

## A comparative study of raw and treated peach stones for the adsorption of hexavalent chromium: characterization, kinetic and thermodynamic modelling

F. Khemmari\* and K. Benrachedi

Research Laboratory of Alimentary Technology, Faculty of Engineering Sciences, M'hamed Bougara University, Boumerdes 35000 (Algeria).

\*Corresponding author: [khemmari@yahoo.fr](mailto:khemmari@yahoo.fr)

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### ABSTRACT/RESUME

*Abstract : In the last years, much attention has been focused on the use of low-cost adsorbents for the removal of heavy metals from wastewater. The present study consists of comparing the adsorption of hexavalent chromium in aqueous solutions by two adsorbents: raw peach stones (RPS) and peach stones activated carbon (PSAC). The characterization of the adsorbents was done by using Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM). Comparative study was carried out using adsorption parameters such as contact time, adsorbent dose and solution pH in a batch system. Results show that pH is key parameter for adsorption optimization. The time necessary to attain adsorption equilibrium was found 120 min for PSAC in the pH range 2-5.6 and 240 min for RPS at pH 2 with maximum removal percentage greater than 97% for both adsorbents. The adsorption process followed the pseudo-second order kinetics. Thermodynamic parameters revealed the spontaneous and endothermic nature of the adsorption process for both adsorbents. Investigations carried out proved that RPS and PSAC are good potential adsorbents for the treatment of toxic hexavalent chromium.*