Removal and Preconcentration of Chromium Species by Okra Leaves

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The present study demonstrates the efficiency of okra leaves for specificative removal of Cr (III) and Cr (VI). The results demonstrate that adsorption of both species on okra leaves are pH dependent which makes it possible for speciation studies. Adsorbed species were desorbed with HCl and NaOH. The experimental data was examined by Langmuir, Freundlich and D-R Isotherm equations. Cr (III) at pH-4 showed maximum adsorption capacity (221.17mg/g) and Cr (VI) at pH-2 (81.94 mg/g). In order to further understand the nature of adsorption, kinetic study was carried out. Data of both chromium species was found to follow pseudo second order rate equation, Elovich equation, Morris-Weber equation and Richenberge equation. The developed method was applied to real water samples (affected by industrial waste water). Up to 92.15 % of chromium metal was removed from the real water samples.

Keywords: Removal, Adsorption, Speciation, chromium