

Seasonal Studies on Biochemical Constituents of Alginate from *Hormophysa cuneiformis* (Gmelin) Silva

¹Bakthavachalam Babu, ²S. Jothi Saraswathi and ²R. Rengasamy

¹Department of Botany, Madras Christian College (Autonomous)
Chennai – 600 059, Tamil Nadu, India

²Centre for Advanced Studies in Botany, University of Madras,
Chennai – 600 025, Tamil Nadu, India

ABSTRACT

Hormophysa cuneiformis (Gmelin) Silva was collected along the Coast of Indinthakarai, Tamil Nadu during six different seasons and investigated for its alginate yield, viscosity and biochemical constituents of alginate, such as β -D-mannuronic acid (M-block), α -L-guluronic acid (G-block) and alternating sequences of β -D-mannuronic acid and α -L-guluronic acid (MG-block). Substantial seasonal variation was recorded with high yield of alginate during premonsoon season. A significant positive correlation was observed between viscosity and G-block. Viscosity and the content of G-block were also maximal in the premonsoon season and M/G ratio was also assessed.

Keywords: Alginate, *Hormophysa*, M-Block, MG-Block, G-Block.

Evaluation of Different Cell Disruption Methods on Lipid Recovery from Diverse Strains of Microalgae

¹M.S. Gaikwad* and ²B.B. Chaugule

¹Department of Botany, Savitribai Phule Pune University, Pune-41007

²BVDV Poona College of Pharmacy, Erandevane, Pune-411038

* Corresponding author: mahadev.gaikwad999@gmail.com

Abstract

Microalgae have been looked promising source of third generation biofuels. For maximum lipid recovery the type of cell disruption method followed is considered as critical one. Therefore attempt was made to evaluate the extraction efficiency of five commonly used disruption methods as Autoclaving, Bead beating, Microwave, Sonication and Osmotic shock. For the experiment eleven strains of microalgae belonging to seven groups were used. Based upon the results obtained bead beater or sonicator appeared to be most efficient cell disruption method.

Key words: Microalgae, biodiesel, lipid extraction, cell disruption,

Chlorophyceae of Parakkai Pond in Kanyakumari District, South Tamil Nadu

G.S. Regini Balasingh and W. Vincy

Research Centre in Botany,
Scott Christian College (Autonomous),
Nagercoil, Tamil Nadu, India – 629 003.

*Corresponding author

Abstract

Hydrobiological studies were made in the Parakkai pond for a period of one year from October 2015 to September 2016. The physicochemical factors like Temperature, pH, DO, BOD, Total alkalinity, Sodium, Potassium, PO₄, and NO₃ were analysed. Phytoplankton studies showed a total of 72 chlorophycean members in which 3 genera belonging to Volvocales, 11 to Chlorococcales, 12 to Zygnematales, 1 to Ulotricales and 3 genera to the order Cladophorales.

Key words: Chlorophyceae, Pollution, diversity

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Systematic Studies on the Freshwater Diatom Flora From Selected Places of Kancheepuram District, Tamil Nadu

Bakthavachalam Babu¹ and S. Pauline Gifty

Department of Botany

Madras Christian College (Autonomous), Chennai – 600 059

e-mail: bbabu2k5@gmail.com

ABSTRACT

The diversity of freshwater diatoms has not been well explored in Tamil Nadu and only few research papers have been published on the freshwater diatom flora of Tamil Nadu. Therefore, an attempt to conduct a preliminary taxonomic and floristic survey to document the freshwater diatom communities from selected places of Kancheepuram district was made in the present study. Diatom samples were collected during November, 2014 to January 2015 from three different water bodies such as Okkiyam Madavu (Karapakkam, 12.91°N, 80.23°E), Shollinganallur Lake (12.90°N, 80.23°E) and Navalur Lake (12.83°N, 80.20°E). A total of 28 species belonging to 16 families were documented of which, 15 species have been reported for the first time in Tamil Nadu. This study has been initiated to lay a pavement for further studies on the freshwater diatom flora of Tamil Nadu.

