Application of eggplant peels powder for the removal of oil from produced water

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**ABSTRACT**

The removal efficiency of oil from simulated samples of produced water (SPW) was studied using a low-cost adsorbent eggplant peel powder (EPP). The effects of pH, adsorbent dosage, contact time, and temperature on the removal efficiency were investigated. The optimum conditions for maximum removal of oil from produced water (PW) are found to be: pH 10.00, adsorbent dosage = 1.75 g/L, contact time = 40 min, and temperature = 55˚C. The results showed that the removal efficiency increases with increasing adsorbent dosage, salinity, and pH. The maximum removal efficiency of oil on EEP, at the optimum condition, is greater than 90% by weight. The study showed that EPP is a fast and excellent adsorbent for this oil removal. The crude oil adsorption on EPP is found to follow Langmuir adsorption isotherm, whereas the adsorption kinetics is best described by Pseudo-second-order kinetic model.

**Keywords:** Produced water; Eggplant peel; Biosorbent; Equilibrium isotherms; Kinetic model; Crude oil

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