Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed-to-be University under section 3 of UGC Act, 1956)
(Vide Notification No. F.9-5/2000 - U.3, Ministry of Human Resource Development, Govt. of India, dated 4th July 2002)

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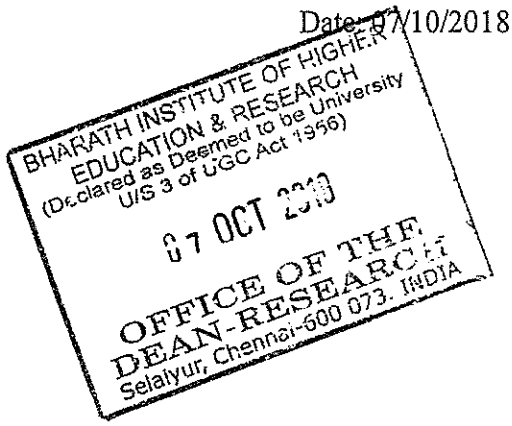
Ref No.SMS-2018-O-04 Date: 07/10/2018



TO

Mrs. D. Sharmila,

Asst. Professor/ IBT,

BIHER.

Thro: Concern Head of the Department

Greetings!!!

We are happy to announce that the Research Advisory Committee has approved your proposal for Seed Money Scheme-2018 which was presented by you. You are requested to complete the proposal and send the progress report to the Dean Research in the prescribed time period.

Title of the Project: A Study on Process, Problem and prospects of medical tourism in south India.

Seed Money Amount: Rs.1, 00,000/- (Rupees One Lakh Only)

Approved on: 27/09/2018

Payment details:

Voucher No.04 **Dated: 09/10/2018**

With Regards

Dean-Research

Bharath University

SELAIYUR, CHENNAI - 600 073, TAMIL NADU, INDIA.

CASH / PAYMENT VOUCHER

Date : 9/10/2018

V.No. 04

Debit _____ Amount

Rs. 1,00,000/-

PAID TO Mrs. D. Sharmila

RUPEES One Lakh only.

TOWARDS Seed Money scheme - 2018.

Authorised by **Finance Manager** **Cashier/Accountant** **Payee's Signature**

PROPOSAL SUBMISSION

1. **Details of Principal Investigator**

Name	: Ms. D. Sharmila
Designation	:Assistant Professor
Highest Qualifications	: M.Tech
Department	: Industrial Biotechnology
E-mail	: sharmibiotechnology@gmail.com
Contact no	: 9677298889
Date of Joining	: 30.09.2010

2. **Details of Co - Principal Investigator**

Name	: Dr.L.Jeyanthi Rebecca
Designation	: Professor
Highest Qualifications	: Ph.D.
Department	: Industrial biotechnology
E-mail	: hodbiobharath@gmail.com
Contact no	: 9444649109
Date of Joining	: 08.08.2005

Technical details

1. Introduction

Adsorption is the adhesion of atoms, ions or molecules from a gas, liquid or dissolved solid to a surface.This process creates a film of the *adsorbate* on the surface of the *adsorbent.* This process differs from absorption, in which a fluid (the *absorbate*) is dissolved by or permeates a liquid or solid (the *absorbent*), respectively.Adsorption is a *surface phenomenon*, while absorption involves the whole volume of the material, although adsorption does often precede absorption. The term *sorption* encompasses both processes, while *desorption* is the reverse of it. Similar to surface tension, adsorption is a consequence of surface energy. In a bulk material, all the bonding requirements (be they ionic, covalent or metallic) of the constituent atoms of the material are filled by other atoms in the material. However, atoms on the surface of the adsorbent are not wholly surrounded by other adsorbent atoms and therefore can attract adsorbates. The exact nature of the bonding depends on the details of the species involved, but the adsorption process is generally classified as physisorption (characteristic of weak van der Waals forces) or chemisorption (characteristic of covalent bonding). It may also occur due to electrostatic attraction. Adsorption is present in many natural, physical, biological and chemical systems and is widely used in industrial applications such as heterogeneous catalysts, activated charcoal, capturing and using waste heat to provide cold water for air conditioning and other process requirements (adsorption chillers), synthetic resins, increasing storage capacity of carbide-derived carbons and water purification. Adsorption, ion exchange and chromatography are sorption processes in which certain adsorbates are selectively transferred from the fluid phase to the surface of insoluble, rigid particles suspended in a vessel or packed in a column.

