

CHANGES IN COLOUR AND pH OF PHEASANT (*PHASIANUS COLCHICUS*) PACKAGED IN MODIFIED ATMOSPHERE

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Introduction

Game species have not been studied as thoroughly as poultry. Historically, game represented the major portion of meat consumed by man before the development of agriculture. Recently, there have been some trends to revive and develop intensive pheasant farming (Strakova et al., 2006). The dietetic assessment of pheasant meat was studied by a number of authors who focused particularly on basic analyses such as content of water, protein content, fat and ash and yield of carcass and individual parts (Richter, 1992; Richter et al., 1992; Strakova et al., 2006). Exact data on the detailed colour analysis and packaging are not currently available in the scientific literature. The colour stability of meat is influenced by a large number of factors, some being of a biochemical nature and some due to handling during the slaughter process. Caution in choosing the optimal packaging and storage conditions can largely improve the colour and shelf life of meat. Gases commonly used in modified atmosphere packaging include carbon dioxide (CO₂), oxygen (O₂), and nitrogen (N₂). CO₂ has anti-microbial properties while elevated levels of oxygen improve the red colour stability of fresh meats. Nitrogen functions as filler gas (John et al., 2005). The aim of this study was evaluation of colour and pH changes of pheasant packaged in modified atmosphere during 28 days of storage.

Material and methods

Fresh pheasant (cock pheasant, *Phasianus colchicus*, 8 month of age, n = 100) carcasses cut into halves longitudinally was obtained from farm for rearing of feathered game in Jinacovice – Brno Czech Republic. Samples of pheasant carcasses without skin were individually packaged in AMILEN PA/PE (Verpackungen GmbH, Germany) bags with 60 µm coat of polyamide and 20 µm coat of polyethylene with EVA. The atmosphere in packages was evacuated (99% vacuum) and subsequently flushed once before final treatment with the gas mixture A (25 % CO₂ and 75 % O₂) and B (25 % CO₂ and 75 % N₂) in the screening trial and main trial. All the packages with pheasant samples were stored chilled (3.2 ± 0.7 °C). Sampling was carried out at predetermined time intervals namely: 0 (day of packing), 7, 14, 21 and 28 days after packing.

Instrumental colour analyses (CIELAB colour system) of pheasant breasts and thighs were performed by a KonicaMinolta Colorimeter CM 2600d (Minolta, Osaka, Japan) using light source D65, CIE standard illuminates for daylight. L* describes the lightness of the sample, a* redness and b* yellowness. The pH was measured for pheasant breasts and thighs in duplicate with a pH meter (pH 340i, WTW GmbH, Weilheim, Germany) with a needle tip pH electrode. Mean values were used for statistical analyses of data.

Results and Discussion

The data of colour analysis are shown in figure 1,2, and 3 and pH in figure 4. During storage in modified atmosphere A the colour of meat pheasant became darker and from 21. day were lighten. Pheasant meat packaged in modified atmosphere B became darker during storage. There were not found statistically differences ($P \leq 0.05$) in colour of fresh meat in both packaging. The colour of thigh were shown statistically differences ($P \leq 0.05$) in L*, a* and b* between atmospheres during 28 days of storage. The colour of breast there were showed statistically differences ($P \leq 0.05$) in L* and b* between atmospheres during 28 days of storage. Rotabakk et al. (2006) reported that there were no significant differences in surface colour of chicken fillets packaged in modified atmosphere with nitrogen.

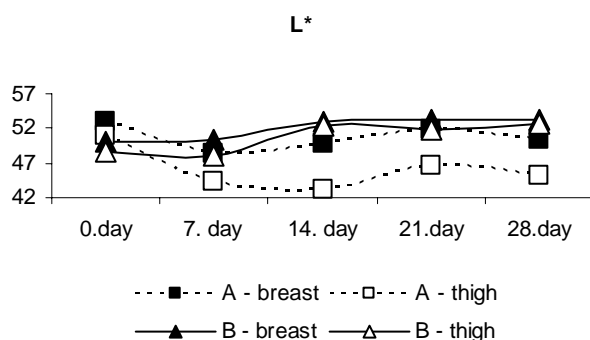


Figure 1. Lightness of pheasant meat

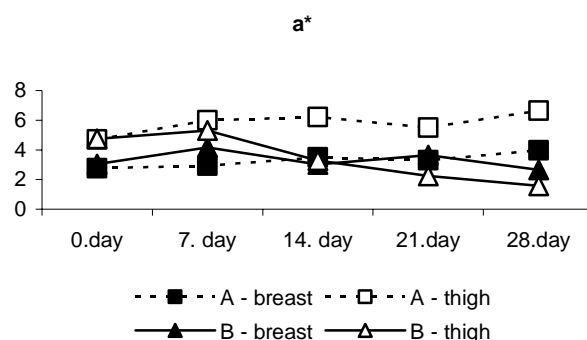


Figure 2. Redness of pheasant meat

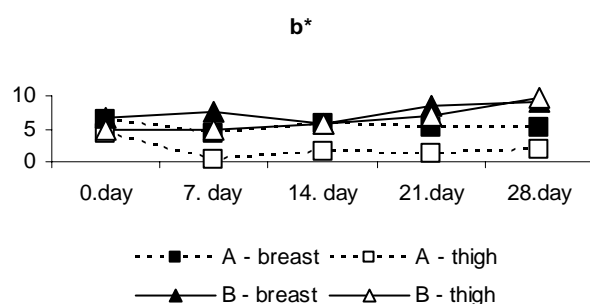


Figure 3. Yellowness of pheasant meat

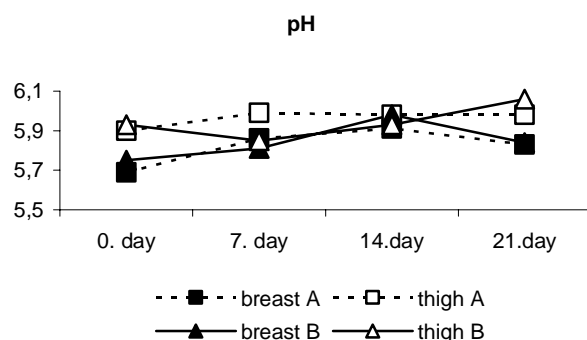


Figure 4. pH value of pheasant meat

Conclusion

The colour of pheasant is actual theme, because its popularity increases. It seems that packaging in modified atmosphere with nitrogen is better, because colour of meat is more stationary.

Acknowledgements

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