

Original Paper

Evaluation of Copper removal from industrial sewages by the Green microalgae *Chlorella vulgaris*

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Abstract

Background and Objective: Bioabsorbent is one of the most effective methods for the removal of heavy metals from industrial sewages. This study was done to assess the evaluation of Copper removal from industrial sewages by the Green microalgae *Chlorella vulgaris*.

Methods: This descriptive-analytic study was done on three samples from Bahonar Kerman copper industry sewage samples and 63 copper biosorption synthetic samples by Green microalgae *Chlorella vulgaris* at a constant temperature of 25°C, optimum pH 6 and contact time of 60 minutes and adsorbent concentration of 2 g/L. The rate of residual copper was determined using atomic absorption instrument. The adsorption isotherms and metal ions kinetic modeling on to the adsorbent were determined based on Langmuir isotherm, Freundlich and kinetics of type I and II.

Results: The removal efficiency was determined as 82.62% and 91.5 % in Copper real examples and synthetic samples, respectively. Based on the obtained results, copper absorption followed Langmuir model and second order kinetic equation ($P < 0.05$).

Conclusion: Due to high absorption potential of Green microalgae *Chlorella vulgaris*, this method can be effectively used for copper removal from industrial sewages.

Keywords: Heavy metals, Alga *Chlorella vulgaris*, Wastewater, Copper Industry

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