THE INFLUENCE OF FREEZING AND NON-ENZYMATIC CATALYSIS ON DESTRUCTION OF HETEROPOLYSACCARIDE-PROTEIC NANO COMPLEXES DURING THE PROCESSING OF TOPINAMBOUR

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The influence of freezing and non-enzymatic catalysis on destruction of hardly soluble heteropolysaccaride-proteic Nano complexes and their transformation into the soluble form during the deep processing of topinambour to the fine-dispersed additives is studied. It is determined that 45...55% of heteropolysaccaride-proteic Nano complexes are destructed to their separate monomers in Nano form in dimensional diapason from 0,5 to 1,5 nanometers.

It is determined that the activation of inactive hardly soluble forms of pectin substances occurs while the complex effect of cryogenic "shock" freezing and fine-dispersed grinding on topinambour. There is also a more complete (3,0...3,4 times) extraction of these substances from Nano complexes with other biopolymers, including protopectin (2 times more than in raw material). It is controlled by conventional chemical methods. In addition, the production of soluble pectin increases 4,5 times. Generally, 70% of pectin in Nano powders and Nano puree are in a soluble form. The mechanism of this process is associated with non-enzymatic biocatalysis-cryomechanalysis.

It is determined that the absorption of Nano additives (Nano puree and Nano powders) from topinambour is 2,7...3 times higher than in raw material. It is revealed with the use of bio test methods of infusorians (using generative activity of unicellular organisms) due to special characteristics of chemical composition, biologically active substances content and dispersed condition of additives. The significant part (60...70%) of substances is in Nano soluble form.

Different kinds of health-improving products (dry instant fruit Nano drinks, dry juices (including ones for special contingent), pastries, new types of Nano ice-cream, Bio kefir and Bio yoghurt with prebiotic properties) are developed with the use of Nano additives.

Keywords: freezing, non-enzymatic catalysis, heteropolysaccaride-proteic Nano complexes, fine-dispersed additives, topinambour, deep processing