#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution
IV Cycle of Accreditation



60435 - 2401391

Estd. 1963



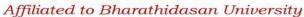
CRITERION III - RESEARCH, INNOVATIONS AND EXTENSION

## 3.4. RESEARCH PUBLICATION AND AWARDS

# 3.4.4 Number of Books and Chapters in Edited Volumes Published per Teacher



#### KUMBAKONAM - 612 001



DST - CURIE Sponsored Institution IV Cycle of Accreditation







# 3.4.4.1 Total Number of books and chapters in edited volumes published during the last five years

Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
D. Asokan	Pulavi Nunukka m	2018	978 - 93 -86816 - 99 -3	Yes	Pallavi Pathipakkam

Printed in India

பன்னாட்டு நூல் தரக்குறியீட்டு எண் ISBN: 978-93-86816-99-3

புலவி நுணுக்கம்

Pulavi Nunukkam

முனைவர் து. அசோகன்

Dr. D. Asokan

தமிழ்

Tamil

இலக்கியம்

Literature

முதற்பதிப்பு – ஜனவரி 2018

பக்கங்கள்

Pages: 100

ബിഞல

Price Rs. 140/-

பதிப்புரிமை: ஆசிரியருக்கு

© Copyright Reserved by the Author

வெளியீடு :

பல்லவி பதிப்பகம்

118–மேட்டூர் ரோடு, கல்யாண் சில்க்ஸ் எதிரில்,

**#**СупС - 638 О11

Printed, Published and Distributed by

PALLAVI PATHIPPAKAM,

118-Mettur Road, Opp:Kalyan Silks, Erode-638 011.

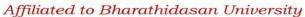
**Q** 94422 51549, 97919 51549.

pallavipublications@gmail.com

www.pallavipathippakam.in



#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution
IV Cycle of Accreditation

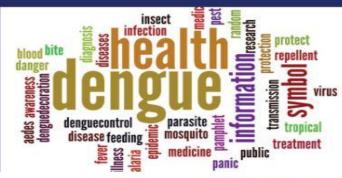


Estd. 1963 0435 – 2401391

principal@gcwk.ac.in

Name of the teacher	Title of the book published	Year of publicatio	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M.Govindarajan	Green Synthesized Silver Nanoparticle s In The Fight Against Mosquitoes	2018	978-3-330- 03713-7	Yes	Lap LAMBERT Academic publishing

Mosquito vectors are solely responsible for transmitting diseases such as malaria, dengue, chikungunya, Japanese encephalitis, Jimphatic Illiariasis and, recently, Zika virus. Vector control is an essential requirement in the Notably, the excessive use of synthetic pesticides causes emergence of resistance in treated pests and also lead to harmful effect on non-target organisms. This has required an urgent search for development of new and improved mosquito control methods that are cheap, effective and safe for human health and the environment. The green synthesis of eco-friendly metal nanoparticles is a fast-growing branch of current nanoscience with number of biomedical and entomological implications. The aim of this book is designed for research scholars who studies mosquito control through nanotechnology. The book contains six chapters. Chapter 1 provides a general introduction. In chapter 2, reviews of literature are given. The chapter 3 provides materials and methods. The observations are presented in chapter 4. The discussion is in chapter 5. Summany is in chapter 6. Finally provide references.



Marimuthu Govindarajan



Dr. M. Govindarajan is serving as an Assistant Professor at the Department of Zoology, Annamalai University, India. He has published more than 200 studies on top-ranked journals with impact factor. He has also guided M. Phil and Ph. D. scholars. He has been received major research project from DST, UGC and ICMR, Government of India, New Delhi, India.



