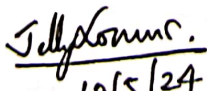
This is to certify that the dissertation entitled "PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF FORMULATED CORN SILK – LEMON PEEL INFUSION" is a record of bonafide project work successfully completed by SNEHA E. S. with Register No. CRAWMBT013, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Geo Joseph, Assistant Professor in Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

  
Supervising Teacher  
Dr. Geo Joseph



  
Head of the Department  
Dr. Bindhu K. B.  
Head  
Department of Botany  
Carmel College (Autonomous)  
Mala-680732

Examiners:

1. Dr. Greethe Elizabeth Thomas  10/5/2024
2.  10/5/24

## DECLARATION

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Place: Mala, Thrissur

Date: 08/05/2024

  
Sneha E. S.

2<sup>nd</sup> M.Sc. Botany

Carmel College (Autonomous), Mala

**EXPLORING SEAWEED FOR FUTURE : ALTERNATIVE STAINING  
TECHNIQUES USING NATURAL DYE EXTRACTED FROM CHAETOMORPHA  
ANTENNINA FOR DIAGNOSING PLANT TISSUES**

This dissertation is submitted to the  
**UNIVERSITY OF CALICUT**

In partial fulfilment for the award of the degree of  
**MASTER OF SCIENCE IN BOTANY**

Submitted by  
**SREESHMA RAMESH**  
Reg No: CRAWMBT014

Under the guidance of  
**Dr. Bindhu K. B.**



**RESEARCH AND PG DEPARTMENT OF BOTANY  
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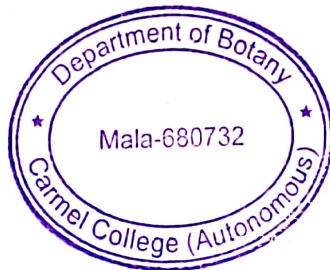
**CERTIFICATE**

This is to certify that the dissertation entitled “Exploring Seaweed for Future : Alternative Staining Techniques Using Natural Dye Extracted from *Chaetomorpha antennina* for Diagnosing Plant tissues” is a record of bonafide project work successfully completed by SREESHMA RAMESH with Reg No. CRAWMBT014, Research and PG Department of Botany, Carmel College (Autonomous), Mala under the supervision and guidance of Dr. Bindhu K. B., Head of the Research and PG Department of Botany, for the partial fulfilment of requirement for the Degree of Master of Science in Botany.

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1. Shahedha T.M. 10/5/24

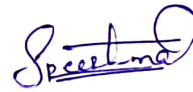
2. Dr. Sreha KC 10/5/24

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Place: Mala

Date: 08-05-2024



Sreeshma Ramesh  
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