

SCREENING OF SELECTED CYANOBACTERIAL STRAINS FOR PHYCOCHEMICAL COMPOUNDS AND BIOLOGICAL ACTIVITIES *IN VITRO*

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ABSTRACT – The present study deals with the growth characteristics, biomass production, phycochemical screening, antibacterial activity and free radical scavenging ability of cyanobacteria (*Tolypothrix* sp., *Cylindrospermum* sp., *Nostoc muscorum* and *Phormidium* sp.). The maximum specific growth rate with high biomass production was noticed in *Tolypothrix* sp. followed by *Cylindrospermum* sp. and *N. muscorum*. whereas, *Phormidium* sp. exhibited minimum growth rate with low biomass production. Preliminary phycochemical analysis of different cyanobacteria revealed the presence of carotenoids, phycocyanin, total phenols, tannin, alkaloids, flavonoids, extracellular protein and extracellular sugars. Antibacterial activity of hexane, ethyl acetate and methanol extracts of cyanobacteria was assayed by agar well diffusion method against three Gram +ve (*Bacillus cereus*, *Staphylococcus aureus* and *Staphylococcus epidermidis*) bacteria. The tested bacteria responded differently to the types of extracts and cyanobacterial strains used. The hexane extract from *Tolypothrix* sp. showed maximum inhibition zone of 17 and 21 mm against *B. cereus* and *S. epidermidis*, respectively. However, no effect was detected against *S. aureus*. Methanol extract did not show any activity against test bacteria. Maximum antioxidant potential using DPPH radical scavenging capacity was exhibited by the methanol extract of *N. muscorum* followed by *Phormidium* sp. and *Tolypothrix* sp. *Cylindrospermum* sp. showed the least activity. Considering all the results collectively *Tolypothrix* sp. and *Nostoc muscorum* appear to be promising strains for the antibacterial and antioxidant potential, respectively.

Key words : Antibacterial, antioxidant, bioactive compounds, biomass, cyanobacteria, specific growth.