B502 Blue-green Algae, *Microcystis aeruginosa* Kützing in Natural Medium

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In order to understand the morphological differences caused by different organic loadings upstream, and to compare other algal groups with references, the blue-green algae, *Microcystis aeruginosa* Kützing, was taken from two branches, Tongbok and Bosung streams of Lake Chuam, Korea and their fine structures examined. There were distinct differences in most physicochemical factors in the two branches, excepting water temperature and pH value. The concentration of total phosphorus in Tongbok branch were twice those of Bosung. *M. aeruginosa* cells were enumerated at 1.2 X 10^4cells/㎖ total and individually, Tongbok branch was nearly double Bosung. Under light and electron microscopy, natural M. aeruginosa colonies formed irregular shapes and non-directional arrays in amorphous matrix. They consisted of many kinds of cells, young or old in cell division, solitary, and various sizes. Each cell ranged from 2.61 to 5.40㎛ in diameter, and averaged 3.54±0.19㎛. In the cytoplasm, they contained a number of inclusions of various sizes, shapes and appearances. Among them, polyhedral bodies or carboxysomes, structured granules, photosynthetic lamellae or thylakoids, and gas vacuoles were prominent and easy to recognize. Although defining morphological variations in the ultrastructure of *M. aeruginosa* in terms of algal habitual environments remain elusive, some useful characters for blue-green algal classification and taxonomy were found.

B503 Photosynthetic Activity and Nitrogen Uptake of *Microcystis aeruginosa* of the Sonaktong River

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Photosynthetic activities were investigated in the temperature range of 15℃ to 35℃ and irradiance range of 30$\mu E \cdot m^{-2} \cdot s^{-1}$ to 60$\mu E \cdot m^{-2} \cdot s^{-1}$ by Plant Efficiency Analyzer on the light temperature gradient plate with the unialgal culture of *Microcystis aeruginosa* isolated from the water bloom sample in the Sonaktong River. There was highly significant relationship between Fv/Fm ratios and temperatures, and the alga was assumed to be adapted to high temperature. The highest ratio of Fv/Fm was 0.619 at 35℃ and 30$\mu E \cdot m^{-2} \cdot s^{-1}$, and the lowest of 0.406 was at 15℃ and 30$\mu E \cdot m^{-2} \cdot s^{-1}$. The ammonium uptake of the alga was determined from the depletion of ammonium after single additions of ammonium to batch cultures. The ammonium uptake was nonlinear with time, and the enhanced uptake of 1.46μmole · mg chl. $a^{-1} \cdot h^{-1}$ was observed at the first incubation period with the pertubation method. The half saturation constant was determined to be 27.1μmole with the multiple flask method. Ecophysiological aspects associated with these results are discussed.