

A PHYCOREMEDIATION APPROACH FOR THE TREATMENT OF DAIRY EFFLUENT

*Thesis submitted in
Partial Fulfillment of the
Degree of Doctor of Philosophy (Ph.D.)
to the*
UNIVERSITY OF MADRAS

By

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DECEMBER 2012

DEDICATED
TO MY BELOVED
PARENTS

*Who encouraged me to proceed along a path “where
tireless striving stretches its arms towards perfection”.*



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DECLARATION

I declare that the thesis entitled **“A PHYCOREMEDIATION APPROACH FOR THE TREATMENT OF DAIRY EFFLUENT”** submitted by me for the degree of Doctor of Philosophy (Ph.D) is the record of work carried out by me during the period from September 2009 to August 2012 under the guidance and supervision of **Dr. S. MURUGESAN**, Assistant Professor in Botany, PG and Research Department of Botany, Pachaiyappa's College, Chennai - 600 030 and has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship, titles in this University or any other University or other similar institution of higher learning.

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CERTIFICATE

I certify that the thesis entitled **“A PHYCOREMEDIATION APPROACH FOR THE TREATMENT OF DAIRY EFFLUENT”** submitted for the degree of Doctor of Philosophy (Ph.D) by **M.KOTTESWARI**, is the bonafide record of research work carried out by her during the period from September 2009 to August 2012 under my guidance and supervision and that this work has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other titles in this University or any other University or institution of higher learning.

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ACKNOWLEDGEMENTS

To begin with, first and foremost I am very grateful to all mighty Lord Ganesha to shower his blessings on me throughout my life. And one evidence is successfully completion of this discretion work.

With a profound sense of gratitude and humbleness to my worthy and zealot supervisor **Dr.S.MURUGESAN**, Assistant Professor in Botany, Pachaiyappa's College, Chennai-30, for his valuable knowledge, support, cooperation and encouragement given throughout the course of this work. Without his constant help, deep interest and vigilant guidance, the completion of this thesis is not possible. I am really indebted to him for his accommodating attitude, thought provoking guidance, immense intellectual input, patience and sympathetic behavior. I feel a real honour to complete my Ph. D under his kind supervision. I would like to thank him for his inspiration, dedication and friendship throughout this endeavour.

Grateful thanks are due to the **Principal**, Pachaiyappa's College, Chennai, for providing the required facilities.

My special sincere thanks to **Dr.K.M.UMARAJAN**, HOD of Botany, Pachaiyappa's College, Chennai, for his full cooperation and gracious attitude and for providing all facilities to complete this research work in time.

I am grateful to **Dr.S.BHARATHAN**, former Professor of Botany, Pachaiyappa's College, Chennai for his continued encouragement, constructive criticism, and valuable suggestions during the thesis writing.

I would like to pay my deepest gratitude and appreciation to members of the Doctoral committee **Dr.R.DHAMOTHARAN**, Associate Professor in Botany, Presidency College, Chennai-5 and **Dr.S.SARAVANAN**, Assistant Professor in

Botany, Pachaiyappa's College, Chennai -30, for their suggestions in my research work and support throughout my study.

I wish to express my sincere acknowledgement for **Prof.N.ANAND**, Pro Vice- Chancellor (R & D), Vels University, for identification of algae.

This thesis is also a fruit of close cooperation among many scientists working in different fields. I am also extremely grateful to **Dr.R.RANJITH KUMAR**, Assistant Professor, Department of Plant Biology and Plant Biotechnology, Sri Chandra Prabhu Jain College, Chennai, who made this project possible with his endless knowledge of algae and wastewater and his valuable assistance, technical suggestions and kind help during the course of my Ph.D studies.

My gratitude is to **Dr. SPM. PRINCE WILLIAM**, Scientist, Solid Waste management division, NEERI, Nagpur for designing the work, encouragement and suggestions given.

Special thanks to all of my teachers who taught me during my academic career. Grateful and sincere thanks are due to **Dr.J.KAMALESWARI**, Associate Professor in Botany, Pachaiyappa's College, Chennai for her guidance and encouragement in the completion of my work.

I sincerely acknowledge to **Dr.N.SHETTU**, Assistant Professor of Zoology, Pachaiyappa's College, Chennai for UV-Vis Spectroscopy analysis and for his valuable help in every possible way.

I am also very grateful to **Dr.T.S.SUBHA**, HOD of Botany, Bharathi Women's College, Chennai for her help in the research work and thesis writing.

