

**FEASIBILITY OF CYTOKERATIN BASED CIRCULATING TUMOR CELLS DETECTION
IN ORAL CANCER PATIENTS**

Dissertation Submitted to

MAHATHMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

AISWARYA BAIJU

Reg No: 200011020123

Under the guidance of

DR. S. KANNAN

PROFESSOR & HEAD

DIVISION OF CANCER RESEARCH

REGIONAL CANCER CENTRE

THIRUVANANTHAPURAM



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY-683574



REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India

Fax: +91 471 2442539

Phone: +91 471 2442541

Website: www.rcctvm.org

E-mail: webmaster@rcctvm.gov.in

No. RCC/982/2020-ACAD2/25

Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled "**Feasibility of Cytokeratin Based Circulating Tumor Cells Detection in Oral Cancer Patients**" is a bonafide record of the Project work done by **Ms. Aiswarya Baiju**, M. Sc. Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Ernakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Kannan. S, Professor & Head, Laboratory of Cell Cycle Regulation and Molecular Oncology, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs. Anju S. Kumar, Head of the Department, Department of Biochemistry, Sree Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.


External Guide

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA


Head of the Department

An autonomous centre sponsored for Cancer Treatment & Research by Government of India and Government of Kerala. Donations to this Centre are exempt under Section 80G of the I.T. Act, 1961.

Life beyond cancer

POST GRADUATE DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
KALADY, KERALA -683574



CERTIFICATE

This is to certify that the dissertation entitled “**FEASIBILITY OF CYTOKERATIN BASED CIRCULATING TUMOR CELLS DETECTION IN ORAL CANCER PATIENTS**” is submitted by **Ms. AISWARYA BAIJU**, M.Sc Biochemistry, SreeSankara College, Kalady affiliated to Mahatma Gandhi University, Kottayam in the partial fulfillment of requirements for award of the degree of Master of Science in Biochemistry in an authentic record of review work carried out by her study. The dissertation has not formed the basis for the award of any Degree/Diploma/Associateship or other similar title of any candidate of any University.

Date : 28/9/2022

Place : Kalady

Examiner : (1) SIVAPRABHA-T.S.

(2) Dr. Lije Thomas


Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady



**PLASMA PROTEIN PRECIPITATION BY POLY
ETHYLENE GLYCOL (PEG) 6000 AND ANALYSIS OF
ANTIBODY CONTENT IN THE PRECIPITATE**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

AISWARYA MOL M S

Reg.No.200011020124

Under the guidance of

Dr. GEETHA M

Scientific Officer

Department of Biochemistry

SreeChitraTirunal Institute for Medical Sciences and
Technology(SCTIMST), Trivandrum - 695011



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनन्तपुरम, केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND
TECHNOLOGY**

THIRUVANANTHAPURAM, KERALA – 695 011
(An Institution of National Importance, Department of Science and Technology, Govt. of India)
टेलीफॉन नं./Telephone No. 0471-2443152 फाक्स/Fax 0471-24464332550728
ई-मेल/E-mail :sct@sctimst.ac.in वेबसाइट/ Website : www.sctimst.ac.in



CERTIFICATE

This is to certify that the dissertation entitled '**ISOLATION OF EXOSOMES DERIVED FROM CELL CULTURE SUPERNATANTS OF RAT BONE MARROW MESENCHYMAL STEM CELLS**' submitted by PARVATHY V PRASAD in partial fulfilment of the Degree of Master of Science in Biochemistry at Sree Sankara College, Kalady, affiliated to MG University, Kottayam, is based on her studies under the guidance of the undersigned in the Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during the period from 06/05/2022 to 31/07/2022. It is further certified that this dissertation has not formed the basis for award of any Degree/Diploma/Associateship/Fellowship/ similar title by any candidate of any university.

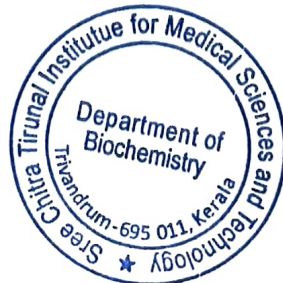
Head
Department of Biochemistry

(In charge)
01/08/2022

Supervisor
Department of Biochemistry

01/08/2022

डॉ मधुसूदनन यू के
Dr. Madhusoodanan UK
सहायक प्रोफेसर/Assistant Professor
जैवरसायन विभाग/Department of Biochemistry
श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी
संस्थान (एस सी टी आई एम एम टी)
Sree Chitra Tirunal Institute for Medical
Sciences and Technology (SCTIMST)
त्रिवेन्द्रम/Trivandrum - 695 011
दूरभाष/Phone: + 91-0471-2524478





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P O, KALADY, ERNAKULAM – 683574


☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **“PLASMA PROTEIN PRECIPITATION BY POLYETHYLENE GLYCOL (PEG) 6000 AND ANALYSIS OF ANTIBODY CONTENT IN THE PRECIPITATE”** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **AISWARYA MOL M.S** under the guidance of **Dr. GEETHA M**, Scientific officer, Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram



Place: Kalady
Date: 28/09/22




Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

- 1 **Dr. Liji Thomas** 
28/9/22
- 2 **Reshma Prasad** 
28/9/22

**EFFECTS OF EGFR INHIBITION ON BREAST CANCER CELLULAR
PROLIFERATION AND SURVIVAL *IN VITRO***

Dissertation Submitted to

MAHATHMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

AJANYA K S

Reg No: 200011020125

Under the guidance of

Dr. LAKSHMI .S

ADDITIONAL PROFESSOR

DIVISION OF CANCER RESEARCH

REGIONAL CANCER CENTRE

THIRUVANANTHAPURAM



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY-683574



REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India

Fax: +91 471 2442539

Phone: +91 471 2442541

Website: www.rccrvm.org

E-mail: webmaster@rccrvm.gov.in

No. RCC/982/2020-ACAD2/19

Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled “Effects of EGFR Inhibition on Breast Cancer Cellular Proliferation and Survival *in vitro*” is a bonafide record of the Project work done by **Ms. Ajanya K. S.**, M. Sc. Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Ernakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Lakshmi S, Additional Professor, Laboratory of Molecular Medicine, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs Anju S. Kumar, Head of the Department, Department of Biochemistry, Sree Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.

External Guide

Dr. LAKSHMI. S
Additional Professor
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram- 695 011
Kerala, India

Head of the Department

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA

An autonomous centre sponsored for Cancer Treatment & Research by Government of India and Government of Kerala. Donations to this Centre are exempt under Section 80G of the I.T. Act, 1961.

Life beyond cancer

POST GRADUATE DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY, KERALA -683574



CERTIFICATE

This is to certify that the thesis entitled “EFFECTS OF EGFR INHIBITION ON BREAST CANCER CELLULAR PROLIFERATION AND SURVIVAL *IN VITRO*” submitted by Ms. AJANYA K.S at Sree Sankara College, Kalady affiliated to Mahatma Gandhi University, Kottayam in partial fulfillment of requirements for award of the Degree of **Master of Science in Biochemistry** is an authentic record of research work carried out by her under the guidance and supervision of Dr. Lakshmi.S, Additional Professor, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram.

