

Abstract

The characterization of the olive mill wastewater by physicochemical analysis of some parameters showed significant pollution load, expressed particularly by a high content of turbidity, chemical oxygen demand and polyphenols. The objective of this study is the removal of phenolic compounds from olive mill wastewater by adsorption on activated carbon, prepared from a lino-cellulosic waste "peach stones" thermally treated. This processing technique is chosen because of its efficiency and ease of implementation. The chronological steps for obtaining active carbon are as follows: cleaning, drying, crushing and finally its carbonization at 900 °C. The characterization of the carbon material showed properties comparable to those of many coals manufactured industrially. Adsorption tests on the obtained material results in about 83% removal rate of polyphenols (at 20 °C, 2 g of activated carbon and 1 hour of contact time). The study of the influence of pH and temperature shows that at acidic pH and ambient temperature ($T = 20^{\circ}\text{C}$), the optimal adsorption of polyphenols is reached (91%) and follows quite well the Freundlich model. The adsorption kinetics is rapid and it is pseudosecond order type.