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ABSTRACTS

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SACCHAROMYCETES AS BIOLOGICAL AGENTS FOR THE MEDIATED BIOSYNTHESIS OF SILVER NANOPARTICLES

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Abstract: Silver nanoparticles (AgNPs) have great potential for use in the food industry due to a wide range of antimicrobial activity against foodborne pathogens which makes it possible to use AgNPs for the production of packaging materials for food products. The use AgNPs in nanobiosensors makes it possible to increase the sensitivity of detecting bacterial pathogens in food and drinking water. Another areas of AgNPs application are their use as nanocatalysts and use in winemaking as concervants. The most commonly used are chemical and physical methods of AgNPs synthesis, but there is also biological synthesis, which is a promising and more environmentally friendly method. Synthesized using the supernatant *Saccharomycescerevisiae* M437 AgNPs had a spherical shape with a diameter of about 15 nm. The polydispersity index (PdI) of t AgNPs solutions was 0,3, and the zeta potential was –13,6. After storage for 45 days at 4 °C, the PdI value increased 1,6 times, and the zeta potential increased by 11,7%. Obtained data indicates a possible change in the shape of AgNPs, the formation of an agglomerate, or other processes that takes place in a colloidal solution during storage. AgNPs that were obtained using a cell-free aqueous extract of S. cerevisiae M437 had an oval shape with a size of 21,3×14,2 nm. The PdI and zeta potential values were similar to the nanoparticles obtained using the supernatant. However, after storage, these values differed significantly: the value of PdI increased 1,3 times, and the zeta potential decreased by 29%. So, the solution of silver nanoparticles obtained in this way is more stable after storage under the specified conditions.

Key words: *nanoparticles, silver, yeast, biosynthesis, Saccharomyces cerevisiae*