Date : 28/9/2022

Place : Kalady

Examiner :

SIVAPRABHA T.S. 

Dr. Lije Thomas 




Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

**MOLECULAR CHARACTERIZATION OF
SALIVARY BACTERIAL
MICROBIOMES**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

ANITTA MARIA SOGI

Reg. No. 200010110126

Under the guidance of

Dr. SRINIVAS GOPAL

Head, Department of Biochemistry,

Sree Chitra Tirunal Institute for Medical Sciences and Technology

Thiruvananthapuram.



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE,

KALADY – 683574

(Affiliated to Mahatma Gandhi University, Kottayam)

August 2022

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनन्तपुरम, केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND
TECHNOLOGY**

THIRUVANANTHAPURAM, KERALA – 695 011

(An Institution of National Importance, Department of Science and Technology, Govt. of India)

टेलीफॉन नं./Telephone No. 0471-2443152 फ़ाक्स/Fax 0471-24464332550728

ई-मेल/E-mail :sct@sctimst.ac.in वेबसाइट/ Website : www.sctimst.ac.in



CERTIFICATE

This is to certify that the dissertation entitled “**MOLECULAR CHARACTERISATION OF SALIVARY BACTERIAL MICROBIOMES**” submitted by ANITTA MARIA SOGI in partial fulfilment of the Degree of Master of Science in Biochemistry at Sree Sankara College, Kalady, affiliated to MG University, Kottayam, is based on her studies under the guidance of Dr. G. Srinivas, Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during the period from 06/05/2022 to 5/08/2022. It is further certified that this dissertation has not formed the basis for award of any Degree/Diploma/Associateship/Fellowship/ similar title by any candidate of any university.


5/8/2022

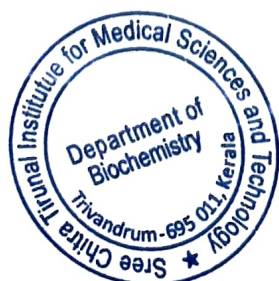
Head

Department of Biochemistry


5/8/2022

Supervisor

Department of Biochemistry





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P.O, KALADY, ERNAKULAM – 683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**MOLECULAR CHARACTERIZATION OF SALIVARY BACTERIAL MICROBIOMS**” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **ANITTA MARIA SOGI** under the guidance of **Dr. SRINIVAS GOPALA**, Associate Professor, Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram.

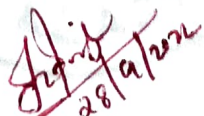
Place: Kalady
Date: 28/9/22


Mrs. SIVAPRABHA T S
Head of the Department

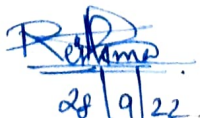
Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1 Dr. Liji Thomas


28/9/22

2 Reshma Prasad


28/9/22

**ANTIOXIDANT ACTIVITY OF *CISSUS*
*QUADRANGULARIS***

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by,

ANITTA SAJU

Reg.No. 200011020127

Under the guidance of

Dr. SALINI BHASKER

Director and Head of research

Scopeful Bioresearch



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE, KALADY – 683574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "**ANTIOXIDANT ACTIVITY OF *CISSUS QUADRANGULARIS***" submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **ANITTA SAJU** under the guidance of **Dr. SALINI BHASKER**, Director, Scopeful Bioresearch Pvt.Ltd, Cochin.

Place: Kalady

Date: 28-9-22



Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1 SIVAPRABHA T.S.

2 Dr. Liji Thomas



CERTIFICATE


This is to certify that the thesis entitled **Antioxidant Activity Of *Cissus quadrangularis*** is an authentic record of the research work carried out by **Ms. Anitta Saju**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin
September 2022



Dr. Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD



Head of the institution:

Dr. C. Mohankumar



“ROLE OF STIL GENE IN COLORECTAL CANCER PROLIFERATION”

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

in partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

ANJITHA P M Reg.No.200011020128

Under the guidance of

Dr. S. ASHA NAIR

Scientist F

Cancer Research Program

Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram-695014



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE, KALADY

(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022

Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram 695014, Kerala State, India.
An Autonomous National Institute for Discovery, Innovation & Translation
in Biotechnology and Disease Biology,
Government of India, Ministry of Science & Technology, Department of Biotechnology

राजीव गॉंधी जैव प्रौद्योगिकी केन्द्र, तिरुवनन्तपुरम 695 014, केरल, भारत.
जैवप्रौद्योगिकी और रोग जीवविज्ञान में अविष्कार, नवीनता एवं अनुवाद
की स्वायत्त राष्ट्रीय संस्थान,
भारत सरकार विज्ञान एवं प्रौद्योगिकी मंत्रालय, जैवप्रौद्योगिकी विभाग.

CERTIFICATE

This is to certify that the dissertation entitled **“ROLE OF STIL GENE IN COLORECTAL CANCER PROLIFERATION”** submitted to the Department of Biochemistry, Sree Sankara College, Kalady by **Ms ANJITHA P M** in partial fulfillment of requirements for the award of Master of Science in Biochemistry is an authentic work done by her at **Rajiv Gandhi Centre for Biotechnology** under my supervision and guidance during the period of **May 08, 2022 to August 3, 2022.**

It is further certified that no part of this dissertation has formed the basis for the award of any Degree/ Diploma/ Associateship or other similar title of any candidate of any university to the best of my knowledge.



Signature of the Guide

Institution Seal

Name and Designation:
Dr. S. Asha Nair
Scientist – F,
Cancer Research Program

Place : Thiruvananthapuram
Date : 03-08-2022

Dr. S. ASHA NAIR
Scientist F
Cancer Research Program
Rajiv Gandhi Centre for Biotechnology
Thiruvananthapuram, India



DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE, KALADY



BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**ROLE OF STIL GENE IN COLORECTAL CANCER PROLIFERATION**” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY** is a record of original work done by **ANJITHA P M** during the year 2022, under the guidance of **Dr. S ASHA NAIR**, Scientist F, Cancer Research Program, Rajiv Gandhi Centre for Biotechnology.

Place: Kalady

Date: 28-09-22

EXAMINERS

1. Dr. Liju Thomas *[Signature]* 28/9/2022

2. SIVAPRABHA T.S. *[Signature]*

[Signature]

Mrs. Sivaprabha T S

Assistant Professor, Biochemistry

Dept. of Biochemistry
Sree Sankara College
Kalady



**“SERINE/THREONINE KINASE, ERK MEDIATED
PHOSPHORYLATION CONTROLS STAR-PAP
STABILITY AND REGULATES CANCER PROGRESSION”**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

in partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

ARDHRA RADHAKRISHNAN

Reg.No.200011020129

Under the guidance of

DR. RAKESH S LAISHRAM

Scientist EII

Cardiovascular Disease Biology Lab

Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram-695014



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE, KALADY

(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022

CERTIFICATE

This is to certify that the dissertation entitled **“Serine/Threonine Kinase, ERK Mediated Phosphorylation Controls Star-PAP Stability and Regulates Cancer Progression”** submitted by **Ms. Ardhra Radhakrishnan** (Reg No -200011020129) to Sree Sankara College, Kalady , for the degree of Master of Science in Biotechnology is original work, done by her during the period (May 2022-August 2022) of study under my supervision. This is also to certify that the above said work has not previously submitted for the award of any degree, diploma, fellowship in any Indian or foreign University.



