

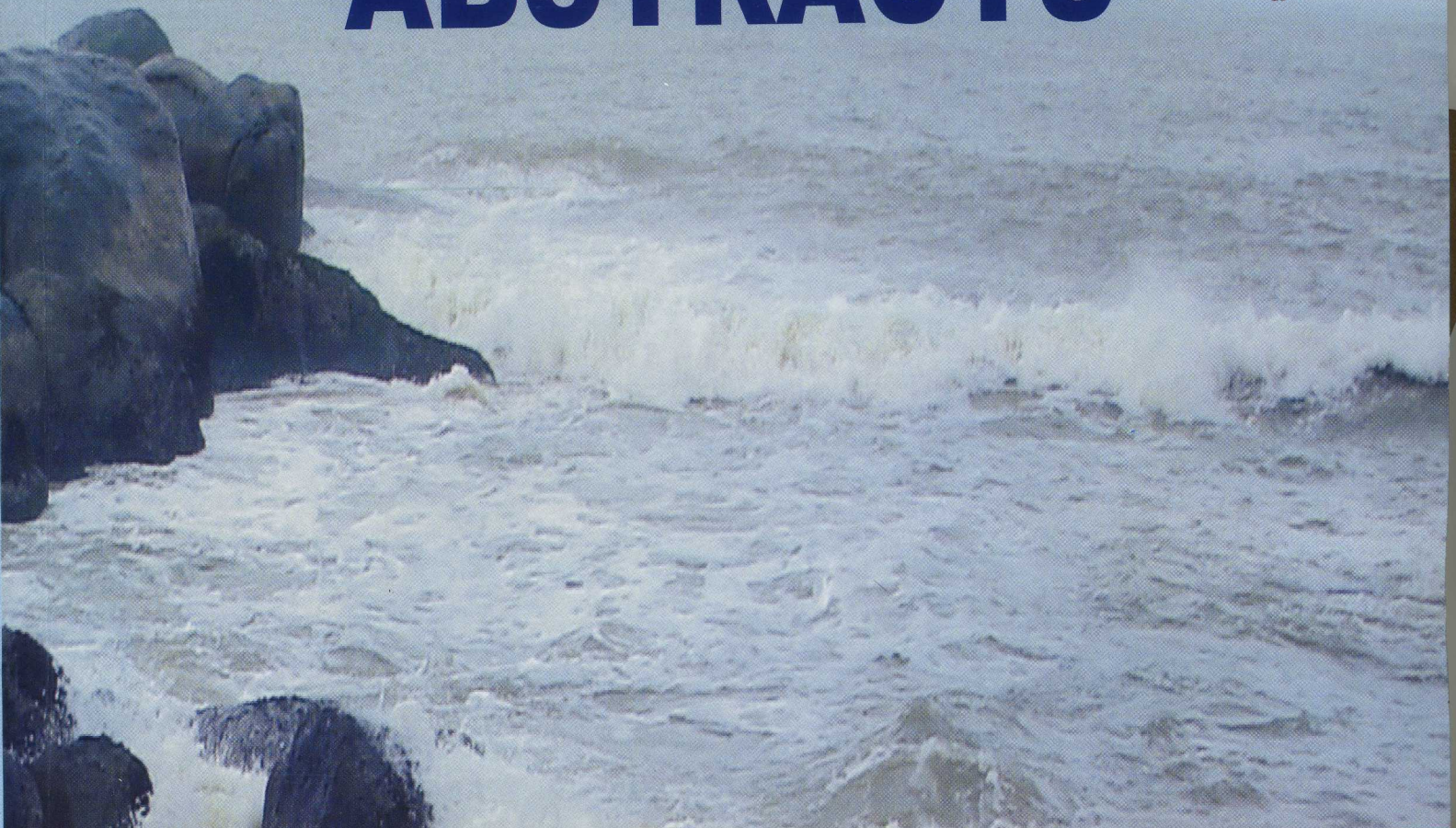
7th Asia-Pacific Conference on Algal Biotechnology

Algal Biotechnology in the Asia-Pacific Region: New Challenges and Opportunities for the 21st Century

December 1-4, 2009, New Delhi - India



ABSTRACTS



Jointly Organized by
DEPARTMENT OF BOTANY, UNIVERSITY OF DELHI, DELHI, INDIA
INDIAN PHYCOLOGICAL SOCIETY, NEW DELHI, INDIA



**7th ASIA-PACIFIC CONFERENCE
ON ALGAL BIOTECHNOLOGY**



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Under the Auspices of Asia-Pacific Society for Applied Phycology**

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ABSTRACTS

Edited by

DINABANDHU SAHOO

Notes: The Abstracts have been published as submitted by the participants. However, certain modifications have been made for the sake of format and brevity.

