

Evaluation of Cadmium Ion (Cd⁺⁺) Adsorption Ability of Banana Peels and Luffa Sponges

R.M.S. Geethanjana and A.Y.L. Fernando

*Department of Food Science & Technology, Sabaragamuwa University of Sri Lanka,
Belihuloya, Sri Lanka*

Cadmium is highly used in industries and causes harmful effects on organisms. The use of low-cost, safe, environment friendly sorbents has been investigated to remove heavy metals from aqueous waste streams of industries. This study was carried out to evaluate the cadmium ion adsorption ability of banana peels (*Musa sapientum*) and luffa (*Luffa cylindrica*) sponges. Any chemical modifications were not used for plant materials during the experiment. Water with known initial cadmium (Cd⁺⁺) concentration was prepared by adding Cd ions to the cadmium free deionised water. Adsorptions were measured at three different plant material dosages of 0.25 g, 0.5 g and 1.0 g in 25 ml of deionised water with known Cd⁺⁺ concentration of 5 ppm. All experiments were conducted under room temperature (27°C). Atomic Absorption Spectrometer was used to evaluate the Cd⁺⁺ concentrations of samples after treatments. Time duration for each trial was 120 minutes. During first 10 minutes all samples showed their maximum Cd⁺⁺ adsorption ability. The highest adsorption of 0.3575 mg/g was given by 0.25 g/25 ml (0.01 g/1 ml) of banana peel powder. The lowest adsorption of 0.0778 mg/ g was given by 1.00 g/25 ml (0.04 g/1 ml) luffa sponge powder. The results showed the potential use of banana peel and luffa sponge as bio adsorbents for cadmium ions.

Keywords: Atomic absorption spectroscopy, *Musa sapientum*, Bio adsorbents, cadmium, *Luffa cylindrica*