

## EFFECTS OF SEX AND STRAIN ON BROILER CHICKEN BODY LIPIDS

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## BACKGROUND

Fatty acid and cholesterol content of food lipids are important considering the relationship between dietary lipids and the risk of several diseases as cardiovascular diseases and cancer. Animal diet can alter the fatty acid composition of body animal fat through a better profile but strain and sex can also affect significantly the performance of broiler chicken (Cherian et al., 1996; Ahn et al., 1995).

**OBJECTIVES** The purpose of the present research is to investigate the body lipid composition of male and female Ross and Avian Farms broiler chicken.

## MATERIALS OF METHODS

Sixteen broilers were taken from a totally randomized design of 4 treatment with 8 repetitions of 40 animals each one. The four treatments were isocaloric and isoproteic with a standard (corn-soybeans) diet. The diet was given *ad libitum* and the chicken were killed at 50 days. Samples of breasts, legs, skins and abdominal fats were analyzed for total intramuscular fat (IMF%), fatty acid composition and total cholesterol content. Lipids were extracted with Folch et al. (1957) method and aliquot samples from the chloroform extract were used for IMF %, fatty acid composition by methyl esters analysis performed using capillary GLC with a WCOT 50 m fused silica CP-Sil88 and cholesterol by Roschlán et al. (1975). The data were analyzed using a General Linear Procedure (SAS, 1987).

## RESULTS AND DISCUSSION

Table 1. Intramuscular fat % in the studied birds according to sex and strain. Means  $\pm$  SD

IMF %	Ross male	Ross female	Avian Farms male	Avian Farms female
Breast w/skin	1.1 $\pm$ 0.2a	1.1 $\pm$ 0.2a	2.1 $\pm$ 0.6b	1.8 $\pm$ 0.8b
Leg w/skin	3.8 $\pm$ 0.7ac	3.1 $\pm$ 0.5a	4.3 $\pm$ 0.5bc	4.1 $\pm$ 0.6ac
Skin	39.6 $\pm$ 4.5a	50.2 $\pm$ 5.3b	36.5 $\pm$ 6.1a	54.2 $\pm$ 4.5b

abc Means in a row with different letters differ ( $p < 0.05$ )

## RESULTS AND DISCUSSION

In Table 1 are shown the IMF% for breasts and legs without the skin. The % of skin fat also is presented in Table 1. Significant differences were detected between the two strains in the amounts of breast IMF%. In both crosses females have more fat in the skin than males. The cholesterol content also was affected by sex and strain. Generally the females have skins fatter but with less cholesterol than males.

In Fig 1 are presented the fatty acid composition of total intramuscular lipids from breasts and legs according to sex and strain. The differences were not statistically significant for the different fatty acids but when we consider the % of SFA, MUFA and PUFA differences according to sex and strain were detected (Table 2) in all tissues except in abdominal fats. For example, breasts and legs from male and female Ross have more SFA% than male and female Avian Farms.

## CONCLUSIONS

Sex and strain affected the IMF% and the cholesterol content in breasts, legs and skin from the experimental birds. The differences in fatty acid composition were not significant, maybe because they are strongly related to the diet. In spite of the % SFA, MUFA or PUFA were also affected by sex and strain.

## REFERENCES

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Table 2. Cholesterol content (mg/100g) according to sex and strain

	Ross male	Ross female	Avian Farms male	Avian Farms female
Breast w/skin	39±4a	48±5b	45±5ab	49±3b
Leg w/skin	85±1a	81±8a	77±11a	84±9a
Skin	104±7ab	93±6a	112±5b	98±4a

abc Means in a row with different letters differ ( $p < 0.05$ )

Table 3. SFA %, MUFA % and PUFA % according to sex and strain. Mean±SD

	Ross Male	Ross female	Avian Farms male	Avian Farms female
<b>SFA %</b>				
Breast w/skin	32.3±1.1a	32.6±1.1a	30.0±0.9b	30.9±1.1b
Leg w/skin	29.6±0.8a	30.3±0.8cb	28.0±0.6b	29.6±1.1a
Skin	31.7±0.3c	27.9±0.2b	27.7±0.8a	29.0±0.7b
Abd. fat	30.2±1.1a	28.8±1.3a	28.6±1.2a	28.4±0.9a
<b>MUFA %</b>				
Breast w/skin	33.0±1.1a	30.9±1.2b	33.4±0.9a	34.1±1.1a
Leg w/skin	31.6±0.8a	32.7±1.0ab	32.5±0.6ab	33.6±1.1b
Skin	37.6±0.8a	35.8±0.6b	36.0±0.5b	35.9±0.4b
Abd. fat	34.9±1.2a	36.4±1.0a	35.8±0.2a	36.2±1.2a
<b>PUFA %</b>				
Breast w/skin	28.5±1.0ab	29.2±1.1ab	29.7±1.0a	27.5±0.9b
Leg w/skin	31.8±1.0a	29.3±1.1b	31.9±0.9a	29.1±1.1b
Skin	27.4±0.6a	28.0±0.2a	26.4±0.7b	27.5±0.3a
Abd. fat	29.4±0.6a	28.6±0.8a	29.2±1.1a	27.9±0.7a

abc Means in a row with different letters differ ( $p < 0.05$ )

Fig 1. Total fatty acids in breast and leg according to sex and strain

