

P-25: Preparation Of The Stimulator Of Biotechnological Processes In Food Industry In The Field Of Ultrasound Waves

Liubov Palianytsia, Ruslana Kosiv, Nataliya Berezovska, Nataliya Pankiv

*National University "L'vivska Polytechnica"
Bandera Str. 12, L'viv 79013, Ukraine, e-mail: liubapal@ukr.net*

The rise of biosynthetic and enzymatic activity of true yeasts is possible to reach at usage biologically of active substances, that is stimulants of growth, such as: malt shoots, yeast autolysates, containing amino acids, enzymes and vitamins of group B.

Yeast's autolysates having rich complex of biologically active substances synthesised by cell in the growing process are used in industry among other stimulators. They are obtained by plasmolysis of yeast cell with the following proteolysis protein protoplast. Plasmolysis carry out with usage specific agents, cultures of microorganisms, and also ultrasonics (US).

The hydrolysis of protein of yeast can be carried out different paths. Use alkaline, lead-acid or enzymatic hydrolysis more often. At a lead-acid hydrolysis of yeast there is an intensive racemization of amino acids, therefore advantage the enzymatic hydrolysis uses which can be realized either brought in proteases, or own proteases of cells (autolysis). Usage of pure proteoclastic enzymes augments cost of the process, and usage of unpurified ferment drugs carries on to derivation of by-products. At autolysis usage of expensive proteases is not required, but it can be conducted only with alive cells. Comparing with other methods lysis with ultrasound waves has advantages: additional substances are not used and duration is shorter.

Lysis of yeast at the presence of a ultrasonics is investigated still insufficiently well. Therefore purpose of research - learning of the factors, which influence speed and degree lysis in the field of ultrasound waves.

Yeast suspension of premolded documentary yeast (*Saccharomyces cerevisiae*) handled in the low-frequency generator УЗДН-2Т with exponential emitter. A survival of yeast (amount of viable cells) defined by a method depth cultivation on Petri dishes with wort agar. A content of assimilative nitrogen in obtained lysates determined by a method of formol titration.

At microscopic research of the fixed drugs prepared from sounded yeast suspension, the ruptures of cells did not supervise. The significant amount of cells with the unimpaired shell had such pathological change: the protoplasm dissociated from the shell of a cell and is oblate. There were cells, in which the at all endocellular structures were not viewed. This pattern reminded plasmolysis of yeast cells with extraction of their contents in an aqueous medium, to what testified of a stain ungeometrical around of empty shells of cells. At cultivation of suspension on wort agar even those cells did not sprout which, on the first sight, were not damaged by operation US of oscillations.

By the parameter, which considerably influences efficiency of US oscillations operation, there is an intensity of US insonify, which changed by change of current strength in an outline of a lamp of the generator. At increase last from 10 up to 40 mA there is a considerable growth of percent of dead cells and contents of assimilative nitrogen in processed suspension. These metrics almost do not vary at further rise of current strength up to 70 mA, and at 80 mA there is their some decrease.

Analogical character have the curves of dependences pH and acidity from US intensity, and the increase last carries on to rise pH of suspension and decrease, accordingly, its acidity. The analysis of kinetic curve accumulation of assimilative nitrogen in yeast suspension has shown, that its considerable growth happens on exposure of US insonify up to 4 min. The processing by a duration 8-12 min is necessary for reaching a sufficient content of formol titrated of nitrogen.

Due to the conditions of the research of *saccharomycetes*'s lysis in the field of ultrasound waves its results show that:

- the rate of assimilative nitrogen's accumulation increases with the growth of intensities of ultrasound waves;
- the time of ultrasonic treatment is 8-12 min the achievement of the sufficient as nitrogen's quantity;
- with the increasing of the temperature to 60°C the yield of assimilative nitrogen is increasing.