

Address for correspondence
Centre for Climate Change Studies,
International Research Centre
Sathyabama University
Jeppiaar Nagar
Rajiv Gandhi Road
Chennai - 600119



EDUCATION

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| 2005-2010 | DOCTOR OF PHILOSOPHY (Ph.D) Environmental Biotechnology
<u>Thesis title</u> : " Impact of chlorinated discharges from a coastal power plant on marine phytoplankton"
<u>Research areas</u> : Environmental impact of industrial discharges, chlorine and chlorination by products chemistry, Ecotoxicity assessment, Phytoplankton physiology, Water quality analysis, Bioremediation, Biofouling and biofilm control from the University of Madras, Chennai, INDIA |
| 2001-2003 | Master of Science (M.Sc.) Environmental Biotechnology
<u>Thesis title</u> : " Immunotoxic and haematotoxic effects of sodium arsenite on guinea pig <i>Cavia porcellus</i> and modulatory effect of <i>Asparagus racemosus</i> "
<u>Specialized subjects</u> : Industrial toxicology, Waste water management, Environmental engineering, Basic biotechnology from Manonmaniam University, Tirunelveli, INDIA in First class (81.73%) Distinction. |
| 1998-2001 | Bachelor of Science (B.Sc.) Microbiology
<u>Specialized subjects</u> : Basic microbiology, Immunology, Organic chemistry, Biophysics from Madurai Kamaraj University, Madurai, INDIA in first class (73.6%). |

PROFESSIONAL EXPERIENCE

April 2014 - Present - Scientist - Centre for Climate Change Studies, Sathyabama University, Chennai, India.

March 2011 - March 2014 - Postdoctoral Researcher - Sangmyung University, Seoul, South Korea.

March 2006 - September 2010 - Senior Research Fellow - Atomic Energy Regulatory Board of India - Government of India.

March 2004 - February 2006 - Junior Research Fellow - Atomic Energy Regulatory Board of India - Government of India.

June 2003 - January 2004 - Trainee (Quality analysis - waste water & industrial effluents) - Pure Envirotech Pvt Ltd, Chennai, India.

AWARDS/FELLOWSHIPS

March 2006 - September 2010 - Senior Research Fellow - Atomic Energy Regulatory Board, Government of India

March 2004 - March 2006 - Junior Research Fellow - Atomic Energy Regulatory Board, Government of India.

RESEARCH INTERESTS

- Ecotoxicology and risk assessment of environmental contaminants with emphasis on the bioavailability, effects and ecological risks of metals, POP's, EDC's and novel chemicals on aquatic organisms (especially phytoplankton and zooplankton).
- Global climate change, Bio-geochemical cycle alteration and impact on aquatic microorganisms
- Microalgal carbon sequestration and mechanisms.

RESEARCH EXPERIENCE

- Chlorophyll fluorescence characteristics for the evaluation of the toxicity of metals, EDC's and other chemicals to microalgae
- Evaluation of the physiological and transcriptional responses of both marine and freshwater microalgae on exposure to chemical toxicant and other environmental factors. Development of a rapid and reliable biomarker for ecotoxicity assessment
- Field sampling for assessment of the impact of chlorinated discharges on marine microalgae from a nuclear power plant.
- Ecotoxicity assessment of chlorine and chlorination byproducts on the physiology of marine microalgae. Conventional growth based assays and advanced microscopic techniques like CLSM for the study.
- Synthesis of Silver Nanoparticles and its toxicity to Microalgae
- Screening of marine microalgae for Biodiesel production
- Nutrient limitation and growth dynamics in marine microalgae
- Feeding deterrence in copepod grazing on chemical treated microalgae

RESEARCH EXPERTISE

- Identification, culturing and maintenance of microalgal cultures (diatoms, green algae, dinoflagellates and cyanobacteria), Zooplankton (copepods)
- Biochemical assays (Protein and enzyme studies)
- Molecular biology (DNA and RNA extraction, gene cloning)
- Water quality assessment
- Quantification and characterization of chemicals and metabolites

INSTRUMENTS HANDLED

- Confocal laser scanning microscopy
- Cellometer (Flow cytometer)
- Fluorometer
- Gas chromatography - Mass spectrophotometer
- High performance liquid chromatography
- Carbon analyzer
- PCR, Real time PCR

SOFTWARE EXPERTISE

- Image Analysis (Image J, Leica LAS)
- Statistical softwares - InStat Prism, SigmaPlot, Origin
- Molecular biology related

