

SORPTION OF FLUORIDE USING CHEMICALLY MODIFIED MORINGA OLEIFERA LEAVES

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Contamination of drinking water due to fluoride is a severe health hazard problem. Excess of fluoride (>1.5 mg/L) in drinking water is harmful to human health. Various treatment technologies for removing fluoride from groundwater have been investigated. The present study showed that the leaves of *Moringa oleifera*, an herbal plant are an effective adsorbent for the removal of fluoride from aqueous solution. Acid treated *Moringa oleifera* leaves powder showed good adsorption capacity than alkali treated *Moringa oleifera* leaves powder. Batch sorptive defluoridation was conducted under variable experimental condition such as pH, contact time, adsorbent dose and initial fluoride ion concentration. Maximum defluoridation was achieved at pH 1. The percentage of fluoride removal increases with adsorbent dose. The equilibrium sorption data were fitted into Langmuir, Freundlich and Temkin isotherms. Of the three adsorption isotherms, the R^2 value of Langmuir isotherm model was the highest. The maximum monolayer coverage ($Q_{\max}$) from Langmuir isotherm model was determined to be 1.1441 mg/g, the separation factor indicating a favourable sorption experiment is 0.035. It was also discovered that the adsorption did not conform to the Freundlich adsorption isotherm. The heat of sorption process was estimated from Temkin isotherm model to be -0.042 J/mol which vividly proved that the adsorption experiment followed a physical process

Biography

Shabnam Dan is a Research Scholar in the Department of Chemistry at Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, India. Currently, she is working on Nanoadsorbents, trying to incorporate a few aspects of polymer chemistry. Her research interest lies in the area of surface chemistry especially adsorption. She has a good research aptitude. Her past research works focuses on defluoridation using chemically modified biosorbent, under which she has two research publications, one of which is published in a Springer journal of high repute. She also has an experience of teaching as a Guest Lecturer in Department of Chemistry, Ewing Christian College which is one of the oldest and good colleges of the city. She is also serving as a Reviewer in one of the Springer journal and has also been invited by a journal to be a part of the Editorial Board.

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