

## Adsorption of Gemifloxacin Mesylate on Activated Charcoal and Kaolin

Hattab. A<sup>1</sup>, Khalaf. S<sup>1</sup>, Abu-Shqair. I<sup>1</sup>  
[1] An-Najah N. University, Nablus, Palestine

### Abstract

In this study, the adsorption of gemifloxacin mesylate (antibiotic) using selected pharmaceutical adsorbents such as activated charcoal and kaolin was investigated spectrophotometrically in terms of initial pH, residence time, initial concentration of drug (adsorbate), weight of adsorbent and temperature. For equilibrium studies, data for adsorption of gemifloxacin mesylate (GEMX) on charcoal were shown to fit Langmuir isotherm whereas, Freundlich isotherm fitted the data very well for the adsorption on kaolin. The maximum adsorption capacity of GEMX were 137mg/g on charcoal compared to 0.04 mg/g on kaolin. This is due to high surface area of charcoal compared to kaolin. The amount adsorbed at equilibrium decreases as adsorbate's concentration increases and increases as the weight of adsorbent increases. pH played a role in the adsorption of GEMX on charcoal which was more in acidic than in basic medium. The maximum adsorption was at pH 6 and at neutral pH for kaolin. Thermodynamics parameters showed that adsorption process was exothermic and spontaneous as  $\Delta H^{\circ}$  and  $\Delta G^{\circ}$  had negative values. The positive value of  $\Delta S^{\circ}$  showed an increase in freedom of molecules with increasing temperature. This study suggests activated charcoal as an effective antidote for cases of GEMX overdose or poisoning. Keywords: adsorption; Gemifloxacin mesylate; Thermodynamics parameters; poisoning.