

Innovative Approaches to Solving the Problem of Increasing the Biological Value of Drinking Milk

Sukmanov Valerii¹, Kiiko Viktoriia²

¹ Higher Educational Institution of Ukoopspilka "Poltava University of Economics and Trade",
3 Koval St., 36014, Poltava, Ukraine

²National University of Food Technologies, 68 Volodymyrska St., 01601, Kyiv, Ukraine

ABSTRACT

Milk is the balanced, difficult polydisperse system and remains to one of the most popular and consumed food. Any change of components of milk under the influence of different factors can lead to destruction of all equilibrium system and the loss of firmness of its components.

The main objective of the existing traditional technologies of pasteurization of milk is the inactivation of the available microflora, in order to increase the terms of its storage. However, the use of high and ultrahigh temperatures leads to change of biochemical properties of a product and, as a result, the nutrition and biological value of drinking milk decreases.

In this regard, indisputable interest represents the use of the innovative biotechnological methods allowing to prolong periods of storage of drinking milk and to improve its functional properties without breaking their nativity.

One of such technologies is the application of a high pressure, as potential method of preservation. Started being interested in technology of a high pressure more than 100 years ago and today there is a large number of the researches testifying big prospects of this way of processing.

In this work we presented results of research of biological value of the drinking milk received by application of innovative biotechnology of a high pressure - a pascalization.

The assessment of biological value of pascalized milk was carried out by research of index invitro.

Invitro test was based on the research of influence of water extracts of pascalized milk (high pressure processing) on survival of freshly prepared culture of lymphocytes of blood of the person and determination of speed of the proteolysis enzymes (pepsin and pancreatin). The method of determining the rate of protein digestion with pepsin and pancreatin is the quantification of protein accelerated by the Kjeldahl's method.

The obtained results of research did not reveal any statistically significant influences of water extracts of milk pascalized on survival of suspension of the isolated lymphocytes of blood of the person.

The degree of digestibility of proteins (invitro) of pascalized milk enzymes pepsin and pancreatin increased by 2%, concerning control (raw milk) and made 98,7%, in pasteurized milk, this indicator increased only by 0,6%, made 97,2%.

Based on these data we can testify that milk processing by a high pressure in comparison with high-temperature processing, has a sparing effect on a protein complex of milk and is the perspective direction in production of products of the increased nutrition and biological value of long-term storage.

KEY WORDS: high pressure, milk, biological value