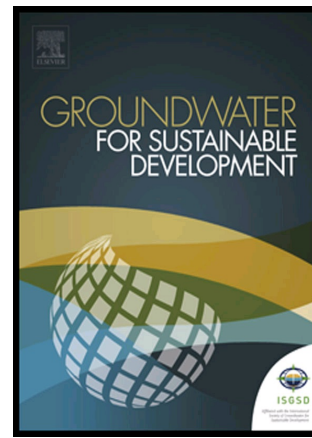


## Author's Accepted Manuscript

Properties, characteristics and application of grinded *Malpighia emargiata* seeds in the removal of toxic metals from water

Adrielli C.P. Silva, Alexandre O. Jorgetto, Marcos H.P. Wondracek, Rodrigo M Galera, José F. Schneider, Margarida J. Saeki, Valber A. Pedrosa, Luiz F. Zara, Gustavo R. Castro



[www.elsevier.com/locate/gsd](http://www.elsevier.com/locate/gsd)

PII: S2352-801X(17)30014-0  
DOI: <https://doi.org/10.1016/j.gsd.2017.10.006>  
Reference: GSD76

To appear in: *Groundwater for Sustainable Development*

Received date: 9 March 2017  
Revised date: 18 October 2017  
Accepted date: 26 October 2017

Cite this article as: Adrielli C.P. Silva, Alexandre O. Jorgetto, Marcos H.P. Wondracek, Rodrigo M Galera, José F. Schneider, Margarida J. Saeki, Valber A. Pedrosa, Luiz F. Zara and Gustavo R. Castro, Properties, characteristics and application of grinded *Malpighia emargiata* seeds in the removal of toxic metals from water, *Groundwater for Sustainable Development*, <https://doi.org/10.1016/j.gsd.2017.10.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Properties, characteristics and application of grinded *Malpighia emarginata* seeds  
in the removal of toxic metals from water**

Adrielli C.P. Silva<sup>a</sup>, Alexandre O. Jorgetto<sup>a</sup>, Marcos H.P. Wondracek<sup>b</sup>, Rodrigo M Galera<sup>a</sup>, José F. Schneider<sup>c</sup>, Margarida J. Saeki<sup>a</sup>, Valber A. Pedrosa<sup>a</sup>, Luiz F. Zara<sup>d</sup>, Gustavo R. Castro<sup>a\*</sup>

<sup>a</sup> IB – UNESP, Dept. Química e Bioquímica, C.P. 510, 18618-000 Botucatu, SP, Brazil

<sup>b</sup> UFGD, C.P. 533, 79804-970 Dourados, MS, Brazil

<sup>c</sup> Instituto de Física de São Carlos – USP - C.P. 369, 13560-970 São Carlos, SP, Brazil

<sup>d</sup> Universidade de Brasília-UnB – Planaltina-DF

Abstract

Cadmium and copper, which are found in aquatic ecosystems, may be considered toxic and potentially toxic metal species, respectively. These metals tend to accumulate in plants and fish, besides their potential to be transferred to other animals and cause several diseases. *Malpighia emarginata* grinded seeds were simply prepared and applied as adsorbent in order to remove and assist the safe trace quantification of such elements. Dry biomass was characterized through FTIR, <sup>13</sup>C-NMR, SEM, surface area measurements and through elemental analysis. Important structures, which may be involved in metal coordination, such as carboxylic acid, thiazole and amine groups, were identified. *Malpighia emarginata* seeds had its pHPZC determined (6.0) and the influence of dynamic contact time (kinetic) and pH on adsorption of Cu(II) and Cd(II) was investigated. Adsorption equilibrium was reached in less than 30 min, and it had good correlation with the pseudo-second-order kinetic model in Cu(II) and Cd(II). The  $N_s$  values were calculated through the modified Langmuir equation (0.103 and 0.098

Download English Version:

<https://daneshyari.com/en/article/8870512>

Download Persian Version:

<https://daneshyari.com/article/8870512>

[Daneshyari.com](https://daneshyari.com)