

## Field pea can be included up to 30% in the fattening concentrate of lambs, as it had no effect on meat colour and only minor effects on meat tenderness

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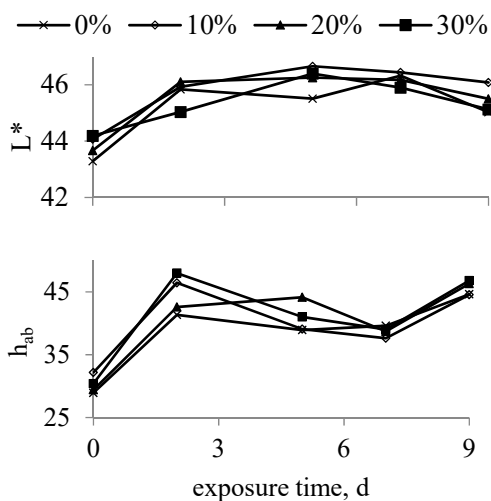
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**Take home message** Field pea can be included in the fattening concentrate of lambs as it only had a minor effect on meat tenderness.

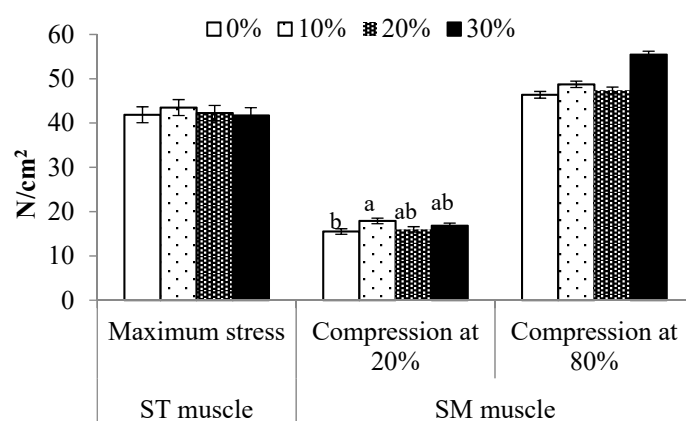
**Introduction** There is interest to include pea in lamb's diets as a source of local protein to increase the self-sufficiency of Europe, which is extremely dependent on soya imports of very volatile prices (Peyraud *et al.*, 2014). But the effect of pea on meat traits as colour and tenderness has not been studied yet. Thus, the aim of the study was to evaluate if different proportions of field pea in the concentrate of fattening lambs affected meat colour, lipid oxidation and tenderness.

**Materials & methods** 54 weaned Rasa Aragonesa lambs (13.4 kg and 31 days of age) were randomly assigned to four treatments that differed in the inclusion of field pea [0% (n=13), 10% (n=13), 20% (n=14) and 30% (n=14)] in the fattening concentrate. The concentrates were formulated to be iso-energetic (1.18 MJ/kg FM) and iso-proteic (175 g CP/kg FM). The concentrates were fed from weaning until the slaughtering (22-24 kg LW). Carcasses were chilled for 24 h and *Longissimus thoracis* (LT) muscle was excised, sliced and stored (4 °C in darkness) in trays for 0, 2, 5, 7 and 9 days to measure the instrumental colour (CIEL\*a\*b\*) (Lobón *et al.*, 2017). For meat tenderness measurements, the *Semitendinosus* muscle was extracted to determine the Warner-Bratzler shear force registering maximum stress (N/cm<sup>2</sup>) in cooked meat and the *Semimembranosus* muscle was extracted to study the force of compression at 20% and 80% (N/cm<sup>2</sup>) in raw meat (Sañudo *et al.*, 2004). The statistical analyses were performed with SAS. Colour parameters were evaluated with a mixed model with the inclusion of pea, the time and its interaction as fixed effect and the animal as random effect. The models for tenderness included the pea as fixed effect. Means were analysed with linear, quadratic and cubic contrasts.

**Results & discussion** Meat colour parameters were not affected by the inclusion of pea in the fattening concentrate of the lambs ( $P>0.05$ ) but they were affected by the exposure time ( $P<0.001$ ) (Figure 1). The inclusion of pea did not affect maximum stress and compression at 80% ( $P<0.05$ ) but affected compression at 20% ( $P<0.05$ ) (Figure 2). The compression at 20% was greater in 10% than 0% pea, whereas 20% and 30% pea presented intermediate values ( $P<0.05$ ).



**Figure 1** Effect of the inclusion of field pea on LT muscle lightness (L\*) and Hue angle (h<sub>ab</sub>)



**Figure 2** Effect of the inclusion of field pea on tenderness measured in *Semitendinosus* (ST) and *Semimembranosus* (SM) muscles. Means with different letters differ at  $P<0.05$

**Conclusion** The inclusion of field pea did not affect meat colour and only affected compression at 20%.

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### References

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