

**PHYTOCHEMICAL AND PHARMACOGNOSTIC ANALYSIS OF  
*INDIGOFERA LONGIRACEMOSA* BOIV. EX BAILL. WITH  
REFERENCE TO DRYING METHODS**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut & Nationally

re-accredited by NAAC A<sup>++</sup> & SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by,

**AGNUS ROSE**

(Reg no: CCAWMBT001)

Under the guidance of,

**DR. SHEELA KARALAM B**

Chief Scientist-Head Technical Services

Vaidyaratnam Ayurveda Research Institute

Thaikattussery

Under the co-guidance of,

**MRS. SABEENA A.M**

Assistant Professor, Department of Botany

Christ College (Autonomous),

Irinjalakuda



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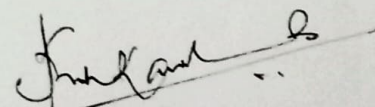
**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**

**CERTIFICATE**

This is to certify that **Ms. AGNUS ROSE** has carried out her dissertation project entitled **"PHYTOCHEMICAL AND PHARMACOGNOSTIC ANALYSIS OF INDIGOFERA LONGIRACEMOSA WITH REFERENCE TO DRYING METHODS"** as part of her M.Sc. Botany course from January to March 2024 at Vaidyaratnam Ayurveda Research Institute, Thaikkattussery, under my supervision and guidance. She has completed her work satisfactorily.

Thaikkattussery  
Date: **17.2024**

  
**Dr. Sheela Karalam.B**

**Chief Scientist - Head Technical Services**







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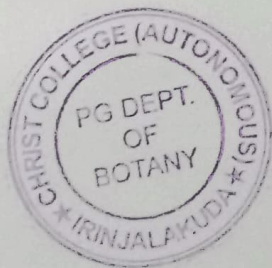
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Date: 8-7-24



Prof. E.J. Vincent

Co Ordinator

P.G. Department of Botany

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Signature of Examiners:

1. 8/7/2024

2. 8/7/2024



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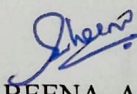
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Date: 8/7/2024

  
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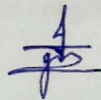


## DECLARATION

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Irinjalakuda

Date: 8/7/2024



**AGNUS ROSE**

**“PHYSICOCHEMICAL, PHYTOCHEMICAL AND  
ANTIMICROBIAL ANALYSIS OF LEAF AND STEM OF  
*Ichnocarpus frutescens* (L.).”**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to University of Calicut and Nationally re-accredited by NACC A<sup>++</sup> &  
SAAC A<sup>+</sup>)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**ANEENA MANUEL**

**Reg no: CCAWMBT002**



Under the guidance of,

**Mr. BIJESHMON P. P.**

Manager Quality Control Sitaram Ayurveda (P) Limited ,

Nedupuzha

&

Under the co- guidance of

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**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**



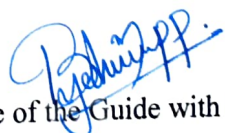
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## CERTIFICATE

This is to certify the Dissertation entitled “**PHYSICOCHEMICAL, PHYTOCHEMICAL AND ANTIMICROBIAL ANALYSIS OF LEAF AND STEM OF *ICHNOCARPUS FRUTESCENS* (L.)**” submitted to the University of Calicut, in the partial fulfilment of the requirements for the award of the degree of **Master of Science in Botany** is a record of the original research work done by **Ms. ANEENA MANUEL (Reg. No.: CCAWMBT002)** at Quality Control Laboratory (AYUSH Lic. No:01/48/2021), **Sitaram Ayurveda (P) Ltd., Nedupuzha, Thrissur, Kerala**, approved by the Ministry of AYUSH, Govt. of India, from 15<sup>th</sup> January, 2024 to 16<sup>th</sup> February, 2024 under my supervision and guidance and the dissertation has not formed the basis for the award of any Degree/Diploma/Associateship/Fellowship or other similar title to any candidate in any university.

Place: Nedupuzha

Date : 29/06/2024

  
Signature of the Guide with Seal**BIJESHMON PP**  
Manager - Quality Control  
(Ayush Lic. No: 01/48/2021)  
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(Affiliated to University of Calicut and Nationally re-accredited by NACC A<sup>++</sup> & SAAC A<sup>+</sup>)

### CERTIFICATE

This is to certify that the dissertation entitled "**PHYSICOCHEMICAL, PHYTOCHEMICAL AND ANTIMICROBIAL ANALYSIS OF LEAF AND STEM OF *Ichnocarpus frutescens* (L.)**" Submitted by **ANEENA MANUEL** Reg.No. **CCAWMBT002** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by her under the supervision and guidance of **Mr. Bijeshmon P. P.**, Manager Quality Control Sitaram Ayurveda (P) Limited, Nedupuzha and co-guidance of **Ms. Sreelakshmi V. V.**, Assistant Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. It is also certifying that no part of the present project work has formed the basis for the award of any other degree or diploma previously.

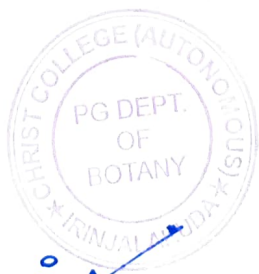
**Irinjalakuda**

**Date:** 08-07-26

**Signature of Examiners:**

1.

2.



**Prof. E.J. Vincent**

**Co Ordinator of E.J. VINCENT**

**P.G. Department of Botany**

**Co-ordinator of Botany**  
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Irinjalakuda

Date: 08-07-24

  
Sreelakshmi V. V.

Supervising teacher

P.G. Department of Botany

Christ College(Autonomous)

Irinjalakuda



## **DECLARATION**

I hereby declare that the dissertation work entitled "**PHYSICOCHEMICAL, PHYTOCHEMICAL AND ANTIMICROBIAL ANALYSIS OF LEAF AND STEM OF *Ichnocarpus frutescens* (L.)**." Submitted by **ANEENA MANUEL** Reg.No. **CCAWMBT002** IV<sup>th</sup> semester M.Sc. Botany in partial fulfillment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by me under the supervision and guidance of **Mr. Bijeshmon P. P.**, Manager Quality Control Sitaram Ayurveda (P) Limited, Nedupuzha and co-guidance of **Ms. Sreelakshmi V. V.**, Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda. I further declare that the dissertation has not previously formed on the basis for the award of any Degree/Diploma/Fellowship/Associateship or any other similar title of recognition of any University or Institution.

Irinjalakuda

Date: 8/07/24

**ANEENA MANUEL**



**“COMPARATIVE PHYTOCHEMICAL,  
PHARMACOGNOSTICAL STUDY ON VARIOUS SPECIES OF  
IXORA IN THE SPECIAL REFERENCE TO INDUSTRIAL  
SUBSTITUTION PRACTICES”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC A<sup>++</sup> and  
SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**ANGEL THOMAS**

**Reg no: CCAWMBT003**



Under the guidance of,

**Dr. SHEELA KARALAM. B**

Chief Scientist - Head Technical Services  
Vaidyaratnam Ayurveda Research Institute  
Thaikkattussery  
&

Under the co-guidance of

**Ms. SREELAKSHMI V.V.**

Assistant Professor  
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**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**

**CERTIFICATE**

This is to certify that **Ms. ANGEL THOMAS** has carried out her dissertation project entitled "**COMPARATIVE PHYTOCHEMICAL, PHARMACOGNOSTICAL STUDY ON VARIOUS SPECIES OF IXORA IN THE SPECIAL REFERENCE TO INDUSTRIAL SUBSTITUTION PRACTICES**" as part of her M.Sc. Botany course from January to March 2024 at Vaidyaratnam Ayurveda Research Institute, Thaikkattussery, under my supervision and guidance. She has completed her work satisfactorily.

