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Way of manufacturing complex drug of nucleotides: production, properties, application

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Abstract

The way of manufacturing complex nucleotide medicine encad from yeast ribonucleic acid is offered. Development of inexpensive and effective medicines of domestic production, studying the pharmacological properties of natural biologically active substances are among the priority areas of medical chemistry. The pancreatic hydrolyzate of yeast ribonucleic acid is a mixture of products of fermentative hydrolysis of yeast RNA containing pyrimidine nucleoside-3'-phosphates and oligoribonucleosides. The pancreatic hydrolyzate, complex nucleotide medicine enkad, is allowed for clinical use in hereditary eye diseases – tapetoretinal degeneration (retina abiotrophy) leading to blindness. The substance was produced on technology of enzymatic hydrolysis of RNA from yeast of *Torula* with bovine pancreatic ribonuclease earlier according to VPS 42-1758-87. In this paper, we propose the method for obtaining the substation of the nucleotide medicine based on the bakery yeast *Saccharomyces cerevisiae*, being secondary raw materials in production of alcohol and bakery products that could be an available source of the general pool of yeast RNA under conditions of complex processing of biomass of microbiological production.

The optimal conditions for the yeast RNA hydrolysis by pancreatic ribonuclease were chosen. It was shown that the use of ribonuclease inhibitor, mandelic acid, at the stage of ultra-concentration provided an increase in the yield of the product by 10-12% in comparison with the known technologies and that allowed to increase the stability of the final product composition while maintaining its nontoxicity and apyrogenicity.

The control of the obtained medicine at the Kharkov enterprise for the production of immunobiological and medicinal preparations of CJSC Biolek confirmed the compliance of the drug with the requirements in its specified pharmacopoeial article. The test data allowed recommending to obtain a substance enkad for medical assignment on the basis of purified RNA from industrial baker's yeast of the Russian production. The general analysis of the obtained nucleotide medicine composition was carried out; separate components being isolated and characterized. Based on the experimental data, assumptions about possible mechanisms of effect of the drug were formulated.

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