

CAVITATION TECHNOLOGY TO PRODUCE NANOPREPARATIONS

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A priority trend in modern scientific developments is the search for reliable methods for the manufacture of nanostructures for the organization of their industrial production. Nanomaterials by their physical properties far outperform the materials of the micro level. The use of nanotechnology allows us to find new approaches to solving many scientific problems in energy, material science, bioengineering, medicine, food industry and other sectors of the national economy. Nanotechnologies provide the controlled creation of an artificial nanostructure with predefined sizes, structures and other properties. Considerable attention in the world is given to finding efficient ways of delivering active substances to cells and creating nanocapsules.

The purpose of the study is to substantiate the feasibility of using cavitation technologies to produce nanostructures for various industries and agriculture.

The analysis of literature and patent sources suggests that it is expedient to use the phenomenon of hydrodynamic cavitation for the intensification of many chemical and technological processes, including for the intensification of the process of formation of lipid nanostructures and the development of industrial technologies to produce nanoform of preparations for various industries and agriculture. The effectiveness of its use in obtaining lipid vesicles with given properties is confirmed by the results of our theoretical and experimental studies.

Conclusions The conducted complex of studies allowed to choose the design of a cavitation mixer and to establish rational heat engineering conditions for the cavitation treatment of a disperse system with phospholipids for obtaining modern types of fertilizers for agriculture with lipid nanostructures with definite properties. The result of testing the effectiveness of the use of hydrodynamic cavitation equipment to produce cosmetic balms has been proved that the proposed treatment allows obtaining high-quality, stable in storage nano-range products.