

Effect of sonication on the anti-radical activity of pork loin protein hydrolyzates after six months of ageing

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Introduction: The term bioactive food ingredients is being used more and more frequently in the field of food science. This definition, among others, includes: polyphenols, vitamins, macro- and microelements, and also bioactive peptides. These short amino acid sequences are made from proteins, and animal raw materials such as meat are a good source of them. Bioactive peptides can exhibit a number of different activities, thus improving the well-being and health of consumers. For this reason, the search for new peptide sequences with the strongest health-promoting effect is still ongoing. These could later be included as an ingredient in a health food or nutritional supplement to improve health.

Materials and Methods: The research material was pork tenderloin ageing for 6 months. Proteins were extracted from meat products and subjected to pepsin hydrolysis for 2 hours. During the hydrolysis, the extracts were simultaneously sonicated in order to assess the influence of this process on the availability of protein structures for the enzyme. The process was carried out in the dark, maintaining the temperature at $37^{\circ}\text{C} \pm 1$. Samples were taken at 30-minute intervals to evaluate the peptide content in the extracts as well as their antiradical activity against the ABTS radical cation.

Results: The study confirmed the effect of sonication on the hydrolysis of proteins from the ageing meat product. Higher antiradical activity of hydrolysates subjected to simultaneous treatment with pepsin and sonication was found.

Conclusion: Probably, sonication process contributed to the relaxation of meat protein structures, making them more accessible to the enzyme, resulting in the formation of specific peptide sequences with high biological activity against radicals.

Key words: Sonication, Anti-radical activity, Pork protein hydrolyzate