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Investigation of the conditions for obtaining active carbons medical supplies from seed fruit

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Abstract

The subject of this research is to optimize parameters of the process of obtaining crushed activated carbon from the shell of apricot kernels, intended for use in medical purposes. The article presents the results of thermogravimetric analysis of raw materials, on the basis of which is determined by the conditions of his pre-heat modification. The necessity of the process of carbonization in two stages: low temperature stage is carried out at 350-400 °C and high temperature stage, at 800-850 °C with subsequent gas-vapor activation of the carbonized product is water vapor. In the first stage of the process of carbonation is the removal of the main mass of volatile substances, and the formation of the primary pore structure of the carbon material is at high temperature stage. The results of the study of the synthesized carbon materials confirmed the formation of homogeneous microporous structure of carbon materials derived from fruit pits. The percentage of micropore volume of carbonized shell of fruit seeds was about 50 % of the total pore volume. The micropores formed during carbonization, are centres for the formation of the microporous structure during subsequent activation. To assess the ability of the hydrocarbon to the process of activating through derivatographic studies determined its reactivity towards carbon dioxide. At a temperature of 930 °C, it was 10.7 mg/g·min. the influence of process conditions of activation on the sorption properties and porous structure of the synthesized activated carbons. It is shown that the active carbon apricot shell with optimum characteristics can be obtained by the activation degree carbonizate to remove 50-55%. The evaluation of properties of active carbon relative to low and medium molecular substances, which used iodine with an average diameter of molecules 0.43-0.62 nm and the dye methylene blue with the molecule of 1.6-2.5 nm. As a middle marker applied streptomycin sulfate. The possibility of using the shell of the apricot seed to get effective enterosorbent.

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