Signature of the Guide

(Dr. Rakesh S Laishram)

Date: 05/08/2022

DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE, KALADY



BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**SERINE/THREONINE KINASE, ERK MEDIATED PHOSPHORYLATION CONTROLS STAR-PAP STABILITY AND REGULATES CANCER PROGRESSION**” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **ARDHRA RADHAKRISHNAN** during the year 2022 under the guidance of **Dr. RAKESH S LAISHRAM**, Scientist EII, Department of Cardiovascular Disease Biology Lab, Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram.

Place: Kalady

Date: 29/09/2022

Examiners:

(1) SWAPRABHA T.S.



Mrs. Sivaprabha T S

Assistant Professor, Biochemistry

Dept. of Biochemistry
Sree Sankara College
Kalady

(2) Dr. Archana T M

Comparison of wound healing property of – *Chromolaena odorata*, *Centella asiatica* and *Aloe vera*- Cell viability studies and scratch wound assays – anti-inflammatory and anti-oxidant studies

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfilment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

ARYA C S

Reg.No.200011020130

Under the guidance of

Dr. SALINI BHASKER

Director & Head of Research

Scopeful Bioresearch



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



Scopeful Bioresearch

The company that walks with nature

✉ service@scopefulbioresearch.com
☎ +91 9847 065 069
☎ +91 9847 865 609
📍 KRIBS BIONEST, KINFRA Hi- Tech Park,
Kalamassery, Kochi ,Kerala - 683 503.

CERTIFICATE

This is to certify that the thesis entitled **Comparison Of Wound Healing Property Of Chromolaena, Centella And Aloe Vera Using *In-Vitro* Rat Myoblast L6 Wound Model** is an authentic record of the research work carried out by **Ms. Arya C.S**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin
September 2022

Dr.Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar



DEPARTMENT OF BIOCHEMISTRY



SREE SANKARA COLLEGE

MATTOOR P O, KALADY, ERNAKULAM - 683574

☎0484-2462341 ✉info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**COMPARISON OF WOUND HEALING PROPERTY OF CHROMOLENA ODORATA, CENTELLA ASIATICA AND ALOE VERA USING IN VITRO RAT MYOBLAST L6 WOUND MODEL**” submitted to Mahatma Gandhi University in the partial fulfilment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **Ms ARYA C S** under the guidance of **Dr. SALINI BHASKER**, Director & head of research, Scopeful Bioresearch, Cochin

Place: Kalady

Date:





Mrs SIVAPRABHA T S

Head of the department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

- 1 **Dr. Liju Thomas**  28/9/2022
- 2 **SIVAPRABHA T. S.**  29/9/2022

**EXPRESSION OF GLUCOSE TRANSPORTER 4 GENE IN
AZADIRACTHTA INDICA AND TRIGONELLA FOENUM
GRAECUM AQUEOUS EXTRACT TREATED RAT
MYOBLAST L6 CELL LINES**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfilment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

BLESSY SAJU

Reg.No.200011020131

Under the guidance of

Dr. SALINI BHASKER

Director & Head of Research
Scopeful Bioresearch



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



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The company that walks with nature

✉ service@scopefulbioresearch.com

☎ +91 9847 065 069

+91 9847 865 609

📍 KRIBS BIONEST, KINFRA Hi-Tech Park,
Kalamassery, Kochi, Kerala - 683 503.

CERTIFICATE

This is to certify that the thesis entitled **Expression of Glucose Transporter-4 Gene In *Azardichtha indica* And *Trigonella foenum graceum* Aqueous Extract Treated Rat Myoblast L6 Cell Lines** is an authentic record of the research work carried out by **Ms. Blessy Saju**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin

September 2022

Dr. Salini Bhasker

Director & Head of Research

Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

MATTOOR P O, KALADY, ERNAKULAM – 683574

☎ 484-2462341 ✉ info@ssc.ac.in

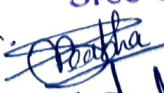

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **“EXPRESSION OF GLUCOSE TRANSPORTER 4 GENE IN AZADIRACTHTA INDICA AND TRIGONELLA FOENUM GRAECUM AQUEOUS EXTRACT TREATED RAT MYOBLAST L6 CELL LINES”** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **Ms BLESSY SAJU** under the guidance of **Dr SALINI BHASKER**, Director & head of research, Scopeful Bioresearch , Cochin.

Place: Kalady

Date: 28-09-2022

Examiners

- 1 **SIVAPRABHA T S**  Kalady
- 2 **Dr ARCHANA T M** 




Mrs. SIVAPRABHA T S

Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady



**COMPARATIVE BIOCHEMICAL ANALYSIS OF WHEY
PROTEINS IN *BOS TAURUS* AND *CAPRA HIRCUS*.**

Dissertation submitted to
MAHATMA GANDHI UNIVERSITY
In partial fulfillment for the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by
FARA FARZEEN A.H
Reg. No. 200011020132

Under the guidance of
Dr. SALINI BHASKER
Director & Head of Research
Scopeful Bioresearch



DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



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✉ service@scopefulbioresearch.com

☎ +91 9847 065 069

+91 9847 865 609

📍 KRIBS BIONEST, KINFRA Hi- Tech Park,
Kalamassery, Kochi ,Kerala - 683 503.

CERTIFICATE

This is to certify that the thesis entitled **Comparative Biochemical Analysis Of Whey Proteins In *Bos taurus* And *Capra hircus*** is an authentic record of the research work carried out by **Ms. Fara Farzeen A.H**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin

September 2022

Dr.Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P O, KALADY, ERNAKULAM –683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**Comparative Biochemical Analysis Of Whey Proteins In *Bos taurus* And *Capra hircus***” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **FARA FARZEEN A H** under the guidance of **Dr. SALINI BHASKER**, Director & Head of the department Scopeful Bioresearch , Cochin.

