

THE STUDY OF THE PROPERTIES OF ZEOLITE AS A MEDICAL SORBENT

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Introduction. In medical practice the adsorption treatment is widely used for purification of biological fluids; adsorbents appointed as therapeutic agents for treatment dyspepsia, flatulence, stomach poisoning, poisoning by alkaloids, by heavy metal salts, by barbiturates, by toxins and by other substances. The existing arsenal of medicines do not always meet the requirements of practitioners in dealing with new negative toxic factors influencing on the body. The search for new effective adsorbents encourages scientists to address not only to the plant world, but also to the world of natural minerals, thanks to their unique properties.

Promising substance to create enterosorbent is natural zeolites. Huge reserves of raw materials available to the Ukraine, and low production cost will bring to market a new drug pharmacoeconomic parameters of which will compare favourably with existing analogues.

Aim. The aim of our study was to investigate the properties of natural zeolite from the perspective of its compliance to medical sorbents.

Materials and methods. The studies of the spatial structure and shape of the particles performed were done using a microscope SEM-106. The elemental composition was determined on scanning microscope «Quanta 200 3D». Particle size distribution were analysed on laser analyser «Analysette 22 NanoTec», the specific surface area and porosity on gas analyser «TriStar II 3020". Technological properties were studied by the method described in State Pharmacopoeia of Ukraine.

Results and discussion. It is established that the substance consists of particles of non-uniform shape with a rough surface, of size 0.05-200 microns. The chemical composition represented by elements such as silicon, aluminium, potassium, calcium, iron, magnesium, sodium, copper and titanium. The content of substances soluble in water (0.9%) and in hydrochloric acid (2.7%), the degree of swelling (7.2%), loss in weight on drying (4%), bulk density to shrinkage (0.75 g/cm³) and after shrinkage (1.09 g/cm³), the specific surface area - 8.9200 m²/g (BET), the average pore size (14.86 nm) and pore volume (0.033158 cm³/g).

Conclusions. Proved natural zeolite compliance to requirements for medical sorbents. The experimental data will be considered further in the development of technologies for drugs based on it.