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Study process of cadmium adsorption in algae *Arribadas*

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The presence of metals in the environment has led to disastrous consequences for natural ecosystems causing degradation of natural resources, which have been of great concern in recent years. Among these metals, cadmium is widely used in galvanic industries and disposal of waste is classified as harmful to the environment indicating a need for its removal. This work was carried out to evaluate cadmium bioretention capacity in aqueous solutions by algae *Arribadas*. The *Arribadas* algae used were collected on the beach of Jaguaribe, Itamaracá - Pernambuco, Brazil, washed, dried in a greenhouse at room temperature (32±2.0 °C) for 4 days, pounded into knifemill and classified Tyler sieves. To optimize the process, we used a 23 factorial design with center point to evaluate the effect of buffer pH (3.0 to 5.0), stirring speed (100 to 300 rpm) and mass algae (0.1 to 0.2g) on the adsorptive process. The tests were performed by placing the algae are in contact with 25 ml of a solution containing 50 mg L-1 of Cd2+ in acetate buffer 0.1 mol L-1, the conditions of the experimental design. The Cd2+ levels before and after the tests were quantified by Atomic Absorption Spectrometry in Chama. The kinetic experiments were performed under the conditions that gave the highest bioretention in the factorial design studies, or algal mass 0.1g, stirring speed of 100 rpm and pH 5.0. Metal concentrations were used, ranging from 10-170 mg L-1, where samples were with drawn and filtered in a predetermined time interval in the range of 0.5 to 180 minutes. The balance of algae *Cádmio- Arribadas* retention were achieved in 30 minutes. To accomplish the linearization used the Langmuir model and Freundlich. The quantity of cadmium adsorbed on the adsorbent mg.g-1 ranged from 2.6 to 6.7 with pure estimated experimental error of 0.39%. All major variables were significant at a level of 95% confidence. A rapid increase of the amount of cadmium reaching the maximum sorption within 30 minutes was observed. From the Langmuir equation n value was obtained (adsorption intensity) of 1.02 and a correlation coefficient ($R2$) of 0.9974. There was a better fit Langmuir model. The *Arribadas* algae shown to have a potential to remove cadmium from aqueous solutions and can be used in the removal of the metal in industrial effluents.

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