My sincere thanks are due to **Thiru.C.H.ASHOK**, Divisional General Manager (Production) of TCMPF Ltd, Avain, Manali, **Mr.V.THANGAPADIAN**, AGM (Engg), **Mr.Md.FAROOK**, Manager, **Mr.A.SHANMUGAM**, Dr Manager

(Engg), **Mr.D.SEKAR**, Dy Manager (Engg), **Mr.P.VENUGOPAL**, Jr. Manager (Engg.), **Mr.R.GANDHINATHAN**, Jr Manager (Engg), **Mr.G.MAHENDRAN**, Jr Manager, **Mr.T.G.ANAND**, Jr Manager (Engg.) and **Mr.S.CHANDRABASKAR**, Jr Manager (Engg) for allowing the effluent collection whenever needed.

I am deeply and strongly obliged to members of Sophisticated Instrumentation Centre, Indian Institute of Technology, Chennai for providing the FT-IR and heavy metal analysis. I sincerely thank the members of the TWAD Board, Chennai especially **Mrs.D.CHANDRIKA**, Junior Water Analyst for her guidance and help in doing the effluent analyses and I am also grateful to the TNPCB officials for allowing me to do the heavy metal analysis and for the library facilities. I also thank A to Z Pharmaceutical Laboratory for confirming my biochemical analysis. I also thank Bio-Zone, Chennai, for microbiological analysis.

I realize that the fulfillment of Ph.D. task is a collective effort, which involves the guidance, cooperation and help of my well wishers. I would like to pay greatest thanks to **Ms.S.BHUVANESWARI**, Junior Research Fellow, PG and Research Department of Botany, Pachaiyappa's College, Chennai, without her, I would not have made it through the many late hours of experimentation and the countless drafts that it took to get to this point. I am also highly indebted to my best friends and fellows especially, **Ms.R.ROSY**, and rest of my friends for their assistance, good company, marvelous behavior and friendly attitude.

My personal and very sincerest appreciation goes to my colleagues and dearest friends for their lovely support in all shades of life. They have been very kind and supportive in my course.

I feel incredibly fortunate to have met someone as talented and passionate about algae as **Dr.S.NAGARAJAN** and **Mr.P.ARUL MURUGAN** and

Miss.UMAMAHESWARI, CAS in Botany, University of Madras, Chennai and I look forward to what the future of algae will bring. I owe my sincere thanks to **Dr.S.LINGATHURAI**, Entomology Research Institute, Loyola College Chennai. In addition, I would like to thank. **Prof.R.SRINIVASAN**, Assistant Director and **L.AMAR SANTH**, Asst. Librarian, **VIT** University, Vellore for their contribution in editing this thesis. I would like to thank my co-workers and friends at Algology lab, Department of Botany, Pachaiyappa's College, Chennai for their support.

I am also thankful to all the administrative and laboratory staff of the Department of Botany, Pachaiyappa's College, Chennai for their kind support.

Last but not least, I really acknowledge and offer my heartiest gratitude to my parents, sisters and younger brother, for their huge sacrifice, moral support, cooperation, encouragement, patience, tolerance and prayers for my health and success which enabled me to achieve this goal. I would like to thank my family for their love and sacrifice throughout my career and better part of two decades of education.

I thank the Adyar Students Xerox, Kilpauk Branch for the Typing and Laser Printing.

(M. KOTTESWARI)

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ABBREVIATIONS

Short Names	Descriptions
ABTS	2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid)
APHA	American Public Health Association Standard Methods
ATP	Adenosine triphosphate
BG11	Blue Green Medium
BGA	Blue green algae
BHT	Butylated hydroxytoluene
BIS	Bureau of Indian Standards
BOD	Biological oxygen demand
BSA	Bovine serum albumin
CFTRI	Central Food Technological Research Institute
COD	Chemical oxygen demand
CPI	Chemical processing industries
DAF	Dissolved air flotation
DOC	Dissolved Organic Carbon
DPPH	2,2-Diphenyl-1-picrylhydrazyl
E.T.P	Effluent treatment plant
EDTA	Ethylene diamine tetra acetic acid
FTIR	Fourier transform infrared spectroscopy
HPLC	High performance liquid chromatography
HRAP	High rate algal ponds
IC50	Half maximal inhibitory concentration
mg/l	Milligrams per liter
MHA	Mueller Hinton agar
NA	Nutrient Agar
NTU	Nephelometric turbidity units
OPA	Orthophthaldehyde
PBPs	Phycobilliproteins
PS-II	Photo system II
RE	Removal efficiency

Short Names	Descriptions
RNA	Ribonucleic acid
RO	Reverse osmosis
ROS	Reactive oxygen speceis
R _t	Retention time
SF	Synthetic fiber
SPE	Solid-phase extraction
TCA	Trichloro acetic acid
TDS	Total dissolved solids
TEA	Triethylamine
TFA	Trifluoroacetic acid
THF	Tetrahydrofuran
TSS	Total suspended solids
TUc	Toxic Units (Chronic toxicity)
V/W	Volume/Weight
W/V	Weight/Volume
WSP	Wastewater Stabilization Ponds
WWTPs	Wastewater treatment plants
μS/cm	Micro Siemen