We studied the impact of processes of steam-thermal cryo-treatment and finely dispersed grinding on biopolymers and BAS of fruits and vegetables during obtaining health promoting nanoproducts. It was established and scientifically substantiated that during integrated influence of steam-thermal or cryo-treatment and finely dispersed grinding on fruits and vegetables, activation of non-soluble nanocomplexes of heteropolysaccharides (in particular, pectic substances) with other biopolymers occurs. Activation occurs due to the processes of thermo-, cryo- and mechanodestruction. This leads to a release of mass fraction of pectic substances from the hidden, bound form into the free condition and its increase by 4.5–4.8 times and by 3.6–3.9 times during cryo- (or steam-thermal) treatment and finely dispersed grinding, respectively, in comparison with the original raw materials. Simultaneously, non-enzymatic catalysis of 70% of non-soluble pectic substances to individual monomers, that is, a transformation into the soluble, easily assimilated form occurs.

The impact of integrated processes of cryo- (or steam-thermal) treatment and finely dispersed grinding on content of BAS was studied. It was found that in comparison with fresh raw material, mass fraction of BAS in finely dispersed frozen and thermally processed puree from the studied raw materials (black currants, apricots, lemons, apples, spinach, pumpkin) increased. An increase is by 1.5–4.0 times and by 1.5–3.0 times, respectively.

The quality of the obtained new kinds of finely dispersed puree surpasses the known analogues in content of BAS and technological characteristics. New kinds of puree are in the nanodimensional, easily assimilated form.

With application of new types of finely dispersed additives, a wide range of products for healthy eating with a record content of natural BAS was developed. New kinds of nanobeverages, nanosorbents, dairy-vegetable cocktails, fillings for confectionery and extruded products, cottage cheese desserts, bakery products, snacks, such as falafels, creams, etc., were developed. New additives were recommended for using at large and small food enterprises, institutions of restaurant business, trade, and for individual nutritional needs.

**Keywords:** non-enzymatic catalysis, mechanolysis, steam-thermal treatment, cryotreatment, nanocomplexes, heteropolysaccharides, pectic substances.