Place: Kalady


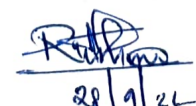
Date: 28/9/2022

Mrs. SIVAPRABHA T S
Head of the Department



Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

- 1 Dr. Liji Thomas 
28/9/22
- 2 Reshmi prasad 
28/9/22



**“EFFECT OF STEM CELL THERAPY ON BLEOMYCIN
INDUCED LUNG INJURY IN MODEL ANIMALS – A
HISTOMORPHOMETRIC STUDY”**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

in partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

HARISANKAR K C

Reg. No. 200011020133

Under the guidance of

Dr. NARESH KASOJU

Scientist C (Applied Biology)

Sree Chitra Tirunal Institute for Medical Sciences and Technology
(An Institution of National Importance), Thiruvananthapuram



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE, KALADY

(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022

ശ്രീ ചിത്ര തിരുനാല അധ്വൈജ്ഞ ഏവ ശ്രീശാഗികീ അസ്ഥാൻ നിയോദന നേതാവികാമകീയ ശ്രീശാഗികീ സ്കൂൾ
പൂജപ്പുര തിരുവനന്തപുരം 695 012 കേരള ഇന്ത്യ

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BIO-MEDICAL TECHNOLOGY WING

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(ഒരു ശാഗികീ വ്യാപാര അസ്ഥാൻ ശ്രീശാഗികീ ശ്രീശാഗികീ ശ്രീശാഗികീ)

(An Institution of National Importance, Department of Science and Technology, Government of India)

ഫോൺ: 0471 2340801/2/20450, ഫാക്സ്: 0471 2341814

E-mail: sctimst@imst.ac.in, sctimst@rediffmail.com, www.sctimst.ac.in



CERTIFICATE

This is to certify that the dissertation entitled **Effect of Stem Cell Therapy on Bleomycin Induced Lung Injury in Model Animals – A Histomorphometric Study** submitted by **Mr. Harisankar K C** (Reg. No. 200011020133), Department of Biochemistry, **Sree Sankara College, Kalady** (Affiliated to Mahatma Gandhi University, Kottayam), in partial fulfilment for the award of the degree of **Master of Science in Biochemistry** by Mahatma Gandhi University, Kottayam is a record of bonafide work carried out during May – August 2022 by him under my supervision here at Division of Tissue Culture, Department of Applied Biology, Biomedical Technology Wing, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Poojappura Campus, Thiruvananthapuram 695012, Kerala, India.

Place: Thiruvananthapuram

Date: 20 Sep 2022

Dr. Naresh Kasoju

Dr. NARESH KASOJU

Scientist-C (Applied Biology)

Bio-Medical Technology Wing, SCTIMST

Thiruvananthapuram - 012, Kerala

**DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE, KALADY**



BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**EFFECT OF STEM CELL THERAPY ON BLEOMYCIN INDUCED LUNG INJURY IN MODEL ANIMALS – A HISTOMORPHOMETRIC STUDY**” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **HARISANKAR K C** during the year 2022 , under the guidance of **Dr. NARESH KASOJU**, Scientist C, Division of Tissue Culture, Department of Applied Biology, Biomedical Technology Wing, Sree Chitra Tirunal Institute for Medical Sciences and Technology (An Institution of National Importance), Thiruvananthapuram.

Place: Kalady

Date: 29/9/2022

Mrs. Sivaprabha T S

Assistant Professor, Biochemistry

Dept. of Biochemistry
Sree Sankara College
Kalady

EXAMINERS:

(1) SIVAPRABHA T S

(2) Dr. ARCHANA T M



**ISOLATION OF EXOSOMES DERIVED FROM CELL
CULTURE SUPERNATANTS OF RAT BONE MARROW
MESENCHYMAL STEM CELL**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

PARVATHY V PRASAD

Reg. No. 200011020134

Under the guidance of

Dr. MADHUSOODANAN U K

Associate Professor

Department of Biochemistry

Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST),

Trivandrum - 695011



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनन्तपुरम, केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND
TECHNOLOGY**

THIRUVANANTHAPURAM, KERALA – 695 011

(An Institution of National Importance, Department of Science and Technology, Govt. of India)


टेलीफोन नं./Telephone No. 0471-2443152 फाक्स/Fax 0471-24464332550728


ई-मेल/E-mail :sct@sctimst.ac.in वेबसाइट/ Website : www.sctimst.ac.in



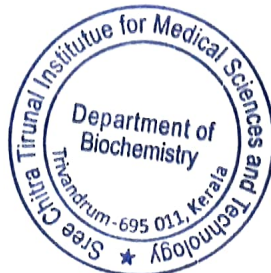
CERTIFICATE

This is to certify that the dissertation entitled '**ISOLATION OF EXOSOMES DERIVED FROM CELL CULTURE SUPERNATANTS OF RAT BONE MARROW MESENCHYMAL STEM CELLS**' submitted by PARVATHY V PRASAD in partial fulfilment of the Degree of Master of Science in Biochemistry at Sree Sankara College, Kalady, affiliated to MG University, Kottayam, is based on her studies under the guidance of the undersigned in the Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during the period from 06/05/2022 to 31/07/2022. It is further certified that this dissertation has not formed the basis for award of any Degree/Diploma/Associateship/Fellowship/ similar title by any candidate of any university.


01/08/2022
Head
(In charge)
Department of Biochemistry


01/08/2022
Supervisor
Department of Biochemistry

डॉ मधुसूदनन यू के
Dr. Madhusoodanan UK
सहायक प्रोफेसर/Assistant Professor
जैवरसायन विभाग/Department of Biochemistry
श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी
संस्थान (एस.सी.टी.आई.एम.एच.टी.)
Sree Chitra Tirunal Institute for Medical
Sciences and Technology (SCTIMST)
त्रिवेन्द्रम/Trivandrum - 695 011
दूरभाष/Phone: + 91-0471-2524478





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P O, KALADY, ERNAKULAM – 683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE



This is to certify that the dissertation entitled **“ISOLATION OF EXOSOMES DERIVED FROM CELL CULTURE SUPERNATANTS OF RAT BONE MARROW MESENCHYMAL STEM CELLS”** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **PARVATHY V PRASAD** under the guidance of **Dr. SRINIVAS GOPALA**, Head, Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram

Place: Kalady
Date: 28/09/22


Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

- 1 **Dr. Liji Thomas** 
- 2 **SIVAPRABHA-T.S.** 



PCR AMPLIFICATION OF HUMAN GAPDH GENE, SEQUENCING AND SEQUENCE ANALYSIS

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

RENNA JOJO

REG. NO. 200011020135

Under the guidance of

Dr. SALINI BHASKER

DIRECTOR

Scopeful Bioresearch Pvt.Ltd



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SREE SANKARA COLLEGE, KALADY – 683 574

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☎ +91 9847 865 409
📍 KRIBS BIONEST KINFRA Hi-Tech Park,
Kalamassery Kochi Kerala 683 503

CERTIFICATE

This is to certify that the thesis entitled **PCR Amplification Of Human GAPDH Gene, Sequencing And Sequence Analysis** an authentic record of the research work carried out by **Ms. Renna Jojo**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin
September 2022

Dr. Salini Bhasker
Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P O, KALADY, ERNAKULAM -683574
☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **“PCR Amplification of Human GAPDH Gene, Sequencing and Sequencing Analysis”** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **RENNA JOJO** under the guidance of **Dr. SALINI BHASKER**, Director, Scopeful Bioresearch Pvt.Ltd, Cochin.

