

**SURVEILLANCE OF CULTIVABLE AND NON-  
CULTIVABLE MULTIDRUG-RESISTANT MICROBES  
FROM DRAINS OF CHENNAI CITY**

**PROJECT REPORT**

*Submitted by*

**VISHWA R (920418214056)**

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

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**



**DEPARTMENT OF BIOTECHNOLOGY**

**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(An Autonomous Institution – Affiliated to Anna University, Chennai)**

**K. VELLAKULAM – 625 701 (Near Virudhunagar)**

**MAY 2022**

# KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution- Affiliated to Anna University, Chennai)

K.VELLAKULAM - 625 701 (Near Virudhunagar)

## BONAFIDE CERTIFICATE

Certified that the project report “Surveillance of cultivable ad non-cultivable multidrug-resistant microbes from drains of Chennai city” is the bonafide work of “Mr. R. Vishwa (920418214056)” who carried out the project work under my supervision.

*[Handwritten Signature]*  
SIGNATURE

**Dr. R. Shyam Kumar**  
HOD  
**Head of the Department**  
Kamaraj College of Engineering & Technology  
Professor  
VIRUDHUNAGAR.

Dept. of Biotechnology  
Kamaraj College of Engg & Tech  
K. Vellakulam, Near Virudhunagar

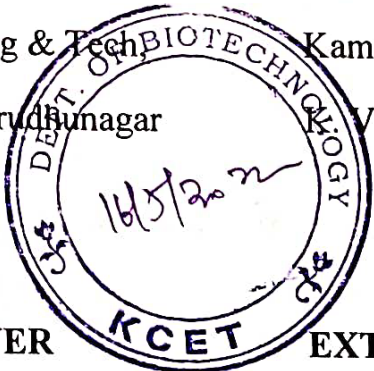
*[Handwritten Signature]*  
INTERNAL EXAMINER

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**Dr. K. Geetha**  
SUPERVISOR,  
Associate professor,  
Dept. of Biotechnology

Kamaraj College of Engg & Tech  
K. Vellakulam, Near Virudhunagar

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EXTERNAL EXAMINER



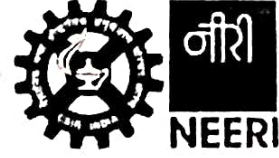


# राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान

(राष्ट्रीय वैज्ञानिक अनुसंधान परिषद)

एन.ई.टी. १०२ पर्यवेक्षण संशोधन संकेंद्र, मद्रास कॉम्प्लेक्स, तारामणी पी.ओ.

चेन्नई - ६०० ११३, भारत



**NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE**

(Council of Scientific & Industrial Research)

Chennai Zonal Laboratory, CSIR Madras Complex, Taramani P.O.

Chennai - 600 113, India

**Dr. T. Rajesh**  
Sr. Scientist

06.05.2022

## CERTIFICATE OF PROJECT COMPLETION

This is to certify that Mr. R. Vishwa (Reg. No: 920418214056) doing his final year B. Tech Biotechnology programme at Kamaraj College of Engineering and Technology, Virudhunagar has successfully completed his project work entitled "Surveillance of cultivable and non-cultivable multidrug-resistant microbes from drains of Chennai city" guided internally by Dr. K. Geetha, Associate professor, Department of Biotechnology, Kamaraj College of Engineering and Technology, Virudhunagar with the external guidance of Dr. T. Rajesh, Senior Scientist, CSIR-NEERI, CMC, Chennai zonal laboratory, Chennai. During the project tenure, his attendance was 100% as mandated and he has completed all the assigned tasks.

डॉ. टी. राजेश Dr. T. Rajesh  
वरिष्ठ वैज्ञानिक Senior Scientist  
एन.ई.टी. आर - नीरी CSIR-NEERI  
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**PROCESS OPTIMIZATION OF BIOSURFACTANT  
PRODUCING ENVIRONMENTAL BACTERIAL  
ISOLATE FOR THE TREATMENT OF PETROLEUM  
REFINERY SLUDGE**

**A PROJECT REPORT**

***SUBMITTED BY***

**YOGESH M (920418214057)**

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

**of**

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**



**DEPARTMENT OF BIOTECHNOLOGY**

**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY,  
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**(An Autonomous Institution – Affiliated to Anna University, Chennai)**

**MAY 2022**

**KAMARAJ COLLEGE OF ENGINEERING AND  
TECHNOLOGY**

**(An Autonomous Institution- Affiliated to Anna University, Chennai)**

**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that the project report “Process Optimization of Biosurfactant Producing Environmental Isolates for the Treatment of Petroleum Refinery Sludge” is the bonafide work of “Mr. M. Yogesh (920418214057)” who carried out the project work under my supervision.

