

Biochemical Study on the Removal of Water Impurities using Modified
Activated Carbon

Jasim Hamadi Hassen, Alaa Abbas Baqer, Nagham Khairi
Kareem, Anwar Yousif Zaeen

ABSTRACT:

River and tap waters usually contain natural chemical and biological species known as impurities, whose composition changes from one location to another. Our investigation focuses on characterizing and removing water impurities using a column containing a mixture of powder and granular activated carbon impregnated with potassium permanganate to enhance the adsorption performance and to give it sterilization power. Four samples were subjected to different chemical and biological analysis. Two samples from Euphrates River, the first from a location near the city of Ramadi (RR0) and the second from a location near the town of Fallujah (FR0), where the river stream flows from Ramadi to Fallujah. Two other samples from tap water supplied by the municipality of Ramadi (RT0) and the municipality of Fallujah (FT0). The four water samples were allowed to pass once and twice through an activated carbon column (5 cm thickness), pre-treated with 0.1 w/w potassium permanganate solution. The samples were analyzed for various parameters such as pH, total dissolved solids TDS, chloride, phosphate, dissolved oxygen DO, electrical conductivity EC, turbidity, and bacterial existence. The analysis data indicates that the samples are not suitable to be used as drinking water due to the existence of high quantities of impurities. The treatment with activated carbon has some effects on the removal of chemical impurities and removes the bacteria found in one sample.

Keywords: Tap water river water potassium permanganate activated carbon adsorption.