

Physicochemical characteristics and fatty acid composition of meat from foals reared in a rotational grazing system

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Introduction: The traditional grazing systems in Northern Spain are based on extensive livestock farming of local breeds and the use of mountain areas (Lorenzo et al., 2010). However, these systems have been replaced by other less complex and laborious. Inefficient use of pastures has caused an increase in weeds and, consequently, in the number of forest fires. In addition, it has been demonstrated that grazing has positive effects on meat nutritional quality. Therefore, in recent years an effort has been made to return to the forestry-pastoral management of these areas, using more sustainable production systems, introducing improvements in the pasture and using autochthonous species. The objective of this study was to assess physicochemical properties and fatty acids composition of meat of foals reared under an extensive system production.

Materials and methods: The physicochemical properties and fatty acids composition of meat of 14 foals from Asturias (north of Spain) slaughtered approximately at 10 months of age were studied. Foals were reared in a rotational grazing system for six months with improved pastures (grasses and legumes) and not improved (gorse and heather) from march to August. At 48 h postmortem, the chemical composition, pH, color, cooking loss and texture analysis were determined on longissimus dorsi muscle according to Pateiro et al, (2013). The fatty acid profile was assessed according to Barros et al. (2020).

Results: The pH values were similar in meat of all foals studied with values varied between 5.48 and 5.60. The color parameters (L^* , a^* and b^*) showed mean values of 38.9, 13.5 and 12.3, respectively. Regarding the composition, the mean values were: moisture 75.1%, intramuscular fat: 1.0%, protein: 21.6% and ashes: 1.3%. The mean percentage of cooking loss and shear force were 24.5% and 52.1 N/cm², respectively. The mean values obtained in our experiment are in agreement with data previously reported by other authors (Domínguez et al., 2015, 2017; Franco et al., 2013; Franco & Lorenzo, 2014; Lorenzo et al., 2013a; Lorenzo et al., 2013b) for foal meat. On the other hand, the main components of fats were PUFA with the average value of 39.9%, followed by SFA with 34.9% and MUFA with 25.2%. These results also agree with those obtained by other authors (Domínguez et al., 2018; Lorenzo et al., 2013b; Lorenzo et al., 2010; Lorenzo & Pateiro 2013). Considering the individual fatty acids, the main fatty acid was palmitic acid with an average value of 23.0%, followed by linoleic acid, linolenic acid and oleic acid with mean values of 17.2, 16.3 and 16.2%, respectively). The sum of these major fatty acids represented 73% of the total fatty acids.

Conclusions: The results obtained in this study showed that foal meat had a low intramuscular fat percentage, high content of protein and a healthy lipid profile. Therefore, our data confirmed that extensive livestock systems could be an adequate and sustainable alternative to improve foal meat quality.

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