Thaikkattussery  
Date: 1.7.2024

  
**Dr. Sheela Karalam.B**

**Chief Scientist / Head Technical Services**







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### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> and  
SAAC A<sup>+</sup> grade)

### CERTIFICATE

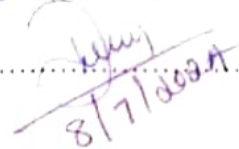
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Irinjalakuda

Date: 08-07-24

Signature of Examiners:

1.  8/7/2024

2.  8/7/2024



  
Prof. E.J. Vincent

Co Ordinator

Prof. E.J. VINCENT  
P.G. Department of Botany  
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Christ College (Autonomous), Irinjalakuda



## DECLARATION

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**ANGEL THOMAS**

Irinjalakuda

Date: 08-07-2024





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Irinjalakuda

Date: 06-07-24

**SREELAKSHMI V.V.**

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda

**“COMPARATIVE PHARMACOGNOSTIC, PHYTOCHEMICAL  
STUDY ON PLANT PARTS OF *Boerhaavia diffusa* Linn. TO  
VALIDATE AN AYURVEDIC PHARMACEUTICAL  
PROCEDURE”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC A<sup>++</sup> and  
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In partial fulfillment of the requirement for the award of the degree of

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**ATHEENA B S**

**Reg no: CCAWMBT004**



Under the guidance of,

**Dr. SHEELA KARALAM. B**

Chief Scientist - Head Technical Services  
Vaidyaratnam Ayurveda Research Institute  
Thaikkattussery  
&

Under the co-guidance of

**Ms. SWEETY M.S.**

Assistant Professor  
P.G. Department of Botany  
Christ College (Autonomous), Irinjalakuda

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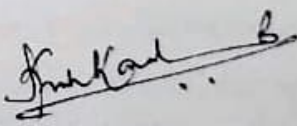
**JUNE 2024**



**CERTIFICATE**

This is to certify that Ms. ATHEENA B S has carried out her dissertation project entitled "COMPARATIVE PHARMACOGNOSTIC, PHYTOCHEMICAL STUDY ON PLANT PARTS OF BOERHAAVIA DIFFUSA L. TO VALIDATE AN AYURVEDIC PHARMACEUTICAL PROCEDURE" as part of her M.Sc. Botany course from January to March 2024 at Vaidyaratnam Ayurveda Research Institute, Thaikkattussery, under my supervision and guidance. She has completed her work satisfactorily.

Thaikkattussery  
Date: 1. 7. 2024

  
Dr. Sheela Karalam.B

Chief Scientist - Head Technical Services





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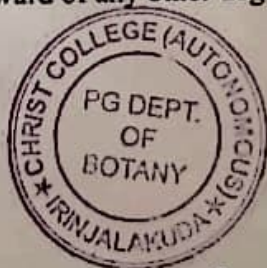
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Irinjalakuda

Date: 08-07-24

Signature of Examiners:

1. *Whiffen Joe* *8/7/24*
2. *Shy* *8/7/24*



*8/7/24*  
Prof. E. J. Vincent

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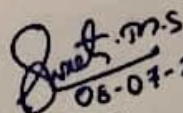
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Irinjalakuda

Date: 08-07-2024

  
08-07-2024

SWEETY M. S.

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

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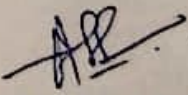


## DECLARATION

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Irinjalakuda

Date: 08-07-2024

  
**ATHEENA B S**



**ALLELOPATHIC ACTIVITY OF *Tithonia diversifolia* (Hemsley)  
A. Gray ON SEED GERMINATION AND SEEDLING GROWTH  
OF *Vigna unguiculata* (L.) WALP.**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**  
(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> grade and SAAC  
accredited with A<sup>+</sup>)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**HRIDHYA KRISHNAN**

**Reg no: CCAWMBT005**



Under the guidance of,

**SABEENA A.M**

Assistant Professor

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**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**





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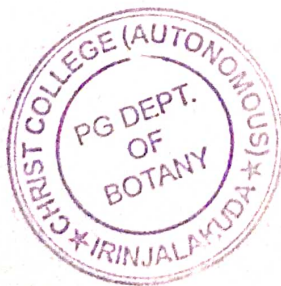
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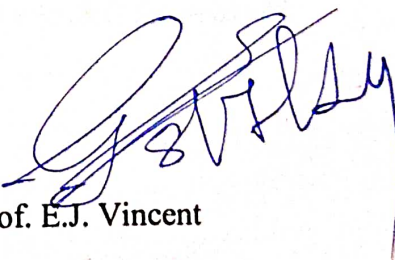
## CERTIFICATE

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Irinjalakuda

8-7-24

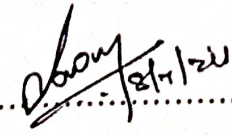
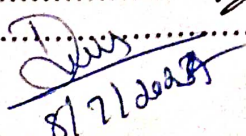


  
Prof. E.J. Vincent

Co Ordinator **Prof. E.J. VINCENT**  
Co-ordinator  
P.G. Department of Botany  
Christ College (Autonomous), Irinjalakuda

Date:

Signature of Examiners:

1.  8/7/24
2.  8/7/24



## DEPARTMENT OF BOTANY

### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> grade  
and SAAC accredited with A<sup>+</sup>)

## CERTIFICATE

This is to certify that the dissertation entitled "**Allelopathic activity of *Tithonia diversifolia* (Hemsley) A. Gray on seed germination and seedling growth of *Vigna unguiculata* (L.) Walp.**" Submitted by Miss **HRIDHYA KRISHNAN** Reg. No. **CCAWMBT005** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by her under my supervision and guidance, Department of Botany, Christ College (Autonomous) Irinjalakuda.

Irinjalakuda

Date: 08-07-24

SABEENA. A.M

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda





## DECLARATION

I hereby declare that the dissertation work entitled "**Allelopathic activity of *Tithonia diversifolia* (Hemsley) A. Gray on seed germination and seedling growth of *Vigna unguiculata* (L.) Walp.**" Submitted by Miss **HRIDHYA KRISHNAN** Reg.No. **CCAWMBT005 IV<sup>th</sup>** semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by her under the supervision and guidance of Sabeena. A.M. Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda

Irinjalakuda

Date: 08-07-24

**HRIDHYA KRISHNAN**



**“Green Synthesis of Zinc Oxide Nanoparticles via  
*Orthosiphon thymiflorus* (Roth) Sleesen Leaf Extract:  
Characterization, Antibacterial Activity Evaluation of  
PVF/Zinc Oxide Nanocomposites”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC A<sup>++</sup> and  
SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**JOSNI C J**

**Reg no: CCAWMBT006**



Under the guidance of,

**Dr. P. SUNOJ KUMAR**

Professor

Department of Botany

University of Calicut

&

Under the co-guidance of

**Mrs. SWEETY M. S.**

Assistant Professor

P.G. Department of Botany

Christ College (Autonomous), Irinjalakuda.

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**





**UNIVERSITY OF CALICUT**  
**DEPARTMENT OF BOTANY**

Calicut University P.O 673 635, Kerala, India

**Dr. SUNOJKUMAR P.**

**Professor**

Angiosperm Taxonomy and Floristics Division

Principal Investigator, DST & DBT Projects

Purayathkandi (H)

Elathur P.O

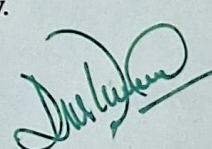
Calicut 673 303

Kerala, India

**CERTIFICATE**

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Calicut University

  
**Dr. Sunojkumar P.**

Date: 14-06-2024

14-06-2024

14-06-2024





## DEPARTMENT OF BOTANY

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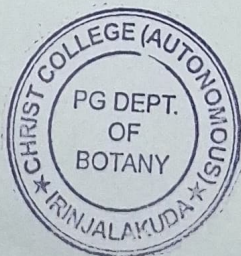
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Irinjalakuda

Date: 8-7-24

Signature of Examiners:



Prof. E.J. Vincent

Co Ordinator E.J. VINCENT

Co-ordinator

P.G. Department of Botany  
Christ College (Autonomous), Irinjalakuda

1.

2.





## DEPARTMENT OF BOTANY

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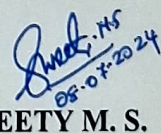
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Irinjalakuda

Date: 08-07-2024

  
SWEETY M. S.

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda





## DECLARATION

I hereby declare that the dissertation work entitled “**Green Synthesis of Zinc Oxide Nanoparticles via *Orthosiphon thymiflorus* (Roth) Sleesen Leaf Extract: Characterization, Antibacterial Activity Evaluation of PVF/Zinc Oxide Nanocomposites**” submitted to Christ College (Autonomous), Irinjalakuda in partial fulfillment for the award of the degree **Master of Science in Botany**, is a bonafide record of the research work carried out by me under the supervision and guidance of **Dr. P. Sunoj Kumar**, Professor, Department of Botany, University of Calicut and co-guidance of **Mrs. Sweety M. S**, Assistant Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. I further declare that the dissertation has not previously formed on the basis for the award of any Degree/Diploma/Fellowship/Associateship or any other similar title of recognition of any University or Institution.