PUBLICATIONS

- 1) Ebenezer, V., Ki, J-S. 2016. Toxic effects of Aroclor 1016 and bisphenol A on marine green algae *Tetraselmis suecica*, diatom *Ditylum brightwellii* and dinoflagellate *Prorocentrum minimum*. *Korean Journal of Microbiology*, 52 (3): 306-312.
- 2) Guo, R., Ebenezer, V., Wang, H., Ki, J.S 2016. Chlorine affects photosystem II and modulates the transcriptional 4 levels of photosynthesis-related genes in the dinoflagellate *Prorocentrum minimum*. *Journal of Applied Phycology* (10.1007/s10811-016-0955-8.).
- 3) Sathasivam. R., Ebenezer.V, Guo, R., Ki, J-S 2016. Physiological and biochemical responses of the freshwater green algae *Closterium ehrenbergii* to the common disinfectant chlorine. *Ecotoxicology and Environmental Safety*, 133: 501-508.
- 4) Lee, M.A., Guo, R., Ebenezer, V., Ki, J.S. 2015. Evaluation and selection of reference genes for ecotoxicogenomic study of the green alga *Closterium ehrenbergii* using quantitative real-time PCR. *Ecotoxicology*, 24(4):863-872.
- 5) Ebenezer, V., Suh, Y-S., Ki, J-S. 2015. Effects of biocide chlorine on biochemical responses of the dinoflagellates *Prorocentrum minimum*. *Water Environment Research*, 87(11):1949-1954.
- 6) Ebenezer, V., Ki, J-S. 2014. Biocide sodium hypochlorite decreases pigment production and induces oxidative damage in the harmful dinoflagellate *Cochlodinium polykrikoides*. *Algae*, 29(4): 311-319.
- 7) Guo, R., Ebenezer, V., Ki, J-S. 2014. PmMGST3 a novel microsomal glutathione s-transferase gene in the dinoflagellate *Prorocentrum minimum*, is a potential biomarker of oxidative stress. *Gene*, 546(2): 378-385

- 8) Ebenezer, V., Ki, J-S. 2014. Effects of the algicides CuSO₄ and NaOCl on physiological and catalase responses of the harmful dinoflagellate *Cochlodinium polykrikoides*. *Journal of Applied Phycology*, 26(6): 2357-2365.
- 9) Ebenezer, V., Ki, J-S. 2014. Quantification of toxic effects of the organochlorine insecticide endosulfan on marine green algae, diatom and dinoflagellate. *Indian Journal of Geo-Marine Sciences*, 42(3): 393-399.
- 10) Ebenezer, V., Ki, J-S. 2013. Quantification of sub-lethal toxicity of the marine green microalga *Tetraselmis suecica* to metals and endocrine-disrupting chemicals. *Fisheries and Aquatic Sciences*, 16(3): 187-194.
- 11) Ebenezer, V., Ki, J-S. 2013. Physiological and biochemical responses of the marine dinoflagellate *Prorocentrum minimum* exposed to the oxidizing biocide chlorine. *Ecotoxicology and Environmental Safety*, 91: 129-134.
- 12) Ebenezer, V., Ki, J.S. 2013. Quantification of toxic effects of the herbicide metolachlor on marine microalgae *Ditylum brightwellii* (Bacillariophyceae), *Prorocentrum minimum* (Dinophyceae) and *Tetraselmis suecica* (Chlorophyceae). *The Journal of Microbiology*, 51(1): 136-139.
- 13) Rajamohan R, Ebenezer, V., Rajesh, P., Venugopalan, V.P., Natesan, U., Murugesan, V, Narasimhan, S.V., 2012. Trihalomethane formation potential of drinking water sources in a rural location. *Advances in Environmental Research*, 1(3): 181-189.
- 14) Ebenezer, V., Nancharaiah, Y.V, Venugopalan, V.P. 2012. Chlorination-induced cellular damage and recovery in marine microalgae *Chlorella salina*. *Chemosphere*, 89(9):1042-1049.
- 15) Guo R, Ebenezer, V., Ki J-S. 2012. Transcriptional responses of heat shock protein 70 (Hsp70) of *Prorocentrum minimum* subjected to thermal, BPA and Copper stress. *Chemosphere*, 89(5): 512-520.
- 16) Ebenezer, V., Ki, J-S. 2012. Evaluation of the sub-lethal toxicity of Cu, Pb, bisphenol A and PCB to the marine dinoflagellate *Cochlodinium polykrikoides*. *Algae*, 27 (1): 63-70.
- 17) Ebenezer, V., Medlin, L.K., Ki. J.S. 2012 Molecular detection, quantification, and diversity evaluation of microalgae. *Marine Biotechnology*, 14, 129- 142.
- 18) Vinitha E, Veeramani, P, Venugopalan, V.P. 2010. Chlorination for power plant biofouling control: potential impact on entrained phytoplankton. *International Journal of Environmental Studies*, 67(4), 515-530.
- 19) Rajamohan, R., Vinitha, E., Venugopalan, V.P. and Narasimhan S.V. 2007. Chlorination byproducts in the cooling water system of a coastal electric plant. *Current Science*, 93(11), 1608-1612.

REFERENCES

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