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Use of Dinoflagellates as a Biorefinery for Interested Biomolecules

CP-33

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Today one of the major challenges in biotechnology is to find the best feedstock for producing different types of biomolecules for pharmaceutical, cosmetic industries, biofuels or medical use. For centuries the human race had utilize terrestrial plant as an alternative in the production of natural product, but now, microalgae seems to be the major feedstock for the production of the secondary metabolites. We know the use of microalgae for producing pigments (*Haematococcus pluvialis*), for proteins (*Spirulina maxima*) aquaculture use (*Dunaliella salina*, *Tetraselmis suecica*) or to biodiesel production (*Chlorella protothecoides*, *Nannochloropsis oculata*). Dinoflagellates are a group of microalgae knower for extensive proliferation in coastal eutrofized areas. These algae have the capacity to enhanced lipids in their life cycle, specially triacylglycerides (TAG) in the stationary phase of culture, TAG are the best feedstock for transesterification to produce a second generation biodiesel, some strains (*Karlodinium veneficum*, *Alexandrium andersoni*, and the raphidophyte *Heterosigma akashiwo*) show good parameters of growth, yield of lipids and short period of culture and seems to be an environmental friendly alternative in the production of this biofuels.

Also, is possible to cultivate dinoflagellate under different strategies or culture system (open ponds, air lift bubble column, photobioreactor, Flat panel, etc). Due to their physiological characteristic we can found interested secondary metabolites as a Eicosapentanoic (EPA), Docosahexanoic DHA, and Arachidonic acids, also some antioxidants as a lutein, and even toxins as a Paralytic, Diarrhetic and Amnesic shellfish poison. All this metabolites have enormous potential in many fields of science, and some of these molecules are really expensive reaching thousands of dollars per a few milligrams (¹³C stable isotopes). The main goal of this study is to obtain high value molecules from dinoflagellates cultures, also show how can we modified their lipids profiles using abiotics parameters, and identified and quantify the production of TAG for biodiesel purposes.

Protein and Fiber of Selected Azorean Seaweeds

CP-34

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Seaweeds are traditionally used in human and animal nutrition. Their protein and fiber contents have been studied widely and differ according to the species and seasonal conditions. In the archipelago of the Azores, the consumption of seaweed is widespread and accepted as a common practice in some islands. In addition to their value for human nutrition, the seaweeds may also contribute to a healthy human life in such areas as: weight control and in some medical applications (anti-blood cholesterol, antioxidant and antitumor activities, etc).

This work is aimed at providing additional information on the protein (P) and fiber (F) contents of locally consumed species, to promote a regional product that potentially can be profitable from the biotechnology and commercial perspective, and also bring benefits to Public Health, particularly, taking into account the low level of marine pollution in the Azores archipelago. P content of eight seaweeds was determined using the Kjeldahl method (AOAC 945.18). Seaweeds belonging to Phaeophyta (*Cystoseira abies-marina* and *Fucus spiralis*), Chlorophyta (*Ulva compressa*) and Rhodophyta (*Porphyra* sp., *Osmundea pinnatifida*, *Pterocladia capillacea*, *Sphaerococcus coronopifolius* and *Gelidium microdon*) were collected during January/February 2007, April 2008 and June 2009, from the littoral of the Azores archipelago. The P content ranged between $6,82 \pm 0,18\%$ and $26,62 \pm 0,69\%$ of dry weight, in *Cystoseira abies-marina* and *Ulva compressa*, respectively. F content will be performed using the Weende method.

Screening of Antibacterial Activities of Identified Compounds from Red Seaweed of *Eucheuma serra*

CP-35

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Acetone extracts of *Eucheuma serra* (red seaweed species) were fractionated and isolated using Column Chromatography and Bioautographic Thin Layer Chromatography (TLC) methods, and the compounds identified using GC-MS. Mass spectra analysis of *Eucheuma serra* fractions yielded 24 compounds, consisted of 7 of fatty acids, 7 of steroids, 3 of hydrocarbons, 4 of alcohols, and 3 of aldehydes. All isolated compounds were tested for their antibacterial activities by the agar diffusion method against the Gram-positive bacteria *Staphylococcus aureus*, *Bacillus subtilis* and *Streptococcus faecalis*, and the Gram-negative bacteria *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhimurium*. Eight compounds (3 fatty acids, 3 steroids, and 2 aldehyds) from *Eucheuma serra* showed activity against Gram-positive bacteria, especially *Bacillus subtilis* and only one compound showed activity against Gram-negative bacteria *Escherichia coli*. Four compounds showed activity against *Staphylococcus aureus*, and three compounds showed activity against *Streptococcus faecalis*. All compounds were not active against *Pseudomonas aeruginosa* and *Salmonella typhimurium* bacteria. This study indicated that there is indeed a diversity both in types and in molecular structures of the antibacterial substances.

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PROTEIN AND FIBER OF SELECTED AZOREAN SEAWEEDS

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