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Fresh water algal biodiversity of the Anaimalai hill ranges, Tamilnadu - Chlorophyta - Chaetophorales

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ABSTRACT

The Anaimalai hill ranges constitute a part of the Western Ghats, in Tamil Nadu, India. They abound in lentic and lotic systems. These support a rich phyco flora. Attempts have been made to bring out the algal biodiversity of these freshwater ecosystems of this region. The present study deals with the green filamentous algae belonging to the genera *Chaetophora*, *Stigeolonium* and *Coleochaete* collected from different localities of this region. The taxonomic determinations and diagnoses have been made with the help of previous standard work, based on the morphological and morphometric attributes. The salient features of the taxonomy, structure, occurrence and nature of habitat are discussed.

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Fresh water algal biodiversity of the Anaimalai hill ranges, - Chlorophyta - Ultrichales and Ulvales

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ABSTRACT

Explorative studies are essential to bring out biodiversity. The Anaimalai hill ranges, which are located in Tamilnadu support a wide variety of algal flora in their lentic and lotic fresh water ecosystems, as brought out by earlier work. The present work is a continuation of the earlier investigations. Green unbranched filamentous and thalloid algae belonging to the orders Ulotrichales and Ulvales are described as first reports from this part of Tamilnadu. *Ulothrix aequalis, U. idiospora, U. rorida, U. tenuissima* and *U. zonta* of the genus *Ulothrix* are discribed on the basis of morphological and morphometic characters. The least reported thalloid green alga of Ulvales, viz., *Enteromorpha intermedia* is also recorded and described from this part of India for the first time. The occurrence and distribution of these algae are also discussed.

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Some fresh water algae from Amphitheatre of Wilson Dam

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ABSTRACT

The Wilson dam impounds eleven thousand million cubic feet of water. All the algal samples were collected from the streams of amphitheatre between Kalsubai-Ratangad areas of Wilson dam during the period June to September 2003. Observations were made with the help of research microscope. Algal taxa belonging to four divisions of algae i.e. Cyanophyta, Chlorophyta, Bascillariophyta, and Rhodophyta were identified with the help of standard literature like Monographs of Desikachary 1959, Prescott 1951, Anand 1998, Randhawa 1959, Gonzalves 1981, Desikachary et, al. 1990 etc. Typical fresh water red algae like *Batrachospermum and Sirodotia* were collected on the rocks at high hilly regions in cold-water temporary streams. Similarly members of Chlorophyta like *Chaetophora, Draparnaldiopsis, Stigeoclonium, Spirogyra, and Zygnema* were also collected and identified. Cyanophyta belonging to Nostocales were also collected and identified. These were mainly *Nostoc spp.*; *Cylindrospermum, Microchaete, Phormidium, Scytonema* etc. As the water is very clean and unpolluted all the collected and identified algae can be used as indicator of good, clean potable water.

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Biodiversity of diatoms of a few lentic and lotic habitats of Coimbatore District

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ABSTRACT

Fresh water bodies are the invaluable assets of a nation which cater to the various needs of the society such as drinking water, irrigation, industrial usage, water sports and so on. But these water bodies lose their values because of water pollution due to industrialization, urbanization and swelling human population. They become increasingly subjected to varying degrees of pollution due to discharge of domestic sewage, agricultural run off, industrial effluents and so on. These factors lead to the luxuriant growth of algal members especially diatoms. Biomonitoring of these fresh water habitats in term of phycological evaluation provides useful information about the pollution status of the water bodies. The present communication provides a primary report on the biodiversity of diatom flora of three fresh water habitats of Coimbatore District such as 1. Krishnan Anaikattikulam (KAK pond), 2. Alampalayam Pond (AP pond), 3. Aliyar River at Anaimalai section and all of them located near Pollachi of Coimbatore District in Tamil Nadu. The enumeration of biodiversity of diatoms was carried out for one year. A total of 61 species of diatoms have been recorded in these three water bodies. Out of these 61 species of Diatoms, a few of them indicate and tolerate water pollution. These include *Cyclotella meneghiniana, Gomphonema parvulum, Hantzschia amphioxys, Navicula halophila, Rhopalodia gibba, Synedra ulna.* The biodiversity of diatoms of these three water bodies with an orientation on pollution tolerating species is compared with other fresh water bodies and discussed with the help of previous literature.