Irinjalakuda

Date: 08-07-2024

  
JOSNI C J



# **PHYTOCHEMICAL AND PHARMACOGNOSTIC STUDY ON BAUHINIA SPECIES AND MARKET SAMPLES**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut & NAAC accredited with A<sup>++</sup> and SAAC A<sup>+</sup> grade)

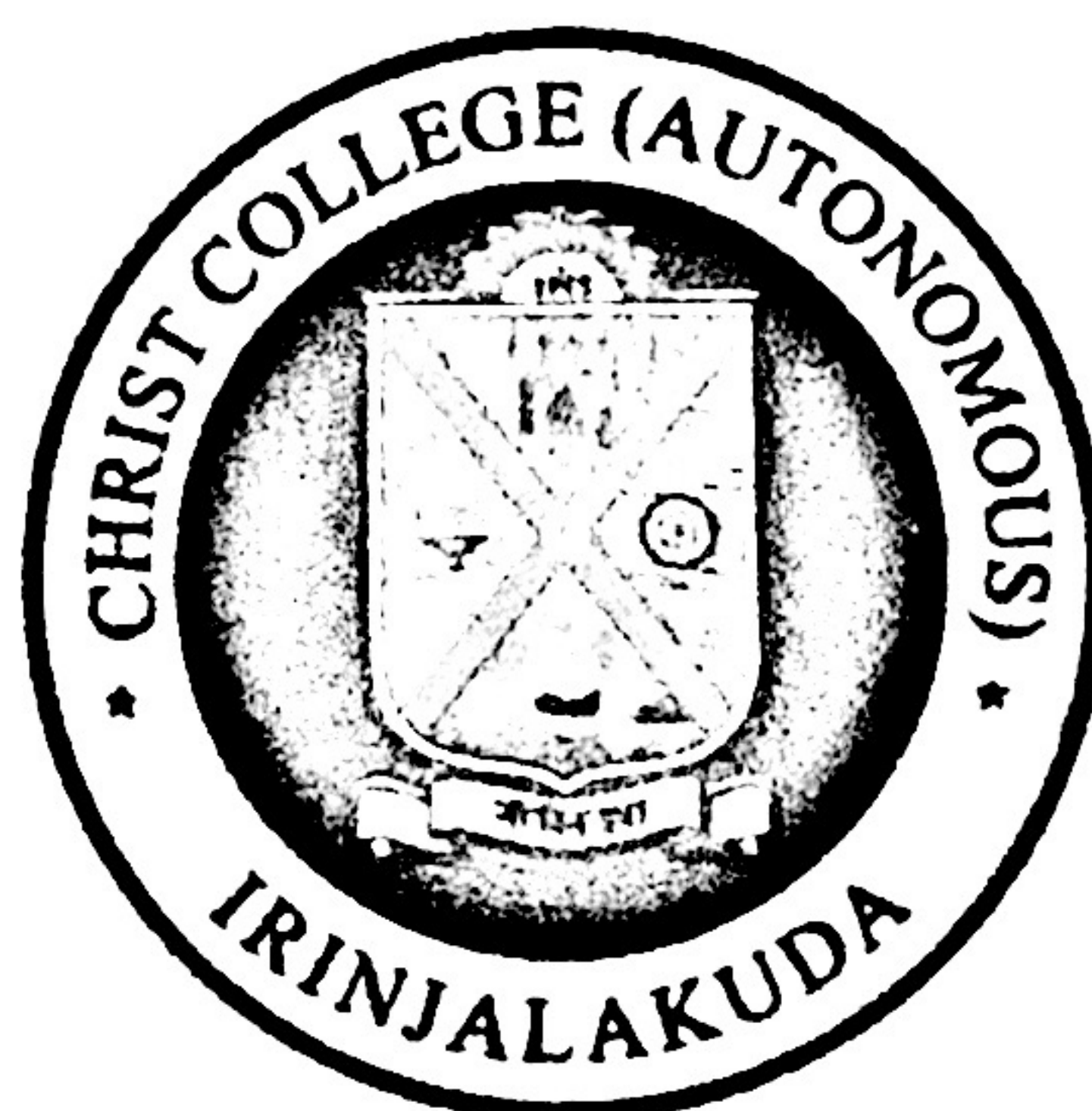
In partial fulfillment of the requirement for the award of the degree of

**MASTER OF SCIENCE IN BOTANY**

Submitted by,

**LEEN BABU**

**Reg no: CCAWMBT007**



Under the guidance of,

**Dr. SHEELA KARALAM. B**

Chief Scientist-Head Technical Services

Vaidyaratnam Oushadhasala Pvt.Ltd.,

Thaikkattussery

&

Under the co-guidance of

**Ms. SWEETY M. S.,**

Assistant professor, Department of Botany

Christ College (Autonomous), Irinjalakuda

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**

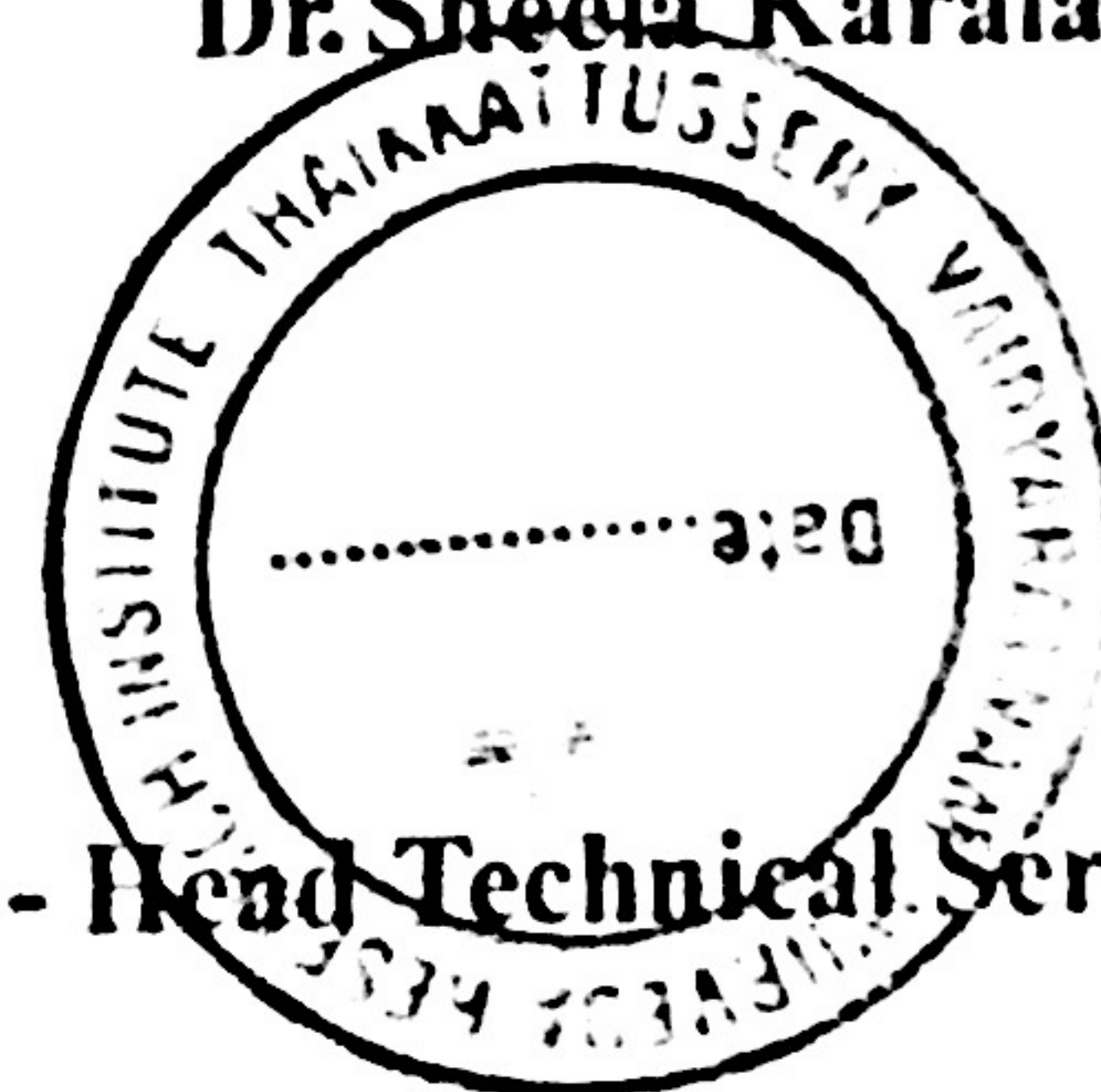


**CERTIFICATE**

This is to certify that Ms. LEEN BABU has carried out her dissertation project entitled “PHYTOCHEMICAL AND PHARMACOGNOSTIC STUDY ON BAUHINIA SPECIES AND MARKET SAMPLES” as part of her M.Sc. Botany course from January to March 2024 at Vaidyaratnam Ayurveda Research Institute, Thaikkattussery, under my supervision and guidance. She has completed her work satisfactorily.

