Utilization of algae for biofertilizer and high value added products from West Bengal

Ref: BT(Estt)RD-12/2011

Dr. Manojit Debnath, Ph. D., Post graduate department of Botany, Hooghly Mohsin College
Email: mandebphycology@gmail.com

Brief objectives of the sanctioned research project for 1st Year were-
(a) Collection of various cyanobacterial and algal taxa from their natural habitats.
(b) Isolation and identification of cyanobacteria taxa from rice field soil.
(c) Analysis of various ecological parameters of respective habitat and rice field soil.

To achieve the target fresh water algae were collected from fifteen different location and habitat of the districts Burdwan and Nadia, West Bengal respectively. From the collected sample unialgal cultures were established in different algal medium, for cyanobacteria, chlorophyta and diatom. A total of fourteen genera of cyanobacteria, five chlorophyta and one diatom have been identified up to species level. These are *Aphanothece* sp*., Chroococcus* sp*., Gloeocapsa* sp*., Microcystis* sp*., Oscillatoria* sp*., Lyngbya* sp*., Phormidium* sp*., Microcoleus* sp*., Nostoc* sp*., Anabaena* sp*., Calothrix* sp*., Scytonema* sp*., Tolypothrix* sp*., Westiellopsis* sp., *Chlorella* sp., *Chlorococcum* sp., *Tetraspora* sp., *Scenedesmus* sp., *Rhizoclonium* sp. and *Navicula* sp. Twenty pure culture of algal population were maintained in Hooghly Mohsin College culture collection of Algae (**HMCCCA**) in Systematics and Applied Phycology Laboratory, Department of Botany with isolation number. For the quantitative analysis of important physico-chemical parameters of respective habitat (soil and water), pH, electrical conductivity, free CO2, dissolved oxygen, inorganic phosphate, available nitrogen, K, Na, and Ca were carried out following standard methodology.

From the collected algal strains biotechnological application immediate/long term may be exploited for:
a) site specific cyanobacterial biofertilizer along with genotypic identification of selected superior algal biofertilizer strains based on restriction fragment length polymorphism (RFLP) analysis
b) high value added product like **i)** nutraceutical and pharmaceutical compounds (very long-chain poly-unsaturated fatty acids (vlcPUFAs), eicosapentaenoic (EPA), docosahexaenoic acid (DHA) and arachidonic acid (AA), **ii)** colourant with antioxidant properties (like astaxanthin, leutin, β-carotene) will also be screened.

This work has been presented in national and international seminar/conferences in R.K.M.V.C. College, Rahara and Siksha O Anusandhan University, Bhubaneswar.