

PROJECT REPORT

ON

REMOVAL OF HEAVY METAL - CHROMIUM(VI) FROM SYNTHETIC WASTEWATER USING IMMOBILIZED *CHLORELLA PYRENOIDOSA*

(Project approved by Karnataka State Council For Science And Technology)

Submitted in partial fulfillment of the requirements for the award of degree of

BACHELOR OF ENGINEERING

IN

BIOTECHNOLOGY



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ABSTRACT

Heavy metal pollution due to rapid industrialization is one of the most serious environmental problems being faced by the world today. Over the past two decades, an increased interest in the phenomenon of heavy metal ion sequestering by living or inactive microbial biomass has been seen in the scientific and engineering community. In the present study, microalgal species - *Chlorella pyrenoidosa* was tested for its Chromium (VI) removal capacity from synthetic solution. Two different matrices for immobilization were compared, namely – calcium alginate and carrageenan. In this study effect of initial metal ion concentration, pH & contact time was studied. Batch adsorption experiments were performed. It was seen that the carrageenan cubes disintegrated after the 6th day of the batch studies. The alginate matrix showed a more stable system for immobilization of the biosorbent. The metal ion adsorption efficiency by the algae decreases with the increase in the initial metal ion concentration. Maximum metal uptake by the algal beads was observed for alginate at pH 3 and concentration of 75 mgL⁻¹ on the 9th day of the study.