

LIPIDS IN VEAL MUSCLES García, Pilar Teresa and Pensel, Norma, A. Instituto Tecnología de Alimentos, CICV, INTA CC 77 (1708) Morón, Buenos Aires, Argentina Keywords: Veal Lipids Intramuscular fat Cholesterol

Introduction

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The light color, bland flavor and fine texture of meat are desirable qualities of veal. They are several types of veal currently been sold in different countries (Bowers et al. 1989). The production parameters for veal have changed within the past few years. Slaughter weights of calves increasing from less than 70 kg to more than 200 kg live weight, and diets including concentrates and roughage, besides pure milk of milk replacers. Veal meat generally is perceived as lower fat and according to the recommendations for dietary fat reduction, veal meat could be important (Nasvadi et al., 1993).

Objective

The aim of this study was to determine the lipids, cholesterol and fatty acid composition of grass fed veal muscles and to make a comparison with existing values for beef and veal.

Materials and Methods

British crossbred veals were produced in standard conditions on natural pastures and supplemented during winter months with no more than 2 kg of sorghum grain/day. At 215 kg of live weight the animals were selected and slaughtered in a commercial abater. Sixteen carcasses were selected randomly and Mm Psoas major (PM), Semitendinosus (ST), Semimembranosus (SM) and Longissimus dorsi (LD) were obtained after 24 hs chill. The muscles were dissected, weighted and representative samples (±200 g), taken from the middle of each muscle were analyzed. Hexane extraction analysis of dry aliquot samples were carried out to determine intramuscular fat percentages (IMF %) Chloroform extracts, prepared according to Folch et al. technique, were used for cholesterol and fatty acids analysis (García et al. 1995) Samples of subcutaneous fat were analyzed similarly. The statistical analysis was undertaken by using a General Linear Model Procedure (SAS Institute, 1987).

Results and Discussion

Moisture and intramuscular fat in the studied muscles are shown in Table 1. Total intramuscular lipids ranged from 0.4% in ST to 3.5% in PM. PM was fatter compared with the other muscles. The IMF% were low and comparable to the results of Nasvadi et al. (1993)

Muscle	IMF % Mean±SD	IMF % Min-max	Moisture Mean±DS	Muscle g Mean±SD	IMF g Mean±SD	Distribution (%) of IMF
PM	2.8±0.96	1.9-3.5	74.9±1.57	644±247	18.5±9.6	24
ST	0.9±0.31	0.4-1.8	75.0±1.38	1000±182	9.2±3.5	12
SM	1.1±0.61	0.7-2.6	75.9±0.77	2259±858	23.3±10.8	30
LD	1.3±0.63	0.3-2.5	75.2±1.47	2000±481	26.1±14.9	34

The simple correlation coefficients among IMF % are shown in Table 2. IMF% was highly correlated among Mm. ST, PM and LD

Table 2. Simple correlation coefficients among IMF% in the four muscles

	PM	ST	SM	LD
PM	1			
ST	0.81	1	105	
SM	0.30	0.31	1	
LD	0 71	0.72	0.30	1

The cholesterol and total saturated, mono and polyunsaturated fatty acids are presented in Table 3. Fatty acid composition of total triglycerides and polar lipids of ST muscles are presented in Fig. 1 Subcutaneous fat fatty acid composition is shown in Table 4 The veal meat is high in PUFA and the ratio PUFA/SFA is higher than in beef. The cholesterol content is quite similar to grass-fed steer beef (Garcia et al. 1992) On et al (1986) and Bowers (1989) reported very high cholesterol content in veal meat but they studied animals with carcasses between 22 3 and 100.6 kg. The CV% in cholesterol content were 6.2%, 7.7%, 2.1% and 8.6% for PM, SM, ST and LD muscles respectively)

Table 3 Cholesterol and percentages of saturated (SFA), monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acid

and fight to me	PM	ST	SM	LD
SFA %	45.3±0.88	46.3±0.98	45.5±0.54	53.4±1.54
MUFA %	41.2±0.18	40.6±1.97	39.82±1.86	35.7±0.56
PUFA %	10.4±1.1	11.1±1.25	11.3±1.13	8.8±1.9
PUFA/SEA	0.23	0.24	0.25	0.16
Chol mg/100g	40±2.45	44±0.92	45±3.41	39±3.34

Table 4 Fatty acid composition	(%) of subcutaneous fa	t. (Mean±SD).
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Table 4 Tatty acid composition (76) of subcutaneous rate (Freene 12)										
14:0	15:0	16:0	16:1	17:0	17:1	18:0	18:1	18:2	18:3	Fat mm
5.2±0.6	2.3±0.5	29.8±2.5	6.1±0.5	0.9±0.4	0.6±0.5	14.0±1.6	39.1±2.9	1.2±0.5	1.1±0.3	1.0±0.2

Conclusions

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Grass fed veal meat is very low in intramuscular lipids and its lipids have higher levels of PUFA and ratio PUFA/SEA than beef.

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