

## SURVEY OF PHYTOPLANKTON AND SELECTION OF RESISTANT VARIETIES AROUND SIND AREA

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### INTRODUCTION

The planktonic algae have received less attention than their importance warrants. They can be produced with a content of 85% protein under selected artificial conditions [1]. Unlike crop plants photosynthetic efficiency of algal culture may be as high as 25% of the light energy [2]. In addition phytoplankton protein content ranges from 40 to 50% and biological value of algal proteins is also fairly high due to the presence of almost all the essential amino acids in them [3].

The present study was undertaken to select such varieties of algae which could survive in every type of climatic conditions.

### MATERIALS AND METHODS

*Collection of Algal Samples.* Water samples were collected for three vegetative seasons from 1976 to 1978 in spring, summer, autumn and winter. Samples were collected fortnightly from various biotops especially those from peat bogs, sphagnum bogs, pools, ditches, soils, littoral ponds, bottom of pools and puddles, from the rivers, lakes, artificial reservoirs and from natural springs in different parts of Sind.

Mixed cultures grown in Petri-dishes, Erlenmeyer Flasks, test tubes, etc., were centrifuged at 1000 rpm. Sediments thus obtained were sprinkled with a small pipette on sterilised petri-dishes containing agar. Agar blocks were examined for algal growth after one week. Pure colonies were picked off and transferred to a new block of agar. After 4–6 days the algae were transferred into test tubes containing agar and basal medium.

For cultivation of algae, Bold basal medium was mostly used [4], either in the form of solution or in the form of one percent solidified agar (pH 6.5) containing 10 ml solution of soil decoction per litre. They were illuminated through natural light or artificially from fluorescent tubes

at room temperature (15°–30°). Reinoculation of culture was made every three weeks during summer and also every six months during winter season, to keep the algal cells in suspension.

Out of a total number of 184 water samples collected from all over the Sind region, following twenty planktonic species were isolated in pure culture:

#### *List of Species Isolated in Pure Culture*

#### CHLOROPHYCEAE

1. *Chlamydomonas pseudopertyi* Pascher.
2. *Chlamydomonas globosa* Snow.
3. *Chlorococcum humicola* (Naeg.) Rabenhorst.
4. *Chlorella vulgaris* Beijerinck,
5. *Monoraphidium contortum* (Thuret.) Komarkova Legnerova.
6. *Scenedesmus dimorphus* (Turp.) Kuetzing.
7. *Scenedesmus quadricauda* var. *quadripina* (Chod.) Smith.
8. *Scenedesmus quadricauda* var. *longispina* (Chod.) Smith.

#### CYANOPHYCEAE

9. *Anabaena circinalis* Bornet et Flahaut
10. *Anabaenopsis circularis* (West) Wolsz and Miller.
11. *Arthrospira platensis* (Nordst) Gomont.
12. *Gloeocapsa aeruginosa* (Carm.) Kutz.
13. *Lyngbya majascula* Harvey ex Gomont.
14. *Lyngbya spiralis* Geitler.
15. *Nostoc calcicola* (Breb.) Bornet.
16. *Nostoc carneum* Ag. ex Bornet et Flah.
17. *Oscillatoria limosa* Ag ex Gomont.
18. *Phormidium trunicola* Ghose.
19. *Spirulina major* Kuetz. ex Gomont.
20. *Spirulina subsalsa* Oerst

Three species namely, *Chlorella vulgaris*, *Monoraphidium contortum* and *Scenedesmus quadricauda* var. *longispina* showed good growth in the laboratory culture medium. Out of these *Monoraphidium contortum* seems to be best eurythermic species; it survives longer and multiplies faster than other isolated species. Therefore, it may be utilized safely for mass culturing of algae.

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