2. Review of status of Research and Development in the subject

Environmental issues are harmful effects of human activity on the biophysical environment. Environmental protection is a practice of protecting the natural environment on the individual, organizational or governmental levels, for the benefit of both the environment and humans. Environmentalism, a social and environmental movement, addresses environmental issues through advocacy, education and activism.

The carbon dioxide equivalent of greenhouse gases (GHG) in the atmosphere has already exceeded 400 parts per million (NOAA) (with total "long-term" GHG exceeding 455 parts per million) (Intergovernmental Panel on Climate Report). The amount of greenhouse gas in the atmosphere is possibly above the threshold that can potentially cause climate change. The UN Office for the Coordination of Humanitarian Affairs (OCHA) has stated "Climate change is not just a distant future threat. It is the main driver behind rising humanitarian needs and we are seeing its impact. The number of people affected and the damages inflicted by extreme weather has been unprecedented. Further, OCHA has stated:

- Climate disasters are on the rise. Around 70 percent of disasters are now climate-related – up from around 50 percent from two decades ago.
- These disasters take a heavier human toll and come with a higher price tag. In the last decade, 2.4 billion people were affected by climate-related disasters, compared to 1.7 billion in the previous decade. The cost of responding to disasters has risen tenfold between 1992 and 2008.
- Destructive sudden heavy rains, intense tropical storms, repeated flooding, and droughts are likely to increase, as will the vulnerability of local communities in the absence of strong concerted action.

2.1 International Status: The exact nature of the bonding depends on the details of the species involved, but the adsorption process is generally classified as physisorption (characteristic of weak van der Waals forces) or chemisorption (characteristic of covalent bonding). It may also occur due to electrostatic attraction. Adsorption is present in many natural, physical, biological and chemical systems and is widely used in industrial applications such as heterogeneous catalysts,activated charcoal, capturing and using waste heat to provide cold water for air conditioning and other process requirements (adsorption chillers), synthetic resins, increasing storage capacity of carbide-derived carbons and water purification.

2.2 National Status: Adsorption is present in many natural, physical, biological and chemical systems and is widely used in industrial applications such as heterogeneous catalysts,activated charcoal, capturing and using waste heat to provide cold water for air conditioning and other process requirements (adsorption chillers), synthetic resins,

increasing storage capacity of carbide-derived carbons and water purification. Adsorption, ion exchange and chromatography are sorption processes in which certain adsorbates are selectively transferred from the fluid phase to the surface of insoluble, rigid particles suspended in a vessel or packed in a column

3. Progress/achievement so far,

a) Literature survey was studied.

b) Proposal work has been completed.

4. Work Plan:

4.1 Methodology:

The main objectives of the project are as follows,

- To study the heavy metal pollutant
- To analyze the industrial effluents from various industries.
- To remove the harmful pollutant from waste water.

4.2 Time Schedule of activities giving milestones through BAR diagram.

Work plan (including detailed methodology and time schedule)

Sl. No.	Activity / Milestone	1st Year		2nd Year	
1.	Literature review	**1-6**			
2.	Analysis of metal pollutant		**7-12**		
3.	Removal of pollutants			**13-18**	
4.	Experiments and results				**19-24**

4.3.Expected outcome within the time period of Seed Money Scheme

For preliminary implemented within the time period of Seed Money Scheme.

a) For a real time field work can be done within the time period of Seed Money Scheme.

5. Suggested Plan of action stating the name of funding agency where the project will be communicated for financial support within the time period of project.

Nil

6. **Bibliography:** Nil

7. **List of Projects submitted/implemented by the Investigators (Separate for Pi and Co-PI)**

Nil

7.1 Details of Projects submitted to various funding agencies:

Sl. No.	Title	Cost in lakhs	Month of submission	Role as PI/ Co-PI	Agency	Status
	NA	NA	NA	NA	NA	NA

7.2 Details of Projects under implementation

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
	NA NA	NA	NA	NA	NA

7.3 Details of Projects completed during the last 5 years

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
	NA	NA NA	NA	NA	NA

8. **List of publications published by the Investigators, if any:**
Co - Principal Investigator

