Antibacterial evaluation and preliminary phytochemical analysis of *Microcystis* sp.

T. Ashourpour¹,*, J. Sarmad², M. Hakemi Vala³

¹Department of Pharmacogenosy, Islamic Azad University of Pharmaceutical Sciences, Tehran, Iran
²Department of Herbal Physiology, Guilan University, Rasht, Iran
³Department of Microbiology, Shaheed Beheshti University of Medical Sciences, Tehran, Iran

**Background and Aims:** The present study was designed to promote the proper use of cyanobacteria and to determine their potential as sources for new drugs. Cyanobacteria, a morphologically diversified class of prokaryotic photosynthetic organisms flourish in static eutrophicated water bodies, dominate microbial assemblage through formation of blooms. The medicinal value of cyanobacteria lies in some chemical substances that produce a definite physiological action on human body. The most important of these bioactive constituents of cyanobacteria are alkaloids, tannins, flavonoids, and phenolic compounds. Further investigations into secondary metabolite products of cyanobacteria identified biologically active compounds with antimicrobial properties.

**Methods:** *Microcystis* sp. Collected from a lake of Daneshju park in Rasht in September 2011, then cultivated to optimise growth and produce yield of species. Enriched BG11 media was used for cultivation of *Microcystis* sp. to determine the efficacy of the methanol/sonication extracts of *Microcystis* sp. In response to temperature and extract concentration, the cup plate method were repeated using bacteria *E. coli*, *B. subtilis*, *S. aureus*, and *P. aeruginosa*. The preliminary phytochemical screening was carried out on 99% methanol extract of sample. Dragendorff’s test and Mayer’s test were done to assay alkaloids, foam test for saponins, Shinoda test for flavonoids, ferric chloride solution test for tannins and phenolic compounds, Libermann–Buchard reaction for stroid and Borntrager’s test for anthraquinone glycosides were done.

**Results:** Alkaloids, stroids, and saponins were present in all samples. Flavonoids, tannins, and anthraquinone glycosides were absent in *Microcystis* sp. No inhibition was recorded with aqueous and methanolic extract in antibacterical test.

**Conclusions:** The present study carried out on *Microcystis* genus revealed the presence of medicinally active constituents. For example, alkaloids in general alkaloids are a broad group of heterocyclic nitrogenous compounds, they could have neurotoxic, cytotoxic or dermatotoxic effect. To date no alkaloids have been found in *Microcystis* genus.

**Keywords:** Blue green algae microcystis; Antibacterial effect; Phytochemistry