*[Handwritten Signature]*

**SIGNATURE**

**Dr. R. Shyam Kumar**

**PROFESSOR AND HEAD,  
DEPT. OF BIOTECHNOLOGY  
Dept. of Biotechnology Engineering & Technology  
Kamaraj College of Engg & Tech  
VIRUDHUNAGAR  
K. Vellakulam, Near Virudhunagar**

*[Handwritten Signature]*

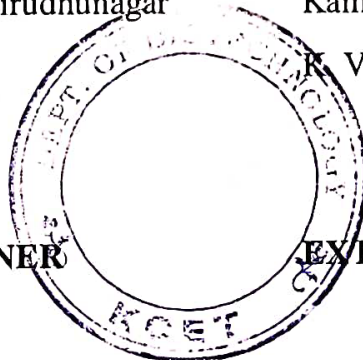
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**Dr. K. Geetha**

**SUPERVISOR,  
Associate professor,  
Dept. of Biotechnology  
Kamaraj College of Engg & Tech  
K. Vellakulam, Near Virudhunagar**

*[Handwritten Signature]*  
16/5/22

**INTERNAL EXAMINER**



*[Handwritten Signature]*

**EXTERNAL EXAMINER**

# द्वीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

चेन्नई क्षेत्र प्रयोगशाला, सीएसआईआर मद्रास कॉम्प्लेक्स, तारामणी पी.ओ.

चेन्नई - 600 113, भारत



**NATIONAL ENVIRONMENTAL ENGINEERING RESEARCH INSTITUTE**

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Chennai Zonal Laboratory, CSIR Madras Complex, Taramani P.O.

Chennai - 600 113, India

**Dr. T. Rajesh**

**Sr. Scientist**

06.05.2022

## CERTIFICATE OF PROJECT COMPLETION

This is to certify that Mr. M. Yogesh (920418214057) doing his final year B. Tech Biotechnology programme at Kamaraj College of Engineering and Technology, Virudhunagar has successfully completed his project work entitled "Process optimization for biosurfactant producing environmental bacterial isolate(s) for treatment of petroleum refinery sludge" guided internally by Dr. K. Geetha, Associate professor, Department of Biotechnology, Kamaraj College of Engineering and Technology, Virudhunagar with the external guidance of Dr. T. Rajesh, Senior Scientist, CSIR-NEERI, Chennai zonal laboratory, CMC, Chennai. During the project tenure, his attendance was 100% as mandated and he has completed all the assigned tasks.

डॉ. त. राजेश Dr. T. Rajesh  
वरिष्ठ वैज्ञानिक Senior Scientist  
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**DEVELOPMENT OF AGRO WASTE BASED  
HETEROGENEOUS CATALYST FOR THE PRODUCTION OF  
BIODIESEL FROM USED COOKING OIL**

**PROJECT REPORT**

*Submitted by*

**AKASH R (920418214008)**

**AREEF SULAIMAN M (920418214013)**

**BHAVESH CHANDRU P (920418214014)**

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

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**



**DEPARTMENT OF BIOTECHNOLOGY**

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**K. VELLAKULAM - 625 701 (Near Virudhunagar)**

**MAY 2022**



**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY**  
 (An Autonomous Institution- Affiliated to Anna University, Chennai)  
 K. VELLAKULAM - 625 701 (Near Virudhunagar)

**BONAFIDE CERTIFICATE**

Certified that the project report "DEVELOPMENT OF AGRO WASTE BASED HETEROGENEOUS CATALYST FOR THE PRODUCTION OF BIODIESEL FROM USED COOKING OIL" is the bonafide work of "AKASH R (920418214008), AREEF SULAIMAN M (920418214013) & BHAVESH CHANDRU P (920418214014)" who carried out the project work under my supervision.

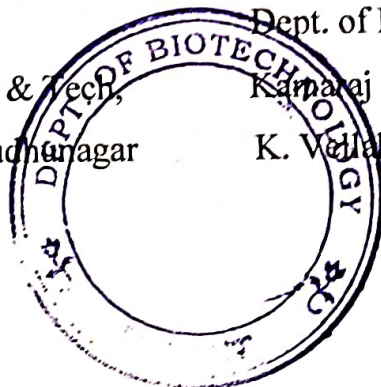
  
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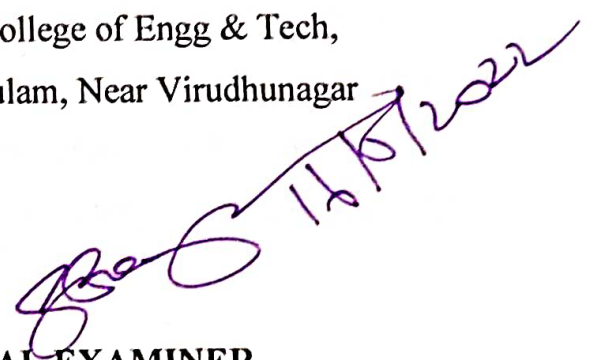
**Dr. R. Shyam Kumar**, HOD  
 DEPT. OF BIOTECHNOLOGY  
 Head of the Department, Engineering & Technology  
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 Dept. of Biotechnology,  
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**Dr. I. Ganesh Moorthy**,  
 Supervisor,  
 Associate Professor,  
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 Kamaraj College of Engg & Tech,  
 K. Vellakulam, Near Virudhunagar