Place: Kalady

Date: 28-09-2022


Mrs. SIVAPRABHA T S

Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1  SIVAPRABHA T S

2 Dr. ARCHANA T M 



NATURAL COAGULANTS IN WATER PURIFICATION WITH REFERENCE TO *Carica papaya* AND *Ocimum tenuiflorum*

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

SALIYA C S

Reg. No. 20001102136

Under the guidance of

Dr. SALINI BHASKER

Director & Head of Research

Scopeful Bioresearch



**DEPARTMENT OF BIOCHEMISTRY SREE SANKARA COLLEGE, KALADY –
683574**

(Affiliated to Mahatma Gandhi University, Kottayam)

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☎ +91 9847 865 609

📍 KRIBS BIONEST, KINFRA Hi-Tech Park,
Kalamassery, Kochi, Kerala - 683 503.

CERTIFICATE

This is to certify that the thesis entitled **Natural Coagulants In Water Purification With Reference To *Carica papaya* And *Ocimum tenuiflorum*** is an authentic record of the research work carried out by **Ms. Saliya C.S**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin

September 2022

Dr. Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE
MATTOOR P O, KALADY, ERNAKULAM -683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "**NATURAL COAGULANTS IN WATER PURIFICATION TO *Carica papaya* AND *Ocimum tenuiflorum***" submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **SALIYA C S** under the guidance of **Dr. SALINI BHASKER**, Director, Scopeful Bioresearch Pvt.Ltd, Cochin.

Place: Kalady

Date: 29/9/22

Mrs. SIVAPRABHA T S
Head of the Department



Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1 Dr. Lijo Thomas

2 SIVAPRABHA T.S.



**PACLITAXEL LOADED SELENIUM NANOPARTICLE
FOR COLON CANCER TREATMENT**

Dissertation Submitted to

MAHATHMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

SANDRA N NAIR

Reg No: 200011020137

Under the guidance of

Dr T T SREELEKHA

Associate professor

Division Of Cancer Research

Regional Cancer Centre

Thiruvananthapuram



**DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY-683574**

September 2022

REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India

Fax: +91 471 2442530

Phone: +91 471 2442541

Website: www.rccctm.org

E-mail: webmaster@rccctm.gov.in

No. RCC/982/2020-ACAD/2/24

Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled "**Paclitaxel Loaded Selenium Nanoparticle for Colon Cancer Treatment**" is a bonafide record of the Project work done by **Ms. Sandra N. Nair**, M. Sc. Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Ernakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Sreelekha T.T. Associate Professor, Laboratory of Biopharmaceuticals and Nanomedicine, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs. Anju S. Kumar, Head of the Department, Department of Biochemistry, Sree Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.

External Guide

DR. T.T. SREELEKHA PhD
Associate Professor
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
Kerala, India

Head of the Department

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA

DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY, KERALA -683574



BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **“PACLITAXEL LOADED SELENIUM NANOPARTICLE FOR COLON CANCER TREATMENT”** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **Ms. SANDRA N NAIR**, during the year 2022, under the guidance of **Dr. T T SREELEKHA**, Associate professor, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram.


Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Date :

Place :

Examiner :

(1)  S. V. PRABHAKAR

(2)  DR. ARCHANA T M



**“DEVELOPMENT OF MANUKA HONEY LOADED
CHITOSAN-PVA FOAM DRESSINGS-A SOLUTION FOR
ADVANCED WOUND CARE”**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

in partial fulfillment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

SANGEETH C Reg. No. 200011020138

Under the guidance of

Dr. LYNDA VELUTHERIL THOMAS

Scientist E,

Division of tissue engineering and regenerative technologies Sree Chitra Tirunal Institute for

Medical Sciences and Technology

(An Institution of National Importance), Thiruvananthapuram



DEPARTMENT OF BIOCHEMISTRY SREE SANKARA COLLEGE, KALADY

(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM – 695011, INDIA
(An Institute of National Importance under Govt. of India)



CERTIFICATE

This is to certify that the dissertation entitled “**Development Of Manuka Honey Chitosan - PVA Foam Dressing - A Solution For Advanced Wound Care** submitted by **Mr. Sangeeth C** (Reg No 200012020138), Department of Biochemistry, Sree Sankara College, Kalady (Affiliated to Mahatma Gandhi University, Kottayam), in partial fulfilment for the award of the degree of Master of Science in Biochemistry by Mahatma Gandhi University Kottayam is a record of bonafide work carried out during May-August 2022 by him under my supervision here at Division of Tissue Engineering and Regenerative Technologies, Biomedical Technology Wing. Sree Chitra Tirunal Institute for Medical Sciences and Technology Poojappura Campus, Thiruvananthapuram 695012, Kerala, India

Thiruvananthapuram

Date: 6/8/2022


Dr. Lynda V Thomas

Dr. Lynda V. Thomas
Scientist E, DERT
BMT Wing, SCTIMS

**DEPARTMENT OF BIOCHEMISTRY SREE SANKARA
COLLEGE, KALADY**





BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “**DEVELOPMENT OF MANUKA HONEY LOADED CHITOSAN-PVA FOAM DRESSINGS-A SOLUTION FOR ADVANCED WOUND CARE**” submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **SANGEETH C** during the year 2022, under the guidance of **Dr. LYNDIA VELUTHERIL THOMAS**, Scientist E, Division of tissue engineering and regenerative technologies ,Biomedical Technology Wing, SreeChitra Tirunal Institute for Medical Sciences and Technology (An Institution of National Importance), Thiruvananthapuram.

Place: Kalady

Date: 29-09-2020

Examiners:

1. Dr. Liji Thomas 
2. SIVAPRABHA-T.S. 




Mrs. Sivaprabha T S

Head Of The Department

Dept. of Biochemistry
Sree Sankara College
Kalady

**ANALYSIS OF LIPID PROFILE DATA IN
ADULTS FOR THEIR DISTRIBUTIONS, GENDER
DIFFERENCES AND CORRELATIONS**

Dissertation submitted to
MAHATMA GANDHI UNIVERSITY

In partial fulfillment of the requirement for the award of the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted By

SHAHANAZ BINTH AHAMED BINABDULLA

Reg No: 200011020139

Under the Guidance of

**DR. JOSE JACOB MD,
HEAD OF THE DEPARTMENT OF BIOCHEMISTRY
AMALA INSTITUTE OF MEDICAL SCIENCES
THRISSUR**



**DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY-683574**

(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022



**AMALA INSTITUTE OF MEDICAL SCIENCES
AMALANAGAR, THRISSUR-680555, KERALA.**

DEPARTMENT OF BIOCHEMISTRY

Date: 30.07.2022

CERTIFICATE

This is to certify that this dissertation entitled “Analysis of Lipid profile data in adults for their distributions, gender differences and correlations” submitted by Ms. Shahanaz Bintahamed Binabdulla to MG University, is the work done using the methods standardised by me, and using sample data of ongoing projects, during a period of three months from May to July 2022, under the supervision and guidance of Dr. Jose Jacob, Amala Institute of Medical Sciences, Amala Nagar, Thrissur, Kerala.

