



## Recycling of waste chicken bones for greywater pollutants removal

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### ABSTRACT

Treatment and reuse of wastewater can overcome the shortage and pollution of water resources. The separation of domestic wastewater into greywater and blackwater fractions can reduce the loads in a huge part of domestic wastewater. The goal of this study is to examine how activated carbon (CAB) made from chicken bones performs in the treatment of greywater. The physicochemical characteristics of raw and treated greywater were evaluated before and after treatment. The effect of ashing temperature (300°C and 550°C) of the carbon activated bone (CAB) was investigated. The ideal carbonization temperature was 550°C. The X-ray diffraction and scanning electron microscopy techniques are used to characterize the CAB particles. The batch adsorption process was done with different adsorbent doses and contact times. Different doses of chicken bone ash (CBA) were examined. The optimal CBA dosage at 60 min of contact time was 0.8 mg/L. The pseudo-second-order models were used to fit the kinetic experimental data. The removal rate obtained for chemical oxygen demand, PO<sub>4</sub>, total Kjeldahl nitrogen, and total suspended solids was 95%, 96%, 97%, and 97% respectively. Meanwhile, with an R<sup>2</sup> of 0.99, the CBA's influence on batch adsorption was effectively represented by the Langmuir isotherm model. The CAB appears to be a potential adsorbent for the elimination of contaminants, according to the findings.

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