Green Synthesized Silver Nanoparticles In The Fight Against Mosquitoes





#### **KUMBAKONAM - 612 001**











Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M.Govindarajan	Plant extracts to control the Zika virus mosquito vector	2019	978-613- 9-91126-4	Yes	Lap LAMBERT Academic publishing

Mosquito-borne diseases, such as malaria, yellow fever, dengue, West Nile and Zika virus are of huge medical and veterinary importance. The control of arboviral diseases, particularly dengue and Zika virus, sadly lacks in reliable and effective treatments of the infection, therefore vector control still plays pivotal importance. On the other hand, the overuse of synthetic insecticides led to several public health and ecological problems, including environmental pollution, effects on non-target organisms, as well as development of resistance in targeted vectors. Insecticides from natural products may boost the effectiveness of vector control programs. This book is designed for research scholars who studies mosquito control through medicinal plant extracts. The book contains seven chapters. Chapter 1 provides a general introduction. In chapter 2, reviews of literature are given. The chapter 3 provides the biology of Zika virus mosquito vector. Chapter 4 covers the materials and methods. The observations are presented in chapter 5. The discussion is in chapter 6 Summary is in chapter 7. Finally provide references.



Marimuthu Govindarajan



Dr. M. Govindarajan is serving as an Assistant Professor at the Department of Zoology, Annamalai University, India. He has published more than 200 studies on top-ranked journals with impact factor. He has also guided M.Phil and Ph.D scholars. He has been received major research project from DST, UGC and ICMR, Government of India, New Delhi, India.



Estd. 1963

Plant extracts to control the Zika virus mosquito vector





## **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution
IV Cycle of Accreditation







Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M.Govindarajan	A handbook of practical Zoology Vol. 2- Chordates	2018 - 2019	978-93- 5321-561- 3	Yes	Nadar Publication, Kumbakonam, Tamil Nadu.

Students gain practical understanding via applying the scientific method in the Practical Zoology book. Students at the Zoology program's undergraduate and postgraduate levels will find this lab manual very helpful. This laboratory handbook offers instances of zoological experiments as well as several processes, techniques, and methods about the study of water. There was an examination of the ecology of the water. The development of a number of different species is covered in this discussion. Students are taught about the development of embryos as well as the qualitative aspects of biochemistry research. Students who are pursuing a degree in animal behavior will find that reading this book is of tremendous use to them.



M. Moorthi M. Govindarajan

**Practical Zoology** 

Ecology, Evolution, Embryology, Animal Physiology and Biochemistry

Dr. M. Moorthi works as an Assistant Professor of Zoology and Wildlife Biology, A.V.C. College (Autonomous), Mayiladuthurai, Tamil Nadu, India, Dr. M. Govindarajan serves as an Assistant Professor of Zoology, Government College for Women (A), Kumbakonam, Tamil Nadu, India.



**்ல்வாழ்**வ

Estd. 1963

Moorthi, M. Govindara





#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation

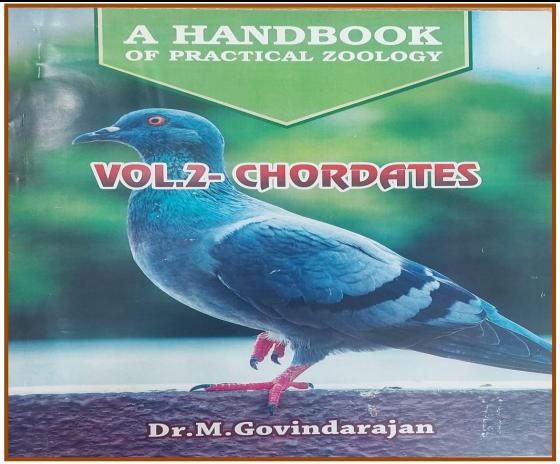


Estd. 1963





Name of the teacher	Title of the book published	Year of publicati on	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M.Govindarajan	A handbook of practical Zoology Vol. 3- Allied Zoology	2018 - 2019	978-93- 5321- 625-2	Yes	Nadar Publication, Kumbakonam, Tamil Nadu.





