

## Oxidative stability and quality parameters of veal during ageing

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**Introduction:** Meat ageing is a common name for many biochemical processes, also known as proteolysis and lipolysis. The basic purpose of ageing is to improve tenderness, smell and aroma of meat. During ageing or storage, meat is subjected to lipid and protein oxidation, which leads to the formation of various oxidative products, including carbonyl groups and lipid oxidation products as thiobarbituric acid reactive substances (TBARs). In view of these changes, it seems reasonable to assume that those changes may affect the quality of the meat.

The aim of present study was to determine the quality parameters and oxidative stability of colour, lipids and proteins of vacuum packed veal loin during 21 days of ageing period.

**Material and methods:** Six loins (*longissimus lumborum*) or three veal carcasses, Slovenian breeding and rearing, less than 8 months old were included in the experiment. Each muscle was cut into four parts, making a total of 24 samples. Samples were vacuum packed and randomly selected for ageing period (1, 7, 14 and 21 days pm) in a cooling chamber at a constant temperature of  $2\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . After each ageing period weight loss, direct measurement of pH value, instrumental colour measurement, descriptive sensory analysis of colour and marbliness, protein oxidation (spectrophotometric protein carbonyl content determination with DNPH) and lipid oxidation (spectrophotometric determination of TBARs) were determined on raw samples. After each ageing period on thermally treated samples (*sous-vide*, 1 h at  $75\text{ }^{\circ}\text{C}$ ) weight loss, descriptive sensory analysis of juiciness, tenderness, smell, aroma and instrumental analysis of texture parameter (shear force) were determined.

**Results:** Obtained results shown that ageing period affected most quality parameters; sensory profile greatly improved. The best tenderness, juiciness, smell and aroma were achieved after 21 days. Colour assessed on fresh cut raw sample became slightly lighter ( $P \leq 0.05$ ), the same was observed in instrumentally measured colour (lower  $b^*$  value). Texture parameter shear force decreased for about 33% after 21 days, which is in agreement with sensory assessed tenderness. Lipid oxidation products as TBARs were not affected ( $P > 0.05$ ). After 14 days of ageing a significant increase (6.22 nmol/mg proteins vs. 3.98 nmol/mg proteins) in protein oxidation products (carbonyls) was observed.

**Conclusions:** In general, 21 days ageing period, under appropriate conditions to retard oxidation process, is enough to obtain optimal quality parameters of veal.

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