  
INTERNAL EXAMINER



  
EXTERNAL EXAMINER

**UTILIZATION OF OIL INDUSTRY WASTE FOR THE  
PRODUCTION OF RHAMNOLIPIDS AND ITS  
APPLICATION IN TREATMENT OF OIL  
CONTAMINATED SOIL**

**PROJECT REPORT**

*Submitted by*

**MOHAMEDTHAMIZUL G (920418214030)**

**MUGESH KANNA K (920418214031)**

**SRI SANTHOSH RAJ R (920418214048)**

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

**BACHELOR OF ENGINEERING**

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**BONAFIDE CERTIFICATE**

Certified that the project report “ULTIZATION OF INDUSTRY WASTE FOR THE PRODUCTION OF RHAMNOLIPID AND ITS APPLICATION IN TREATMENT OF OIL CONTAMINATED SOILS” is the bonafide work of “MOHAMED THAMIZUL G (920418214030), MUGESH KANNA K (92041824031) & R. SRI SANTHOSH RAJ (920418214048)” who carried out the project work under my supervision.

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**Dr. R. Shyam Kumar**

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**Head of the Department**

DEPT. OF BIOTECHNOLOGY  
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**Dr. S. Maria Amal Raj**

**SUPERVISOR ,**

Assistant Professor ,

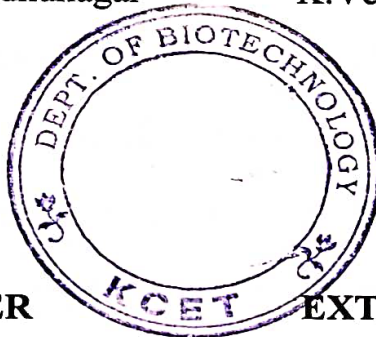
Dept. of Biotechnology,

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*[Handwritten Signature]*  
16/5/22

**INTERNAL EXAMINER**



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16/5/22

**EXTERNAL EXAMINER**

**PROCESS DEVELOPMENT FOR TEXTILE DYE  
REMOVAL BY BIOSORPTION USING  
HYBRID HYDROGEL**

**A PROJECT REPORT**

*Submitted by*

**ABIRAMASUNDARI S (920418214004)**

**JESINTHA K L (920418214020)**

**MADHUBALA G (920418214026)**

**SHALINI S (920418214045)**

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**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that this project report "PROCESS DEVELOPMENT FOR TEXTILE DYE REMOVAL BY BIOSORPTION USING HYBRID HYDROGEL" is the bonafide work of "ABIRAMASUNDARI S (920418214004), JESINTHA K L (920418214020), MADHUBALA G (920418214026) & SHALINI S (920418214045)" who carried out the project work under my supervision.

*R. Shyam*

**SIGNATURE**

**Dr. R. Shyam Kumar**  
**Head of the Department**

Dept. of Biotechnology,  
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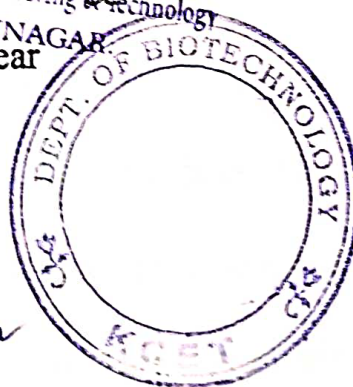
*D. P. ...*  
*16/5/22*  
**INTERNAL EXAMINER**

*S. Mariaamalraj*

**SIGNATURE**

**Dr. S. Mariaamalraj**  
**SUPERVISOR,**  
Assistant Professor,  
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K.Vellakulam, Near  
Virudhunagar

*S. Mariaamalraj*  
**EXTERNAL EXAMINER**





# **DRUG REPURPOSING STUDIES ON COVID PATIENTS WITH DIABETIC ATHEROSCLEROSIS COMPLICATION**

**PROJECT REPORT**

*Submitted by*

**AARTHI A (920418214002)**

**KAVITHA K (920418214022)**

**PRASANNA R (920418214036)**

**RIZWANA A (920418214042)**

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

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**



**DEPARTMENT OF BIOTECHNOLOGY**

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**MAY2022**

**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY**  
(An Autonomous Institution – Affiliated to Anna University, Chennai)

**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that the project report “DRUG REPURPOSING STUDIES ON COVID PATIENTS WITH DIABETIC ATHEROSCLEROSIS COMPLICATION” is the bonafide work of “AARTHI A (920418214002), KAVITHA K (920418214022), PRASANNA R (920418214036), RIZWANA A (920418214042)” who carried out the project work under my supervision.

