were also efficient in the production of asparaginase. *B. subtilis* secreted this enzyme only after 48 hr of incubation. *E. coli* which is the only source of this enzyme, was found to be much inferior to *S. albus*. There was no correlation between vegetative growth and asparaginase activity of different bacteria.

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BRANCHING DEVELOPMENT OF THE BLUE-GREEN ALGA *MASTIGOCLADUS LAMINOSUS* COHN AT DIFFERENT pH LEVEL

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A branched blue-green alga *Mastigocladus laminosus* Cohn, found growing in the main tank and over flows of the hot spring Taptapani (Orissa, India) displayed variable branching frequencies. The yearly mean temperature and pH of the spring water was 44°C and 9.0 respectively. Hydrogen-ion-concentration, an important factor of hot spring water, appears to control the degree of branching of this organism. Experiments were designed to find out the relation between growth and branching development of the *Mastigocladus* strain at different pH levels of the culture in the laboratory.

The blue-green alga *M. laminosus* was isolated and the unialgal culture of the organism was obtained by plating method[1]. Axenic cultures were obtained following the method described earlier[2]. The alga was grown at 30±1°C (by repeated cultivation the alga gradually adapted to grow at this lower temperature in comparison to its natural habitat) under continuous light from daylight fluorescent tubes at an intensity of 2400 lux in Allen and Arnon's medium[3] with trace elements as used by Fogg[4]. Growth experiments at different pH levels of the culture were performed in 100 ml Erlenmeyer flasks containing 25 ml of nitrogen-free medium. The required pH of the culture media was obtained and adjusted from time to time by asceptic addition of a few drops of 0.1 N NaOH or 0.1 N HCl. An equal volume of exponentially growing alga (equivalent to 1 mg dry weight) was inoculated to the experimental flasks and the cultures were harvested after 15 days of incubation. Growth was estimated on dry weight basis[5]. Frequency of branching was calculated by counting the number of cells at intervals between branch initials; mean values of 30 readings ±S.D. was plotted.

Results on the growth and branching development of *M. laminosus* at different pH levels of the cultures (5, 6, 7, 7.5, 8, 8.5, 9, 9.5, 10, 11) are given in the figure. No growth was observed at the pH level of 5. Brock[6] also reported that blue-green algae were absent from a wide variety of acidic environments and in enriched cultures at less than pH 5. The rate of growth of *Mastigocladus* was not substantial at pH 6. Further increase in pH of the media encouraged the growth of the alga and a maximum was obtained at

