



## The residue of alginate extraction from *Sargassum muticum* (brown seaweed) as a low-cost adsorbent for hexavalent chromium removal from aqueous solutions

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### ABSTRACT

The residue of alginate extraction from the invasive brown seaweed *Sargassum muticum* harvested from the Moroccan Atlantic coast was tested as biosorbent for hexavalent chromium removal. The results revealed that biosorption of Cr(VI) was highly pH dependent, favoring higher chromium removal at very low pH values. Langmuir and Freundlich adsorption isotherms were applied to fit the experimental data. The results demonstrated that the equilibrium data were well fitted by Langmuir isotherm model. The maximum uptake capacity for Cr(VI) was about 34.8 mg/g. The kinetic studies showed that biosorption process can be described perfectly by a pseudo-second-order model. Functional groups on the biomass surface, responsible of adsorption phenomenon, have been successfully evidenced by the use of attenuated total reflectance Fourier transform infrared spectroscopy. The results gave evidence that the residue of alginate extraction from *S. muticum* could be an appropriate low-cost biosourced material for removing hexavalent chromium from aqueous solutions.

*Keywords:* Biosorption; Hexavalent chromium; Alginate extraction residue; *Sargassum muticum*; Seaweed

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