

CONTRIBUTION OF POULTRY LIPIDS TO CURRENT RECOMMENDATIONS FOR AN OPTIMUM LIPID DIETARY INTAKE.

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BACKGROUND

Meats are an important part of our diet but some consumers consider its lipids the main contributor to excess saturated fat in the diet. General current recommendations about the optimum lipid diet are that total fat must be less than 30% of total cal from fat, monounsaturated fatty acids 15%, and the rest saturated and polyunsaturated fatty acids. The ratio of the PUFA to saturated fatty acids should be around 0.45 and intakes of n-3 PUFA should be increased relative to n-6 to bring the ratio below 4.0. Cholesterol must be less than 300mg/ day. Animal body lipids vary according to the anatomical location and could be important to study the differences in order to improve the knowledge of dietary lipids and to contribute to an optimal intake of lipids.

The purpose of this paper is to present the total fat, the fatty acids composition and cholesterol content from breast, leg, skin and abdominal fats from commercial chicken produced in Mercosur and to compare these values with the current nutritional recommendations for optimal dietary lipid intake.

MATERIALS AND METHODS

Aliquot samples from breast without skin (BWS), leg without skin (LWS), skin and abdominal fat from 50 commercial chickens with an average carcass weight of 2.2 kg were used for total fat, fatty acid composition and cholesterol content. The variables considered were intramuscular fat % (IMF), cholesterol content (mg/100 g), saturated fatty acids % (SFA), monounsaturated fatty acids % (MUFA) and polyunsaturated fatty acids % (PUFA) and the ratios 18:2 n-6/18:3 n-3 fatty acids and PUFA/SFA (P/S). IMF% was determined for extraction with boiling hexane of the dried samples. Cholesterol and fatty acid composition was determined in aliquot samples from the chloroform extract (Folch et al., 1957). Cholesterol with an enzymatic-colorimetric method (Chod-PAP) and fatty acids by GLC using a WCOT fused silica 50m x 25 mm coating CP-SIL 8CB capillary column. Multivariate analysis of variance was performed using a least square model

Table 1: Fat content, cholesterol and total fatty acids composition of different parts of commercial chickens.

	BWS ¹	LWS ²	Skin	Abdominal fat
Fat %	1.5±0.8 a	3.9±1.1 b	45.7±8.9 c	—
Chol mg/100g	45±7.1 a	82±12.8 b	102±11.2 c	54±4.5 d
14:0 %	0.6±0.08 a	0.5±0.06 b	0.6±0.03 a	0.5±0.06 b
15:0 %	1.0±0.41 a	0.5±0.15 b	0.3±0.01 c	0.2±0.14 d
16:0 %	23.3±1.44 a	21.5±1.27 b	21.7±0.75 b	21.6±1.21 b
16:1 %	3.9±0.63 a	4.5±0.73 b	4.6±0.67 b	4.1±0.54 a
18:0 %	7.9±0.72 a	7.4±0.53 b	6.2±0.69 c	6.8±0.73 d
18:1 %	32.7±1.89 a	32.6±1.91 a	35.5±1.25 b	35.8±1.11 b
18:2 n-6 %	24.5±1.40 a	26.3±1.52 b	25.3±1.28 c	26.4±1.07 b
18:3 n-3 %	1.8±0.27 a	2.2±0.19 b	2.3±0.07 c	2.4±0.14 c
20:4 n-6 %	2.2±0.96 a	1.65±0.42 b	0.3±0.04 c	Traces
20:5 n-3 %	0.4±0.03 a	0.3±0.06 b	0.1±0.04 c	Traces
22:6 n-3 %	0.4±0.04 a	0.2±0.06 b	0.1±0.06 c	Traces

1. BWS Breast without skin 2. LWS Leg without skin 3. No determined
abcd Means within the same row with different superscripts differ (p<.05)

RESULTS AND DISCUSSION

The IMF %, cholesterol and total fatty acids composition are presented in Table 1. Differences (p<.05) were detected in IMF%, cholesterol and fatty acid composition among BWS, LWS, skin and abdominal fat. The results are quite similar to

Rhee (1992). SFA %, MUFA %, PUFA %, P/S, the ratio 18:2 n-6/18:3 n-3 and the % of the hipercholesterolemic fatty acids 14:0+16:0 are shown in Table 2. The differences among our values and same recommended nutritional values are given in Figures 1 and 2. It could be positive to decrease the % of SFA and PUFA but to increase MUFA. The deviations from the recommended ratio n-6/n-3 and P/S are very important and need to be correct by changes in the animal diets or for the use of the adequate lipids from the other diet components. Legs and skin are very rich in fat and cholesterol and its intake needs to be controlled.