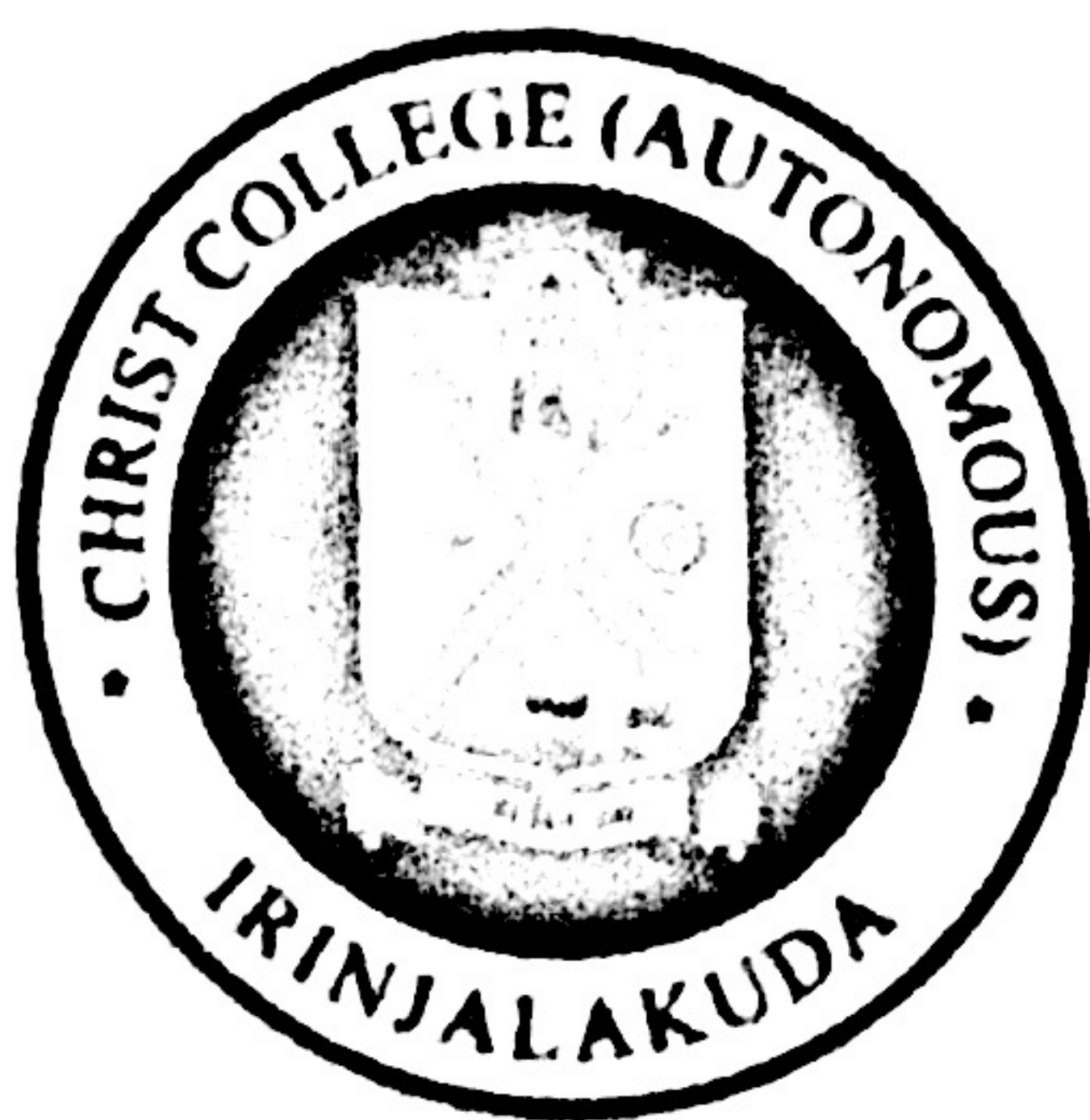
Thaikkattussery  
Date: 1.7.2024

  
Dr. Sheela Karalam.B



Chief Scientist - Head Technical Services





**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

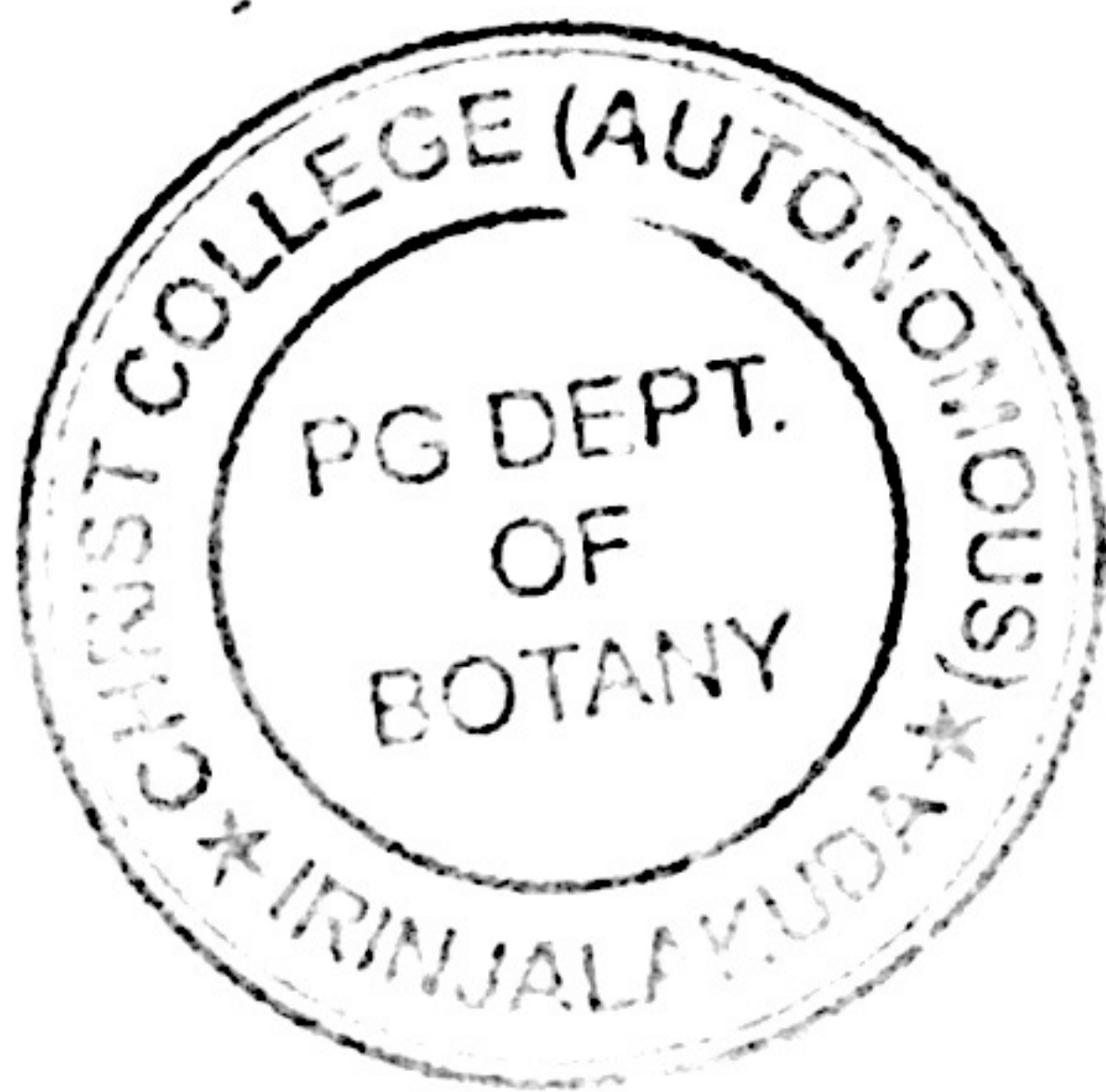
(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> and SAAC A<sup>+</sup> grade)

**CERTIFICATE**

This is to certify that the dissertation entitled **“PHYTOCHEMICAL AND PHARMACOGNOSTIC STUDY ON BAUHINIA SPECIES AND MARKET SAMPLES”** Submitted by Miss **LEEN BABU** Reg.No. **CCAWMBT007** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bona-fide record of the research work carried out by her under the supervision and guidance of **Dr. Sheela Karalam. B**, Chief Scientist-Head Technical Services, Vaidyaratnam Oushadhasala Pvt. Ltd., and under the co-guidance of **Ms. Sweety M. S.**, Assistant professor, Department of Botany, Christ College (Autonomous) Irinjalakuda

