

TECHNOLOGY OF PROTEIN HYDROLYSATES FOR FUNCTIONAL NUTRITION

Dekusha H.V., Avdieieva L.Y., Zhukotskyi E.K.

*Institute of Engineering Thermophysics of NAS of Ukraine
tel. +38-044-453-28-44, e-mail: tbds_ittf@ukr.net*

Analysis of scientific and patent literature indicates the active development of industrial production of products and preparations based on protein hydrolysates for special dietary nutrition. Protein hydrolysates are defined as a complex of peptides of different molecular mass and free aminoacids. There is a general agreement that peptides with a molecular mass of 2-3 kDa do not show allergenic properties and are easily absorbed by the body. Such products are used for nutrition of people with high protein and energy needs.

Aim of the work is a development of technology of product based on highly hydrolyzed proteins in dry form for special and dietary nutrition.

Results. The kinetic regularities of enzymatic hydrolysis of high-protein components of animal and vegetable origin were studied using various proteolytic enzyme preparations, depending on their mass concentration, hydromodule and incubation time. Rational technological parameters of the process were determined and the possibility of obtaining great depth protein hydrolysis (up to 80%) in a short period of time was proved. The possibility of using the principle of discrete-pulse energy input (DPEI) developed at the Institute of Engineering Thermophysics of NAS of Ukraine when dissolving high-protein dry components was investigated as well.

The correct choice of the enzyme preparations and rationally selected technological regimes and parameters made it possible to carry out directional hydrolysis to obtain a new product with a given amino acid composition of low molecular weight (3-5 kDa).

The obtained product is a complex of peptides and free amino acids of high biological value. The product is easily digested and does not cause allergic reactions.

Conclusions. A technology characterized by high economic efficiency has been developed for the production of hydrolyzed proteins in a dry form. According to the results of experimental studies rational technological parameters of the process of enzymatic hydrolysis have been determined. The reasonableness of applying the method DPEI when dissolving high-protein components in an aqueous medium has been proved. The method allows the most complete hydration of a mixture of animal and vegetable proteins for the subsequent process of enzymatic hydrolysis.