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Colour and Curcuminoids Removal from Turmeric Wastewater Using Activated Carbon Adsorption

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Abstract : This study aimed to determine the removal of colour and curcuminoids from turmeric wastewater using granular activated carbon (GAC) adsorption. The adsorption isotherm and kinetic behavior of colour and curcuminoids was invested using batch and fixed bed columns tests. The results indicated that the removal efficiency of colour and curcuminoids were 80.13 and 78.64%, respectively at 8 hr of equilibrium time. The adsorption isotherm of colour and curcuminoids were well fitted with the Freundlich adsorption model. The maximum adsorption capacity of colour and curcuminoids were 130 Pt-Co/g and 17 mg/g, respectively. The continuous experiment data showed that the exhaustion concentration of colour and curcuminoids occurred at 39 hr of operation time. The adsorption characteristic of colour and curcuminoids from turmeric wastewater by GAC can be described by the Thomas model. The maximum adsorption capacity obtained from kinetic approach were 39954 Pt-Co/g and 0.0516 mg/kg for colour and curcuminoids, respectively. Moreover, the decrease of colour and curcuminoids concentration during the service time showed a similar trend.

Keywords : adsorption, turmeric, colour, curcuminoids, activated carbon
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