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Evaluation of Florina (Pelagonia) sheep breed for meat quality

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INTRODUCTION

The Florina (Pelagonia) breed, which used to be farmed in the mountainous less favoured areas of West Macedonia (Greece), is now legally listed as endangered (1). Our objective was to determine effects of slaughter weight on meat quality of weaned Florina lambs fed a high concentrate diet.

MATERIALS & METHODS

To evaluate the effect of slaughter weight on meat quality 40 male and 40 female Florina lambs weaned at 42 days of age were used in an experiment (see 1). All lambs used in the experiment were cared for according to applicable recommendations of the U.S. National Research Council (2). The lambs were allocated at random to four equal treatment groups (42d, 30BW, 45BW and 60BW) of 10 males and 10 females each, and assigned for slaughter at 42 day (weaning), 30, 45 and 60% of the mature body weight (BW), respectively. The 60 lambs in treatments 30BW, 45BW and 60BW were grouped in 6 pens, 10 each, separating males from females, and fed a high concentrate diet. After slaughter, samples of the *longissimus lumborum et thoracis* muscle from the right half of the carcass of all lambs were removed for chemical composition analysis (3), color evaluation (HunterLab Chroma Meter DP-9000, Reston, VA, USA), sensory evaluation (sensory panel), and fatty acid (FA; Varian CP – 3800, Varian Analytical Instruments, Walnut Creek, CA, USA) and cholesterol analysis (4). Data were analyzed as a factorial experiment with degree of maturity, sex, and the degree of maturity by sex interaction as factors in the model. Differences among treatment means were tested at the 5% probability level (5).

RESULTS

Degree of maturity affected (P<0.05) slaughter weight, as well as all meat quality characteristics, except protein and ash percentage, yellowness and hue values, and C15:0, n3 fatty acids and the ratio n6/n3 which did not differ. (Table).

Table. Chemical composition of Florina lamb meat.

	42 d of age[a]		30% of BW		45% of BW		60% of BW		Significance level[b]		
	M	F	M	F	M	F	M	F	Degree of Maturity (DM)	Sex	DM × S
Moisture (%)	76.3	76.4	76.1	76.8	76.3	75.4	75.0	73.9	<0.001	0.225	<0.001
Protein (%)	19.6	19.4	19.2	19.3	19.2	19.7	19.6	20.0	0.197	0.243	<0.001
Fat (%)	2.5	2.6	2.9	2.2	2.9	3.9	4.0	4.9	<0.001	0.346	<0.001
Ash (%)	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.331	0.991	<0.001
SFA[c] (g/100 g FA)	48.8	48.7	44.9	46.4	41.3	44.0	42.9	43.9	<0.001	0.082	<0.001
MUFA (g/100 g FA)	40.9	41.1	44.1	44.1	45.2	45.2	44.4	45.9	<0.001	0.534	<0.001
PUFA (g/100 g FA)	3.7	3.3	5.0	4.1	6.0	4.1	5.4	4.7	0.001	0.001	<0.001
Cholesterol (mg/100 g)	51.6	51.5	37.2	37.1	31.2	31.2	23.0	23.0	<0.001	0.979	<0.001

[a] Number of lambs/degree of maturity = 10 male (M) and 10 female (F). BW: body weight. [b] Numbers are probability values. [c] FA: fatty acids, SFA: saturated FA, MUFA: monounsaturated FA, PUFA: polyunsaturated FA.

Florina lambs can be slaughtered in heavier carcass weights, heavier than the 15 kg as the present practice. The heavier carcasses can appeal to wider range of consumers due to the excellent muscle development and the reduced visible fat cover. Florina sheep raised for heavy carcass meat production may be more economically beneficial for the breeders and the increased meat produced locally can help reduce need for importing meat from abroad.

CONCLUSION: Florina lambs exhibit excellent meat quality in all four degrees of maturity examined (42 d of age, 30% of BW, 45% of BW, and 60% of BW).

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