

INFLUENCE OF *PLEUROTUS OSTREATUS* PREPARATIONS ON FERMENTATION PRODUCTS OF LACTIC ACID CULTURES

Ekaterina Antontceva^{1*}, Sergei Sorokin¹, Mark Shamtsyan¹, Ludmila Krasnikova²

¹Department of microbiological synthesis technology, St. Petersburg State Technological Institute (technical university), Moskovsky pr. 26, 190013 Saint-Petersburg, Russia

²Department of Chemistry and Molecular Biology, St. Petersburg University of Information Technologies, Mechanics and Optics, Kronverksky pr. 49, 197101 Saint-Petersburg, Russia

*e-mail: _p_m_@mail.ru

Abstract

Pleurotus ostreatus is well-known and commercially important edible basidiomycetes. Polysaccharides, obtained from *P. ostreatus*, are suitable candidates for research and development of new functional foods and nutraceuticals. *P. ostreatus* preparations can provide to the product's additional therapeutic properties, such as anti-cancer, anti-inflammatory and hypoglycemic properties. Yoghurt is the popular base for functional products. Useful additives can be simply added into yoghurt, but they can also impact on process of milk fermentation by lactic acid bacteria: *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus*.

The object of our study was polysaccharide preparations, obtained from submerged cultivated *P. ostreatus* biomass. It was obtained 3 preparations: preparation P1, which was collected after removing from biomass lipids and low-molecular compounds by 80% ethanol repeated; preparation P2, collected after ethanol extraction and extraction in a boiling water bath and then concentrated by evaporation and precipitated with five volumes of 96% ethanol solution; and preparation P3, taken as the solid residue remaining after the ethanol and aqueous extractions. Preparations were added to milk in different concentration before the introduction of lactic acid cultures. The titrated acidity was analyzed by acid-base titration with sodium hydroxide. The water holding capacity was defined as the ratio of the weight of the fermented bunch to the weight of the total fermented milk product after 24 hours storage from the time of preparation.

It was found, that preparation P1 mostly increase the acidity of fermented milk for both cases and the water-holding capacity of *L. bulgaricus* fermented milk. Preparation P2 enlarges both parameters, but only in case of *L. bulgaricus*, and preparation P3 enhanced the acidity of *S. thermophilus* fermented milk and the water-holding capacity of milk fermented by each bacterium.

Thus, the addition of the *P. ostreatus* preparations increase the rate of acidity growth and the moisture-holding capacity of the clot.

Key words: Functional food, *Pleurotus ostreatus*, Lactic acid fermentation, Polysaccharides, *Lactobacillus bulgaricus*, *Streptococcus thermophilus*.