Extraction efficiency of lead(II) from seaweed *Gracilaria fisheri* with food additive extractants

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Abstract: Food additive extractants, namely acetic acid (HOAc), citric acid (CTA), sodium chloride (NaCl), sodium bicarbonate (NaHCO3), ethylenediaminetetraacetic acid (EDTA), and chitosan (CTS) were examined to evaluate the maximized extraction efficiency of lead(II) from seaweed *G. fisheri*. The performance under batch system was operated by impregnating a 1.0-g clean dried-seaweed into 75-mL individual extractant then shaking at 100 rpm for 2 h at ambient temperature. It was found that EDTA was the most effective extractant to remove lead(II) from such seaweed with the extraction efficiency up to 82.2%. Afterward, the extraction efficiency of lead(II) in the sample using EDTA extractant was maximized by optimizing extraction conditions, including concentration, pH and contact time. Results showed that the highest efficiency values obtained by using the extraction conditions under 0.1 M EDTA at pH 2.0 for 120 min. shaking were found at 83.0, 92.4 and 93.0% respectively. The extraction efficiency of the method was showed at 93.2% that the initial and final concentrations of lead(II) in real sample were found at 6.17±0.13 and 0.42±0.06 µg.L−1, respectively. Therefore these results provide strong evidence of the promise to apply for removal of lead(II) from *G. fisheri* by batch operation.

Keywords: Lead(II); *G. fisheri*; Food additive extractants; EDTA; Extraction efficiency