#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation

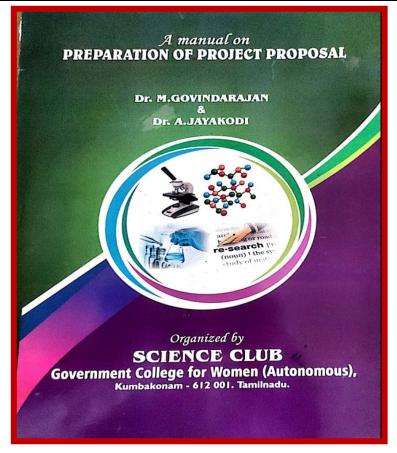


Estd. 1963





Name of the teacher	Title of the book published	Year of publicat ion	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
r. M.Govindarajan r.A.Jayakodi	A Manual on Preparation of Project Proposal	2019	978-93- 53-82- 735-9	Yes	Nadar Publication, Kumbakonam, Tamil Nadu.





#### **KUMBAKONAM - 612 001**











Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
K. Krishnappa, J. Pandian & M. Govindarajan	Agricultu ral Pest Managem ent	2020	978-620- 2-67180-4	Yes	Lap LAMBERT Academic publishing

Agriculture is the backbone of the Indian economy nearly 75% of the rural areas of Indian villagers is depending on agriculture. The amount of food production is greatly deteriorated due to the farmer's enemies like pests and diseases. According to UN reports, the total world population now is about 10000 million and we required double the food production. Insect pests and diseases are important limiting factors of agricultural production across the globe and certain important polyphagous pests widely distributed throughout Asia. It has a wide range of hosts, feeding on more than 200 plant species worldwide, of which 100 species are known from India. This book comprises a collection of chapters on morphology, life cycle, and various control measures of agricultural pests. This book looks at the lead to useful guidance for developing the future generation of farmers. Also, the contents of this book will prove useful for researchers and professionals working in the field of agriculture.



Dr. Kaliyamoorthy Krishnappa Dr. Jeganathan Pandiyan Dr. Marimuthu Govindarajan



**்ல்வாழ்**வ

Estd. 1963

Dr.K. Krishnappa and Dr.J. Pandiyan are working as an Assistant Professor of Zoology and Wildlife Biology, A.V.C. College (Autonomous), Mannampandai, Mayiladuthurai, Tamil Nadu, India. Dr. M. Govindarajian serving as an Assistant Professor of Zoology, Annamalai University, Tamil Nadu, India.



AGRICULTURAL PEST MANAGEMENT

Morphology, life cycle and control measures





## **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation







Name of the teacher	Title of the book published	Year of publicati on	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
S.Umavathi, K. Gopinath & M. Govindarajan	Plant Mutagenesis	2020	978-620-2- 66744-9	Yes	Lap LAMBERT Academic publishing

This book comprises a collection of chapters on Mutation breeding approaches for the enhancement of crop growth in terms of productivity. The book looks at ways to establish long term safe, cost-effective and sustainable breeding practices over classical plant breeding methods. Genetic variation is a prerequisite for crop improvement program and was accomplished mainly through mutagenic treatment methods. This book will prove useful for researchers and professionals working in the field of Plant and molecular breeding. The book contains seven chapters. Chapter 1 provides a general introduction, In chapter 2, Effects of mutagens on plants with special reference to biophysical damages are given. Chapter 3 provides mitotic and meiotic chromosomal aberrations due to mutagenic treatment. In chapter 4, the spectrum of morphological mutations and its causes was discussed. The mutagenesis and genetic variability is well explained in chapter 5. Mutagenesis and molecular profiling are discussed in chapter 6. Finally, chapter 7 concludes the molecular approaches and future prospective of mutation breeding.



Dr. Saraswathi Umavathi Dr. Kasi Gopinath Dr. Marimuthu Govindarajan



Induced Mutation for Crop Improvement

Dr.S.Umavathi working as an Assistant Professor of Botony, Adhiyaman Arts and Science College for Women, Uthangarai, Tamilnadu, India, Dr.K. Gopinath is serving as a postdoctoral fellow at the School of Materials and Energy, Southwest University, P.R. China. Dr.M.Govindarajan serves as an Assistant Professor of Zoology, Annamalai University, India.