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Bio-remediation of industrial effluent using micro algae

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ABSTRACT

The marine diatoms, *Amphora* sp, *Amphora laevis, Amphora turgida, Amphiprora paludosa, Navicula pennata, Synedra tabulata* and *Thalassiosira weissflogii* and the freshwater micro algae, *Scenedesmus acuminatus, Ankistrodesmus* sp., *Chroococcus* sp., and the BGA-isolate 01 isolated from the effluent were employed for an investigation on bioremediation and removal of nutrients from the samples of industrial effluent collected from ChemFab Alkalis, a chemical industry from Pondicherry. The marine diatoms removed the nitrate more effectively than the freshwater algae. *Navicula pennata* showed the maximum performance in nitrate removal followed by *Thalassiosira* sp and *Amphora laevis*. *Amphiprora* sp removed nitrate effectively in samples S1, S2, S3 and S4. Maximum amount of nitrate (600μM) was observed in ROR. *Amphora laevis* grew and removed nitrate effectively in ROR and CWW in which other algae did not perform very well. *Scenedesmus* sp removed nitrate only in sample CWW very effectively (93.48%) and other freshwater algae showed a very poor performance in nitrate removal. All the micro algae removed ammonium from the effluent. *Thalassiosira* sp and BGA-isolate 01 performed very well in removing ammonium.

All the micro algae except the freshwater algae, removed phosphate very effectively. *Thalassiosira* sp was the most effective algae in removing phosphates. Algal mixture and BGA-isolate 01 were also very effective. . Among the algae tested, *Scenedesmus* sp and *Ankistrodesmus* sp reduced conductivity considerably.

The immobilized cells of *Scenedesmus* sp could remove nitrate in all the samples.

Phosphate removal ranged from 44% to 76% which is very significant considering the importance of phosphates in eutrophication in freshwater systems.

There was a significant reduction in conductivity observed when treated with immobilized cells of *Scenedesmus* sp. Percentage reduction ranged from 28 to 54. Since electrical conductivity is related to TDS (Total Dissolved Solids) this property of immobilized cells of *Scenedesmus* sp gains importance in treatment of drinking water sources with higher TDS and of course the industrial effluents with higher TDS.

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Temple Tanks, their status and algal biodiversity

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ABSTRACT

Temple tanks are sources of water storage since ancient times. There are about fifty identifiable temple tanks in and around the city of Chennai. Of which most of them today are neglected, disused or being used to dump garbage, or even as open air toilet. Amidst these pictures of gloom there are few symbols of hope where some temple tanks are hopefully restored and kept in good usage. The hydrological features revealed that the tanks were part of an integral water harvesting system and were situated in the basin of one of the rivers that flowed through city. Unplanned urbanisation, however has blocked the storm water channels that fed the tanks, the water now bypasses these tanks on its way to sea. The water samples were collected from five tanks in and around city of chennai namely : 1. Dhandheeshwarar temple, Velachery, 2. Maruntheeswaarar temple, Tiruvanmiyur, 3. Kabaleeshwarar temple, Mylapore, 4. Parthasarathy temple, Triplicane, 5. Karuneeshwarar temple, Saidapet. Physical parameters such as humidity, temperature, water pH, were recorded. Water was analysed for basic nutrients. The algal biodiversity was studied and algae belonging to Cyanophyceae, Chlorophyceae , Bacillariophyceae, and Euglenophyceae were recorded.

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Morphology and Life History of *Dunaliella salina* Teod. from Mumbai

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ABSTRACT

The present communication deals with morphology and reproduction of *Dunaliella* isolated from the saltpans near Mumbai and maintained in the laboratory culture. The alga exhibited better growth in *Dunaliella* medium proposed by Ben-Amotz, *et al* (1981). In its general morphology the alga resembles *Dunaliella salina* Teod. The alga reproduces asexually by longitudinal cell division while it is in motile stage. Under low light conditions alga goes into palmelloid stage and with the addition of fresh medium its motility is restored. Some of the stages in sexual reproduction have been observed. Some of the mature cells come together and form a cytoplasmic bridge at lateral or posterio-lateral side and then fuse completely. The zygote remains round and develops thick wall at a later stage. The zygote appears to be without any dormancy period. Under hypersaline conditions the alga metamorphoses into cysts, which are thick walled, and orange- red in color.

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Organic Wastes as a Medium for Cultivating Microalgae

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ABSTRACT

Experiments were carried out on the cultivation of microalgae collected from salterns using different organic sources as nutrients: cow dung, chicken manure, cabbage leaf wastes and plants of the water hyacinth (*Eichhornia*). The test algae were *Chlorella sp.*, *Tetraselmis sp.* and *Aphanothece sp.* Urea as a source of nutrient was used as control. The experiments revealed that organic wastes were superior to urea in enhancing growth of the algae.

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Water characterization and fresh water algae of Chitlapakkam lake

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ABSTRACT

In the present study the physico-chemical and microbiological parameters of Chitlapakkam lake, Chrompet, located in the Southern suburb, South Chennai have been analysed. The water samples were analysed for temperature, turbidity, pH, dissolved oxygen, TDS, sulphate, antimony. The change in physico-chemical characteristics of water and the algal forms were encountered.