RESEARCH REGARDING THE INFLUENCE OF CONSERVATION BY USING DEEP – FROZEN METHODOLOGY OVER THE QUALITY OF SOME HORTICULTURE PRODUCTS

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Abstract

Vegetables improve human life by means of the many nutrients they contain. The nutritional quality of frozen products is intensified by the quality of the raw material, which uses correct manufacturing practices in the preservation process, while horticultural products are stored at the appropriate temperature. Competing with new minimum food processing technologies, industrial freezing is the most satisfactory method for maintaining quality for long storage periods. The main purpose of this study is to determine the influence of a preservation process based on the use of the cold, of cryoanabiosis, respectively on fresh vegetables frozen using a domestic and industrial method. We monitored the possible qualitative changes after the storage of the frozen biological material and the difference between the application of a home preservation technology, respectively the application of an industrial preservation technology on the products under analysis. The main objectives of the study are to examine the quality of frozen vegetables by determining the sensory and physical-chemical characteristics of cold-preserved products. The study material to be analysed is represented by three species of vegetables, as follows: carrot (*Daucus carota*), root parsley (*Petroselium crispum*), respectively broccoli (*Brassica oleracea*). The sensory evaluation of the products studied showed that frozen products using the industrial system had superior characteristics compared to those frozen at home. It is found that after the freezing of horticultural products using a domestic and industrial method there were no significant differences in the results of physical and chemical tests, as these kept their nutritional value high. Regarding the pH results, the biggest differences were identified in the case of broccoli. Thus, as the frozen broccoli in the industrial system registered a value of 5.7, and the frozen broccoli in the domestic system a value of 6.58. Acidification of the product may occur due to the freezing of water in the cells, followed by an increasingly concentrated accumulation of cell fluid containing diluents and colloidal substances. The water content increased in the case of products frozen by using a domestic system, presenting higher values as compared to the humidity of industrial frozen products, but also compared to the reference values as follows: carrots and parsley registered a humidity of 90% and 86%, respectively. The higher value in the case of the humidity parameter is caused by a higher amount of released cell juice, due to a slow freezing which led to the formation of ice crystals or to the occurrence of the plasmolysis phenomenon. The soluble dry matter shows several differences. Products frozen at home have higher values compared to industrially frozen products. The most significant difference appears in the case of root parsley frozen at home with a value of 11%. Therefore, freezing showed the following advantages: the lowering of the temperature of the product below 0℃ ensured the keeping of the plant product longer, and most of the biochemical reactions were stopped during freezing and also the blocking of the multiplication of microorganisms took place.