

**Durian husk wastes as low-cost adsorbent for physical pollutants removal:
groundwater supply**

Abstract

Durian peel can be the main contributor to agricultural wastes and becomes an environmental problem when it is discarded into the landfill site or even burning it. The average of entire durian fruit weight is about 255,353 MT for all over the country. The loading rate of landfills is increasing, especially with the massive amount and size of the durian waste that requires a larger space to dispose of. Therefore, it is certainly important to utilize durian husk as an adsorbent to improve water quality, especially groundwater source. Groundwater commonly has a higher hardness level than surface water. The higher hardness in water becomes a major concern, especially in every cleaning task. This research aimed to investigate the potential of durian husk in reducing water hardness, electrical conductivity (EC), and total dissolved solids (TDS). Durian husk was treated with NaOH solution to improve adsorption efficiency. Laboratory analyses such as the ethylenediaminetetraacetic acid (EDTA) titration method were performed for the water hardness, total dissolved solids, and conductivity concentrations respectively to test the performance of the removal efficiency before and after the treatments. As the results, the removal of hardness concentrations by durian husk has significantly dropped with dosage and settling time. However, not for TDS and EC concentrations removal, which it went sudden increased for a higher dosage. The novelty of this study is that it is the first-ever experiment using the real on-site samples in the field as for initial concentrations, different from other previous studies by lab-scale the synthetic hard water and most of them using the highest concentration of hardness which up to 700 mg/L of CaCO_3 as to find out the removal efficiency for water softening in water treatment using durian husk, compare to this study using a concentration that is too low within 300 mg/L and below.