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BANGALORE · INDIA

Notice for the PhD Viva Voce Examination

Ms Jincy A George (Registration Number: 1942097), PhD scholar at the School of Sciences, CHRIST (Deemed to be University), Bangalore will defend her PhD thesis at the public viva-voce examination on Saturday, 5 August 2023 at 10.30 am in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029.

Title of the Thesis	:	**Green Synthesis of Nanoparticles Leading to the Biocontrol of Aedes Aegypti**
Discipline	:	**Zoology**
External Examiner (Outside Karnataka)	:	**Dr Siddharthan S** Associate Professor School of Life Sciences University of Hyderabad Professor CR Rao Road, Gachibowli Hyderabad - 500046 Telegana
External Examiner (Within Karnataka)	:	**Dr H R Raveesha** Professor Department of Botany Bangalore University Bengaluru – 560056 Karnataka
Supervisor	:	**Dr Paari K A** Assistant Professor Department of Life Sciences School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Registrar

Place: Bengaluru

Date: 27 July 2023

ABSTRACT

Mosquitoes are the potential vectors of many diseases such as malaria, dengue, brain fever, etc. There is a need to check the proliferation of the population of vector mosquitoes to reduce vector-borne diseases by appropriate control methods. Nanotechnology, a promising field of research, opens up in the present decade and is expected to give major impulses to technical innovations. Over the past few decades, nanoparticles of noble metals such as silver exhibited significantly distinct physical, chemical and biological properties. Presently, there is a need for increased efforts to develop newer and more effective methods to control mosquito vectors. Due to different technical and operational reasons, the existing chemical and biological methods are not as effective as in the earlier period. Therefore, this study is designed to extract silver nanoparticles from plant, fungal and bacterial species and assess their impact on the third and fourth-instar mosquito larvae and the adult mosquito (*Aedes aegypti*). The study has formulated a gel material that is composed of nanomaterials that exhibited promising properties to develop a nano gel product. The study is designed in a way to have an impact on the control of mosquito larvae using biologically synthesized nanoparticle formulations. Green synthesis is expected to show a higher yield of nano products that can be formulated in various forms to standardize the biocontrol of mosquito species. Bioinformatic studies revealed the good binding potential of the extracted bio compounds against the juvenile hormone-binding proteins in *A. aegypti*. The study deduced meaningful outcomes that can benefit the environment by controlling the mosquito population and thereby reducing disease transmission in many developing countries.

Keywords: *Aedes aegypti, silver nanoparticles, larvicidal, antioxidant activity, Predatory efficiency, MTT assay, DNA fragmentation, Nanogel formulation*

Publications:

1. A review article titled as "A review on metal nanoparticles from the medicinal plants: Synthesis, Characterization and Applications" was published in Nanoscience and Nanotechnology -Asia. 2020
2. A review article titled "Microbial sources silver nanoparticles and its activity on dengue causing mosquito" was published in the Research Journal of Biotechnology. 2022
3. A research article titled "Biocontrol of *Aedes aegypti* using *Talaromyces islandicus* synthesized silver nanoparticles" was published in the Asian Journal of Chemistry. 2022
4. A research article titled as "Evaluation of potential larvicidal and pupicidal activity of *Cassia fistula L.* synthesized silver nanoparticles against *Aedes aegypti"* was published in the Medicinal plants journal. 2023
5. Book article titled as "Nanomaterials: its biosynthesis and application on mosquito control" published in a compendium of research insights of life science students, ISBN: 978-93-91342-27-2. 2022.