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Tissue composition of carcass and fatty acids profile of lambs meat finished in pasture and feedlot of the Southern region of Brazil

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Key words: fat, meat quality, muscle, supplementation, concentrate, wean

Introduction Farmers due to the economic value of their products and consumers due to sensory quality and health values are increasingly interested in every aspect related to meat quality (Martínez 2007). The researchers have shown that the nature of ruminants' diets and the amount and source of supplementary fats added to diets make it possible to manipulate the content of fatty acids in ruminants' meat, and thus improve its health value. The objective of this study was to evaluate the effect of finishing systems on tissue composition of carcass and fatty acid profiles of meat in Suffolk lambs.

Materials and methods This work was conducted in the Sheep and Goat Production Laboratory in the Experimental Farm of Parana Federal University in Curitiba-PR-Brazil from August of 2004 to January of 2006. During the first year the following finishing systems were compared: lambs were (1) weaned at 40 days of age and finished in ryegrass pasture; (2) kept with their dams in the same pasture until slaughter; (3) same treatment of (2) but supplemented with concentrate 1% BW in creep feeding daily; and (4) weaned at 40 days of age and finished on feedlot, fed with corn silage and concentrate *ad libitum*. The experiment was allocated in a completely randomized design. In the second year, lambs were weaned at 42 days and finished in ryegrass pasture with different levels of daily supplementation (0; 1; 2% of BW and *ad libitum*) in a randomized block design with three replications. Grazing method was continuous variable stocking to keep a minimum of 1000 kg of leaf dry matter per hectare. Lambs were slaughtered when individual live weight reached 32 kg of BW. Tissue composition was determined in right loin and leg and left loin was used for fatty acids profile analyses. The data obtained in first year have been analyzed by PROC GLM and the means were tested by Tukey ($P=0.05$), and in second year we used PROC GLM, PROC REG and PROC CORR by SAS (2001).

Results and discussion Weaned lambs finished on pasture produced less ($P<0.05$) leg (2185 g); loin (607 g); loin muscle (378 g); leg (55 g) and loin (28 g) subcutaneous fat; leg (147 g) and loin (51.2 g) total fat weights; lower muscularity index (0.39) and a higher leg muscle:fat ratio (8.73) compared to what. Lambs kept with their dams and supplemented in creep feeding produced similar leg (2357 g); loin (893 g); loin (85 g) and leg (160 g) subcutaneous fat; loin (200 g) and leg (296 g) total fat; loin muscles (452 g) weights; leg muscularity index (4.53) as lambs weaned and kept in a feedlot (2381 g; 809 g; 96 g; 152 g; 170 g; 242 g; 451 g e 5.71, respectively). Therefore, milk intake plus supplementation in creep feeding increased the subcutaneous and total fat of legs of lambs finished on pasture. For each addition of one percentile unit of concentrate supplementation increased intermuscular fat weight 14.76 g, total fat weight 34.61 g, and muscularity index 0.03. Total fat of leg and loin were highly correlated with fattening state ($P=0.0001$ and $r=0.90$; $P<0.0001$ and $r=0.96$) and conformation ($P=0.0001$ and $r=0.85$; $P=0.147$ and $r=0.71$) of carcass. Lambs kept with their dams and supplemented in creep feeding produced more fatty acids in meat (16.44 mg/100g) than lambs weaned in ryegrass pasture (5.93 mg/100g). Levels of supplementation did not affect ($P>0.05$) the amount and percent of each fatty acid in lamb meat. Probably, length of time of lambs were on treatments plus low intake of concentrate in diets with 1% e 2% of BW/day were not enough to make significant changes on fatty acids profile of lamb meat.

Conclusions The supplementation of weaned lambs finished on pasture and/or in the presence of dams produced legs cuts with higher intermuscular and total fat, and the highest muscularity index. The finishing systems on pasture without weaning, on feedlot after weaning, or on pasture with supplementation after weaning produced carcasses with better muscle development and fat covering and adequate conformation, without making significant changes in the fatty acid profile of lamb meat.

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