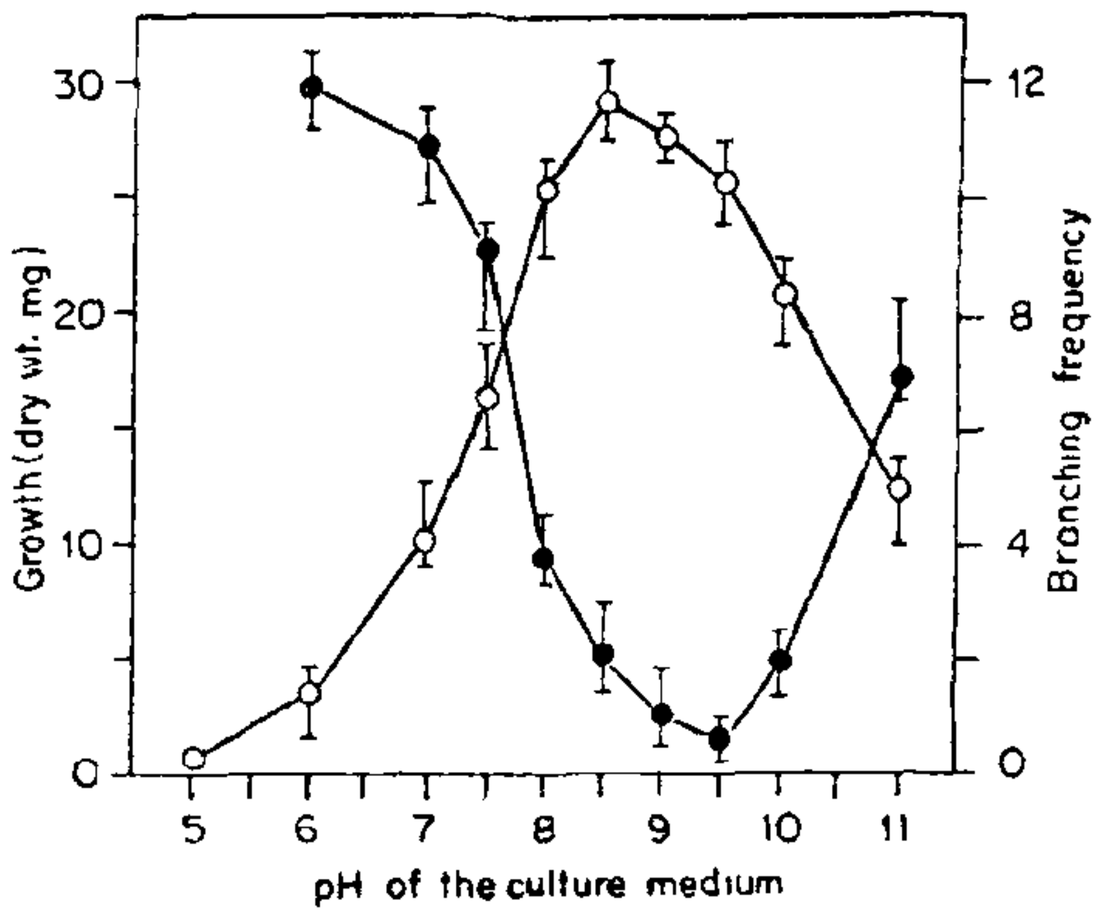

Figure 1. Growth and branching frequency of *M. laminosus* Cohn at different pH levels of the culture medium. Growth (○——○); Branching frequency (●——●).

pH 8.5. Growth of the organism decreased in the alkaline range at the level of more than pH 8.5 of the culture medium (figure 1). Microscopic examination revealed that the filaments were devoid of branches in the acidic pH. Distinct branching was observed in the alkaline pH and pH 9.5 was found to be the most effective one where the frequency of branching was observed as the maximum (figure 1). Each alternate cell or even each cell of the filament grown at pH 9.5 was found to develop a branch initial. The pH which was most effective for the best growth of the alga was found ineffective at the same level for the highest degree of branching development, thus suggesting an independent role of hydrogen-ion-concentration for the branching initiation. It appears that the degree of branching is rather a function of hydrogen-ion-concentration of the growth medium and to an appreciable extent it is independent of the growth rate of the organism.

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Figure 1. Agaricoid fruit bodies of *Strobilurus stephanocystis* on Pinus cone.

STROBILURUS STEPHANOCYSTIS (HORA) SINGER—A NEW RECORD FROM INDIA

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DURING surveys in May and July, 1986 in the forest areas of Himachal Pradesh, a very interesting specimen of *S. stephanocystis* (Hora) Singer was collected from Matiana (H.P) (2500 Meter, msl). The fruit bodies of the fungus were growing on fallen and decaying cones of *Pinus* sp and *Cedrus deodara* (figure 1). The sporophores were agaricoid, stalked and tough. Pileus 0.4 to 1.5 cm in dia, thin, convex, hemispherical, umbonate specially in young specimens, brown to dark brown at the centre, cream coloured and striated at the margins. Lamellae numerous, cream coloured, adnate with lamellulae of 1–3 unequal length. Stipe 2–4 × 0.3 cm, central, hollow, dark brown to black in the lower 3/4th portion, light brown above and hyaline to creamish at the top, uniform in thickness, tough, attached to the substratum firmly with a long tapering, dark brown pseudorrhiza. Dermatocystidia present. Caulocystidia numerous, hyaline, ventricose with broadly obtuse rounded tips, very long, 60–70 × 4.5–6 mμ. Pilocystidia numerous, ventricose, hyaline, 30–36 × 3–4 mμ with swollen obtuse tips. Pleurocystidia numerous, clavate, hyaline, 34–40 × 8–10 mμ. Cheilocystidia rare, ventricose, 18–20 × 3.5–4.5 mμ. Hymenophoral trama regular. Basidia clavate, 4 spored, 8–10 × 2 mμ. Basidiospores white in mass, hyaline, smooth, inamyloid, acyanophilic, ellipsoid to narrowly subfusoid with a suprahilar depression and 5.5 × 3.5 mμ. Mycelium 5–6 mμ thick, septate and branched. Clamp connections absent.

Only four species of this genus have been recorded throughout the world on pine and spruce cones and inflorescence of Magnoliaceae[1]. *S. esculentus* (Wulf apud Jacquin: Fr) Singer has earlier been reported