**்ல்வாழ்**வ

Estd. 1963









DST - CURIE Sponsored Institution IV Cycle of Accreditation

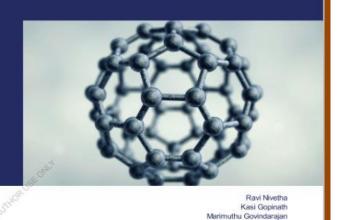






Name of the teacher	Title of the book published	Year of publicatio n	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
R. Nivetha, K. Gopinath & M. Govindarajan	Electrocata lysts for Advanced energy	2020	978-620-2- 67343-3	Yes	Lap LAMBERT Academic publishing

This book comprises a collection of chapters on Electrocatalyst and telectrode materials for the advanced electrochemical applications. The book looks at ways to establish inexpensively, replace of noble metal for electrochemical energy conversion and storage. The contents of this book will prove useful for researchers and professionals working in the field of Electrochemistry. The book contains six chapters. Chapter 1 provides a general introduction. In chapter 2, described the basics of the electrochemical water splitting mechanism of electrochemical hydrogen evolution reaction. Chapter 3 described the Electrocatalyst. The metal-organic framework was described in chapter 4. Chapter 5 discussed the potential application of the metal-organic framework, Finally, chapter 6 concludes the electrocatalyst and electrode materials for energy conversion and storage applications.



Estd. 1963

Dr. R. Nivetha working as a Project staff, Center for Nanotechnology Research, VT. Vellore, Tamil Nadu, India. Dr. K. Gopinath is serving as a postdoctoral fellow at the School of Materials and Energy, Southwest University, P. R. China 400715. Dr. M. Govindarajan serves as an Assistant Professor of Zoology, Annamalai University, Tamil Nadu, India.

Electrocatalysts for Advanced Energy



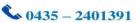




#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation

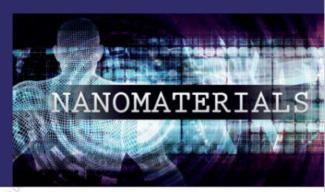






Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
K. Gopinath, M. Govindarajan & S. Umavathi	Greener Nanomater ials	May 2020	978-620- 2-56544- 8	Yes	Lap LAMBERT Academic publishing

This book comprises a collection of chapters on advances in green nanomaterials. The book looks at ways to establish long term safe and sustainable forms of nanotechnology through implementation of nanoparticle biosynthesis with minimum impact on the ecosystem. Controlled size and shape nanoparticle influence on plant growth, nutraceutical and pharmacological applications. The book looks at lead to useful guidance for developing the future generation of green synthesized nanomaterials based biomedical applications. The contents of this book will prove useful for researchers and professionals working in the field of nanomaterials and green nanotechnology. The book contains sx chapters. Chapter 1 provides a general introduction. In chapter 2, Effects of nanoparticles on plant growth and developments are given. The chapter 3 provides other nanoparticles on plant growth. In chapter 4, contain Nutraceutical applications. The pharmacological application is in chapter 5. Future prospective and conclusion is in chapter 6. Finally provide references.



Kasi Gopinath Marimuthu Govindarajan Saraswathi Umavathi



**்ல்வாழ்**வ

Estd. 1963

Dr. K. Gopinath serving as a post doctoral fellow at the School of Materials and Energy, Southwest University, P. R. China 400715, Dr. M. Gowindarajan is serving as an Assistant Professor of Zoology, Annamalai University, India. Dr. S. Unawathi working as an Assistant Professor of Botany, Adhiyaman Arts and Science College for Women, Uthangarai, India.



