

ADSORPTION OF AMMONIA NITROGEN FROM WATER AND OF NITRATE IONS FROM VEGETABLE JUICES BY SHUNGITE

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Extracting nitrate ions from red beet juice without losing its valuable components poses an important problem, especially when producing vegetable juices for children food and for juice concentrates.

Search for the ways to purify red beet juice from nitrate ions has given the possibility to conduct research on shungite – mineral of carbonic nature.¹

Carbon in shungite is amorphous, has metastable globular structure and does not tend to graphitization. The main element of super-globular structure is porous globe with the size up to 10 nm. The most complex and diverse in composition group of shungite formation is the one with silicate mineral basis. These formations contain the main amount of shungite carbon, which makes them universal adsorbents.

In sorbent's structure carbon rings zones – hexagons – are rotating.² Shungite has free porous space, which is represented by three-dimensional labyrinth of interrelated pores with the width of less than 3.2...3.6 nm. In such pores adsorptive potential increases greatly due to the overlapping of adsorptive fields of opposite walls.

As result of the research ecological safety of shungite has been established.

Shungite used for conducting research has been previously thermo-activated, and with its help red beet juice of different concentrations has been processed at various temperatures. Shungite has showed good adsorptive capacity with regard to nitrate ions. The optimal technological parameters, recommended for being introduced into the industry, have been established.

The next stage of the research has been the series of experiments on using shungite for adsorbing ammonia nitrogen from drinking water.

The results obtained have shown effective adsorptive capacity of shungite with regard to ammonia nitrogen ions from drinking water, and this enables the improvement of apparatus-technological schemes for purifying drinking water.

The conducted research of shungite structure has provided a possibility to explain the mechanism of adsorptive processes which take place in the system "solid substance – liquid", as well as to establish adsorbent's capacity to be multiply used. Shungite can be utilized easily.