Preparation of activated carbon from Salak seeds for dye removal
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Abstract: Nowadays, most concern over environmental pollutions has centered on pigment-containing wastewaters from various industrial sources. The potential treatment technique for dye removal is adsorption using local agricultural wastes as raw materials to produce activated carbon. In this study, activated carbon from Salak (Sumalee) seeds was prepared from the pyrolysis (400 °C, 1 h), activated with 50% v/v H₃PO₄ at the impregnation ratio is 1:3 and activated temperature of 500°C for 1 h. Resultant activated carbon had the high iodine number of 843.46±49.01 mg/g. The methylene blue index (12.40±0.04 mg/g) was very low because the activated carbon was microporous material. The effects of contact time initial concentration and adsorbent dosage were investigated in the batch testing. It can be concluded that the activated carbon and dye solution ratio of 30:1 (mg/ml) has the highest dye removal capacity for all initial concentration. Thus, this study demonstrated the potential of using Salak (Sumalee) seeds as cheap and efficient raw materials to produce activated carbon for dye removal from wastewaters.

Keywords: Activated carbon; Salak seed; Dye removal; Microporous; Phosphoric acid