

Book of Abstracts

of the 75th Annual Meeting
of the European Federation of Animal Science



Book of Abstracts No. 34 (2024)
Florence, Italy
1-5 September, 2024

Effects of dietary supplementation of oregano essential oil to feedlot cattle on their meat quality and muscle fiber histomorphometry

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Essential oils are common ingredients of feed supplements in animal nutrition. The notion is that they contribute positively in quality characteristics of meat and enhance its shelf life. The objective here was to assess the role of Oregano Essential Oil (OEO) as a feed additive on quality characteristics of meat produced by feedlot calves. Sixty-eight Limousine bulls were allocated into two groups (n= 34), designated as control (C) and test (T). Group C was fed a typical commercial diet whereas T was fed the same diet supplemented with OEO at 50mg/kg DM, for 90 days. After this period, all bulls were slaughtered and their carcasses were assessed for microbial contamination. Steaks (13th rib), from all carcasses were obtained to assess meat color, texture, pH, chemical composition and oxidation stability as well as fatty acids and amino acids profile. Fiber histomorphometry (Minimum Feret Diameter) was assessed in formalin-fixed muscle samples. Moreover, sensory evaluation of meat samples was done by a panel of trained consumers. Data were analyzed using SPSS software; significance level was set at P<0.05. Microbial counts of examined carcasses were generally below the limits set by EU Commission Regulation No. 2073/2005. Meat physicochemical properties, organoleptic characteristics, texture and color did not differ between the groups (P>0.05). However, meat oxidation stability was higher in carcasses of T group (P<0.05). The Minimum Feret Diameter was similar between the two groups (P>0.05). The results suggest that dietary supplementation of OEO to feedlot cattle has positively impact the quality of produced meat. This research has been co-financed by the European Regional Development Fund of the European Union and Greek National Funds through the Operational Program Central Macedonia 2014-2020 (KMP6-0280294; BellasQualityMeat).

Effects of the incorporation of sainfoin as hay or included in the concentrate on carcass and meat quality of young bulls

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The inclusion of sainfoin (*Onobrychis viciifolia*) in ruminant diets has been promoted because of its high quality and its agronomic and environmental benefits. To optimise its use, it must be preserved as hay or pellets, but its inclusion in the diet of intensively fed fattening cattle could affect carcass parameters and meat quality. Forty Montbeliard young bulls (age: 117 d, body weight (BW): 188 kg) were ad libitum fed four diets for 28 weeks: concentrate + straw (C+straw), concentrate + sainfoin hay (C+SFhay), concentrate including 15% sainfoin + straw (CSF+straw) and concentrate with 15% sainfoin + sainfoin hay (CSF+sfhay). The effect of the diet on slaughter BW, hot carcass weight (HCC), dressing percentage (DP), conformation (1-18), fatness score (1-5), subcutaneous fat colour, and meat pH, chemical composition and colour was studied. The diet affected slaughter BW (498, 490, 466, 461 kg, for C+straw, CSF+SFhay, C+SFhay and CSF+straw respectively, P<0.01), but had no effect on HCC (274 kg), fatness score (2) and fat colour (lightness (L*): 73.3; redness (a*): 4.0, yellowness (b*): 11) (P>0.05). The diet affected DP (56%, 57%, 59% and 59%, respectively; P<0.001); and conformation (6.0, 6.0, 5.8, 6.5, respectively; P<0.05). The diet did not affect meat pH (5.6) and protein content (22.6% fresh matter (FM), P>0.05), but tended to affect fat (3.4, 3.3, 2.7 and 3.0% FM, respectively; P<0.10). Meat L* was affected by the diet (39.3, 41.0, 39.5, 39.3, respectively; P<0.05) but a* (13.1) and b* (8.1) were similar (P>0.05). Thus, despite the differences in slaughter BW, sainfoin inclusion mildly affected most carcass and meat quality parameters