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Studies on removal of lead(II) by Alginate Immobilized Bromelain (*AIB*)

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ABSTRACT

The work is based on augmentation of active sites of calcium alginate bead by immobilizing bromelain to remove lead(II) from simulated solution. The optimum immobilization condition as specified by response surface methodology is as follows: initial concentration of sodium alginate, bromelain, and calcium chloride are 20, 21.09, and 20 g/L, respectively, at pH 7 and 35°C and the sample, thus prepared, is termed as alginate immobilized bromelain (*AIB*). Maximum 99.5% lead(II) has been removed when 30 mL lead(II) solution having initial concentration of 0.0048 mmol L^{-1} has been treated with 5 g of *AIB* at pH 7 and 35°C. 77.9% lead(II) has been recovered when 1 g of spent adsorbent is stirred in 100 mL of solution having pH 2 for 30 min. The removal of lead(II) using *AIB* and, thereby, simultaneous inhibition of enzyme have been modeled both statistically and empirically.

Keywords: Enzyme immobilization; Bromelain; Lead; Response surface methodology; Empirical model

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