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ПРОБЛЕМИ ТА ДОСЯГНЕННЯ СУЧАСНОЇ БІОТЕХНОЛОГІЇ

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КАФЕДРА БІОТЕХНОЛОГІЇ

MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
DEPARTMENT OF BIOTECHNOLOGY

ПРОБЛЕМИ ТА ДОСЯГНЕННЯ СУЧАСНОЇ БІОТЕХНОЛОГІЇ

PROBLEMS AND ACHIEVEMENTS OF MODERN BIOTECHNOLOGY

Матеріали
IV міжнародної науково-практичної
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Further studies on evaluation of cultivation temperature and other growth factors on biomass productivity and composition of biomass, including lipids and content of polyunsaturated fatty acids, for selected lactose-assimilating microalgal isolates are in progress, also influence of the factors should be evaluated further during autotrophic an mixotrophic cultivation.

This study was co-financed by European Agricultural Fund for Rural Development (EAFRD) and supported by the Ministry of Agriculture and Rural Support Service of the Republic of Latvia.

Research into the development of a dietary supplement in the form of capsules based on dandelion officinalis

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The healing properties of plants are known and used by humanity since ancient times. Safety, effectiveness, economic feasibility, virtually no side effects, the possibility of long-term use, the possibility of combining with other drugs - this is an incomplete list of the advantages of plant-based drugs. The above factors are the reason for the increased interest of researchers in the study of biologically active substances of medicinal plants in order to create new effective drugs and dietary supplements.

The Tashkent Pharmaceutical Institute has developed a technology for obtaining an inulin-containing substance from the roots of dandelion, which grows on the territory of the Republic of Uzbekistan.

The objective of this research was to select the composition and develop technology for obtaining a biologically active supplement in the form of capsules based on this substance.

Initial studies of the pharmacotechnological parameters of the substance showed the need to introduce excipients to obtain high-quality products. For a scientifically

based selection of excipients in the composition of the encapsulated mass, it was decided to use the method of two-factor analysis of variance 5x5 with repeated observations (n=3). The influence of the filler type (factor A) and granulating agent (factor B) was studied as factors. The results of the release of active substances in *in vitro* experiments were chosen as a quantitative indicator of selection.

Magnesium stearate was introduced into all model compositions as an antifriction substance in the amount permitted by regulatory documentation.

After drawing up the experimental plan, the homogeneity of variances was checked using the Cochran test. It was ascertained that the experiments performed were equally accurate, because the tabular value of the Cochran criterion was 0.2354, which is significantly greater than the experimental value (y_{exp} = 0.0755).

The results of dispersion analysis of experimental data to determine the release of inulin from model capsules indicate that the optimal filler for the developed capsules is a mixture of microcrystalline cellulose and aerosil, and it is preferable to use purified water, 40% and 70% ethyl alcohol as a granulating agent. Based on economic feasibility, it was decided to use purified water.

Based on the research, a technology for producing a biologically active supplement was developed: an inulin-containing substance, microcrystalline cellulose, and aerosil were pre-sifted and the required amount was weighed out. Then stirred until a homogeneous mass was obtained. With constant stirring, they were moistened with purified water. The resulting mass was laid out on pallets and dried in a drying cabinet at a temperature of 40-50 ^{0}C until the residual moisture content was 10-15%. Then the mass was granulated by rubbing through a sieve with a hole diameter of 1000 microns and continued drying in an oven at a temperature of no more than 50 ^{0}C until the optimal residual moisture content was reached (2-3%). The resulting mass was dusted with magnesium stearate, weighed and packaged in capsules of size 0 to 0.4 g.

This technology for producing capsules has been tested in industrial conditions on the basis of a domestic manufacturer. A package of documents for registration of dietary supplements has been prepared.