Plant Growth, Nutraceutical and Pharmacological Applications







## **KUMBAKONAM - 612 001**



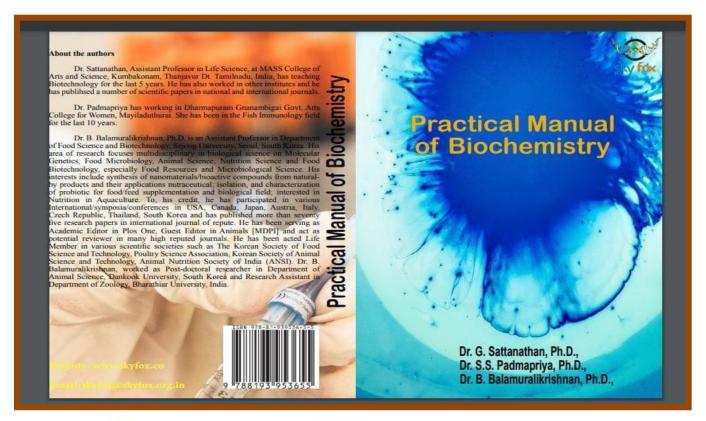
DST - CURIE Sponsored Institution
IV Cycle of Accreditation







Name of the teacher	Title of the book published	Year of publicatio	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
Dr.S.S.Padmapriya	Practical manual of Biochemi stry	2020	ISBN: 978- 81-939536- 5-5	Yes	Skyfox Publishing Group 333 Cedar Street, PO Box 208002, New Haven, United States. CT 06520-8002.





**்ல்வாழ்**வ

Estd. 1963

## **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation



Estd. 1963







#### **AUTHOR INFORMATIONS**

#### Dr Sattanathan Govindharajan Ph.D.,

Assistant Professor Department of Life Science MASS College of Arts and Science, Kumbakonam, Taminadu, India

#### Dr Swaminathan Padmapriya Ph.D.,

Guest Lecturer
Department Of Zoology
Dharmapuram Gnanambigai Government Arts College
For Women,
Mayiladuthurai, Tamil Nadu, India.

#### Dr Balasubramanian Balamuralikrishnan Ph.D.,

Assistant Professor Department of Food Science and Biotechnology, College of Life Science, Sejong University, Seoul 05006, South Korea

First Edition : December 2020

Cover Art and Design : Authors

ISBN : 978-81-939536-5-5

DOI : https://doi.org/10.22573/spg.020.BK/S/028

Copyright : © 2020 by Authors



#### KUMBAKONAM - 612 001



**DST - CURIE Sponsored Institution IV Cycle of Accreditation** 







Name of the teacher	Title of the book published	Year of public ation	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
Dr.D.Soumady	A comparative study of Avifaunal Diversity in and around Kumbakonam, Thanjavur District, Tamil Nadu, India	2021	978-93- 88854	Yes	Discovery Publishing House Pvt.Ltd., New Delhil (India)

Pages: 165-172

Hydrobiology and Fisheries (Vol. 2)

Editors: Dr. Vishwas Balasaheb Sakhare; Dr. Ashwini Dnayndeo Chalak
Dr. Shivaji Gyanba Jetithor

158BN: 978-93-88854-71-9

158BN: 978-93-88854-71-9

ISBN: 9/8-92 Edition: 2021 published by: Discovery Publishing House Pvt. Ltd., New Delhi (India)



ல்வாழ்வு

Estd. 1963

A Comparative Study of Avifaunal Diversity in and around Kumbakonam, Thanjavur District, Tamil Nadu