Irinjalakuda

Date: 08 - 07 - 2024



Prof. E.J. Vincent

Co-ordinator

Co Ordinator P.G. Dept. of Botany  
Christ College (Autonomous), Irinjalakuda

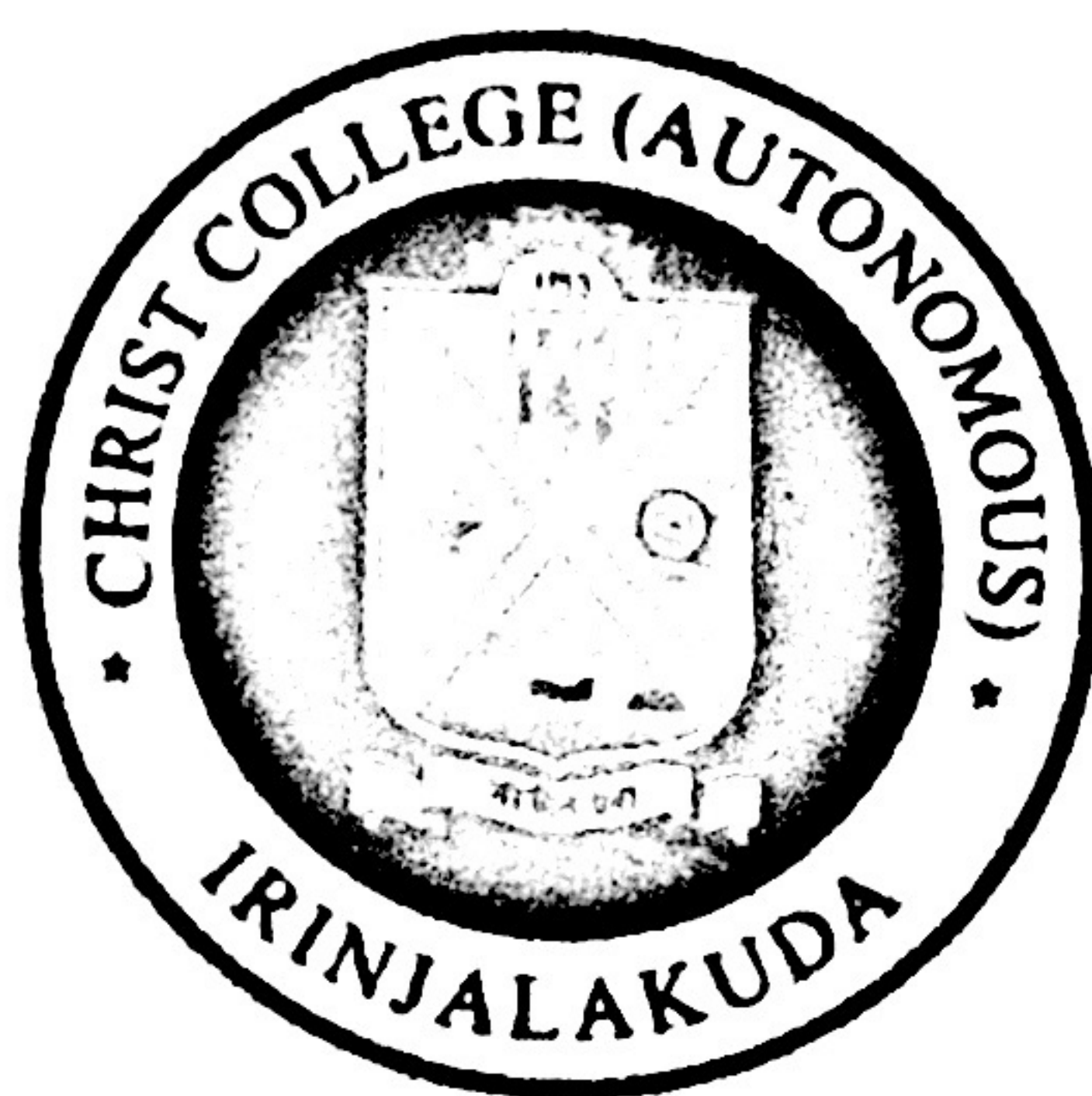
P.G. Department of Botany

Signature of Examiners:

1. ....

2. ....





## **DEPARTMENT OF BOTANY**

### **CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

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Irinjalakuda

Date: 08 - 07 - 2024

**SWEETY M. S.**

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda



## **DECLARATION**

I hereby declare that the dissertation work entitled **“PHYTOCHEMICAL AND PHARMACOGNOSTIC STUDY ON BAUHINIA SPECIES AND MARKET SAMPLES”** submitted by Miss **LEEN BABU** Reg.No. **CCAWMBT007** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bona-fide record of the research work carried out by her under the supervision and guidance of Dr. Sheela Karalam. B, under co-guidance of Ms. Sweety M. S., Assistant professor, Department of Botany, Christ College (Autonomous), Irinjalakuda



**LEEN BABU**

**“Taxonomic studies on selected taxa of the family  
Alismataceae”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut & Nationally re-accredited by NAAC A<sup>++</sup>  
and SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**MEBIN C M**

**Reg no: CCAWMBT008**



Under the guidance of

**Dr. HAREESH V S**

Junior Scientist

KSCSTE-Malabar Botanical Garden and Institute for Plant Sciences,  
Kozhikode, Kerala

&

Under the co-guidance of

**Prof. JACOB ABRAHAM PULIKAL**

Associate Professor

P.G. Department of Botany

Christ College (Autonomous), Irinjalakuda.

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**





## KSCSTE - MALABAR BOTANICAL GARDEN AND INSTITUTE FOR PLANT SCIENCES

(An Institution under Kerala State Council for Science, Technology & Environment)

Post Box No. 1, Kozhikode - 673 014, Kerala, India. Phone: +91 495 2430939

Email: malabarbot.garden@gmail.com, www.mbgis.in



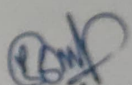
MBGIPS/27/2024 -A1

03.07.2024

### CERTIFICATE

This is to certify that Mr. MEBIN C. M., 04<sup>th</sup> Semester, M. Sc. Botany, Christ College (Autonomous), Irinjalakkuda, Thrissur had carried out dissertation on the topic titled "**Taxonomic studies on selected taxa of the family ALISMATACEAE**" at KSCSTE- Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala, 673014 during the period from 08<sup>th</sup> January to 03<sup>rd</sup> July 2024.



  
Scientist-in-charge  
KSCSTE- MBGIPS





KSCSTE-MBGIPS

## KSCSTE - MALABAR BOTANICAL GARDEN AND INSTITUTE FOR PLANT SCIENCES

(An Institution under Kerala State Council for Science, Technology & Environment)

Post Box No. 1, Kozhikode - 673 014, Kerala, India. Phone: +91 495 2430939

Email: malabarbot.garden@gmail.co, www.mbgips.in



### BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "**Taxonomic studies on selected taxa of the family ALISMATACEAE**" submitted by **Mr. MEBIN C. M.**, 04<sup>th</sup> Semester, M. Sc. Botany, Christ College (Autonomous), Irinjalakkuda, Thrissur in partial fulfillment for the M.Sc. Degree, is the bonafide record of the research work under taken by him in this institution under my guidance and supervision.

**Dr. Hareesh V S**  
Junior Scientist  
KSCSTE-MBGIPS





## DEPARTMENT OF BOTANY

### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

(Affiliated to the University of Calicut Nationally re-accredited by  
NAAC A<sup>++</sup> and SAAC A<sup>+</sup> grade)

## CERTIFICATE

This is to certify that the dissertation entitled **“Taxonomic studies on selected taxa of the family Alismataceae”** submitted by **Mr. MEBIN C M**, Reg.No: **CCAWMBT008** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by him under the supervision and guidance of **Dr. Hareesh V S**, Junior Scientist KSCSTE – Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala and co-guidance of **Prof. Jacob Abraham Pulikal**, Associate Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. It is also certifying that no part of the present project work has formed the basis for the award of any other degree or diploma previously.

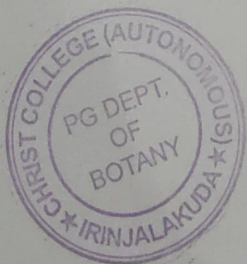
Irinjalakuda

Date: 08.7.24

Signature of Examiners:

1. ....

2. ....



Prof. E.J. Vincent

Co Ordinator

Prof. E.J. VINCENT  
P.G. Department of Botany  
P.G. Dept. of Botany  
Christ College (Autonomous), Irinjalakuda





## DEPARTMENT OF BOTANY

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### CERTIFICATE

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Irinjalakuda

Date:

**Prof. JACOB ABRAHAM PULIKAL**

Associate Professor

P.G. Department of Botany

Christ College (Autonomous), Irinjalakuda.



## DECLARATION

I hereby declare that the dissertation work entitled **“Taxonomic studies on selected taxa of the Alismataceae”** submitted to Christ College (Autonomous), Irinjalakuda in partial fulfillment for the award of the degree **Master of Science in Botany**, is a bonafide record of the research work carried out by me under the supervision and guidance of **Dr. Hareesh V S** Junior Scientist KSCSTE – Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala and co-guidance of **Prof. Jacob Abraham Pulikal**, Assistant Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. I further declare that the dissertation has not previously formed on the basis for the award of any Degree/Diploma/Fellowship/Associateship or any other similar title of recognition of any University or Institution.

