



## **CARBON BLACK AND ITS STUDY ON ADSORPTION IN PARACETAMOL: ADSORBENT MASS EFFECT**

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### **INTRODUCTION**

Nowadays the environment suffers with a serious problem, the emergent microcontaminants. There are many examples of this group, for instance, pesticides, hormone, drugs and others. Among the different types of drugs, there is paracetamol, which is one of the most commercialized and consumed. The inappropriate disposal and the portion not metabolized in the human body, has resulted in the constant presence of this drug in water resources (García-Mateos, 2015, Chem Eng J). Therefore, this study presents the use of carbon black, a residue from the pyrolysis of tires of the RODE Company, as an adsorbent for the removal of paracetamol from aqueous solutions. Carbon black has been used by our research group and it shows a good efficiency as an adsorbent. In preliminary tests was evaluated the use of 100 mg of carbon black with 20 mL of paracetamol (50 mg/L) and a 40 % removal was obtained after two hours of contact. In this present study the mass of the adsorbent was increased aiming to potentiate the adsorption process.

### **MATERIAL AND METHODS**

As carbon black is a residue of the tires pyrolysis process, a preliminary treatment was necessary. Therefore, this material was subjected to a muffle thermal process (400 °C/30 minutes) subsequently washed with distilled water (100 mg/50 mL). The kinetic adsorption (25 °C) was investigated with 20 mL of the paracetamol solution (50 mg/L) at a contact time of two hours. 200, 300 and 400 mg of adsorbent were used.

Paracetamol removal was determined by spectrophotometer UV 1800 in 240 nm using a calibration curve.

### **RESULTS**

The removal of paracetamol was 66, 79 and 86 % to 200, 300 and 400 mg of carbon black, respectively. According to the kinetic results it can be seen that the increase in mass of adsorbent showed a significant removal of paracetamol.

### **CONCLUSIONS**

The present study showed the application of different masses of carbon black, from RODE Company, as an alternative adsorbent for the removal of paracetamol from aqueous solutions. A significant removal result for the 400 mg mass was obtained (86 %), but other parameters should be evaluated to determine a better condition for the adsorption process.

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