> S. Priyanka Soumady

#### ABSTRACT

The present work is an attempt on the diversity of birds in and around Kumbakonam in Thanjavur district, Tamil Nadu, India. For this study data were collected and recorded from June 2019 to March 2020. Based on the available resource and habitat the study area was selected and result were observed like birds density, diversity and richness as follows (1) College campus adjacent to Arasalar river (379, 0.288 to 1.365 & 0.130 to 0.995), (2) Cultivated areas like Pattiswaram and Aduthurai (575, 0.339 to 1.508, 0.793 to 0.996), (3) Residential places such as town and village (271, 0.365 to 1.582, 0.388 to 0.994), (4) Gaushala at Vittal Rukmani temple in Govindapuram (344, 0.354 to 1.211, 0.488 to 0.991) respectively. The present study showed 37% of species from Cultivated area followed by 25% from College campus 22% from Gaushala and 17% from Residential area, It indicate cultivated area like agriculture field, and college campus adjacent area of Arasalar river are suitable place for nesting, foraging and roosting for many birds when compare to Gaushala (Cow shed) and Residential area in Kumbakonam. Total observed species belonging to the 23 families were recorded during the study period. \*\*Keywords: Kumbakonam, Species density, Avifaunal diversity.

Keywords: Kumbakonam, Species density, Avifaunal diversity.

INTRODUCTION

Study of avifaunal diversity is essential ecological tools which act as an important indicator to evaluate different habitats both qualitatively and



#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution
IV Cycle of Accreditation



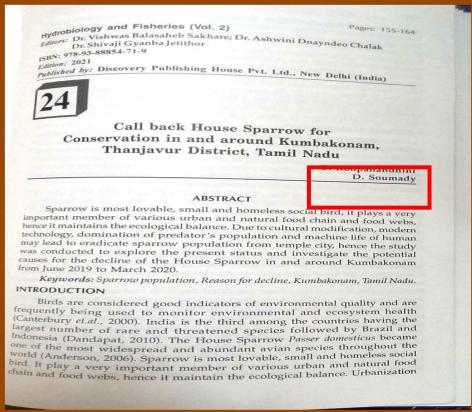
ல்வாழ்வ

Estd. 1963



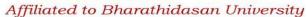


Name of the teacher	Title of the book published	Year of publicatio n	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
Dr.D.Soumady	Call back House Sparrow for conservation in and around Kumbakona, Thanjavur District,Tamil Nadu, India	2021	978-93- 88854	Yes	Discovery Publishing House Pvt.Ltd., New Delhil (India)





#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation



**சல்வாழ்**வ

Estd. 1963





Name of the teacher	Title of the book published	Year of publicatio n	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M.Govindarajan	Vermitechn ology- Earthworm Biology and Vermitechn ology	2021	978-620-5- 49810-1	Yes	Lap LAMBERT Academic publishing

Vermicomposting is emerging as a low-cost and convenient technology for deaning up the soil. This book relevant the students/farmers and self-help group can construct their vermicompost farm. Students residing in cities can produce vermicompost on a small scale for garden/household plants. It will lead towards organic farming & healthy food. This book comprises a collection of chapters on the biology of earthworms and vermitechniques. This book looks at lead to helpful guidance for developing the future generation of farmers. Also, the contents of this book will be helpful for researchers and professionals working in the field of agriculture. Thus, it proves that vermitechnology is economically vable, socially acceptable, and environmentally sustainable to the industrialists and farmers.

Dr. M. Moorthi works as an Assistant Professor of Zoology and Wildlife Biology, A.V.C. College, Mayiladuthurai, Tamil Nadu, India. Dr. M. Govindarajan serves as an Assistant Professor of Zoology, Annamalai University, Tamil Nadu, India. He salso on the list of the top 2% scientists ranked by Stanford University, USA, in 2020.



M. Moorthi M. Govindarajan

Vermitechnology

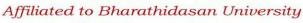
Earthworm Biology and Vermitechniques







#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation



ல்வாழ்வ

Estd. 1963





Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
V.Kavitha	Aquatic biology/Pestici des and Earthworms	2022	978-81- 958210	Yes	Discovery publishing house, New Delhi (India)

Aquatic Biology Editors: Dr. V.B. Sakhare, Dr. P.R. Surve ISBN: 978-81-958210-

Published by : Discovery Publishing House, New Delhi (India)