Irinjalakuda

Date: 08-07-2024

  
MEBIN C M



**“Sustainable fabrication of Zinc oxide nanoparticles using  
*Pogostemon deccanensis* (Panigrahi) Press: Preparation, structural  
and antibacterial characterization of cashew gum nanocomposites”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC A<sup>++</sup> and  
SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**MEEVAL ALPHONSA T PAULSON**

**Reg no: CCAWMBT009**



Under the guidance of,

**Dr. P. SUNOJ KUMAR**

Professor

Department of Botany

University of Calicut

&

Under the co-guidance of

**Ms. SREELAKSHMI V. V.**

Assistant Professor

P.G. Department of Botany

Christ College (Autonomous), Irinjalakuda

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**



## UNIVERSITY OF CALICUT DEPARTMENT OF BOTANY

Calicut University P.O 673 635, Kerala, India

**Dr. SUNOJKUMAR P.**

**Professor**

Angiosperm Taxonomy and Floristics Division  
Principal Investigator, DST & DBT Projects

Purayathkandi (H)  
Elathur P.O  
Calicut 673 303  
Kerala, India

### CERTIFICATE

This is to certify that the dissertation entitled “**Sustainable Fabrication of Zinc Oxide Nanoparticles using *Pogostemon deccanensis* (Panigrahi) Press: Preparation, Structural and Antibacterial Characterization of Cashew Gum Nanocomposites**” is an authentic record of bonafide research work carried out by **Ms. MEEVAL ALPHONSA T PAULSON** in the Department of Botany, University of Calicut during the period January – March 2024 as a partial fulfilment for the award the degree of **Master of Science in Botany** under my guidance and supervision. No part of this present dissertation has formed the basis for the award of any other degree or diploma previously.

Calicut University

  
**Dr. Sunojkumar P.**

Date: 14-06-2024





## DEPARTMENT OF BOTANY

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(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> grade and SAAC A<sup>+</sup> grade)

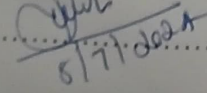
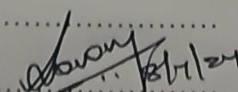
### CERTIFICATE

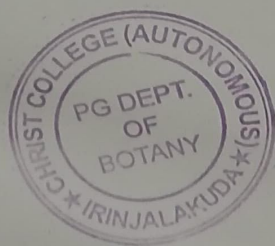
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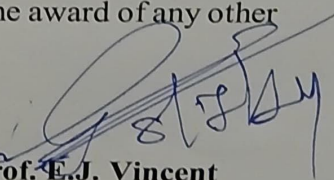
Irinjalakuda

Date: 08-07-24

Signature of Examiners:

1.  07/07/24
2.  07/07/24



  
Prof. E.J. Vincent

Co Ordinator

P.G. Dept. of Botany

Christ College (Autonomous), Irinjalakuda



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Irinjalakuda

Date: 08-07-2024

**SREELAKSHMI V.V.**

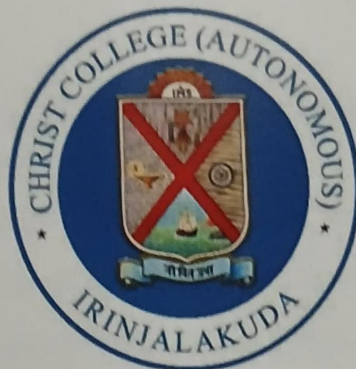
Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda





## DECLARATION

I hereby declare that the dissertation work entitled “**Sustainable fabrication of Zinc oxide nanoparticles using *Pogostemon deccanensis* (Panigrahi) Press: Preparation, structural and antibacterial characterization of cashew gum nanocomposites**” submitted to Christ College (Autonomous), Irinjalakuda in partial fulfillment for the award of the degree **Master of Science in Botany**, is a bonafide record of the research work carried out by me under the supervision and guidance of **Dr. P. Sunoj Kumar**, Professor, Department of Botany, University of Calicut and co-guidance of **Ms. Sreelakshmi V.V.**, Assistant Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. I further declare that the dissertation has not previously formed on the basis for the award of any Degree/Diploma/Fellowship/Associateship or any other similar title of recognition of any University or Institution.

Irinjalakuda

Date: 08-07-2024

  
MEEVAL ALPHONSA T PAULSON

**“Phytofabrication of Magnesium Oxide Nanoparticles using  
*Pogostemon paniculatus* (Willd.) Benth. Leaf Extract:  
Characterization of PVF/Magnesium Oxide Nanocomposites for  
Antibacterial Assay”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC A<sup>++</sup> and  
SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**MERIN THOMAS**

**Reg no: CCAWMBT010**



Under the guidance of,

**Dr. P. SUNOJ KUMAR**

Professor

Department of Botany

University of Calicut

&

Under the co-guidance of

**Mrs. SABEENA A. M**

Assistant Professor

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**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**





# UNIVERSITY OF CALICUT

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Dr. SUNOJKUMAR P.

Professor

Angiosperm Taxonomy and Floristics Division

Principal Investigator, DST & DBT Projects

Purayathkandi (H)

Elathur P.O

Calicut 673 303

Kerala, India

### CERTIFICATE

This is to certify that the dissertation entitled “**Phytofabrication of Magnesium Oxide Nanoparticles using *Pogostemon paniculatus* (Willd.) Benth. Leaf Extract : Characterization of PVF/Magnesium Oxide Nanocomposites for Antibacterial Assay**” is an authentic record of bonafide research work carried out by **Ms. MERIN THOMAS** in the Department of Botany, University of Calicut during the period January – March 2024 as a partial fulfilment for the award the degree of **Master of Science in Botany** under my guidance and supervision. No part of this present dissertation has formed the basis for the award of any other degree or diploma previously.

Calicut University

Dr. Sunojkumar P.

Date: 14-06-2024



## DEPARTMENT OF BOTANY

### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

(Affiliated to University of Calicut & NAAC accredited with A<sup>++</sup> and SAAC A<sup>+</sup> grade)

### CERTIFICATE



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Irinjalakuda

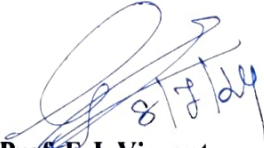
Date: 8/7/24

Signature of Examiners:


1.  8/7/24

2.   8/7/24



  
Prof. E.J. Vincent

Co Ordinator

P.G. Department of Botany  
  
Co-ordinator  
P.G. Dept. of Botany  
Christ College (Autonomous), Irinjalakuda





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Irinjalakuda

Date: 08-07-24

  
**SABEENA A. M**

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda



## DECLARATION

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Irinjalakuda

  
**MERIN THOMAS**

Date: 08-07-2024



**“PHYSICOCHEMICAL, PHYTOCHEMICAL AND  
ANTIMICROBIAL ANALYSIS OF LEAF, BARK AND FRUIT OF  
*Sterculia guttata* Roxb.”**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to University of Calicut and Nationally re-accredited by NACC A<sup>++</sup> &  
SAAC A<sup>+</sup>)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**POOJA**

**Reg no: CCAWMBT011**



Under the guidance of,

**Mr. BIJESHMON P. P.**

Manager Quality Control Sitaram Ayurveda (P) Limited ,

Nedupuzha

&

Under the co- guidance of

**Mrs. SWEETY M. S.**

Assistant Professor , P.G Department of Botany

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Irinjalakuda

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**

Sf: SAPL/QC/2024-25/003

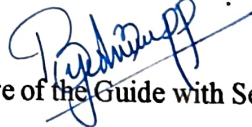
## CERTIFICATE

This is to certify the Dissertation entitled “**PHYSICOCHEMICAL, PHYTOCHEMICAL AND ANTIMICROBIAL ANALYSIS OF LEAF, BARK AND FRUIT OF *STERCULIA GUTTATA* ROXB.**” submitted to the University of Calicut, in the partial fulfilment of the requirements for the award of the degree of **Master of Science in Botany** is a record of the original research work done by **Ms. POOJA (Reg. No.: CCAWMBT011)** at Quality Control Laboratory (AYUSH Lic. No:01/48/2021), **Sitaram Ayurveda (P) Ltd., Nedupuzha, Thrissur, Kerala**, approved by the Ministry of AYUSH, Govt. of India, from 15<sup>th</sup> January, 2024 to 16<sup>th</sup> February, 2024 under my supervision and guidance and the dissertation has not formed the basis for the award of any Degree/Diploma/Associateship/Fellowship or other similar title to any candidate in any university.

Place: Nedupuzha

Date : 29/06/2024

Signature of the Guide with Seal

**BIJESHMON PP**  
Manager - Quality Control  
(Ayush Lic. No: 01/48/2021)  
Sitaram Ayurveda (P) Limited  
Thrissur, Kerala - 680 007





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### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

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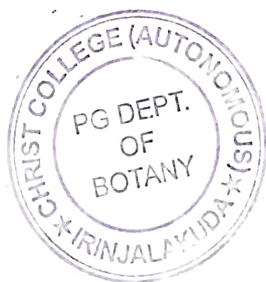
Irinjalakuda


Date: 8.7.24

Signature of Examiners:

1. ....

2. ....



  
**Prof. E.J. Vincent**

Co Ordinator

P.G. Department of Botany

**Prof. E.J. VINCENT**  
Co-ordinator  
P.G. Dept. of Botany  
Christ College (Autonomous), Irinjalakuda



## DEPARTMENT OF BOTANY

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Irinjalakuda

Date: 08-07-2024

  
08-07-2024

Sweety M. S.