**PROFESSOR & HEAD
DEPARTMENT OF BIOCHEMISTRY
AMALA INSTITUTE OF MEDICAL SCIENCES.
AMALANAGAR, THRISSUR - 680 555.**

**Dr. Jose Jacob, MD
Guide, Head of Department of Biochemistry
Amala Institute of Medical Sciences,
Amala Nagar, Thrissur, Kerala.**

POST GRADUATE DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY, KERALA -683574



CERTIFICATE

This is to certify that the dissertation entitled "ANALYSIS OF LIPID PROFILE DATA IN ADULTS FOR THEIR DISTRIBUTIONS, GENDER DIFFERENCES AND CORRELATIONS" is submitted by Ms. SHAHANAZ BINTH AHAMED BINABDULLA at Sree Sankara College, Kalady affiliated to Mahatma Gandhi University, kottayam in the partial fulfillment of requirements for award of the degree of Master of Science in Biochemistry is an authentic record of research work carried out by her Under the guidance and supervision of Dr Jose jacob, Head of department of Biochemistry, Amala institute of medical sciences thrissur

Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Date : ~~Kalady~~ 30-9-2022

Place : Kalady.

Examiner :

(1) SIVAPRABHA T.S.

(2) Dr. ARCHANA T M



**CAFFEINE AND NICOTINE INDUCE TUMOR IN
IN VITRO CELL CULTURE AND P53 GENE
EXPRESSION**

Dissertation submitted to
MAHATMA GANDHI UNIVERSITY
In partial fulfillment for the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by
SNEHA PAULSON
Reg. No. 200011020140

Under the guidance of
Dr. SALINI BHASKER
Director & Head of Research
Scopeful Bioresearch



DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



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✉ service@scopefulbioresearch.com
☎ +91 9847 065 069
☎ +91 9847 865 609
📍 KRIBS BIONEST KINFRA Hi- Tech Park,
Kalamassery Kochi Kerala - 683 503.

CERTIFICATE

This is to certify that the thesis entitled **Caffeine And Nicotine Induced Tumor In *Invitro* Cell Culture And p53 Gene Expression** is an authentic record of the research work carried out by **Ms. Sneha Paulson**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin
September 2022

Dr. Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the Institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

MATTOOR P O, KALADY, ERNAKULAM -683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"CAFFEINE AND NICOTINE INDUCED TUMOR IN *IN VITRO* CELL CULTURE AND P53 GENE EXPRESSION"** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **SNEHA PAULSON** under the guidance of **Dr. SALINI BHASKER**, Director, Scopeful Bioresearch Pvt.Ltd, Cochin.

Place: Kalady



Date: 28 -09-2022




Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

- 1 Dr. Liji Thomas 
- 2 Reshma Prasad 

INVESTIGATION OF THE ANTI-TUMOUR EFFICIENCY OF *Camellia sinensis* LEAF EXTRACT ON MDA-T32 PAPILLARY THYROID CARCINOMA CELLS.

Dissertation Submitted to
MAHATHMA GANDHI UNIVERSITY
in partial fulfillment of the requirement for the award of the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by
SREEKKUTTY N SHAJI
Reg No: 200011020141
Under the guidance of
Dr. GURUVAYOORAPPAN C
ASSOCIATE PROFESSOR
DIVISION OF CANCER RESEARCH
REGIONAL CANCER CENTRE , THIRUVANANTHAPURAM



DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY-683574



REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India

Fax: +91 471 2442539

Phone: +91 471 2442541

Website: www.rcctvm.org

E-mail: webmaster@rcctvm.gov.in

No. RCC/982/2020-ACAD2/20

Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled “**Investigation of the Anti-Tumour Efficiency of *Camellia sinensis* Leaf Extract on MDA-T32 Papillary Thyroid Carcinoma Cells**” is a bonafide record of the Project work done by **Ms. Sreekkutty N. Shaji**, M. Sc. Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Ernakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Guruvayoorappan. C., Associate Professor, Laboratory of Immunopharmacology & Experimental Therapeutics, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs. Anju S. Kumar, Head of the Department, Department of Biochemistry, Sere Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.

External Guide

Dr. Guruvayoorappan. C
Associate Professor
Cancer Research, RCC

Head of the Department

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA

**POST GRADUATE DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY, KERALA - 683574**



CERTIFICATE

This is to certify that the dissertation entitled "INVESTIGATION OF THE ANTI-TUMOUR EFFICACY OF *Camellia sinensis* LEAF EXTRACT ON MDA- T32 PAPILLARY THYROID CARCINOMA CELLS" is submitted by
Ms. SREEKUTTY N SHAJI, M.Sc Biochemistry, Sree Sankara College, Kalady affiliated to Mahatma Gandhi University, Kottayam in the partial fulfillment of requirements for award of the degree of Master of Science in Biochemistry in an authentic record of review work carried out by her study. The review has not formed the basis for the study. The review has not formed the basis for the award of any Degree/ Diploma/ Associateship or other similar title of any candidate of any University.


Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Date: 30-09-2022

Place: Kalady



Examiner:

(1) SIVAPRABHA-T.S. 

(2) Dr. ARCHANA T M 

CPT1A MEDIATED FATTY ACID OXIDATION PROMOTES METASTASIS IN ORAL SQUAMOUS CELL CARCINOMA

Dissertation Submitted to

MAHATHMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

SREELEKSHMI S P

Reg No: 200011020142

Under the guidance of

DR. S. KANNAN

PROFESSOR & HEAD

DIVISION OF CANCER RESEARCH

REGIONAL CANCER CENTRE

THIRUVANANTHAPURAM



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY-683574



REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India

Fax: +91 471 2442539

Phone: +91 471 2442541

Website: www.rcctvm.org

E-mail: webmaster@rcctvm.gov.in

No. RCC/982/2020-ACAD2/22

Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled “**CPT1A Mediated Fatty Acid Oxidation Promotes Metastasis in Oral Squamous Cell Carcinoma**” is a bonafide record of the Project work done by **Ms. Sreelekshmi S.P.**, M. Sc. Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Ernakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Kannan. S, Professor & Head, Laboratory of Cell Cycle Regulation and Molecular Oncology, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs. Anju S. Kumar, Head of the Department, Department of Biochemistry, Sere Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.

External Guide

Head of the Department

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA

POST GRADUATE DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY, KERALA -683574



CERTIFICATE

This is to certify that the dissertation entitled “CPT1A Mediated Fatty Acid Oxidation Promotes Metastasis in Oral Squamous Cell Carcinoma” is a bonafide record of project work carried out by Ms. SREELEKSHMI SP, M.Sc Biochemistry, Sree Sankara College, Kalady affiliated to Mahatma Gandhi University, kottayam in the partial fulfillment for the award of the degree of Master of Science in Biochemistry during the academic year 2020 - 2022.

Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Date : 30-9-22
Place : Kalady



Examiner

: 1. Dr. Liji Thomas

2. Reshma Prasad

**INHIBITION OF AUTOPHAGY BY BAFILOMYCIN A1
IMPAIRS MITOCHONDRIAL METABOLISM IN MUSCLE
CELLS**

Dissertation submitted to
MAHATMA GANDHI UNIVERSITY
In partial fulfillment for the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by
SREEVALSAN V R
Reg. No. 200011020143

Under the guidance of
Dr. G SREENIVAS
Scientist G and Head
Department of Biochemistry
Sree Chitra Thirunal institute
of Medical Sciences



DEPARTMENT OF BIOCHEMISTRY
SREESANKARA COLLEGE, KALADY-683574
(Affiliated to Mahatma Gandhi University, Kottayam)

August 2022

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनन्तपुरम, केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND
TECHNOLOGY**

THIRUVANANTHAPURAM, KERALA - 695 011
(An Institution of National Importance, Department of Science and Technology, Govt. of India)
टेलीफोन नं./Telephone No. 0471-2443152 फाक्स/Fax 0471-24464332550728
ई-मेल/E-mail :set@setimst.ac.in वेबसाइट/ Website : www.setimst.ac.in




CERTIFICATE

This is to certify that the dissertation entitled '**Bafilomycin A1 Impairs Mitochondrial Metabolism In Muscle Cells**' submitted by **SREEVALSAN V R** in partial fulfilment of the Degree of Master of Science in Biochemistry at Sree Sankara College, Kalady, affiliated to MG University, Kottayam, is based on his studies under the guidance of the undersigned in the Department of Biochemistry, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during the period from 05/05/2022 to 04/08/2022. It is further certified that this dissertation has not formed the basis for award of any Degree/Diploma/Associateship/Fellowship/ similar title by any candidate of any university.

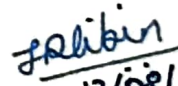
Head

Department of Biochemistry


12/8/2022

Supervisor

Department of Biochemistry


12/08/2022

Dr. CIBIN T.R. PhD.
Assistant Professor, Department of Biochemistry,
Sree Chitra Tirunal Institute for Medical Science & Technology
Thiruvananthapuram - 695 011, Kerala, India





DEPARTMENT OF BIOCHEMISTRY SREESANKARA COLLEGE

MATTOOR PO, KALADY, ERNAKULAM -683574

☎ 0484-2462341 ✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "INHIBITION OF AUTOPHAGY BY BAFILOMYCIN A1 IMPAIRS MITOCHONDRIAL METABOLISM IN MUSCLE CELLS" submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **SREEVALSAN V R** under the guidance of **Dr. G SREENIVAS**, Head of the department, Sree Chitra thirunal Institute of Medical sciences, Thiruvananthapuram

Place: Kalady
Date:

Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady



Examiners

1

2



**EXPRESSIONAL VARIATION OF HOUSEKEEPING
GENES-GAPDH, BETA-ACTIN AND 18SrRNA IN
HUMAN BLOOD**

Dissertation submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfilment for the degree of

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

THAJMAL.A.U

REG. NO. 200011020145

Under the guidance of

Dr. SALINI BHASKER

Director and Head of research

Scopeful Bioresearch, Cochin



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA SANKARA COLLEGE, KALADY – 683 574

(Affiliated to Mahatma Gandhi University, Kottayam)

2022



Scopeful Bioresearch

Thirikkakara, Ernakulam, Kerala - 682021

✉ service@scopefulbioresearch.com

☎ +91 9847 865 069

+91 9847 865 609

📍 KPIBS BIONEEST, KINFPA Hi-Tech Park,
Kalamassery Kochi, Kerala - 683 503

CERTIFICATE

This is to certify that the thesis entitled **Expressional Variation Of Housekeeping Genes –GAPDH, β actin, 18S rRNA In Human Blood** is an authentic record of the research work carried out by **Ms. Thajmal A.U**, Sree Sankara College, Kalady, Ernakulam under my supervision in partial fulfillment of the requirements for the M.Sc. degree in **Biochemistry** of the **Mahatma Gandhi University, Kottayam** and further that no part thereof has been presented before for any other degree.

Cochin

September 2022

Dr. Salini Bhasker

Director & Head of Research
Scopeful Bioresearch PVT LTD

Head of the institution:

Dr. C. Mohankumar





DEPARTMENT OF BIOCHEMISTRY SREE SANKARA COLLEGE

MATTOOR P.O., KALADY, ERNAKULAM - 683574

☎ 0484 2452341

✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"EXPRESSIONAL VARIATION OF HOUSEKEEPING GENES GAPDH, BETA-ACTIN AND 18SrRNA IN HUMAN BLOOD"** submitted to Mahatma Gandhi University in the partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN BIOCHEMISTRY**, is a record of original work done by **THAJMAL. A. U.** under the guidance of **Dr. SALINI BHASKER**, Director, Scopeful Bioresearch Pvt.Ltd, Cochin.



Place: Kalady

Date: 28-09-2022


Mrs. SIVAPRABHA T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1. SIVAPRABHA T.S. 
2. Dr. ARCHANA T.M. 



M

ROLE OF ALPHA TOCOPHEROL IN THE MANAGEMENT OF OXIDATIVE STRESS USING HUMAN ERYTHROCYTES MODEL

Dissertation Submitted to

MAHATMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

VIDYA K RAMESH

Reg. No.200011020146

Under the guidance of

Dr. MATHEW JOHN

SCIENTIST C

JUBILEE CENTRE FOR MEDICAL RESEARCH, THRISSUR



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

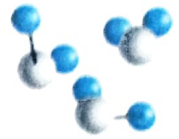
KALADY-683574

2020-2022



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Recognised Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research (DSIR), Ministry of Science & Technology, Government of India. F. No. 21-TU-V/2015

CERTIFICATE

This is to certify that Ms. Vidya K Ramesh, M.Sc. Biochemistry student of Sree Sankara College, Kalady has successfully completed her dissertation work in **“Role of alpha tocopherol in the management of oxidative stress using human erythrocyte model”** from 12/05/2022 to 08/07/2022 at this centre under my supervision and guidance.

Place: Thrissur
Date: 08.07.2022



Dr. Mathew John
Scientist C
Jubilee Centre for Medical Research

POST GRADUATE DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

PB.1 KALADY, KERALA-683574

Ph:0484-2462341




CERTIFICATE

This is to certify that the dissertation entitled "**ROLE OF ALPHA TOCOPHEROL IN THE MANAGEMENT OF OXIDATIVE STRESS USING HUMAN ERYTHROCYTE MODEL**" submitted by **Ms. VIDYA K RAMESH** M.Sc. Biochemistry, Sree Sankara college affiliated to Mahatma Gandhi University, Kottayam in partial fulfillment of requirements for award of the degree of Master of Science in Biochemistry is an authentic record of research work carried out by her study. The dissertation has not formed the basis for the award of any Degree/Diploma/Associate ship or other similar title of any candidate of any university.