Sl No	Author	Title	Journal	Year	Volume(issue)	Page no
1	Dr. L. Jeyanthi Rebecca	Plant extracts inhibiting the adhesion of oral bacteria	Drug Invention Today	2018	10(7)	100-1101

2	Dr. L. Jeyanthi Rebecca	Green synthesized silver nanoparticles as an antimicrobialagent in dentistry	Drug Inventio n Today	2018	10(6)	950-953
3	Dr. L. Jeyanthi Rebecca	Current trends in reducing microbial adhesion to acrylic denture base resins.	Drug Inventio n Today	2018	10(6)	946-949
4	Dr. L. Jeyanthi Rebecca	Study on the antibacterial activity and identification of cellulolytic bacteria from cow urine	Researc h Journal of Pharmac y and Technol ogy	2018	11(9)	1-5
5	Dr. L. Jeyanthi Rebecca	Antibacterial activity of phytochemicals against oral bacteria.	Drug Inventio n Today	2018	10(7):	1091-1093
6	Dr. L. Jeyanthi Rebecca	Screening of marine actinomycetes for fibrinolytic enzymes	Res.J of Pharmac y and technolo gy	2018	11(10)	4365-4369
7	Dr. L. Jeyanthi Rebecca	Plant Extracts with Activity against Oral Bacteria	Drug Inventio n Today	2018	10(7)	1088-1090
8	Dr. L. Jeyanthi Rebecca	Isolation of Pseudomonas aeruginosa from Quarry Sand	Journal of Chemica l and Pharmac eutical Researc h	2018	10(1)	6-8
9	Dr. L. Jeyanthi Rebecca	Optimization of protease enzyme production by marine actinomycetes	Int J Pharma Bio Sci	2017	8	188-194
10	Dr. L. Jeyanthi Rebecca	Antimicrobial Activity of Marine Actinomycetes against Human Pathogenic Bacteria	Pharm. Sci. & Res.	2017	9(11)	2086-2088

Principal Investigator

S. No	Author names	Title of paper	Name of Journal	Vol (issue)	Page no.	Year
1	Sharmila	Effect Of Food Processing Waste On The Growth And Nutrition Quality Of PleurotusOstreatus	International Journal of Pharmacy and Technology		917-925	2018
2	Sharmila	Study on the antibacterial activity and identification of cellulolytic bacteria from cow urine	Research Journal of Pharmacy and Technology	11(9)		2018

CERTIFICATE FROM THE INVESTIGATOR

Project Title: **Adsorption Studies of Camelia Sinensis**

It is certified that

1. I do hereby agree to submit a complete proposal for financial support to the external funding agency within the time period of SMS-2018

2. I undertake that spare time on equipment procured in the project will be made available to other users.

3. I agree to submit a certificate from Institutional Biosafety Committee, if the project involves the utilization of genetically engineered organisms. I also declare that while conducting experiments, the Biosafety Guidelines of Department of Biotechnology, Department of Health Research, GOI would be followed in to.

4. I agree to submit ethical clearance certificate from the concerned ethical committee, if the project involves field trails/experiments/exchange of specimens, human & animal materials etc.

5. I agree to abide by the terms and conditions of SMS-2018, BIHER, and Chennai.

Name and signature of
Principal Investigator

Name and signature of
Co-Principal Investigator

Date: 25.08.2018
Place: Chennai – 73

Forwarded by Head of the Department

Signature of the Head

PROJECT EVALUATION FORMAT

Recommendation Sheet

Name of the Principal Investigator	Ms.sharmila.D
Name of the Co-Investigator	Dr.L.Jeyanthirebecca
Name of the Department	IBT
Title of project	**Adsorption Studies of Camelia Sinensis**
Recommendation of the evaluation committee	Recommended
Financial allocation recommended	Rs. 100000/- (One lakh only)

Sl. No.	Equipment	Quantity	Amount in INR
1	Centrifuge	2	50,000
	Hot air oven	1	15,000
2	Consumables (Like, testing tools Charge controller, etc.)	As per requirement	20,000
3	Travel support for the purpose of research work.	---	5,000
4	Contingency	---	5000
5	Others	---	5000
	Total		1,00,000

Name and Signature of the Research Advisory Committee members with date

(Dr. P. Navaneethakrishnan)