



## Removal of fluoride from aqueous solution using *Psidium guajava* leaves

Sheo Prasad Shukla<sup>a,\*</sup>, Sonam Tiwari<sup>a</sup>, Markandeya Tiwari<sup>a</sup>, Devendra Mohan<sup>b</sup>,  
Govind Pandey<sup>c</sup>

<sup>a</sup>Department of Civil Engineering, Institute of Engineering and Technology, Lucknow-226021, U.P., India, Tel. +919415190054; emails: sps.iet@gmail.com (S.P. Shukla), sonam.tiwari13@gmail.com (S. Tiwari), mktiwariiet@gmail.com (M. Tiwari)

<sup>b</sup>Department of Civil Engineering, Indian Institute of Technology (B.H.U.), Varanasi-221005, U.P., India, email: devendra.civ@itbhu.ac.in

<sup>c</sup>Department of Civil Engineering, Madan Mohan Malviya University of Technology Gorakhpur-273010, U.P., India, email: pandey\_govind@rediffmail.com

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### ABSTRACT

A novel, inexpensive, easily available and eco-friendly biosorbent, *Psidium guajava* leaves (L), has been evaluated for its capability to remove fluoride from water. Batch experiments were carried out to study the effect of various parameters affecting the biosorption such as pH (2–10), biosorbent dose (1–7 mg/50 mL), contact time (30–210 min) and initial fluoride concentration (5–12 mg L<sup>-1</sup>) for the adsorption of fluoride at room temperature. The maximum removal of fluoride was found to be 88% at pH 6.5, biosorbent dose 5 mg/50 mL and contact time 180 min. Freundlich isotherm was best fitted to explain the multilayer adsorption of fluoride on treated *Psidium guajava* L. The maximum biosorption capacity was found 62.50 mg g<sup>-1</sup>. The kinetic data of biosorption of fluoride on treated *Psidium guajava* L followed the pseudo-first-order rate equation. The present study demonstrates the treated *Psidium guajava* L that can effectively remediate fluoride contaminated water.

*Keywords:* Biosorbent; Defluoridation capacity; *Psidium guajava* leaves; Isotherms; Kinetics

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\* Corresponding author.