Page 125-135

CHAPTER

#### **Pesticides and Earthworms**

V. Kavitha and R. Anandhan

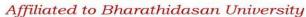
Earthworms are the major terrestrial macrofauna, constitute more than 80% of the soil invertebrate biomass (Senapati and Dash, 1981; Sorour and Larink, 2001). Reynolds (1994) reported worldwide occurrence of 3,627 terrestrial earthworm species. So far, 402 species (357 native and 45 exotic peregrine species) of earthworms belonging to 66 genera and 10 families are known from India (Julka, 2001). Earthworm is an important soil organism in development and maintenance of nutrient value of soil by converting biodegradable material and organic wasteinto nutrient rich vermicast (Jansirani et al. 2012). They are also known as ecological engineers (Jones et al. 1994). Distribution and abundance of earthworms are governed by several ecological parameters viz. soil status, nutrients, temperature, moisture, season, adequate dissolved oxygen, pH and the presence of fertilizers and pesticides (Kale and Krishnamoorthy, 1981; Lee, 1985; Bhaskaran, 1986; Morgan, 1993; Vishwanathan, 1997; Curry, 1998; Bhattacharjee, 2002).

#### IMPORTANCE OF EARTHWORMS

Earthworms can consume a wide range of unstable organic matter such as animal waste, industrial waste, sewage sludge, etc. The burrowing activity of earthworms enhances decomposition, formation of humus, development of soil structure, and cycling of nutrients. The product obtained by the modulation of organic waste in the earthworm gut is quite different from its parent waste material and is also known as black gold or vermicast (Lim and Wu 2015). Vermicompost increases the water holding capacity, porosity, and softness of soil thus requiring less tillage and irrigation. It is also rich in microbial diversity, nutrients, plant growth regulators (PGRs) and has properties of inhibiting pathogenic microbes (Mosa et al. 2015). Addition of earthworms and vermicompost to soil also maintains an optimum level of soil media in terms of metal concentration, soil porosity and aeration, pH, and electrical

tor Women Julian State of Workship of State of S





DST - CURIE Sponsored Institution
IV Cycle of Accreditation



**்ல்வாழ்**வ

Estd. 1963





Name of the teacher	Title of the book published	Year of publica tion	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M. Moorthi & M.Govindarajan	Practical Zoology (Ecology, Evolution, Embryology, Animal Physiology and Biochemistry)	2023	978- 620-5- 49810-1	Yes	Lap LAMBERT Academic publishing

Students gain practical understanding via applying the scientific method in the Practical Zoology book. Students at the Zoology program's undergraduate and postgraduate levels will find this lab manual very helpful. This laboratory handbook offers instances of zoological experiments as well as several processes, techniques, and methods about the study of water, There was an examination of the ecology of the water. The development of a number of different species is covered in this discussion, Students are taught about the development of embryos as well as the qualitative aspects of biochemistry research. Students who are pursuing a degree in animal behavior will find that reading this book is of tremendous use to them.

Dr. M.Moorthi works as an Assistant Professor of Zoology and Wildlife Biology, A.V.C. College (Autonomous), Mayiladuthurai, Tamil Nadu, India, Dr. M. Govindarajan serves as an Assistant Professor of Zoology, Government College for Women (A), Kumbakonam, Tamil Nadu, India.



M. Moorthi M. Govindarajan

## **Practical Zoology**

Ecology, Evolution, Embryology, Animal Physiology and Biochemistry

047 8 6 2 0 5 4 4 9 8 1 0 1

Aporthi, M. Govindar





#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation

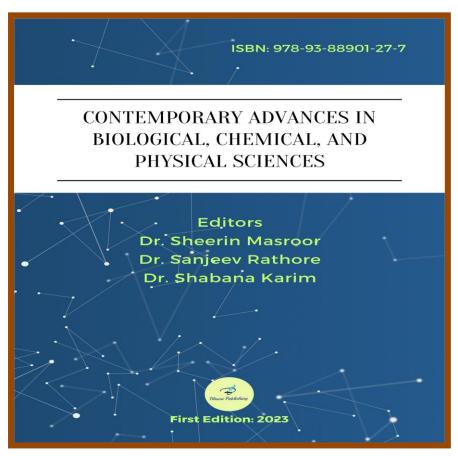


Estd. 1963





Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
M. Kiruthika	Comtemporary advances in biological, chemical and physical sciences (Chapter 5)	2023	978 - 93 - 88901 - 27 - 7	Yes	Bhumi Publishing





