

In vitro adsorption study of fluoxetine in activated carbons and activated carbon fibres

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We study the in vitro adsorption of fluoxetine hydrochloride by different adsorbents in simulated gastric and intestinal fluid, pH 1.2 and 7.5, respectively. The tested materials were two commercial activated carbons, carbomix and maxsorb MSC30, one activated carbon fibre produced in our laboratory and also three MCM-41 samples, also produced by us. Selected samples were modified by liquid phase oxidation and thermal treatment in order to change the surface chemistry without significant modifications to the porous characteristics. The fluoxetine adsorption follows the Langmuir model. The calculated Q_0 values range from 54 to 1112 mg/g. A different adsorption mechanism was found for the adsorption of fluoxetine in activated carbon fibres and activated carbons. In the first case the most relevant factors are the molecular sieving effect and the dispersive interactions whereas in the activated carbons the mechanism seems to be based on the electrostatic interactions between the fluoxetine molecules and the charged carbon surface. Despite the different behaviours most of the materials tested have potential for treating potential fluoxetine intoxications.

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