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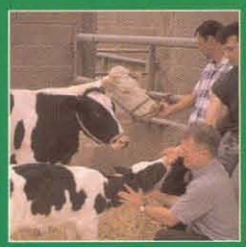

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Effect of sex, degree of maturity and diet of kids from Serrana breed on carcass composition and muscle chemical composition

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Introduction In Portugal consumers prefer low weight carcasses from kids. Some studies on carcass and meat characteristics were conducted with this type of carcasses (Santos *et al.*, 2007). However, there is little information on the effect of increasing the live weight at slaughter by supplementing the diets fed to kids with concentrate in order to maximize meat production. The objective of this study was to evaluate the effect of diet, sex and degree of maturity of kids from Serrana breed on carcass composition and in muscle chemical composition.

Materials and methods Thirty six kids of Serrana breed (18 males and 18 females) were divided in 3 groups according the degree of maturity at slaughter of 20 (M20), 30 (M30) and 40% (M40) of mature body weight. The maturity weight for this breed is 56 kg and 40 kg, for males and females respectively. All animals were fed *ad libitum* on a natural pasture and with hay. Each group was submitted to different nutritional regimes. One with concentrate- 23g/kg live weight (C) and the other without concentrate (W). Animals were slaughtered as they reached the degree of maturity previously established. After slaughter the carcasses were completed dissected in muscle, subcutaneous fat, intermuscular fat and bone according the methodology propose by Fisher and DeBoer (1994). The muscle was analysed and the protein, fat, moisture and ash contents were determined according to the procedures of the AOAC (1990). The statistical analysis was performed by ANOVA module (Statistica V5 program). A fixed model of diet group, sex and maturity degree and appropriate interactions was utilized. No significant diet x sex x degree of maturity interactions were observed for carcass and muscle composition evaluated in this study, therefore only main effects will be presented.

Results In Table 1 shows the mean values for carcass composition and for muscle chemical composition. Diet has no effect on both carcass and muscle composition. Sex and degree of maturity significantly affected the carcass and the muscle composition; males presented higher ($P < 0.05$) muscle content and lower ($P < 0.05$) subcutaneous fat and total fat than females, and animals from group M20 presented more ($P < 0.05$) bone content than animals from group M40. The sex also affected the muscle chemical composition. Males presented higher ($P < 0.05$) moisture and lower ($P < 0.05$) fat and ash contents than females. No significant ($P > 0.05$) differences on protein content were observed between males and females.

Table 1 Mean±standard deviation for proportion of muscle (M), subcutaneous fat (SF), intermuscular fat (IF), total fat (TF), bone (B) in the carcass (g/kg carcass) and moisture, protein, fat and ash of muscle (g/kg muscle).

	Sex		Degree of maturity			Diet	
	Male	Female	M20	M30	M40	C	W
Carcass composition							
M	640.6±28.2^{a}	613.6±28.7^{b}	613.4±30.5	629.7±29.2	638.2±31.0	623.2±24.2	631.0±37.2
SF	39.4±17.2^{a}	65.4±19.9^{b}	59.4±22.1	49.0±24.6	48.9±21.3	55.4±21.4	49.5±24.0
IF	73.8±9.0	80.8±13.1	76.7±14.5	74.1±11.1	81.1±8.2	76.8±9.0	77.8±14.0
TF	113.2±22.9^{a}	146.2±29.2^{b}	136.1±34.4	123.1±33.3	130.0±25.3	132.2±27.1	127.3±34.8
B	220.0±13.2	212.8±13.7	221.3±11.0^{a}	220.2±14.1^{a}	207.7±12.6^{b}	217.5±13.7	215.3±14.1
Muscle chemical composition							
Moisture	728.1±16.8^{a}	711.3±22.8^{b}	721.6±20.3	718.1±22.6	719.5±23.3	722.8±18.3	716.7±24.4
Protein	207.5±10.5	215.5±21.0	209.6±19.6	208.4±17.8	216.5±12.7	210.2±17.9	212.9±16.2
Fat	21.7±6.5^{a}	28.1±8.8^{b}	22.2±9.7	23.6±7.9	28.9±6.0	25.4±7.6	24.4±9.1
Ash	16.2±3.0^{a}	17.9±1.6^{b}	18.6±0.8^{a}	16.7±2.5^{ab}	15.9±3.0^{b}	17.3±2.4	16.9±2.6

Means in the same row with different letter are significant difference ($P < 0.05$).

Conclusions The degree of maturity and sex significantly affected carcass composition of kids from Serrana breed. However, sex was the only factor that affected the muscle chemical composition. It was also concluded that, when the degree of maturity varied from 20 to 40%, the supplementation of diets fed to kids from Serrana breed with concentrate has no effect on both carcass and muscle composition.

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References

AOAC. 1990. Official Methods of Analysis. 14th ed., Association of Official Analytical Chemists, Washington, DC, USA.
Fisher, A. V. and De Boer, H. 1994. Livestock Production Science. 38, 149-159.
Santos, V.A.C., Silva, A.O., Cardoso, J.V.F., Silvestre, A.J.D., Silva, S.R., Martins, C., and Azevedo, J.M.T. 2007. Meat Science. 75, 725–736.