

## SOME ALGAL FILAMENTS ISOLATED FROM SONDA COAL DEPOSITS (DISTRICT THATTA), SIND, PAKISTAN

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### Abstract

Some algal filaments isolated during the study of plant microfossils related to Paleocene period from Sonda coal fields have been described. These filaments include *Chaetomorpha* sp., *Ulothrix tenerima* of Chlorophyceae, *Oscillatoria princeps* var. *pseudolimosa* and *Lyngbya truncola* var. *burmense* of Cyanophyceae.

### Introduction

Though there are quite a few tertiary coal basins in Pakistan and palynological studies have also been undertaken but very little work has been done on algal remains associated with coal (Khan *et al.*, 1966; Leghari & Nizamani, 1984; Leghari *et al.*, 1985). While examining the macerated material from Sonda coal samples, algal and fungal remains alongwith plant tissues, spores and pollen grains were detected. From this material blue-green and green algal remains have been identified.

### Materials and Method

The Sonda coal field is located in Thatta district, lat. 68.15° N and long 25.0° E about 60 km South West of Hyderabad. The subsurface coal samples were taken from the core of the exploratory bore holes drilled in the area. The coal is greyish black in colour. The samples were taken from drilling hole No. 1 at the depth of 225 m. Schultz, method of maceration was adopted and slides were prepared by following the standard techniques (Kisser, 1935).

### Results and Discussion

Following is the description of blue-green and green algal filaments isolated from Sonda coal. The first 3 belong to Chlorophyta and the last 2 to Cyanophyta.

*Chaetomorpha* sp. 1. Filament unbranched 56-70 x 15 µm; septa 2.5 µm thick; cell wall composed of two distinct layers (Fig. 1A).

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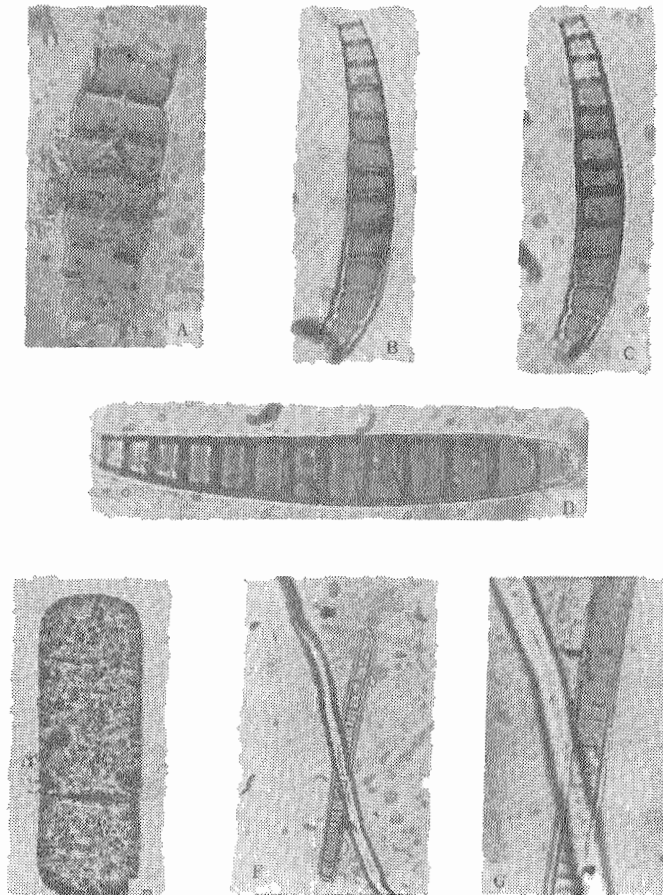


Fig. 1. *Chaetomorpha* sp. A, B & C. *Chaetomorpha* sp. B, D. *Ulothrix tenerrima*, E. *Oscillatoria princeps* var. *pseudolimosa*, F & G. *Lyngbya truncicola* var. *burmense*.

*Chaetomorpha* sp. 2. Filament unbranched, 62.5  $\mu\text{m}$  long; cells sub-hexagonal, 7.5-11.25  $\times$  10  $\mu\text{m}$ ; cell wall composed of two distinct layers; septa measuring 1.8-2.5  $\mu\text{m}$  in thickness (Figs. 1B & C).

*Ulothrix tenerrima* Kutzing 1983 (Singh, 1941; Prescott, 1961; Shameel, 1978). Filament unbranched 95  $\mu\text{m}$  in length, uniciliate, cylindrical, tip tapering, straight; apical cell convex, 7.5-6.2  $\mu\text{m}$ ; middle cell rectangular, 7.5-10  $\times$  9.2-15  $\mu\text{m}$ ; breadth of the filament decreasing gradually towards basal end; Cell wall 1.5-2  $\mu\text{m}$  thick composed of two distinct layers; septa 1.8-2  $\mu\text{m}$  thick (Fig. 1D). The filament very much resembles with *Ulothrix tenerrima* but it differs in the cell wall which is 1.4-2.0  $\mu\text{m}$  thick.

*Oscillatoria princeps* var. *pseudolimosa* Ghose 1924. (Ghose, 1926; Leghari & Arbani, 1984). Trichome 100  $\mu\text{m}$  long, straight, not constricted at the septa; cells 32.5  $\times$  2-

3.5  $\mu\text{m}$  with granular protoplasm; separation disc 2-2.5  $\mu\text{m}$  broad, present at the interval of 22.5 and 45.5  $\mu\text{m}$  (Fig. 1E).

*Lyngbya truncola* var. *burmense* Ghose 1926. (Ghose, 1926; Biswas, 1934). Trichome single with distinct sheath, 2-3  $\mu\text{m}$  thick and not constricted at the cross wall; cells generally shorter than broad, 11.5-12.5 x 10  $\mu\text{m}$  (Fig. 1F & G).

*Ulothrix tenerrima*, *Oscillatoria princeps* var. *pseudolimosa* and *Lyngbya truncola* var. *burmense* are initially attached forms and later on become free floating algae. *U. tenerrima* has also been reported from supra and upper eulittoral belts as a pioneer on poles and embankments and also in localities lacking a mass vegetation (Nienhuis, 1980). *Chaetomorpha* sp. is found in marine, esturine and brackish water zone. The presence of brackish water algae in the coal suggests that deposition of coal has taken place in the zone of mixing, condition that generally obtains in the deltoid setting, which would also account for presence of freshwater algae along side. The coal is itself indicative of paralic swamp vegetation associated with delta indicating that algae described above thrived in deltoid region.

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