

## Tetracycline Sorption by a Tailor-made Adsorbent in Aqueous System

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Tetracyclines (TC) are frequently used antibiotics for growth promotion and therapeutic pharmaceuticals both by humans and animal husbandry and commonly encountered in municipal wastewater treatment plants and in the environment in their active form. This implies their continuous release into the environment may facilitate toxic effects both on humans and the environment including development of resistance strains, among others. This research was focused on the synthesis, characterisation and assessment of a tailor-made adsorbent: modified chitosan flakes, using several materials for the modification of chitosan to enhance its sorption properties thereby facilitating a higher percentage of TC removal from a synthetic pharmaceutical wastewater. TC adsorption onto the modified chitosan flakes was relatively fast (equilibrium time = 2 h). Sorption studies revealed that TC removal by the adsorbent followed pseudo second order kinetics and Freundlich Isotherm models. At higher TC input concentration, the amount of TC removed was also higher, this implied the sorption was concentration dependent. Insight into mechanism of sorption revealed cation exchange was an active means of interaction between the adsorbate and adsorbents moieties.

**Keywords:** Tetracycline, Adsorption, Chitosan, Gastropod shell, Characterisation

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