EFFECT OF TYPE AND LEVEL OF COLLAGEN SUPPLEMENTS ON MORPHOLOGICAL CHARACTERISTICS OF COOKED SAUSAGES

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Abstract

Despite the undoubtedly proven gel-forming properties of collagen proteins, there are different views in the scientific literature about their use in order to stabilize the raw and heat-treated meat mass in the production of structureless cooked sausages. The aim of this research was to investigate the morphological characteristics of nonstructural cooked sausage produced with two different collagen supplements (CPS-C - commercial one; and CPS-U - laboratory produced from pork skins by mechanical treatment) as well as to establish changes in sensory characteristics.

In the study, six experimental groups of cooked homogeneous sausages were produced with the same basic ingredients, but with different amounts (15; 25, and 35 g x kg^{-1}) of added type of collagen supplements (CPS-C and CPS-U). Sensory evaluation was performed in order to determine general texture acceptability of the type and amount of collagen supplementation levels in the final products. It was used a five-point scale to evaluate four major attributes of indicators, multiplying the score for each of them by a corresponding factor of significance. The total sensory value of the test sample was obtained as a sum of the multiplied estimates of the individual indicators divided by 10. For assessment of the morphological changes, fixed, dehydrated and stained with hematoxylin - eosin cuts of sausages were performed and observed by light microscopy with magnification x 400.

The morphological analysis revealed a great influence on products structure by the type and quantity of collagen supplements used. The addition of 15 g x kg^{-1} CPS-U had a positive effect on structuring process of the protein matrix, immobilizing the water and oil phase as well as reducing the effect of the thermal induced shrinkage of the filling mass. It was observed that the most acceptable texture was established in the sample with 15 g x kg^{-1} collagen supplementations, while concentrations ≥ 25 g x kg^{-1} were associated with not typical and harder consistency.

The addition of 15 g x kg^{-1} CPS-U has a positive effect, resulting in formation of much more stable protein matrix and immobilization of water and fat phase. Collagen concentrations ≥ 25 g x kg^{-1} were not appropriate for structureless cooked sausages.

***Key words**: Collagen supplement, Protein matrix, Protein aggregates, Cooked sausages, Morphological characteristics.*