Dr. Lalitha Vaidyanathan
Assistant Professor (Biomedical Sciences)
Faculty of Biomedical Sciences and Technology

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Personal Profile

Assistant Professor at the Department of Biomedical Sciences with 16 years of experience in undergraduate teaching and 5 years of experience in postgraduate teaching in Cell Biology, Bioprocessing Technology, Microbiology, and Pharmaceutical Biotechnology. Curriculum development, Department micro-administration, NAAC coordinator, Training UG/PG students through Biomedical Sciences In-time Training (BITT) Program, Member of Education Unit, Resource person for Faculty Development Programs, Research supervision for UG/PG students of SRIHER and external students through UILIC, Supervising Chancellor's Summer Research Fellowship Grants for UG students include academic, administrative and research profile.

Research Interests

Zebrafish Biology: Establishing adult Zebrafish models for human diseases, metabolic disorders and traumatic conditions associated with clinical conditions necessitating medical intervention.

Adult Zebrafish model for anxiety, obesity, diabetes, intracerebral hemorrhage, traumatic brain injury, neuroinflammation, cutaneous wound and wound infection have been established in the lab during earlier studies. The natural products with bioactive potency in each of these conditions were tested in the developed model.

Microbiology: Antimicrobial activity of phytocompounds, deducing their mode of action

Antimicrobial potency against microbes infecting wounds and enteric pathogens, identifying the mode of action viz., DNA inhibition and/or cell wall targeting mechanisms.

Bioprocess Engineering: Optimising growth and production conditions of industrially important microbes

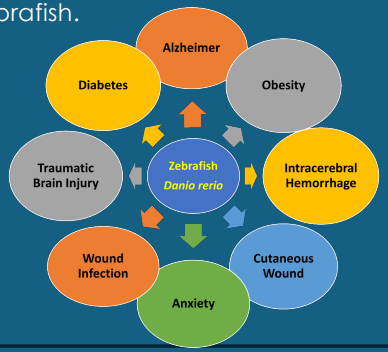
Standardizing specific growth rates and yield coefficients through intricate titrations in supplementation and process conditions

The Zebrafish lab

Research studies in the lab are conducted with approval by the Institutional Animal Ethcis Committee (IAEC), carried out in the GLP labs of the Centre for Toxicology and Developmental Research. Research in Zebrafish Lab centers around establishing Biomedical models of adult Zebrafish to simulate various disease conditions, metabolic alterations, biochemical and cellular changes associated with human conditions that need medical intervention. The lab has established and researched on Zebrafish models for conditions like anxiety, obesity, diabetes, neuroinflammation due to traumatic brain injury, intracerebral haemorrhage. The lab also conducts toxicology studies with embryo, larval and adult stages of Zebrafish.

Current studies in the lab include

1. Formaldehyde induced Amyotropic Lateral Sclerosis modelled in Zebrafish larva.
2. Interplay of SCN1A gene and Gut microbiota alterations in Epilepsy in adult Zebrafish model.



Lab Members

Ms. Lakshmi, Post graduate student, Biomedical Sciences

Selected Publications

1. Lalitha Vaidyanathan, Lokeswari TS. Anti-bacterial and anti-inflammatory properties of *Vernonia arborea* accelerate the healing of infected wounds in adult Zebrafish. BMC Complementary Medicine and Therepies, 2024, 24(1), 95

2. Madhan Kumar Srinivasan, Lalitha Vaidyanathan. Exploring biomarkers associated with secondary inflammation following intracerebral hemorrhage using adult Zebrafish model, Chemical Biology Letters, 2023, 9(4), 408.

3. Vitchanthangal Prathivathibayankaram Shreenidhi and Lalitha Vaidyanathan. Comprehending adult Zebrafish (*Danio rerio*) as a model organism for Alzheimer's disease, Research Journal of Biotechnology, 2023, 18(1).

4. Sarah Andrea Wilson, Anushree Nagaraj, Lalitha Vaidyanathan. *Calocybe indica* extract modifies GABA and Serotonin levels to alleviate anxiety in experimental adult Zebrafish models, Research Journal of Pharmacy and Technology, 2021, 14(9).

5. Anushree Nagaraj, Sarah Andrea Wilson, Lalitha Vaidyanthan. Anti-obesity properties of *Calocybe indica* in Zebrafishes with short-term high fat diet induction, Biomedical & Pharmacology Journal, 2021, 14(1), 411-423.