# Meat colour and pH value of Simmental steers and heifers slaughtered at different age

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## Introduction

Beef meat production in Croatia is dominantly based on feeding Simmental cattle. Beef meat quality is affected by different factors, as breed, gender, age, feeding and housing. One of the most important quality parameters effecting buyers purchasing decision is beef meat colour. Beef meat colour is highly correlated with meat pH value and tenderness. It was shown that especially gender and age have effect on meat pH value and L*, a*, b* colour readings.

The objective of this research was to determine effect of gender and age on colour and pH value of Simmental beef meat.

## Methods

Data used for this research were obtained from 930 Simmental cattle of diverse origin. Research included 528 Simmental cattle originating from Croatia and 402 imported Simmental cattle. Muscle colour and pH value were measured at approximately 24 h *post mortem* on exposed longissimus at a 6$^{th}$ and 7$^{th}$ rib interface. Colour readings were taken in L*, a*, b* colour space (CIELAB colour space, D65 standard illumination) using colorimeter (Minolta Chroma Meter CR-410) with 50-mm-diameter measurement area. At a same time, muscle pH value was measured using an inject able electrode 56/57-SS of pH meter IQ 150. According to age, beef carcasses were divided into three groups: I. group (10-14 months), II. group (14-18 moths), III. groups (18-24 months). Data were analyzed by the GLM procedure of SAS (1999).

Fig. 1: Colour measuring (Minolta Chroma Meter CR-410)

Fig. 2: Colour and pH value measurement area

Fig. 3: pH value measurement (pH meter IQ 150)

## Results

Table 1: Effect of gender on Simmental beef meat pH and colour

| gender | pH | *L** | *a** | *b** |
|---|---|---|---|---|
| ♂ | 5,64$^{a}$ | 39,34$^{a}$ | 24,18$^{a}$ | 8,73$^{a}$ |
| ♀ | 5,56$^{b}$ | 41,75$^{b}$ | 23,86$^{b}$ | 8,96$^{b}$ |

$^{a,b}$ Different superscript in the same column are significantly different at p<0,05

Table 2: Effect of age on Simmental beef meat pH and colour

| age groups (months) | pH | *L** | *a** | *b** |
|---|---|---|---|---|
| 10-14 | 5,61$^{a}$ | 40,93$^{a}$ | 24,41$^{a}$ | 9,12$^{a}$ |
| 14-18 | 5,61$^{b}$ | 40,37$^{b}$ | 23,70$^{b}$ | 8,57$^{b}$ |
| 18-24 | 5,62$^{b}$ | 40,34$^{b}$ | 23,95 | 8,84 |

$^{a,b}$ Different superscript in the same column are significantly different at p<0,05

## Conclusions

- heifers had significantly (P<0,0001) higher L* and a* values then steers
- pH value of heifers was significantly (P<0,0001) different from steers
- as age increased there was significant (P<0,05) difference in pH and L* values between age groups
- Simmental cattle originating from Croatia had significantly (P<0,0001) higher L* values then imported one