#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution
IV Cycle of Accreditation







Bhumi Publishing, India

Estd. 1963

# REMOVAL OF HEXAVALENT CHROMIUM [Cr (VI)] FROM AQUEOUS MEDIUM BY KOH ACTIVATED AERIAL ROOT OF FICUS BENGHALENSIS.L CARBON: ADSORPTION DYNAMICS AND EQUILIBRIUM STUDIES

M. Kiruthiga\*1 and K. Ramesh2

<sup>1</sup>Department of Chemistry, Government College for Women (Autonomous), Kumbakonam, Thanjavur Dt, India (Affiliated to Bharathidasan University)

<sup>2</sup>Department of Chemistry, Poompuhar College (Autonomous),

Melaiyur Mayiladuthurai Dt, India (Affiliated to Annamalai University)

\*Corresponding author E- mail: <a href="mailto:kiruthigamoorthi@gmail.com">kiruthigamoorthi@gmail.com</a>

#### Abstract:

The present paper reports on the use of modified activated carbon as an environmental friendly adsorbent, obtained from aerial root of *Ficus Benghalensis*, for the removal of Cr (VI) from aqueous solution. The activated carbon was prepared from aerial root of *Ficus Benghalensis* by KOH treatment (FBPHAC). Batch studies revealed that the effects of different experimental parameters like pH, dose, contact time, initial ion concentration and temprature. The experimental data showed that the rapid capture of Cr (VI) ions onto FBPHAC is explained by Langmuir isotherm model. The Kinetic modelling showed that a pseudo second order model was suitable to describe the kinetic equilibrium data and suggesting a fast adsorption rate of Cr (VI) ion.

#### Introduction:

Contamination of water by toxic heavy metals through the discharge of industrial wastewater is a global environmental concern [1]. Numerous metals such as Sb, Cr (VI), Cd, Cu, Pb, Hg, etc., have toxic efects on mankind and environment [2]. Hexavalent Chromium is one among the mentioned toxic heavy metals essential to human life and health. In minute quantities, the metal is essential in maintaining the health of an individual, whereas excess of the same is carcinogenic. Prolonged exposure to Cr (VI) causes serious illness to human [3]. According to the WHO, its permissible level in surface water bodies is 0.05 mg/L and its concentration in industrial wastewaters varies from 0.5 to 270 mg/L. Lather, tanning, pigment, textile, wood preservation, chrome plating, cement and photography industries etc., are the major contributors of hexavalent chromium into the environment [4]. Hence, the treatment of contaminated water is the need of the hour. Chemical precipitation, membrane separations, ion exchange, solvent extraction, adsorption, electrodialysis and reverse osmosis are the existing methods for the treatment of industrial waste water. Among these techniques the adsorption is considerably effective due to the feasibility and applicability of low-priced sorbents. It has great potential in significantly reducing such environmental problems, increasing productivity and helping to remediate the environment [5].

Several low-cost adsorbents, such as agricultural wastes, industrial solid wastes, biomass, clays minerals and zeolites, are usually utilized for Cr (VI) removal [1].

Tor Women

PRINCIPAL
Government College for Women (Autonomous)
KUMBAKONAM,

44

#### **KUMBAKONAM - 612 001**



DST - CURIE Sponsored Institution IV Cycle of Accreditation





Name of the teacher	Title of the book published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
S. Geetha	Secure Data Management for Online Learning Applications	2023	978-10- 032-645- 38	Yes	Taylor and Francis

**6** 0435 – 2401391





ல்வாழ்வ

Estd. 1963