

LIPIDS FROM LAMB MEAT

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Introduction

Meats have been an important part of the diet, contributing significantly to the total nutrients in the food supply. They are sources of many essential nutrients including iron, zinc and B vitamins, but are also among the major contributors of fat, saturated fat and cholesterol.

Nutritional concern about fat and cholesterol has encouraged the production of leaner animals and the closer trimming of fat before retail sales. Nutritional concern is likely to be one of several factors influencing meat consumption patterns.

Ruminants growth extensively on natural pastures will be leaner than similar ones on intensive production system (Murphy et al., 1994) and could be one major alternative to produce lean meat.

The objective of the present study was to determine the amount of intramuscular fat, its fatty acid composition and the total cholesterol content of five muscles from 75 lambs from the area of Patagonia, Argentine. Fatty acid from perinephric fat depot also was analyzed.

Materials and Methods

Seventy-five Corriedale and Merino lambs from 5 Patagonian geographic areas, 15 for each area, and with an average live weight of 10.4 ± 2.97 kg were used as experimental animals. All of them were raised on natural grass. They were slaughtered according to commercial practices and after 24 hrs Mm. Semimembranosus (SM), Semitendinosus (ST), Biceps femoris (BF), Rectus femoris (RF) and Gluteous (G) were dissected carefully, weighted, minced and aliquot samples taken for intramuscular fat (IMF), fatty acid (FA) and cholesterol (CHOL) determinations according to García et al., (1992, 1993). Samples of perinephric fat were similarly analyzed.

Results and conclusions

The mean, STD and CV% for the weights of the 5 muscles studied are shown in Table 1. The average percentage of each muscle respect to the total muscles weights were quite constant SM(34.5 ± 1.65), ST(6.7 ± 1.21), RF(28.4 ± 1.7), BF(17.1 ± 1.0) and G(13.2 ± 1.0).

The IMF % for the different muscles are given in Table 1. The IMF % were low and quite similar in the different muscles but the CV% were higher compared with the ones obtained for the muscle weights. No differences between cholesterol content in the different muscles were detected (Table 1).

The fatty acid composition from the five muscles (Table 2) was quite similar considering the similarity in management, live-weight and IMF%. The FA composition from this type of lambs shows higher levels of 14:0 compared with the results obtained with heavier lambs (Salomon et al., 1989) but a very high quantity of 18:2 compared with other ruminants intramuscular lipids (García et al., 1992). The fatty acid composition from the perinephric fat shown in the same table presents a remarkable amount of 14:0. This results were observed by the authors in previous studies (Casal et al. 1985)

Conclusions

The intramuscular fat content of five muscles from Argentine patagonian area was quite low. The fatty acid composition of intramuscular fat present higher levels of myristic and linolenic acid than the references in the literature for heavier lambs or beef intramuscular lipids.

References

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Table 1

Muscle Weights, Percentages of Intramuscular Fat and Cholesterol Content in the Muscle Studied

	SM	ST	RF	BF	G
Weight					
Mean	228	44	187	113	88
ST	54	12	44	27	23
CV%	23	28	23	23	26
IMF					
Mean	2.0a	2.2a	2.6b	2.1a	2.2a
ST	0,8	0,9	1	1,1	0,8
CV%	37	39	40	54	36
Chol mg/100g					
Mean	49.5a	48.8a	49.8a	49.6a	50.4a
ST	10,79	10,98	9,12	14,65	13,73
CV%	22	23	18	29	28

a, b Same letters in the row NS differences (P>0.05)

Table 3

Information of Nutritional Interest . Average of All Muscles Studied

Fatty Acid	Mean	STD	CV%
Saturated (SFA)	48,5	3,35	7
Monounsaturated (MUFA)	38,5	2,88	8
Polyunsaturated (PUFA)	8,1	2,11	26
Ratio PUFA/SFA	0,16	0,05	29

Table 2

Fatty Acid Composition from Intramuscular and Perinephric Fat (Mean±STD). Principal Fatty Acids

