EFFECT OF SOUS-VIDE TREATMENT ON THE STRUCTURE OF TURKEY

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Abstract

Current trends show increasing consumer demand for sous-vide cooking products. Various types of meat can be processed by this method. Many researchers have found that low-temperature long-term processing of a product packaged in vacuum improve consistency and increase tenderness of pork, beef and lamb. Currently, turkey breeding in Russia is developing. Turkey has a low calorie content and is considered a dietary meat. However, the turkey drumstick has many rough tendons and requires prolonged heat treatment. Thus, this research was aimed to study the effect of sous-vide cooking of turkey drumstick at different duration of heat treatment on its textural properties.

The turkey drumstick was vacuum packed and treated in water bath at 60 ^{0}C for: 210, 270, 330 and 390 minutes. The goal was to achieve a tenderer product with high organoleptic value. The microstructure characteristics and shear stress of each sample were measured. The shear stress was determined using a universal testing machine Shimadzu AGS-1kN series (Japan). Samples for histological studies were frozen, stained sections of the samples were examined under a light microscope at a magnification of × 340. Number of samples determined is not less than 3.

It was found that the duration of heat treatment 270 minutes promoted swelling of muscle fibers and loosening of connective tissue layers, which contributed to moisture retention and obtaining a product with a tenderer structure. Heat treatment for more than 270 minutes led to an increase in destructive changes, a decrease in the diameter of muscle fibers, which contributed to the formation of a more tough consistency of finished products. These microstructures were consistent with the results of structural studies of shear stress. To achieve a tender structure, the optimal duration of cooking turkey drumstick at a temperature of 60 ^{0}C was set - 270 minutes. Thus, it was found that excessive cooking time has a negative effect on the consistency of collagen-containing products.

On the basis of research, the optimal duration of heat treatment turkey drumsticks to achieve a tender structure has been substantiated: 270 minutes at a temperature of 60 ^{0}C.

Key words: *Turkey, Heat treatment, Microstructure, Shear stress.*