Table 2 . Data of nutritional interest

	BWS ¹	LWS ²	SKIN	Abdominal fat
SFA %	31.6±2.49 a	29.5±1.30 b	28.5±1.35 c	29.0±1.58 d,b
MUFA %	32.9±1.94 a	32.9±2.05 a	35.3±1.42 b,c	35.8±1.11 b
PUFA %	28.7±1.23 a	30.8±1.49 b	28.4±1.18 a	28.8±1.17 a
18:2/18:3	13.2±1.40 a	11.8±0.58 b	11.1±0.29 c	10.9±0.51 c
14:0+16:0 %	23.7±1.61 a	22.0±1.11 b	22.3±0.84 b	22.1±1.25 b
P/S	0.9±0.08 a	1.0±0.06 b	1.0±0.06 b	1.0±0.08 b

1 BWS Breast without skin 2 LWS Leg without skin

CONCLUSIONS

The intramuscular fat (%), cholesterol content and fatty acid profiles are affected by the anatomical location. The chicken lipids need to be adapted to the recommended lipid intake decreasing SFA and 18:2 n-6 and increasing n-3 fatty acids and MUFA. The amounts of fat and cholesterol in legs and skin are a limitation of its consumption.

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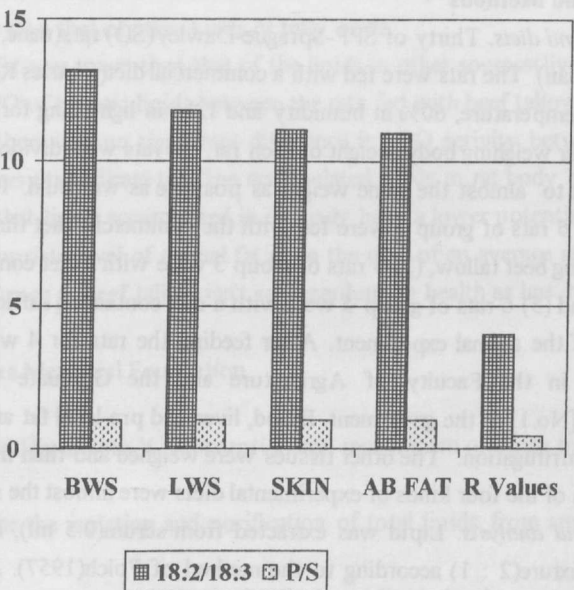
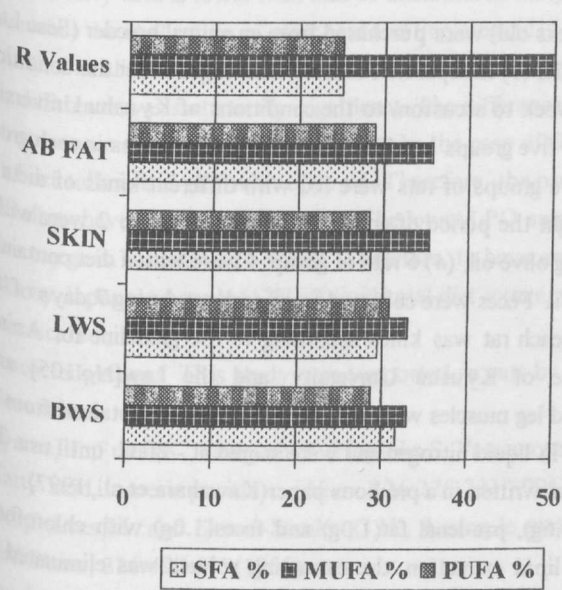


Fig.1. SFA %, MUFA % and PUFA % in BWK, LWK, SKIN and AB FAT compared with the recommended values.

Fig 2. Ratios 18:2 n-6 / 18:3 n-3 and P/S in BWS, LWS, SKIN and AB FAT compared with the recommended values