*R. Shyam*  
**SIGNATURE**

**Dr.R.SHYAMKUMAR**

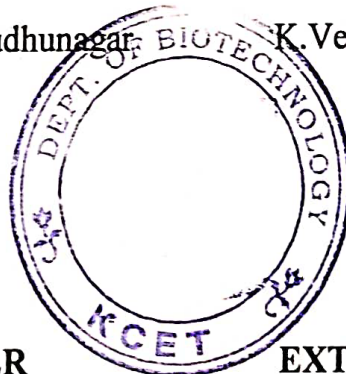
**Head of the Department,**  
HOD  
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*S. Manibalan*  
**SIGNATURE**

**Mr.S.MANIBALAN**

**SUPERVISOR,**  
Associate professor,  
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Kamaraj College of Engg & Tech,  
K.Vellakulam, Near Virudhunagar

*D. Pandu*  
*16/5/22*  
**INTERNAL EXAMINER**



*S. Manibalan*  
*16/5/2022*  
**EXTERNAL EXAMINER**

**PREPARATION AND CHARACTERIZATION OF  
C-PHYCOCYANIN INCORPORATED  
HYDROCOLLOID FOR FUNCTIONAL FOOD  
APPLICATION**

**PROJECT REPORT**

*Submitted by*

**DHOSIJA A (920418214016)  
GAYATHIRI T (920418214017)  
NANDHINI K (920418214032)  
RAGAMBIGAI M (920418214039)**

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

**BACHELOR OF TECHNOLOGY  
IN  
BIOTECHNOLOGY**



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**MAY 2022**

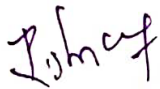
# KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution- Affiliated to Anna University, Chennai)

K.VELLAKULAM - 625 701 (Near Virudhunagar)

## BONAFIDE CERTIFICATE

Certified that the project report "PREPARATION AND CHARACTERIZATION OF C- PHYCOCYANIN INCORPORATED HYDROCOLLOID FOR FUNCTIONAL FOOD APPLICATION" is the bonafide work of "A.DHOSIJA (920418214016), T.GAYATHIRI (920418214017),K.NANDHINI (920418214032) & M.RAGAMBIGAI (920418214039)," who carried out the project work under my supervision.



SIGNATURE

**Dr.R.SHYAMKUMAR**

**Head of the Department,**

DEPT. OF BIOTECHNOLOGY

Professor,

Kamaraj College of Engineering & Technology

Virudhunagar,  
Dept. of Biotechnology,

Kamaraj College of Engg & Tech,

K.Vellakulam, Near Virudhunagar



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**Dr.S.KARTHIKUMAR**

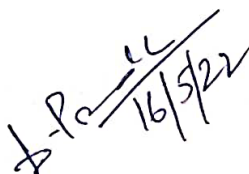
**SUPERVISOR ,**

Associate professor,

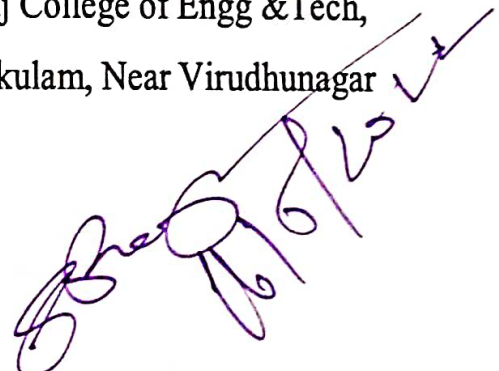
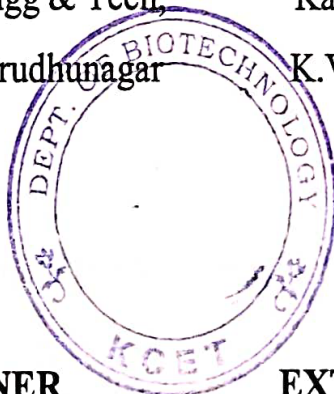
Dept. of Biotechnology,

