



## Removal of an emerging pharmaceutical compound by adsorption in fixed bed column

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### ABSTRACT

Adsorption of atenolol on granular activated carbon in a fixed bed column was investigated. This micropollutant was effectively adsorbed onto the activated carbon; therefore, the effect of some operation parameters on the performance of the breakthrough curve was studied. Some adsorption parameters, as the adsorption capacities at breakthrough and saturation time, the length of the mass transfer zone (mtz) and the fractional bed utilization were estimated. Four kinetic models, including Adams–Bohart, Wolborska, Thomas, and Yoon–Nelson model, were used to determine the adsorption parameters and to predict the breakthrough curves. Among all examined models, Thomas and Yoon–Nelson were found to be the most suitable for simulation of the breakthrough curve of atenolol uptake on granular activated carbon fixed bed column.

*Keywords:* Adsorption; Atenolol; Wastewater; Emerging contaminant; Mathematical model; Fixed bed column.

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