RELATIONSHIPS BETWEEN LAMB MUSCLE CHOLESTEROL AND INTRAMUSCULAR FAT CONTENT **.

Garcia, P. T.*, Pensel, N. A. and Morales, D. A.*
Instituto Tecnología de Alimentos. CICV, INTA.
CC 77 (1708) Moron, Buenos Aires, Argentina

* FICA, UNLZ, Bs As, Argentina
** Group PECOP: INTA: EEA Trelew: Battro, P; EAA Alto Valle: Domingo, E.; EEA Rio Gallegos: Quargnolo, E. ITA, CICV, Castelar: Garcia, P.T.; Gallinger, M. M. and Garriz, C. A.
S.A.G.P y A. Dirección de Produccion Ganadera.
Comisiones Provinciales de Carne Ovina Patagonica

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INTRODUCTION

According to the literature the cholesterol content of meats presents a wide variation, and quite often people related its amount to the intramuscular fat content. Cholesterol is a membrane lipid in meat and adipose tissues and the relation with meat fat content needs to be investigated. Breidenstein and Carpenter (1983) stated that consumer prefer red meat products with less fat and then if cholesterol is not related to intramuscular fat content the important point for producers is to reduce the amount of the intramuscular fat.

The aim of the present paper is to study in a large number of lamb muscles the relation between total muscle cholesterol and intramuscular fat.

MATERIALS AND METHODS

The experimental animal were 180 Corriedale lambs with an average half carcass weight of 5.1±1.1 kg. They were grassing animals and no variations for diet or sex were expected. Semimembranosus (SM) and Biceps femoris (BF) muscles were carefully dissected after slaughter. Aliquot samples from the minced muscles were used for quantification of intramuscular fat and cholesterol content. The samples were extracted according to Folch et al.(1957) and one aliquot sample from the chloroform extract was used for total intramuscular fat determination (IMF) and another for cholesterol determination with a colorimetric-enzymatic method after saponification (Garcia et al. 1995a,b). The data were analyzed using a General Lineal Model Procedure (SAS Institute, 1987).

RESULTS AND DISCUSSION

The average values for the two muscles analyzed are shown in Table 1. Cholesterol content (mg/100 g) and IMF% were higher in BF than in SM muscles. The muscle weight was lower in BF than in SM but the total IMF expressed in g in the whole muscle was similar in both muscles.

The CV% for the studied variables in the two muscles are presented in Table 2. The founded values were low for the muscle weight and high for IMF g.

The correlation coefficients between the studied variables in the two muscles are given in Table 3. The highest correlations were for the muscle weight (0.80 $p<0.01$)). Within each muscle no significant correlations were detected, but between muscles the cholesterol content was related ($r=0.37$ $p<0.05$).

CONCLUSIONS

Muscle cholesterol in lamb *Semitendinosus* and *Bicep femoris* muscles were no significantly related to intramuscular fat percentages, but cholesterol content was related between the two muscles (0.37 $p<0.01$). Total intramuscular fat was more related (0.53 $p<0.01$) than intramuscular fat percentages (0.28 $p<0.01$) between the two muscles.

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Table 1. Weight, intramuscular fat (% and g) and cholesterol content in *Semimembranosus* and *Biceps femoris* muscles. Mean±SD

	Semimembranosus	*Biceps femoris*
Weight g	211±42 a	180±32 b
IMF %	2.2±0.58 a	2.6±0.78 b
IMF g	4.6±1.77 a	4.8±1.88 a
Col mg/100g	54.1±14.9 a	57.1±11.9 b

a,b. Means with different letters are significantly different ($p<0.05$)

Table 2.Coefficient of variation (CV%) in the studied muscles.

	Semimembranosus	*Biceps femoris*
Weight g	20	18
IMF %	27	30
IMF g	38	39
Col mg/100g	28	21

Table 3. Coefficient of correlation among the different variables in the studied muscles.

	SM g	BF g	SM GI%	BF GI%	SM GI g	BF GI g	Chol SM	Chol BF
SM g	-							
BF g	0.80**	-						
SM GI%	0.10	0.13	-					
BF GI%	0.03	0.10	0.30 **	-				
SM GI g	0.62 **	0.53 **	0.82 **	0.27**	-			
BF GI g	0.42 **	0.55 **	0.34 **	0.87**	0.53**	-		
Chol SM	0.05	0.15	0.20	0.14	0.14		-	
Chol BF	0.10	0.07	0.18	0.02	0.16	0.02	0.37**	-

* $p<0.05$ ** $p<0.01$