

## Abstract

The batch removal of heavy metals (Cd, Zn and Pb) from aqueous solution using Algerian sheep hoof powder (size < 90  $\mu\text{m}$ ) prepared from steamed Algerian sheep hoofs was investigated in this study. The influence of sorption time, initial pH, initial concentration of ( $\text{Cd}^{2+}$ ,  $\text{Zn}^{2+}$  and  $\text{Pb}^{2+}$ ) has been evaluated. It is shown that steamed hoof powder issued from Algerian sheep hoofs has a relatively high adsorption capacity for these heavy metals. The percent of adsorption is 59, 70 et 65% for Cd, Zn and Pb respectively. pH selected which gives an optimum adsorption are 8.5, 7 and 5.6 respectively for Cd, Zn et Pb. The adsorption equilibrium was established in 90 minutes for Cd and 60 minutes for both Zn and Pb. The equilibrium data were well described by FREUNDLICH model and it's performed by a process of exchange of ions. A comparison of kinetic models applied to the adsorption of Cadmium, Zinc and Lead on the Algerian sheep hoofs powder was evaluated. The pseudo second-order model was found to correlate the experimental data well.