

P.2.10. Adsorptive purification of food raw materials and semi-finished products with the help of carbon and natural adsorbents

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Improving the quality of food raw materials and food products is one of modern problems with high priority. And one of the methods for dealing with this important issue is additional purification with the help of adsorbents.

Active carbons (AC), which belong to carbon sorbents, are well-known. Their adsorptive capacities regarding aqueous-alcoholic solutions raise no doubts. But at the same time, in the system "active carbons – alcoholic solutions", apart from sorption, catalytical processes take place and they can be the sources of additional impurities, which impair the quality of aqueous-alcoholic solutions. Moreover, in Ukraine there is no industrial production of expensive active carbon.

Therefore the search for analogues among natural dispersive minerals, available and cheap sorbents within Ukrainian deposits, is of great importance. As the result of the research conducted, the authors found an effective in adsorbing ethyl impurities adsorbent – paligorskit.

For the study of adsorptive capacities of paligorskit and for the comparison between them and the adsorptive capabilities of active carbons in order to create industrial combined sorbents, the authors conducted the research on adsorption of the ethyl impurities with the help of paligorskit, active carbon and combined adsorbents (whereas, active carbons and paligorskit were in the ratio 10:90, 30:70, 50:50). The best results were received when refining aqueous-alcoholic solutions with the help of combined adsorbents.

Adsorbent, which contains 10% of AC, adsorbs up to 37% of aldehydes, up to 30% of ethers, up to 50% of the highest alcohols. When the proportion of AC in combined adsorbents constitutes 30%, the quantity of adsorbed aldehydes, ethers, the highest alcohols equals to 39, 30 and 54% accordingly. Combined adsorbent, which contains 50% of AC, decreases the quantity of aldehydes, ethers, the highest alcohols in purified aqueous-alcoholic solutions up to 40, 32 and 55%. The obtained results regarding the quantity of adsorbed impurities do not differ greatly from each other but the costs for AC are different. Thus, combined adsorbents containing 10% of AC and 90% of paligorskit were introduced in the industry for the refining of aqueous-alcoholic solutions when manufacturing alcoholic products. Testing assessment of the solutions, purified with the help of combined adsorbents, turned to be 1-2 points better than of the ones processed only with AC.

Keywords: aqueous-alcoholic solutions, adsorbents, active carbon, paligorskit