Key words: Diatoms, Taxonomy, Centric, Pennate, Kancheepuram

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Filamentous Desmids of Tamil Nadu

¹K.Maheswari and ²M. Baluswami

Department of Botany

Madras Christian College (Autonomous), Chennai-600 059

²Director, Shift II, Self-Financed Stream

Madras Christian College (Autonomous), Chennai-600 059

¹kmaheswarimcc@gmail.com

ABSTRACT

Filamentous desmids are characteristic of having their cells arranged linearly with the help of specialized structures present in the apical region such as knobs, grains and rod like processes. There are 10 genera which are distributed world-wide. viz., *Bambusina*, *Desmidium*, *Groenbladia*, *Hyalotheca*, *Sphaerososma*, *Spondylosium*, *Teilingia*, *Onychonema*, *Streptonema*, *Phymatodocis*. In India, the filamentous desmids are represented by 8 genera, each with varying number of taxa, Such as *Bambusina*, *Desmidium*, *Groenbladia*, *Hyalotheca*, *Onychonema*, *Phymatodocis*, *Sphaerososma* and *Spondylosium*. Taxa belonging to these genera except *Onychonema*, *Phymatodocis* were collected during the present study. Samples containing two taxa of *Teilingia* in addition to the genera listed above have also been collected.

In Tamil Nadu, a total of 11 taxa belonging to 5 genera are already reported. viz., *Bambusina* (as *Gymnozyga*), *Desmidium*, *Hyalotheca*, *Onychonema* and *Spondylosium*. Critical examination of Samples collected during the years 2013-2016 from all over Tamil Nadu resulted in documentation of these filamentous desmids from 9 districts, such as Kancheepuram, Salem, Coimbatore, Dindigul, Sivagangai, Ramanathapuram, Tirunelveli, Tuticorin and Kanyakumari. A total number of 15 taxa belonging to 7 genera were collected from various habitats distributed in these districts. Of these *Desmidium baileyi* (Ralfs) Nordst., *Hyalotheca dissiliens* Brèbisson ex Ralfs. and *Spondylosium planum* (Wolle) West and West were observed to be common throughout India. The following taxa such as, *Desmidium pseudostreptonema* West and West, *Hyalotheca dissiliens* var. *tatrica* Racib., *Hyalotheca mucosa* Ralfs, *Sphaeroszma laeve* (Nordst.) Thomasson, *Sphaeroszma laeve* var. *latum* (West and West) Kurt Förster, *Spondylosium nitens* var. *triangulare* Turner, *Teilingia excavata* (Ralfs ex Ralfs) Bourelly, *Teilingia granulata* (Roy and Bisset) Bourelly, were found to be new reports from Tamil Nadu.

Taxa such as *Groenbladia undulata* (Nordst.) Kurt Förster, *Spondylosium hundellii* Borge, and *Spondylosium tetragonum* West and West were found to be new reports to India. Description and distribution of all these members with photomicrographs and a key for identification of them are presented in the following pages.

Key words: Desmids, Filamentous desmids, *Bambusina*, *Teilingia*.

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Comparison of Heavy Metal such as Lead, Cadmium, Zinc and Copper Concentration in the Sediment from the Seaside, Mangrove and River Side at Kadalundi Region, Kozhikode District, Kerala, India

JAYASURYA P.K.^{a,b,d}, GEORGE J.P.^c AND ANANTHARAJAN^d

a Central Marine Fisheries Research Institute, P B No. 1603, Ernakulam North PO, Kochi 682 018

b Manonmaniam Sundaranar University, Abishekapatti, Thirunelveli 627 012

c Pioneer Kumaraswamy College, Nagercoil

d Address for communication: Suryakanthi, T C 16/1480, J P N 72, Thycaud PO, Trivandrum 695 014, Kerala, India

