## Effect of heat treatment on the content of histidine dipeptides in goose meat

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**Introduction:** The nutritional value of goose meat is an important reason for its gastronomic and technological use. Goose meat is characterized by a high protein content and a favourable fatty acid profile. Its quality depends on the genotype, sex, and age of the birds as well as the rearing and feeding system (Adamski et al., 2016; Biesek et al., 2020). An important endogenous component of meat are compounds with bioactive properties, showing a diversified spectrum of activity. This group includes the histidine dipeptides carnosine and anserine. The presence of carnosine is confirmed in the tissues with the highest intensity of metabolic processes - the central nervous system, liver, kidneys, stomach, skeletal muscles. These compounds reduce the toxicity of heavy metals, show neuroprotective properties and significant antioxidant activity (Boldyrev et al., 2013; Wu 2020). The content of carnosine and anserine in meat can be shaped by the diet and composition of feed (Kopec et al., 2020; Modzelewska-Kapituła et al., 2021). Scientific data indicate a diversified effect of the heat treatment methods and their parameters on the density of dipeptides in meat products (Peiretti et al., 2012; Juniper and Rymer, 2018).

**Materials and methods:** The research material consisted of skinless goose breast muscles (Biała Kołudzka) heated by sous-vide method (temperature 65°C, time - 4 h and 10 h) and in a convection-steam oven (temperature 180°C, final temperature in the geometric center of the sample reached 70°C and 80°C). The control samples were uncooked meat. Anserine contents in meat were determined using HPLC, derivatizing the extracts by OPA working solution. The derivatized samples were analyzed using a Thermo Scientific ACCELA chromatograph with Thermo Scientific ChromQuest 5.0 software. Anserine was extracted using the method as described by Maikhunthod and Intarapichet (2005) and Manhiani et al. (2013) with modifications. The results were analysed using the Statistica program at the significance level of p <0.05. The effect of heat treatment method on the anserine content in the samples was assessed using one-way analysis of variance.

**Results:** The content of anserine in the raw material did not exceed 250 mg/100 g of tissue. As a result of heating the meat in oven, products with a similar anserine content were obtained, regardless of the assumed final heating temperature. The differences in the content of this compound did not exceed 1%. A significant reduction in anserine content was found as a result of heating the meat with the sous-vide method for 10 hours.

**Conclusions:** When using the sous-vide method, the time of heat treatment has a significant impact on the content of anserine in goose breast muscles. The temperature of the roasting in the oven did not affect the anserine content in goose meat.

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