Summary

Evaluation of the effect of storage conditions on the quality and oxidative stability of wild boar and roe deer meat

Meat and meat products are an important part of the diet of people all over the world. With a growing world population, the issue of ensuring healthy and safe food is becoming one of the meat industry's most important challenges. It is therefore important to monitor the quality and safety of products for consumption. Threats include protein oxidation processes, which play a key role in shaping the quality of meat and meat products. Oxidative processes can lead to changes in the taste, odour, texture, colour, water absorption and nutritional value of meat and meat products. Consumption of oxidised proteins can contribute to weakened immune, nervous and cardiovascular systems, and may also be associated with the development of chronic diseases such as cancer. In the context of the search for sustainable food sources, game meat is gaining importance due to its high nutritional value and natural origin.

The aim of this study was to investigate the effects of storage method and time on the physicochemical properties and oxidative stability of European wild boar (*Sus scrofa scrofa*) and European roe deer (*Capreolus capreolus*) meat. The study involved the storage of m. *longissimus thoracis et lumborum* (LTL), m. *biceps femoris* (BF) and m. *vastus lateralis* (VL) muscles under vacuum (VAC), modified atmosphere (MAP), and in a meat seasoning chamber (DRY-AGED) for 21 days.

Meat from wild boar and roe deer was shown to have a high protein and low-fat content and a favourable mineral composition. Oxidative processes and protein aggregation are significantly influenced by storage methods, negatively affecting meat quality. High-oxygen MAP packaging (80% O_2/20% CO_2) promotes intensive oxidation of proteins and lipids, which translates into a deterioration of meat tenderness and colour. The ability of proteins to aggregate and form intramolecular disulphide bonds under high oxygen content was also significantly affected. Titin and myosin were the most susceptible to aggregation, and proteins responding to oxidative stress were also identified.

There is a need for research into the mechanisms of protein oxidation in meat and the impact of these processes on the oxidative stability, functionality and nutritional value of meat products. The dissertation provides important information on the influence of storage methods on the quality of venison, which may contribute to improving the processing and storage strategies of this raw material in the meat industry.

Keywords: game meat, meat storage, protein and lipid oxidation, protein aggregation, proteomics.

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