Abstract

Majority of the mangrove eco systems are seen sandwiched between sea and river. Rivers are the source of fresh water to the mangroves. Mangroves are the feeding and breeding ground of many fin fish, shell fish species and provide food and shelter to small fishes from predators. Large quantity of fin fish, shell fish etc are caught from the mangrove as well as the adjacent sea and river for human consumption. Mangroves have the capacity to store sediments and these sediments accumulate heavy metals like lead, cadmium, zinc and copper. This study gives a picture of the quantity of heavy metals such as lead, cadmium, zinc and copper in the sediment of the mangroves and is compared with river and sea sediments. Pearson correlation analysis is carried out to find out the relation of metals within the station and also the relation among the metals is also explained.

Key words: Sea, mangroves, river, sediment, heavy metal, lead, cadmium, zinc, copper

Comparison of Heavy Metal such as lead, Cadmium, Zinc and Copper concentration in the sediment from the seaside, mangrove and river side at Chetuva Region, Thrissur District, Kerala, India

JAYASURYA P.K.^{ab,d}, GEORGE J.P.^a AND ANANTHARAJAN^d

a Central Marine Fisheries Research Institute, P B No. 1603, Ernakulam North PO, Kochi 682 018

b Manonmaniam Sundaranar University, Abishekapatti, Thirunelveli 627 012

c Pioneer Kumaraswamy College, Nagercoil

d Address for communication: Suryakanthi, T C 16/1480, J P N 72, Thycaud PO, Trivandrum 695 014, Kerala, India

Abstract

Mangrove forests are specialised ecosystems found in the tropical and sub tropical regions. They are the most productive eco systems maintaining wide range of biodiversity. Due to the unplanned anthropogenic activities throughout the world the sea, river and mangrove systems are highly polluted and receive high level of heavy metal such as copper, lead, zinc and cadmium which are highly toxic. Here an attempt is made to compare the concentration of Heavy metals (Cu, Pb, Zn, and Cd) in the sediments from the mangrove with that of the sea and river in the adjacent area. Pearson correlation analysis is done to study the relationship of metals in the sampling station and also within the four heavy metals.

Key words: Sea, mangroves, river, sediment, heavy metal, lead, cadmium, zinc, copper

Effect of Various Nutrients on Photoautotrophic Growth of Microalgae *Botryococcus braunii* MCRC 01 and *Botryococcus braunii* MCRC 02

¹ S.Sharmila, ² T.M.Vatsala, T.S.Subha, and R.Kavitha

PG and Research Department of Botany,
Bharathi Women's College, Chennai, India.

¹drssharmila@yahoo.co.in

²Murugappa Chettiar Research Centre,
Taramani, Chennai-600 113

Abstract

Micro algal biomass is proven to be economically useful not only as industrial products but also to maintain environmental quality and waste water treatment. Micro algae viz., *Botryococcus braunii* MCRC 01 and *Botryococcus braunii* MCRC 02 isolated from Kulaivai Lake Chengelpattu, Tamil Nadu were used for this study. Carbon source (Citrate and Sodium bicarbonate), Nitrogen source (potassium nitrate) and phosphorous source (Potassium dihydrogen phosphate) in different concentrations were supplemented to Modified Largeau Medium. Parameters such as, dry cell weight and chlorophyll were determined. Maximum growth was observed in the medium supplemented with 0.1g/l of Citrate, 1.2 g/l of Sodium bicarbonate, 0.1 g/l of potassium nitrate in both the strain. While treatment with potassium dihydrogen phosphate, maximum growth was observed in 0.2 g/l in *B. braunii* MCRC 01 and 0.08 g/l *B. braunii* MCRC 02. The result indicated that *B. braunii* could be used for CO₂ mitigation and has a positive influence on growth rate

Key words: *Botryococcus braunii*, chlorophyll