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STUDIES ON THE KINETICS OF PHOSPHATE UPTAKE BY SOME FRESH WATER MICRO ALGAE

V. Anandaraj, V.V. Subramanian, V. and Sivasubramanian
Postgraduate & Research Department of Botany
R.M.Vivekananda College
Chennai - 600 004
India

Abstract

The present study deals with the kinetics Of PO_4 uptake by three fresh water micro algae, *Aphanothece sp., Anabaena sp.* and *Scenedesmus sp. Anabaena sp.* and *Aphanothece sp.* showed a biphasic kinetics in uptake of phosphate. *Anabaena sp* showed the lowest Ks value. Presence of EDTA and Ca^{2+} did not have any significant effect on PO_4 uptake by *Scenedesmus sp.* and *Aphanothece sp.* whereas *Anabaena sp.* showed a slight improvement in PO_4 uptake when amended with only EDTA. Addition of Ca^{2+} did not have any effect. Alkaline phosphatase activity was higher in cultures grown in PO_4 limited media. Significant AP activity was recorded in pellets than in supernatants of all algae.

Key words : *Anabaena* sp., *Aphanothece* sp. *Scenedesmus* sp., Phosphate uptake, Alkaline phosphatase.

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A PRELIMINARY REPORT ON THE PHOSPTIATE LEVELS AND PLANKTON IN A FEW SELECTED FRESH WATER BODIES IN KANCHEEPURAM DISTRICT, SOUTH INDIA.

[1]*A. Bojarajan,* [1]*M. Arumugam, V. Sivasubramanian, and V.V. Subramanian*
Post Graduate and Research Department of Botany, R.M.Vivekananda College, Chennai, India.
1. Department of Zoology, University of Madras, Chennai 25, India

Abstract

A preliminary studv on phosphate levels and the occurrence of plankton in a few selected fresh water bodies in Kancheepuram district, South India, was carried out. Possible implications of high levels of P were discussed with special emphasis on finding out suitable control methods for manipulation and restoration of these water bodies.

Key words: Bio-manipulation; Eutrophication- Phosphate- Plankton.

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STUDIES ON THE HEAVY METAL TOLERANCE OF *APHANOCAPSA PULCHRA* (KUTZ.) RABENH

V.V. Subramanian and V. Sivasubramanian
Postgraduate & Research Department of Botany
R.M.Vivekananda College, Chennai - 600 004.India.

Abstract

Aphanocapsa pulchra (Kutz.,) Rabenh., a unicellular blue-green alga, isolated from a cooling tower was made unialgal and employed for the study. LC_{50} values for Cu, Cd and Zn were found. Influence of these metals at LC_{50} levels on the photosynthetic pigments was also studied. Chl a was unaffected by these metals at LC_{50} levels. Whereas the phycobilins were reduced considerably. NO_3 and NO_2 uptakes were not affected by the heavy metals tested. Experiments on NR activity *(in vivo)* revealed that Cu Cd and Zn had no effect on the activity of existing enzyme. But Cd and Zn could inhibit the synthesis of NR.

Key Words: Heavy metals, NO_3 uptake, NO_2 uptake, *Aphanocapsa pulchra.*

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STIGEOCLONIUM KUETZING AND *SPIROGYRA* LINK AS FEED SUPPLEMENT FOR *TILAPIA MOSSAMBICA* PETERS

N. Premila and R. Chithra
Department of Botany, Queen Mary's College,Chennai-600 004.

ABSTRACT

Fish protein output was evaluated under laboratory conditions, using *Stigeoclonium aestivale* and *Spirogyra rhizobrachialis*, the two pollution indicating freshwater filamentous green algae as supplement to conventional feed mixtures of *Tilapia mossambica* Peters for a period of 35 days. The result demonstrated an average increase of 6.2% in the total protein content of fishes fed with *Stigeoclonium* as the algal supplement and 3.4% in the case of *Tilapia* fed with *Spirogyra* as the supplement, thereby indicating the possibility of substitution of traditional feed mixtures with algal meal for *Tilapia mossambica.*

Keywords : *Stigeoclonium, Spirogyra,* feed supplement, *Tilapia*

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DEW, ITS CHEMISTRY AND IMPACT ON SUB-AERIAL MICRO-ORGANISMS

5, Chandra, M.D., Vijaya Parthsarathy and V. Krishnamurthy
Krishnamurthy Institute of Algology, 37, Chari Street, Chennai - 600 017.

ABSTRACT

This history of studies on dew chemistry is reviewed. Dew samples collected from leaf surfaces in several localities on Yercaud hills during a one year period were analysed for potassium, ammonium and phosphate ions and their possible role in the nutrition of epiphyllous algae is discussed.