Supervising teacher

P.G. Department of Botany

Christ College(Autonomous)

Irinjalakuda





## **DECLARATION**

I hereby declare that the dissertation work entitled “**PHYSICOCHEMICAL, PHYTOCHEMICAL AND ANTIMICROBIAL ANALYSIS OF LEAF, BARK AND FRUIT OF *Sterculia guttata* Roxb.**” Submitted by **POOJA** Reg.No. **CCAWMBT011** IV<sup>th</sup> semester M.Sc. Botany in partial fulfillment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by me under the supervision and guidance of **Mr. Bijeshmon P. P.**, Manager Quality Control Sitaram Ayurveda (P) Limited, Nedupuzha and co-guidance of **Mrs. Sweety M. S.**, Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda. I further declare that the dissertation has not previously formed on the basis for the award of and Dergree/Diploma/Fellowship/Associateship or any other similar title of recognition of any University or Institution.

Irinjalakuda

Date: 08-07-2024

**POOJA**

**COMPARISON OF ALLELOPATHIC EFFECT OF TWO INVASIVE  
ALIEN PLANTS - *PENNISETUM POLYSTACHION* (L.) SCHULT.  
AND *PENNISETUM PURPUREUM* SCHUMACH. ON SEED  
GERMINATION AND SEEDLING GROWTH OF *VIGNA*  
*UNGUICULATA* (L.) WALP.**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut & NAAC re-accredited by A<sup>++</sup> and SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**SALINI V. S.**

**Reg no: CCAWMBT012**

Under the guidance of,

**DR. R. SOUMYA**

Assistant Professor, Department of Botany

Christ College (Autonomous), Irinjalakuda

&

Under the co-guidance of,

**Mrs. SABEENA A. M.**

Assistant Professor, Department of Botany

Christ College (Autonomous), Irinjalakuda

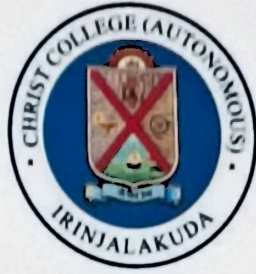


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**JUNE 2024**





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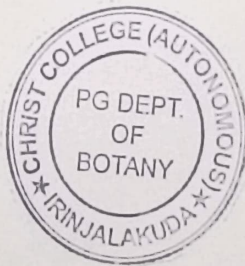
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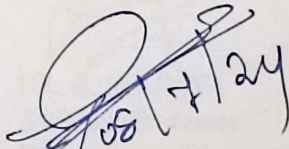
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Irinjalakuda

Date: 08-07-2024

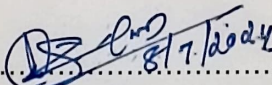
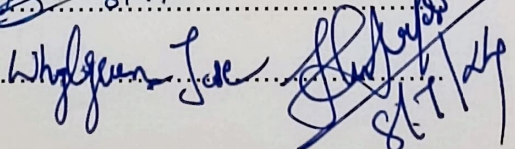


  
Prof. E.J. Vincent

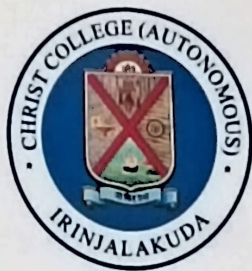
Co ordinator

P.G. Department of Botany

Signature of Examiners:

1.  8/7/2024
2.  8/7/24

Prof. E.J. VINCENT  
Co-ordinator  
P.G. Dept. of Botany  
Christ College (Autonomous), Irinjalakuda



## DEPARTMENT OF BOTANY

### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

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Irinjalakuda

Date: 08-07-2024

DR. R. SOUMYA  
Assistant Professor  
Department of Botany  
Christ College (Autonomous)  
Irinjalakuda

Co-guide  
Mrs. SABEENA A. M.  
Assistant Professor  
Department of Botany  
Christ College (Autonomous)  
Irinjalakuda



## DECLARATION

I here declare that the dissertation work entitled “**Comparison of allelopathic effect of two invasive alien plants - *Pennisetum polystachion* (L.) Schult. and *Pennisetum purpureum* Schumach. on seed germination and seedling growth of *Vigna unguiculata* (L.) Walp.**” Submitted by Miss **SALINI V. S.** Reg. No. **CCAWMBT012** IV<sup>th</sup> semester M. Sc. Botany in partial fulfillment for the award of degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda, is a bonafide record of the research work carried out by her under the supervision and guidance of **Dr. R. Soumya**, Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda and co-guidance of **Mrs. Sabeena A. M.**, Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda.



**SALINI V. S.**

**“ PHARMACOGNOSTIC, PHYTOCHEMICAL  
CHARACTERIZATION AND ANTIMICROBIAL ACTIVITY  
OF THE FRUIT AND SEED OF *Terminalia catappa* ( L.)”**

A Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut Nationally re-accredited by NAAC  
A<sup>++</sup> and SAAC A<sup>+</sup> grade)

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

**MASTER OF SCIENCE IN BOTANY**

Submitted by

**SHAHANA SHAMSEER**

**Reg no: CCAWMBT013**



Under the guidance of,

**Mr. BIJESHMON P. P.**

Manager of QC, Sitaram Ayurveda (P). Ltd

Nedupuzha, Thrissur

&

Under the co-guidance of

**Mrs. SABEENA A. M**

Assistant Professor

P.G. Department of Botany

Christ College (Autonomous), Irinjalakuda

**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**JUNE 2024**



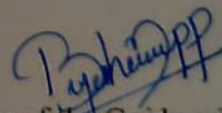
SAPL/QC/2024-25/005

## CERTIFICATE

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Place: Nedupuzha

Date : 29/06/2024

  
Signature of the Guide with Seal**BIJESHMON PP**  
Manager - Quality Control  
(Ayush Lic. No: 01/48/2021)  
Sitaram Ayurveda (P) Limited  
Thrissur, Kerala - 680 007



**DEPARTMENT OF BOTANY**  
**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

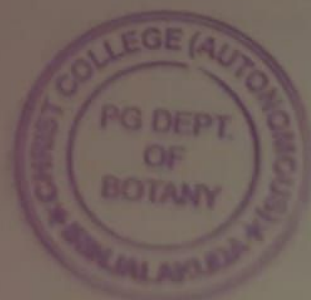
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**CERTIFICATE**

This is to certify that the dissertation entitled "**Pharmacognostic, phytochemical characterization and antimicrobial activity of the fruit and seed of *Terminalia catappa* (L.)**" submitted by **Ms. SHAHANA SHAMSEER**, Reg.No: **CCAWMBT013** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by her under the supervision and guidance of **Mr. Bijeshmon P. P** Manager of QC, Sitaram Ayurveda (P) Ltd. and coguidance of **Mrs. Sabeena A. M**, Assistant Professor, Department of Botany, Christ College (Autonomous) Irinjalakuda. It is also certifying that no part of the present project work has formed the basis for the award of any other degree or diploma previously.

**Irinjalakuda**

**Date: 08-07-2024**



**Prof. E.J. Vincent**

**Co Ordinator**

**P.G. Department of Botany**

**Prof. E.J. VINCENT**

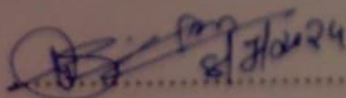
**Co-ordinator**

**P.G. Dept. of Botany**

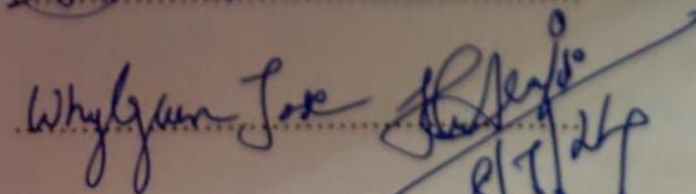
**Christ College (Autonomous), Irinjalakuda**

**Signature of Examiners:**

1.



2.