Date: 28/9/22

Place: KALADY

Examiners:

1. Dr. Liji Thomas 

2. Reshma prasad 




Lecturer in charge

Dept. of Biochemistry
Sree Sankara College
Kalady

**PROGNOSTIC SIGNIFICANCE OF CYTOGENETIC STUDIES
AND PTEN MUTATION STATUS IN PEDIATRIC ACUTE
LYMPHOBLASTIC LEUKEMIA**

Dissertation Submitted to

MAHATHMA GANDHI UNIVERSITY

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

MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by

VIJISHA K R

Reg No: 200011020147

Under the guidance of

Dr. HARIHARAN. S

**ADDITIONAL PROFESSOR, DIVISION OF CANCER RESEARCH,
REGIONAL CANCER CENTRE, THIRUVANANTHAPURAM-695011,
KERALA, INDIA**



DEPARTMENT OF BIOCHEMISTRY

SREE SANKARA COLLEGE

KALADY-683574



REGIONAL CANCER CENTRE

Medical College P.O., Thiruvananthapuram-695011, India
Fax: +91 471 2442539 Phone: +91 471 2442541
Website: www.rccrvm.org E-mail: webmaster@rccrvm.gov.in

No. RCC/982/2020-ACAD2/21
Date: 30/06/2022

CERTIFICATE

This is to certify that the dissertation entitled "**Prognostic Significance of Cytogenetic Studies and PTEN Mutations Status in Pediatric Acute Lymphoblastic Leukemia**" is a bonafide record of the Project work done by **Ms. Vijisha K. R., M. Sc.** Biochemistry student of Sree Sankara College, Kalady and submitted to Sree Sankara College Kalady, Emakulam affiliated to Mahatma Gandhi University, Kottayam for the period from 11th April 2022 to 30th June 2022 under the joint guidance of Dr. Hariharan.S, Additional Professor, Laboratory of Cytogenetics and Molecular Diagnostics, Division of Cancer Research, Regional Cancer Centre, Thiruvananthapuram and Mrs. Anju S. Kumar, Head of the Department, Department of Biochemistry, Sere Sankara College Kalady and that no part of this work has been presented before for the award of any other degree in any university.

External Guide

DR. HARIHARAN S. PhD (CPNH USA)
Associate Professor
Laboratory of Cytogenetics &
Molecular Diagnostics
Division of Cancer Research
Regional Cancer Centre
Medical College Campus, Thiruvananthapuram
695011 Kerala State, India

Head of the Department

S. KANNAN, Ph.D.
Professor & Head
Division of Cancer Research
Regional Cancer Centre
Thiruvananthapuram-695011
KERALA

An autonomous centre sponsored for Cancer Treatment & Research by Government of India and Government of Kerala. Donations to this Centre are exempt under Section 80G of the I.T. Act, 1961.

Life beyond cancer

CERTIFICATE

**POST GRADUATE DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE
KALADY, KERALA -683574**



CERTIFICATE

This is to certify that the thesis entitled “**PROGNOSTIC SIGNIFICANCE OF CYTOGENETIC STUDIES AND PTEN MUTATION STATUS IN PEDIATRIC ACUTE LYMPHOBLASTIC LEUKEMIA**” is submitted by **Ms. VIJISHA K R** at Sree Sankara College, Kalady affiliated to Mahatma Gandhi University, Kottayam in the partial fulfillment of requirements for award of the Degree of **Master of Science in Biochemistry** is an authentic record of research work carried out by her under the guidance and supervision of Dr. Hariharan S, Additional Professor, Division of Cancer Research, Regional Cancer Center, Thiruvanthapuram.

Date : 30/09/2022
Place : Kalady .

Examiner :

Dr. Liji Thomas 
30/9/2022

Reshma prasad 




Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Effect of *Andrographis paniculata* and *Tinospora cordifolia* combination on LPS induced inflammation in peripheral blood mononuclear cells: possible role in inflammatory cascade

Dissertation submitted to
MAHATMA GANDHI UNIVERSITY

In partial fulfillment for the degree of
MASTER OF SCIENCE IN BIOCHEMISTRY

Submitted by
SURAJ S.
Reg. No. 200011020144

Under the guidance of
Dr. O.S. NIRMAL GHOSH
Chief Scientific Officer
Vitromix Lab Pvt. Ltd., Kochi



DEPARTMENT OF BIOCHEMISTRY
SREE SANKARA COLLEGE, KALADY – 683574
(Affiliated to Mahatma Gandhi University, Kottayam)

September 2022



DEPARTMENT OF BIOCHEMISTRY SREE SANKARA COLLEGE

MATTOOR P O, KALADY, ERNAKULAM – 683574

☎ 0484-2462341

✉ info@ssc.ac.in

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled “EFFECT OF *ANDROGRAPHIS PANICULATA* AND *TINOSPORA CORDIFOLIA* COMBINATION ON LPS INDUCED INFLAMMATION IN PERIPHERAL BLOOD MONONUCLEAR CELLS: POSSIBLE ROLE IN INFLAMMATORY CASCADE” submitted to Mahatma Gandhi University in the partial fulfillment of the requirement for the award of the degree of Master of Science in Biochemistry, is a record of original work done by Mr. SURAJ S. under the guidance of DR. O.S. NIRMAL GHOSH, Chief Scientific Officer, Vitromix Lab Pvt. Ltd., Kochi.

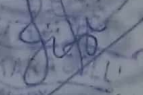
Place : Kalady

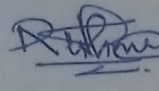
Date : 26/09/2022

Mrs. Sivaprabha T S
Head of the Department

Dept. of Biochemistry
Sree Sankara College
Kalady

Examiners

1 Dr. Lije Thomas 

2 Reshma Prasad 



www.ssc.edu.in



sscbiochemistry@gmail.com



VITROMIX LAB PVT LTD

CENTER FOR MOLECULAR BIOLOGY AND APPLIED SCIENCE

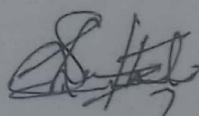
Thripunithura, Kochi- 682301. Ph: 9496950773

Email: vitromixvrc@gmail.com; CIN: U73200KL2021PTC071435

CERTIFICATE

This is to certify that the dissertation entitled “Effect of *Andrographis paniculata* and *Tinospora cordifolia* combination on LPS induced inflammation in peripheral blood mononuclear cells: possible role in inflammatory cascade” is submitted by Mr. Suraj S (200011020144) to Sree Sankara College, Kalady (Affiliated to M.G. University, Kottayam), in partial fulfillment of the requirement for the award of Master of Science in Biochemistry, is an authentic record of the work carried out under the supervision and guidance of Dr. O.S. Nirmal Ghosh, Chief Scientific Officer, Vitromix Lab Pvt Ltd., Kochi. No part of this work has been presented for the award of any degree, fellowship or other similar titles of any University or society.




CO-ORDINATOR

❖ R&D IN LIFESCIENCE

TECHNOLOGY TRANSFER

CONTRACT RESEARCH

Dear Ms. Parvathy,

Greetings from Agappe Diagnostics Ltd!

We are glad to inform you that you have been selected as an Intern in the QC department at Agappe Diagnostics Ltd, based at our Corporate Office at Pattimattom. Please note that the internship will be on a non-stipend basis and the span of the internship is 3 months starting from 13/Oct/2022 (tomorrow). Please carry the below documents when you come for joining tomorrow.

1. Adhar Card – One copy (both sides)
2. PAN Card – One copy
3. 1 passport size photo

Please report at our Corporate Office at Pattimattom tomorrow by 8.30 AM.