Physicochemical and Sensory Characteristics of Meat Specialties Prepared with Mixtures of Spices

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Abstract
Nowadays traditional pork is still remaining the most popular meat in many European countries. The aim of this work was to evaluate spices for the development of functional food with high antioxidant capacity. To achieve the proposed goal, two specialties meat (chops and roulade pork) with mixtures of spices was obtained. According to our results, the spices with the highest antioxidant capacity was basil and mace.

Keywords: spices, antioxidant capacity, pork meat, quality

Introduction. Traditionally, industrial foods are developed to supply the requirements of consumers in relation to taste, appearance, market value, and practicality, to prepare/consume. The development of products to provide beneficial effects on health is a new trend and reflects the increasing acceptance of the role of diet in reducing the risk of chronic diseases (Alezandro, et al., 2011). Meat occupies an important place in human nutrition. Pork and its products show a high nutritive value and good sensory properties (Zymantiene et al., 2008). Modern consumers are paying more attention to the quality of meat as a result of the increased incidence of lifestyle-related diseases such as obesity, diabetes, heart attacks and atherosclerotic strokes (Kokoszyński et al., 2013). Presently there is a growing interest in the production and marketing of meat specialties with addition of spices. This products belong to foodstuffs with high nutritional value. Herbs and spices support nutrient diversity by encouraging new food choices. The most important natural spices used in processed meat products are pepper, paprika, nutmeg, mace, cloves, ginger, cinnamon, cardamom, chilli, coriander, cumin and pimento (FAO), some of them exhibited antioxidant properties (Shan et al., 2005).

Aims and objectives. In the last years, there has been an increasing interest of the food industry in incorporating spices with health benefits properties for consumers. The objectives of this study were (1) to evaluate and compare total antioxidant capacity of 5 common spice extracts, (2) to obtain two specialties meat (chops and roulade pork) with mixtures of spices, (3) to establish the physicochemical and sensory characteristics of the products.

Materials and methods. Dehydrated spices were obtained from local supermarkets. The spices were as follows: basil (Ocimum basilicum L.), cloves (Syzygium aromaticum), mace (Myristica fragrans), liquorice (Glycyrrhiza glabra) and pepper (Piper nigrum). The antioxidant capacity of spices samples was assessed through the evaluation of free radical scavenging effect on 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical (Odriozola-Serrano, et al., 2008). Shortly, 10 ml of samples were extracted with 10 ml of methanol solution. Aliquots of methanolic extracts were mixed with methanolic DPPH solution. After 30
minutes incubation in darkness, the absorbance of each sample was measured on a Shimadzu UV-1700 PharmaSpec spectrophotometer at 515 nm against a blank of methanol. Results were expressed as the percentage of decrease in the absorbance value of each sample compared with the absorbance of DPPH reference solution. The specialties meat samples were analyzed according to standards of AOAC (Association, 2000). Moisture (%) was obtained by oven-drying up to a constant weight, the salt content was determined by the titration method. The protein was determined by the Kjeldahl method and shall consist of the total nitrogen determination which, multiplied with the coefficient of the transformation of nitrogen in protein, give the quantity of protein. Fat was determined by extraction with organic solvents in the Soxhlet apparatus. For the sensory analysis a simple hedonic scale with a small number of points (from 1 to 4 with 1- i don’t like it and 4 - i like it very much) was used in order to evaluate the first impression, the aspect, the flavour, the texture, the taste and the smell of the samples.

**Results and discussion.** The spices had different antioxidant capacities according to the method applied. Basil had very strong activity (95.22%). Other spices with relatively high activity were mace (57.44%) and liquorice (44.66%). Two mixture of spices were made, the first (P1) contained: basil, pepper and mace, and the second mix (P2) was obtained with: cloves, pepper and liquorice. The mix P1 had a very high antioxidant capacities (83.96%) comparison with P2 (33.21%). Compositions of meat specialties are in agreement with the ranges published in literature (Litwifczuk et al., 2004). The content of dry matter in pork meat specialties varied from 40% to 44.5%, the content of fat varied from 3% to 5%, the salt content varied between 2.92%-3.5 and the content of protein varied from 28.17% to 34.65%. The results obtained show a lower content in fat and a higher protein intake, which is normal considering that the raw material used to obtain specialty was pork chops. According to the sensory analysis results, the most appreciated parameters were taste, flavour and the smell of meat specialties. Sensory evaluation analysis showed a preference for the roulade pork made with the first mix (P1).

**Conclusions.** This study suggests that basil, mace and cloves have an excellent potential for the development of functional foods rich in antioxidant. Due to the low percentage of fat, high protein content and high antioxidant capacity, the products obtained address all categories of consumers, especially children's and sportives who need an increased intake of protein in the daily diet.

**References**