Key words : Dew, Chemistry, Subaerial organisms

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NOTE ON OCCURRENCE OF *COMPSOPOGONOPSIS* (MONT.)KRISHNAMURTHY FROM INDIA

Abhay Salve and B.B.Chaugule
Department of Botany, University of Pune, Pune 411 007, India

The family compsopogonaceae is represented by two genera viz. *Compsopogon* Mont. And *Compsopogonopsis* Krishnamurthy(Vis et al 1992). From India there are reports on the occurrence of *Compsopogon* alone from various parts of the country (Krishnamurthy,1961; Desikdchary et al, 1990; Kant and Vora 1999). The other genus *Compsopogonopsis* was established by Krishnamurthy in 1961 and is known by its two sprcies.*C.leptoclads* (Mont) Krishnamurthy has been reported from fresh water stream at Caynne in French Guyana and Petitbourg in Guadeloupe (Krishna murthy 1962, Bourrelly 1970). Chihara (1976) described another species, *C.japonica* which was collected by him from a small artifical pond made along the River Tone, near Sakai city, Japan , and also in the small stream near Gyoda city, Saitama Prefecture Japan. The species has also been reported from another place in Japan i.e. an artifical well of Kapira, Ishigaki-Jima Island , Japan (Seto,1982)

While surveying freshwater red algae between the latitudes 15^0 N to 21^0 N of the western ghats, the authors came across the species of *Compsopogonopsis* growing in the river Vashisti near Chiplun, District Ratnagiri, Maharastra . The alga grows on the submerged concrete pillars of a bridge in swiftly flowing water of the river. The thallus is dark bluish green in colour and profusely branched, reaching a length up to 10 cm and remaining attached to the substratum by a well developed holdfast. The holdfast is 70 - 180 µm in diameter from which as many as 13 erect filaments arise; however only a few of them grow further and mature. The apical cell is dome shaped, 3-15µm in width and 7 – 24µm in height . Branching is abundant, unilateral and branches make an angle of 30^0 – 60^0 with main axis.

The cells of the uniseriate filaments destined to become multiseriate divide and cut cortical cells in parallel plane to the axis of the filament . These cortical cells elongate towards the lower side and undergo transverse divisions and contribute to the cortex formation around the lower axial cells. The mature axial cell is drum shaped, 23-79 µm in diameter and 15-79µm in height. The cortical cells range from 4-15 µm in height to 4-23 µm in width. The monospores are 3-20 µm in diameter.

In Chiplun alga cortical initial cells after differentiation grow downward over the axial cells below, become septate and contribute to the cortex formation. Thus Chiplun alga shows peculiarities of the genus *Compsopogonopsis* as visualized by Krishnamurthy (1961). In having dome shaped apical cell cortical initials cutting in parallel plane to the axis , Chiplun alga resembles *C.japonica* Chihara, and hence it has been identified as *C. japonica.* The present report of the genus *Compsopogonopsis* is the first report of its occurrence from India.

The authors are grateful to Prof. V.Krishnamurthy for confiriming the identification and offering valuable suggestions and UGC for financial assistance.

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HYDROBIOLOGY AND PRIMARY PRODUCTIVITY OF VIRAGANUR DAM, MADURAI, TAMILNADU.

A.Jeyachandran and N.Krishnan
Department of Botany, Thiagarajar Collage, Madurai – 625 009.
Department of Zoology, Madura Collage, Madurai – 625 011.

ABSTRACT

A short-term study (October 1988 – March 1989) on certain physico-chemical factors and primary productivity of Viraganur dam, Madurai revealed that the water body remains alkaline with low dissolved oxygen. Nitrate, nitrite and phosphate contents were found to be high, suggesting an eutrophic status of the system. Moderate water temperature, alkaline pH and high phosphate favour the growth of a variety of phytoplanktons. Quantitative data on photosynthetic pigments and primary productivity are also presented.

Key words : Hydrobiology, Primary Productivity, Viraganur Dam.

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TEMPERATURE DEPENDANCY OF the CYANOBACTERIUM *MASTIGOCLADUS LAMINOSUS* FROM HOTSPRINGS

S.P.Adhikary and Jayanti K. Sahu[1]
P.G.Department of Botany, Utkal University, Bhubaneswar 751004, Orissa
[1]Department of Botany, Bhadrak College, Bhadrak, Orissa

Abstract

Temperature dependency of the therinophihc cyanobacteriurn *Mastigocladus laminosus* isolated from Taptapani hotspring of Orissa was studied. Maximum growth and branching development of the orgaism was observed at 45°C in the laboratory culture. Photosynthetic oxygen evolution in the cells of the cyanobacterium was also active at high temperature and optimum temperature agreed with that of its growth. The growth and photosynthetic activities were low at suboptimal temperatures and irreversibly inactivated at temperature above 60°C. Unlike mesophilic cyanobacteria, the organism fluorishing in the thermal springs at high temperature did not possess any adaptive morphological features suggesting that thermophilic cyanobacteria are qualitatively different from the mesophiles, the former groups being evolved in their specialized natural habitat of great antiquity meeting the challenges of high tenverature.

Keywords : Temperature dependency, *Mastigocladus laminosus.*

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THE STATUS OF MARINE ALGAE AROUND THE COASTS OF INDIA

V. Krishnamurthy

ABSTRACT

The history of marine algal taxonomy in India is traced and estimated number and diversity of the algae discussed. Their distribution and zonation on the shores are critically analysed. Depletion of marine algae on several coastal areas is noted and the causes of such depletion discussed, with reference to case studies. An action plan to conserve algal wealth is outlined.

Keywords : Marine algae; Coasts of India.