

## Assessment of the natural jojoba residues as adsorbent for removal of cadmium from aqueous solutions

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### ABSTRACT

In this work, Jordanian jojoba was tested as an adsorbent for the removal of cadmium ions from aqueous solutions. Batch adsorption tests were carried out at 25, 35, 45 and 45°C using different initial Cd<sup>2+</sup> concentrations in the range of 20–80 ppm. The effect of adsorbent concentration on the equilibrium uptake of Cd<sup>2+</sup> ions was investigated for different jojoba concentrations in the range 5–25 mg/ml. The experimental results showed that the adsorption of Cd<sup>2+</sup> ions on jojoba residue was dependent on the pH and temperature. The uptake of cadmium ions increased with increasing pH, temperature and initial Cd<sup>2+</sup> concentration, but decreased with increasing adsorbent concentration. Maximum Cd<sup>2+</sup> uptake of 9.89 mg/g was achieved at jojoba concentration of 5 mg/ml and Cd<sup>2+</sup> ion concentration of 25 ppm. The kinetics studies showed that equilibrium uptake attained in the first 120 min. Both Langmuir and Freundlich models were used and fitted the experimental data reasonably well. The presence of salt, in the form of NaCl, in the adsorbent–Cd<sup>2+</sup> ions suspension resulted in a decreased of cadmium uptake.

*Keywords:* Jojoba residue; Cadmium; Adsorption

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