The single batch biosorption of copper(II) ions on *Sargassum acinarum*

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**ABSTRACT**

In this study, the biosorption of copper(II) ions to *Sargassum acinarum*, a brown seaweed, was investigated in a batch system. The optimum biosorption conditions were determined as initial pH 5.5, temperature 25°C, initial copper(II) ion concentration 100 mg/L and biosorbent concentration 1.0 g/L. At the optimum biosorption conditions, the biosorption capacity of *S. acinarum* for copper(II) ions was found as 36.56 mg/g algae. The Langmuir and Freundlich isotherm models were applied to the biosorption data and the biosorption equilibrium was described well by the Langmuir isotherm model, with maximum biosorption capacity of 40.50 mg/g (0.637 mmol/g algae) of copper(II) ions. The intraparticle diffusion model and the pseudo-second-order kinetic model were applied to the experimental data in order to determine the removal mechanism and biosorption kinetic of copper(II) ions by *S. acinarum*. The pseudo-second-order kinetic model described very well the biosorption kinetic of copper(II) ions. Results showed that *S. acinarum* was an efficient biosorbent in the removal of copper(II) ions from an aqueous solution.

**Keywords:** Biosorption; Isotherm; Kinetic modelling; *Sargassum acinarum*; Copper(II)