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ALGAL BIO DIESEL FROM NATURAL ALGAL REPOSITORY OF INDIAN SUNDERBAN MANGROVE FOREST

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The Sundarban biosphere reserve -the largest mangrove forest, along the India- Bangladesh coast line (21°31´ to 22°53´N and 88°37´ to 89°09´E) is interconnected with many freshwater rivers, creeks and canals and ultimately connected to Bay of Bengal. The water quality changes regularly by inundation of upstream fresh water and tidal saline water from downstream region changing the salinity level. It is an ideal habitat for different groups of cyanobacterial and algal flora.

In our investigation 30 islands surveyed- 150 taxa of algae and cyanobacteria were collected and identified with morpho-taxonomy and 16SrDNA techniques. For potential biodiesel production, a thorough screening of more than 50 strains were done in terms of total and neutral lipid estimation and biomass productivity. Maximum lipid accumulation was observed in *Cladophora glomerata*. GCMS analysis showed dominance of saturated (C16:0) and monounsaturated (C18:1) fatty acids in all studied taxa . Stress induced changes in biomass yield and lipid accumulation were also investigated. Almost 4 fold increase in lipid accumulation in *Chlorella ellipsoidea* was recorded in nitrogen starved condition. Neutral lipid in the form of triacylglycerol (TAG) was analyzed from two unicellular microalgae *Chlorella ellipsoidea* and Chlorococcum infusionum by flow-cytometry and confocal microscopy. High fluorescence intensity, coefficient of variation and median value were studied in all nutritional stresses. Biodiesel extraction was done from Chlorella in large scale cultivation and was compared with Indian standard diesel and found high Cetane number and calorific value suggesting its potentiality towards next generation diesel oil.

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