Kamaraj College of Engg &Tech,

K.Vellakulam, Near Virudhunagar

  
16/5/22

INTERNAL EXAMINER



EXTERNAL EXAMINER

**INHIBITORY EFFECT OF DUAL PEPTIDE  
APTAMER AGAINST UNMUTATED REGIONS OF  
SARS COV 2 SPIKE PROTEIN VARIANTS**

**A PROJECT REPORT**

*Submitted by*

**Allan Blessing Harison Raj. A (920418214010)**

**Nirmala Jothi. A (920418214033)**

**Saranya. R (920418214043)**

**Shalini. M (920418214044)**

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

**BACHELOR OF TECHNOLOGY**

**IN**

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**DEPARTMENT OF BIOTECHNOLOGY  
KAMARAJ COLLEGE OF ENGINEERING AND  
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**MAY 2022**



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**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that the project report on **INHIBITORY EFFECT OF DUAL PEPTIDE APTAMER AGAINST UNMUTATED REGIONS OF SARS COV 2 SPIKE PROTEIN VARIANTS** is the bonafide work of **A. Allan Blessing Harison Raj(18UBTE028), A. Nirmala Jothi (18UBTE016), R. Saranya (18UBTE026) and M. Shalini (18UBTE001)** who carried out the project work under my supervision.

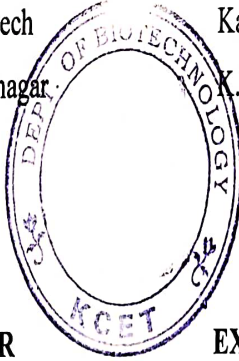
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**SIGNATURE**

*[Handwritten Signature]*  
**SIGNATURE**

**Dr.R.Shyamkumar** M.Sc. M. Tech (BR), Ph.D.  
DEPT. OF BIOTECHNOLOGY  
Head of the Department  
Kamaraj College of Engineering & Technology  
Virudhunagar  
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**Mr.S. Manibalan**, B.Pharm, M.Tech  
Supervisor  
Dept. of BioTechnology  
Kamaraj College of Engg & Tech  
K.Vellakulam, Near Virudhunagar

*[Handwritten Signature]*  
**INTERNAL EXAMINER**



*[Handwritten Signature]*  
**EXTERNAL EXAMINER**

**OHMIC HEATING BASED METHOD DEVELOPMENT  
FOR C- PHYCOCYANIN RECOVERY FROM**

*Spirulina plantensis*

**PROJECT REPORT**

*Submitted by*

**AKASH R (920418214009)**

**JANAKIRAMAN G (920418214018)**

**VISHNU SHAGAR R S (920418214055)**

*In the partial fulfilment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**

**DEPARTMENT OF BIOTECHNOLOGY**

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Chennai)**

**K. VELLAKULAM - 625 701 (Near Virudhunagar)**

**MAY 2022**

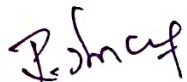
# KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution- Affiliated to Anna University, Chennai)

K. VELLAKULAM - 625 701 (Near Virudhunagar)

## BONAFIDE CERTIFICATE

Certified that the project report "OHMIC HEATING BASED METHOD DEVELOPMENT FOR C-PHYCOCYANIN RECOVERY FROM *Spirulina plantensis*." is the bonafide work of "AKASH (920418214009), JANAKIRAMAN G (920418214018), VISHNU SHAGAR R S (920418214055)" who carried out the project work under my supervision.



SIGNATURE

HOD  
Dr. R. SHYAMKUMAR  
DEPT. OF BIOTECHNOLOGY

Kamaraj College of Engineering & Technology  
Head of the Department,

VIRUDHUNAGAR, HOD

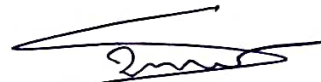
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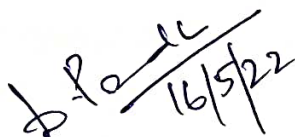
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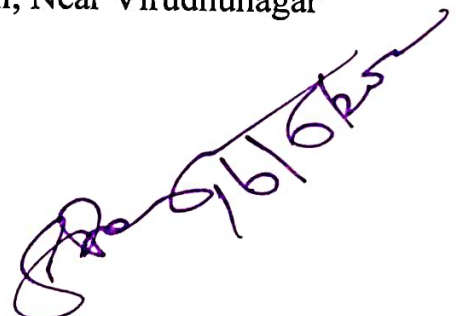
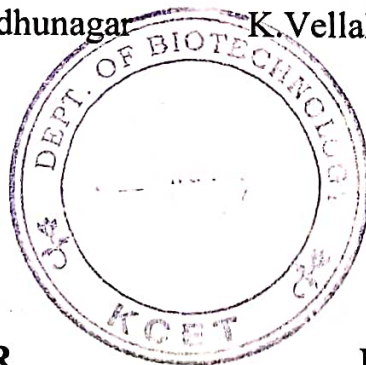
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16/5/22