**DEPARTMENT OF BOTANY  
CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

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Irinjalakuda

Date: 08-07-24

**SABEENA A. M**

Supervising teacher

P.G. Department of Botany

Christ College (Autonomous)

Irinjalakuda



## DECLARATION

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Irinjalakuda

Date: 08-07-2024

SHAHANA SHAMSEER



**COMPARATIVE STUDY ON THE IMPACT OF AIR  
POLLUTION AND THE ASSESSMENT OF AIR POLLUTION  
TOLERANCE INDEX (APTI) OF SELECTED ROADSIDE  
PLANT SPECIES OF MOONUPEEDIKA AND  
KAIPAMANGALAM PALLINADA AREA: AN ECO-  
MANAGEMENT APPROACH**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

(Affiliated to the University of Calicut and Nationally reaccredited by NAAC A<sup>++</sup>  
and SAAC A<sup>+</sup> Grade)

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

**MASTER OF SCIENCE IN BOTANY**

**Submitted by**

**SINTA E A**

**Reg no: CCAWMBT014**

Under the guidance of,

**Ms. SWEETY M. S.**

Assistant professor, Department of Botany

Christ College (Autonomous),

Irinjalakuda



**DEPARTMENT OF BOTANY**

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**

**2022-2024**





## DEPARTMENT OF BOTANY

### CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

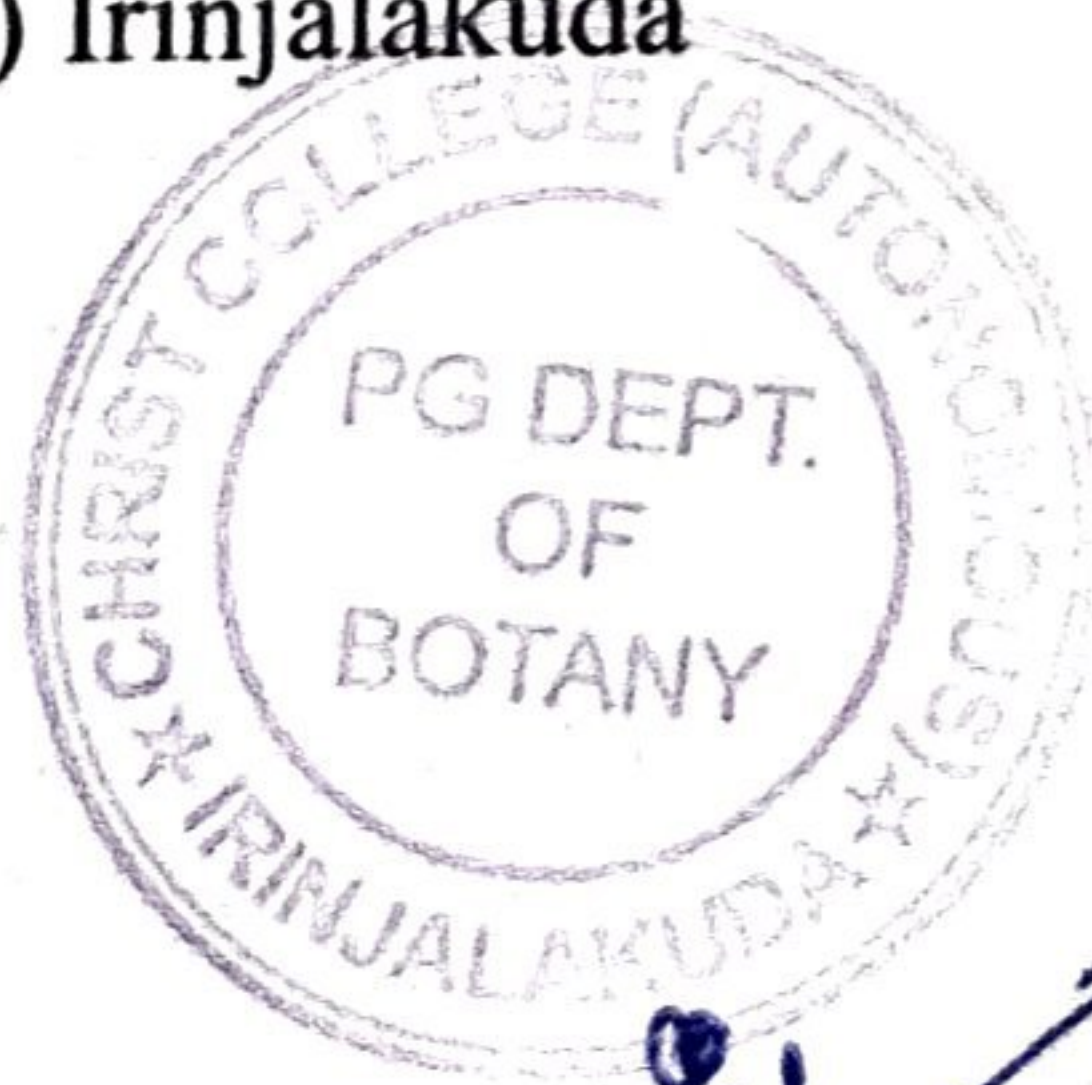
(Affiliated to University of Calicut and NAAC accredited with A<sup>++</sup> grade and SAAC A<sup>+</sup> grade)

### CERTIFICATE

This is to certify that the dissertation entitled "**COMPARATIVE STUDY ON THE IMPACT OF AIR POLLUTION AND THE ASSESSMENT OF AIR POLLUTION TOLERANCE INDEX (APTI OF SELECTED ROADSIDE PLANT SPECIES OF MOONUPEEDIKA AND KAIPAMANGALAM PALLINADA AREA: AN ECO-MANAGEMENT APPROACH.**" Submitted by Miss. **SINTA E A** Reg.No. **CCAWMBT014** IV<sup>th</sup> semester M.Sc. Botany in partial fulfilment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bona fide record of the research work carried out by her under the supervision and guidance of **Ms. SWEETY M. S.**, Assistant professor, Department of Botany, Christ College (Autonomous) Irinjalakuda

Irinjalakuda

Date: 8-7-24



Prof. E. J. Vincent

Coordinator

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2. [Signature]





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Irinjalakuda

Date **08/07/2024**

  
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Christ college (Autonomous) Irinjalakuda



## DECLARATION

I hereby declare that the dissertation work entitled "**COMPARATIVE STUDY ON THE IMPACT OF AIR POLLUTION AND THE ASSESSMENT OF AIR POLLUTION TOLERANCE INDEX (APTI) OF SELECTED ROADSIDE PLANT SPECIES OF MOONUPEEDIKA AND KAIPAMANGALAM PALLINADA AREA: AN ECO-MANAGEMENT APPROACH.**" Submitted by Miss **SINTA E A** Reg.No. **CCAWMBT014** IV<sup>th</sup> semester M.Sc. Botany in partial fulfillment for the award of the degree **Master of Science in Botany**, Christ College (Autonomous), Irinjalakuda is a bona fide record of the research work carried out by her under the supervision and guidance of **Ms. Sweety M.S.**, Assistant professor, Department of Botany, Christ College (Autonomous), Irinjalakuda.

Irinjalakuda

Date: 08/07/2024

  
**SINTA E A**



# **Comparitive Evaluation of Phytochemicals in Leaves and Flowers of Two Varieties of *Clitoria ternatea* Linn.**

Dissertation submitted to

**CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA**  
(Affiliated to University of Calicut and Nationally re-accredited by  
NACC A<sup>++</sup> & SAAC A<sup>+</sup>)

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

**MASTER OF SCIENCE IN BOTANY**

**Submitted by**

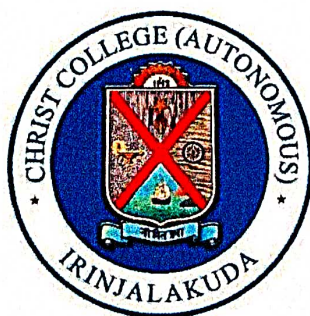
**VISMAYA P. M.**

**Reg no: CCAWMBT015**

Under the guidance of,

**SREELAKSHMI V. V.**

Assistant Professor, Department of Botany  
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Irinjalakuda



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**JUNE 2024**



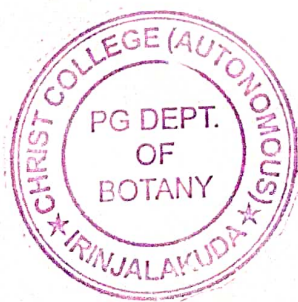
**DEPARTMENT OF BOTANY**  
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**CERTIFICATE**

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Irinjalakuda

Date: 08.07.24



Prof. E.J. Vincent

Co Ordinator

P.G. Department of Botany

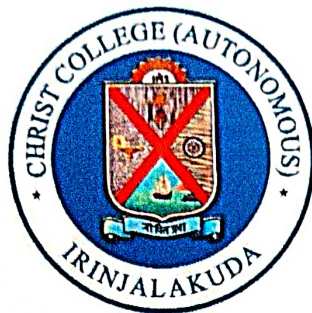
**Prof. E.J. VINCENT**  
Co-ordinator  
P.G. Dept. of Botany  
Christ College (Autonomous), Irin

Signature of Examiners:

1. ....

2. ....





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Irinjalakuda

Date: 08-07-24

Sreelakshmi V. V.

Supervising teacher

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## DECLARATION

I hereby declare that the dissertation work entitled “**Comparitive Evaluation of Phytochemicals in Leaves and Flowers of Two Varieties of *Clitoria ternatea* Linn.**” Submitted by Ms. VISMAYA P. M. Reg.No. CCAWMBT015 IV<sup>th</sup> semester M.Sc. Botany in partial fulfillment for the award of the degree Master of Science in Botany, Christ College (Autonomous), Irinjalakuda is a bonafide record of the research work carried out by her under the supervision and guidance of Sreelakshmi V. V., Assistant Professor, Department of Botany, Christ College (Autonomous), Irinjalakuda

  
VISMAYA P. M. 8/7/2024

VISMAYA P. M.