

Sequestration of Chromium III and VI ions from Wastewater by *Spirulina* sp. and Value-added Pigment Production

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Abstract—Rising concentrations of toxic and carcinogenic heavy metals in wastewater is detrimental to human health, agriculture and flora-fauna. Removal of such heavy metals becomes a necessity due to their potential toxicity and non-biodegradability in the environment. Chromium III & VI is one such heavy metal that is frequently found in the wastewater from the outlet of several industries. Removal of Cr using conventional physio-chemical methods produces harmful by-products and end-products which is the major cause of secondary pollution. The potential application of microalgae as biosorbents for the removal of Cr has been recognized as an alternative to the above-mentioned methods. In this work, microalgae *Spirulina* sp. was acclimatized to gradually increasing concentration of Cr III and VI from 20-80 mg/l in Yamuna river water and Zarrouk's medium as media for the removal of heavy metal. A maximum removal percent of 88% and 82% of Cr (III) and 74% and 83.1% of Cr (VI) in Yamuna and Zarrouk's media was achieved, respectively. Value added pigments were also produced subsequently. The maximum concentration of Chlorophyll was observed as 3.9 mg/g (Cr VI) in Zarrouk's medium and that of Phycocyanin was observed as 2.65 mg/g (Cr III) in Yamuna river water medium. Hence, *Spirulina* sp. proved to be an excellent scavenger of Cr (III) and Cr (VI) ions and also for the generation of value-added pigments.