INTERNAL EXAMINER



EXTERNAL EXAMINER

**NETWORK PHARMACOLOGY STUDIES ON BIOACTIVE  
COMPONENTS OF *Capsicum annuum* AND THEIR MECHANISM  
OF ACTION FOR THE TREATMENT OF BREAST CANCER**

**PROJECT REPORT**

*Submitted by*

**ANNALAKSHMI N (920418214012)**

**MIRA SHAKUNTALA K (920418214028)**

**SHARMILAP (920418214046)**

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

**BACHELOR OF TECHNOLOGY**

**IN**

**BIOTECHNOLOGY**



**DEPARTMENT OF BIOTECHNOLOGY  
KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY  
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K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**MAY 2022**

# KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution- Affiliated to Anna University, Chennai)

K.VELLAKULAM - 625 701 (Near Virudhunagar)

## BONAFIDE CERTIFICATE

Certified that the project report "NETWORK PHARMACOLOGY STUDIES ON BIOACTIVE COMPONENTS OF *Capsicum annuum* AND THEIR MECHANISM OF ACTION FOR THE TREATMENT OF BREAST CANCER" is the bonafide work of "ANNALAKSHMI N(920418214012), MIRA SHAKUNTALA K (920418214028), and SHARMILA P (920418214046) who carried out the project work under my supervision.



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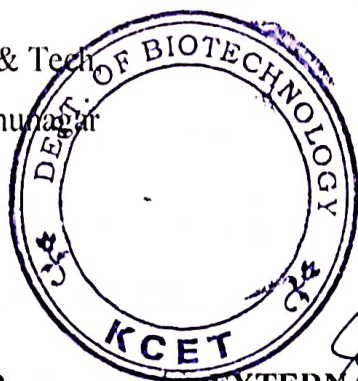
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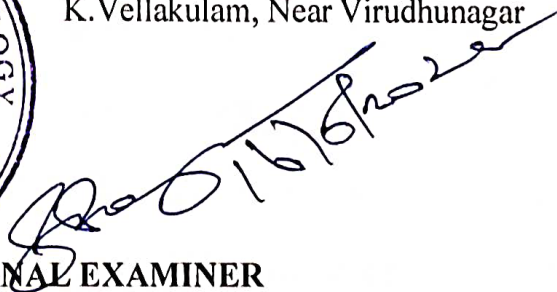
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16/5/22

EXTERNAL EXAMINER





**LIGAND BASED PHARMACOPHORE MODELLING AND  
QSAR STUDIES FOR IDENTIFICATION OF NOVEL  
STEROL CARRIER PROTEIN INHIBITORS**

**PROJECT REPORT**

*Submitted by*

**ADARSH ROHAN B (920418214005)**

**NIROLIN NANCY S (920418214034)**

**SNEHA S (920418214047)**

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**MAY 2022**

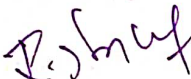
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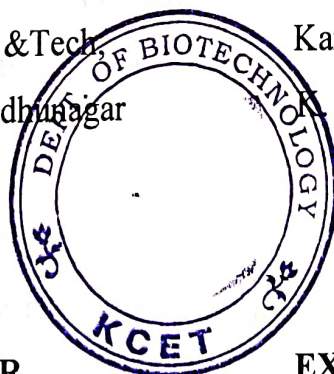
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EXTERNAL EXAMINER



**A STUDY ON PHOTOSYNTHETIC PIGMENT  
RESPONSES IN *LORIELLOPSIS SP.* OF  
CYANOBACTERIA UNDER DIFFERENT LIGHT  
SPECTRUM**

**A PROJECT REPORT**

*Submitted by*

**AMBARISH. G** (Reg.No.920418214011)

**JANANI. R** (Reg.No.920418214019)

**PRIYADARSHINI.S** (Reg.No.920418214038)

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**MAY 2022**

**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**(An Autonomous Institution - Affiliated to Anna University, Chennai)**  
**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that the project report "A STUDY ON PHOTOSYNTHETIC PIGMENT RESPONSES IN *LORIELLOPSIS SP.* OF CYANOBACTERIA UNDER DIFFERENT LIGHT SPECTRUM" is the bonafide work of "AMBARISH.G (920418214011), JANANI.R (920418214019), PRIYADARSHINI (920418214038)" who carried out the project work under my supervision.