Fatty Acid	SM	ST	RF	BF	G	KF
14:0	6.2±1.7	7.8±1.1	6.4±1.4	6.0±2.0	6.4±1.4	9.9±1.9
16:0	25.7±2.3	27.4±1.3	25.9±0.7	25.5±1.7	27.7±2.6	29.0±1.2
16:1	2.3±0.7	2.1±0.3	2.1±0.7	2.2±0.8	2.2±0.5	1.6±0.4
18:0	15.0±1.1	14.7±0.9	15.2±2.3	16.0±1.7	15.8±1.8	24.6±1.9
18:1	36.6±2.6	36.0±3.0	36.4±3.2	35.2±1.2	36.8±1.9	29.4±2.3
18:2	5.5±0.6	5.3±0.6	5.2±1.0	5.9±1.0	4.8±0.6	1.3±0.3
18:3	1.9±0.4	1.4±0.4	1.8±0.4	1.9±0.2	1.7±0.4	
20:3	0.4±0.5	0.5±0.4	0.3±0.4	0.4±0.5	0.3±0.6	
20:4	2.2±0.4	1.2±0.8	1.6±0.8	2.1±0.8	1.9±0.4	

Fatty Acid Composition of Intramuscular and Perinephric Fat

%

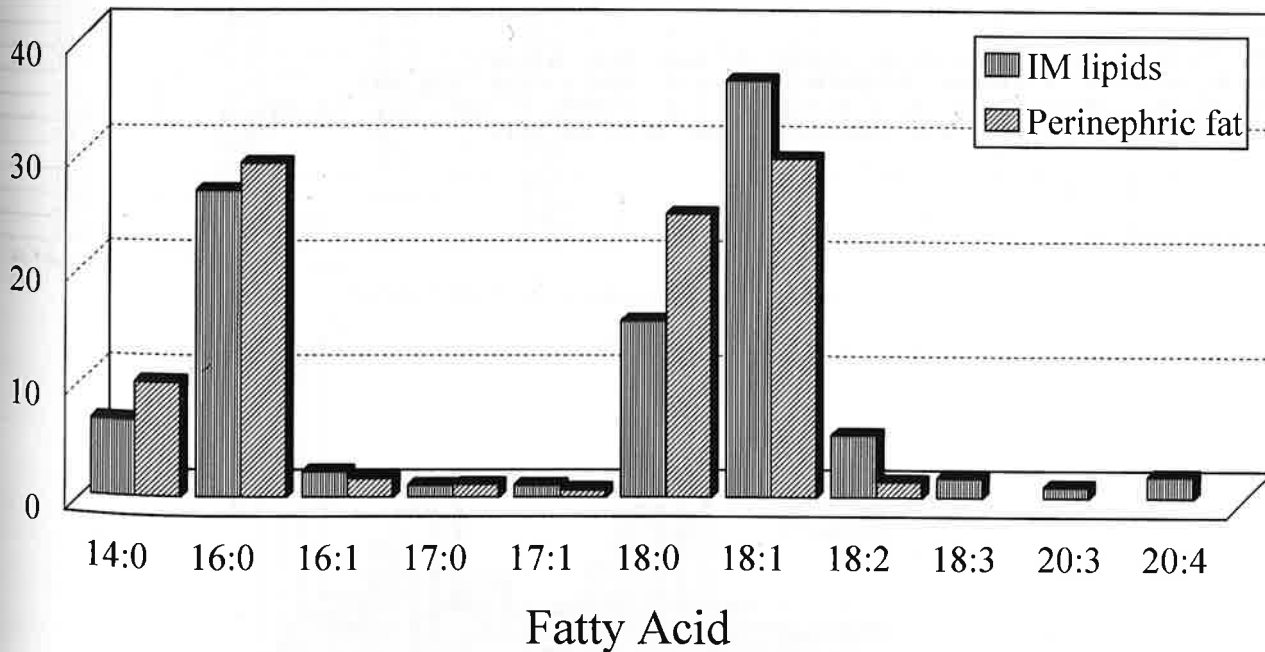


Figure 1