D-47: Epiphytic cyanobacteria at the Hakgala Botanical Gardens

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N_2-fixing cyanobacteria growing on the barks of montane trees could contribute to the N-input of this ecosystem. A study was conducted to evaluate qualitatively and quantitatively, the epiphytic cyanobacteria of some trees growing in the Hakgala Botanical Gardens.

30 samples of bark collected randomly from 20 species of trees were: (a) observed microscopically, (b) inoculated into liquid N^+ and N^- algal media, incubated under fluorescent light and the cyanobacteria were isolated and identified. The dilution plate technique using N^+ and N^- media was applied for the quantitative study.

Direct microscopic observations showed the presence of a diverse population of epiphytic cyanobacteria belonging to 14 genera, together with a few green algae. A succession of cyanobacteria was observed in liquid N^+ and N^- media, a majority of which were heterocystous, N_2-fixing genera. Eventhough *Scytonema, Fischerella* and *Stigonema* were observed in the initial samples, they did not survive laboratory culturing, in which *Nostoc, Anabaena* and *Tolypothrix* became dominant. Most of the colonies on the dilution plates were not unialgal, indicating that cyanobacteria exist as mixed colonies in nature and dilution plating is not effective in separating them.

The population of epiphytic cyanobacteria was extremely variable, ranging from 75 to 55,000 and 150 to 225,000 colony forming units per cm^2 of bark in N^+ and N^- media respectively.

These results show that barks of montane trees harbour a diverse flora of N2-fixing cyanobacteria, but the media and the methods used have a selective effect on the types isolated.