  
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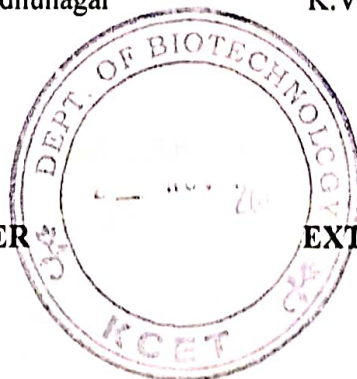
  
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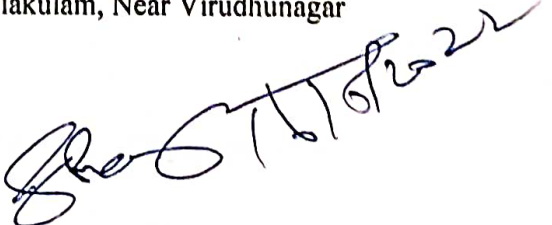
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INTERNAL EXAMINER



  
EXTERNAL EXAMINER

**BIO-REFINERY APPROACH FOR THE PRODUCTION OF  
BIOFUEL FROM MICROALGAE**

**PROJECT REPORT**

*Submitted by*

**AJITH KUMAR K (920418214006)**

**MOHAMED ANWAR H (920418214029)**

*In partial fulfillment for the award of the degree*

*of*

**BACHELOR OF TECHNOLOGY**

**IN**

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**K.VELLAKULAM - 625 701 (Near Virudhunagar)**

**BONAFIDE CERTIFICATE**

Certified that the project report “**BIO-REFINERY APPROACH FOR THE PRODUCTION OF BIOFUEL FROM MICROALGAE**” is the bonafide work of “**AJITH KUMAR K (920418214006) & MOHAMED ANWAR H (920418214029)**” who carried out the project work under my supervision.

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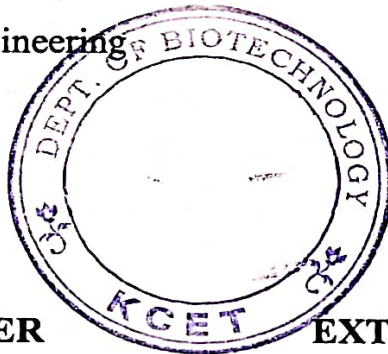
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16/5/22

**INTERNAL EXAMINER**



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16/5/22

**EXTERNAL EXAMINER**

**ISOLATION, CHARACTERIZATION, AND  
OPTIMIZATION OF POTENTIAL PROBIOTIC BACTERIA  
FROM THE GUT OF ESTUARINE FISH**

**A THESIS**

*Submitted by*

**AJITH C (920420PMB02)**

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

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**DEPARTMENT OF BIOTECHNOLOGY**



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**JUNE 2022**

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*J. Shree*

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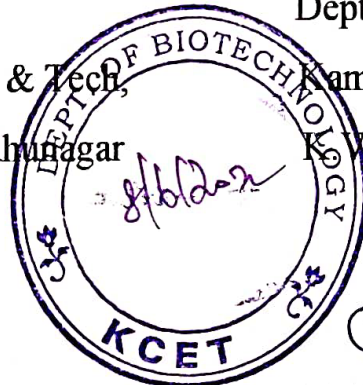
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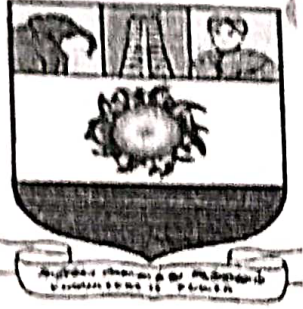


*J. Shree*

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*Adri*  
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### BONAFIDE CERTIFICATE

This is to certify that this dissertation entitled “Isolation, Characterization, and optimization of potential probiotic bacteria from the gut of estuarine fish” is the bonafide work of Mr. Ajith. C ( Reg No: 920420pmb02), II M.Tech Biotechnology, Kamaraj College of Engineering and Technology, K.Vellakulam, near Virudhunagar. In the partial fulfillment for the award of Master of Technology, in Biotechnology, under my guidance in the Centre for Marine Science and Technology, Manonmaniam Sundaranar University, Rajakamangalam and it is made clear that this dissertation has not been submitted for the award of any other degree, diploma, associateship, a fellowship of any other University.

Place: Rajakamangalam

Date: 31.05.2022

Signature of the Guide

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**DESIGN OF HYBRID HYDROGEL BASED REACTOR  
FOR REMOVING REACTIVE DYES FROM  
SIMULATED TEXTILE INDUSTRY EFFLUENT**

**A THESIS**

*Submitted by*

**KASHIMMA V V (920420PMB01)**

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

**MASTER OF TECHNOLOGY IN  
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**DEPARTMENT OF BIOTECHNOLOGY**



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**JUNE 2022**



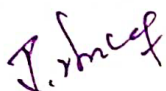
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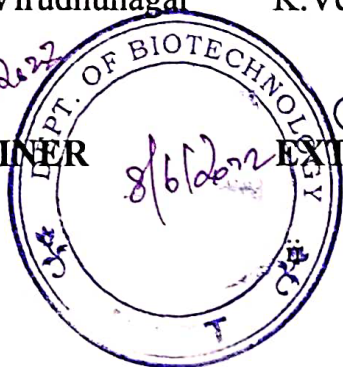


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**INTERNAL EXAMINER**

  
**EXTERNAL EXAMINER**



# **EFFECT OF BIOFERTILIZER LOADED GEL BEADS ON GROWTH OF GROUNDNUT CROP**

**A THESIS**

*Submitted by*

**VIKNESH V (920420PMB03)**

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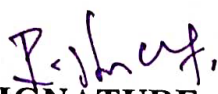
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Certified that this Thesis titled "EFFECT OF BIOFERTILIZER LOADED GEL BEADS ON GROWTH OF GROUNDNUT CROP" is the bonafide work of VIKNESH V (920420PMB03) who carried out the work under my supervision.

Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

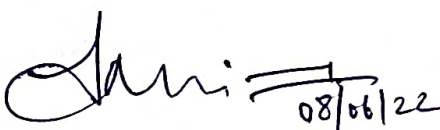
  
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INTERNAL EXAMINER

  
EXTERNAL EXAMINER



# DESIGNING, DOCKING AND SIMULATION STUDIES OF NOVEL ssDNA APTAMERS AGAINST UNMUTATED SPIKE PROTEIN REGIONS OF SARS-CoV-2 VARIANTS

A THESIS

*Submitted by*

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SIGNATURE

Dr. R. Shyam kumar  
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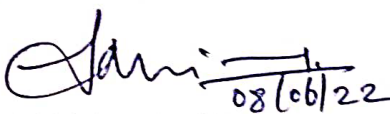
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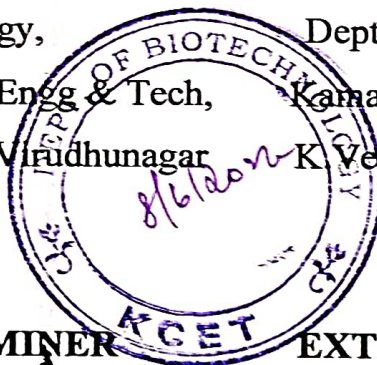
  
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INTERNAL EXAMINER

  
EXTERNAL EXAMINER





**EVALUATION OF ANTIOXIDANT AND APOPTOTIC  
POTENTIAL OF PHYTOCONSTITUENTS ISOLATED  
FROM *ARTOCARPUS HETEROPHYLLUS* PEEL**

**A THESIS**

*Submitted by*

**NIVETHITHA V B (920420PMB04)**

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**DEPARTMENT OF BIOTECHNOLOGY**



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**BONAFIDE CERTIFICATE**

Certified that this Report entitled “EVALUATION OF ANTIOXIDANT AND APOPTOTIC POTENTIAL OF PHYTOCONSTITUENTS ISOLATED FROM *ARTOCARPUS HETEROPHYLLUS* PEEL” is the bonafide work of V.B.NIVETHITHA (Reg No. 920420PMB04) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

*R. Shyam Kumar*

**SIGNATURE**

HOD

**Dr. R. Shyam Kumar**

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*Dr. A. Ronaldo Anuf*

**SIGNATURE**

Dr. A. Ronaldo Anuf

Assistant professor

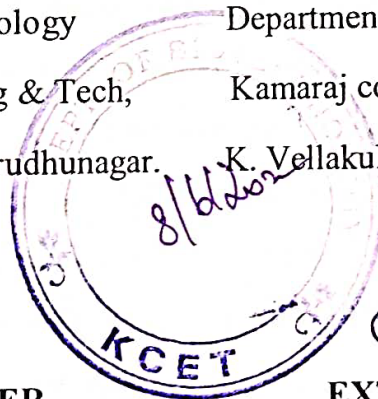
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*R. Shyam Kumar*

**INTERNAL EXAMINER**



*Dr. A. Ronaldo Anuf*  
08/06/22

**EXTERNAL EXAMINER**

# DEVELOPMENT OF BIODEGRADABLE SMART PACKAGING FILM IN FOOD SECTOR

A THESIS

*Submitted by*

VINNARASI A (920420PMB05)

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

MASTER OF TECHNOLOGY IN  
BIOTECHNOLOGY



DEPARTMENT OF BIOTECHNOLOGY



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## BONAFIDE CERTIFICATE

Certified that this Thesis titled "DEVELOPMENT OF BIODEGRADABLE SMART PACKAGING FILM IN FOOD SECTOR" is the bonafide work of VINNARASI A (920420PMB05) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

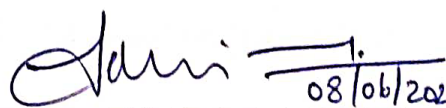
  
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EXTERNAL EXAMINER

8/6/2022