THE CHEMICAL COMPOSITION OF MEAT OBTAINED FROM KABIR POULTRY

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Abstract

The current consumer market requires poultry meat from other breeding systems than industrial ones, but also from other hybrids than the fast growing ones. The chemical analyzes related to this study were performed on samples taken from the pectoral, pulp and wing muscles, respectively, obtained from birds of both Kabir breeds, slaughtered at the age of 50 days. Meat harvested from the female breast area contained 0.1% more dry matter (24.03 vs. 23.93 g / 100 g) and 0.17% more lipids (1.03 vs. 0, 86 g / 100g) and that of males with 0.03% more protein (22.02 vs. 21.99 g / 100 g). For the musculature of the wings, in the females there were registered higher levels by 0.12% for the dry matter. (26.58 vs. 26.46 g / 100 g) and 0.19% for lipids (3.69 vs. 3.50 g / 100 g), but less than 0.05% for proteins (21, 89 vs. 21.94 g / 100 g). In the case of the whole leg, the samples taken from females had higher contents both in the dry matter (25.76 vs. 25.51 g / 100 g), as well as in proteins (20.16 vs. 20.11 g / 100 g) and lipids (4.45 vs. 4.28 g / 100 g). The final conclusion of the research was that the Kabir birds produce high quality meat from a chemical composition point of view.

Key words: Kabir hens, meat, chemical composition

INTRODUCTION

Poultry meat has long been in the top of consumers' preferences [4], for which scientific research has made available to the breeders new genotypes of great value [7], with advanced precocity and high growth rate, able to make better use of feed. managed, thus obtaining high economical productions [1, 11].

This phenomenon has led to an overcrowding of the consumer market with poultry meat accompanied by the reduction of sales of this product, regardless of the form of presentation [13].

In the modern consumer's view, the poultry meat obtained in industrial-type systems has become a product that has lost much of its attractiveness, due to its high water content, the exaggerated fragility of the muscle fibers, the red color of the bones and the bone marrow and the increased perishability. [5, 9].

In these conditions, the consumer market demands more and more poultry meat from other breeding systems than industrial ones (especially from those to which the birds have access to the external environment) [2, 6], but also from other hybrids than those with fast growth (especially from pure breeds or from slow growing hybrids) [8, 10].

For our country, this type of production is attested by documents from the interwar period, when Romania was fourth in poultry products exported to the West (especially in Germany) for peasant chickens and peasant eggs [12].

From the aforementioned considerations, it was considered necessary to evaluate the chemical composition of the meat from the birds of the Kabir breed, a bird more and more appreciated by the farmers in our country, both for the beautiful appearance, and especially for the good production of eggs and meat of superior quality.

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MATERIAL AND METHOD

The determinations were made on meat samples taken from the pectoral, whole leg musculature, respectively, the musculature of the wings obtained from birds of both sexes (males and females) of the Kabir breed, slaughtered at the age of 50 days.

The chemical analyzes were performed according to the methodologies approved in this regard and aimed at determining the following parameters:

- the water content- method involves exposing a meat sample to a heat source until it reaches a constant weight; weight loss, calculated as a percentage, represents the water content (SR ISO 935: 2009) [16];
- • the dry matter content is calculated by difference, according to the relation: S.U. (%) = 100 -% Water [18];
- the protein content was determined by the Kjeldahl method (SR ISO 937: 2007) [14], which is based on the following principle: the product under analysis in the presence of sulfuric acid and a catalyst, is decomposed by heat into the constituent elements. Following the breakdown of proteins and other nitrogen compounds, ammonium ions are released, which is combined with sulfuric acid to form ammonium bisulphate. Ammonium bisulphate from mineralized by strong alkalization releases ammonia, which is distilled and captured in an acid solution. Knowing the amount of acid needed to neutralize the distilled ammonia, the amount of nitrogen in the sample is calculated;
- the lipid content was made by direct Soxhlet, in an extractor for quantitative separation of the substances in a mixture using an organic solvent and follows the methodology described by SR ISO 1443: 2008 [15];
- the content of mineral substances - the working method used is that of calcining the sample at 525±25° C, up to a constant weight, by applying the principles set out in SR ISO 936: 2009 [17].

RESULTS AND DISCUSSIONS

Following the chemical analyzes performed on the samples taken from the level of the pectoral musculature, a dry matter content of 23.93 ± 0.07 g/100 g was found in the case of male meat, of 24.03±0.04 g/100g in females and 23.98±0.04 g/100 g respectively for meat of both sexes.

The difference was water, with levels of 76.07 ± 0.07 g/100 g in males, 75.97±0.04 g / 100 g in females and 76.02 ± 0.04 g/100 g for meat of both sexes. The two characteristics showed a very good homogeneity, the values of the coefficient of variation being 0.53-0.93% for the dry substance content and 0.17-0.29% for the water content.

Regarding the protein content of meat obtained from Kabir birds, it was at a level of 22.02 ± 0.06 g/100 g in males (V%=0.90), of 21.99 ±0.04 g/100 g in females (V %=0.51), resulting in an average of 22.01±0.04 g/100 g for both sexes (V%=0.72).

Lipids were determined in a smaller amount in males (0.86±0.01 g/100 g) than in females (1.03±0.04 g/100 g), the average result being 0.95±0.03 g/100 g; this character was homogeneous in males (V%=5.29) and less homogeneous in females (V%=12.72) and respectively, for both sexes (V% =3.71).

In the pectoral musculature of females were found somewhat lower contents both for mineral substances (0.81±0.02 g/100 g) and for unaccounted extractive substances (0.20±0.01 /100 g), compared to the situation recorded in males (0.83±0.02 g/ 100 g and 0.22±0.01 g / 100 g respectively); the average values for the two sexes were 0.8± 0.01 g /100g in the case of minerals and 0.21±0.01 g/100 g in the case of NFE.

The content in mineral substances was presented as a homogeneous character (V% = 5.75-6.76), while for extractive substances not quoted the values of the coefficient of variation (11.20-12.39%) indicated a medium variability (table 1).

Table 1 Chemical composition of meat from pectoral musculature

Specification	Males (n=10)		Females (n=10)		Both sexes (n=20)	
	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%
Dry matter	23.93±0.07	0.93	24.03±0.04	0.53	23.98±0.04	0.76
Water	76.07±0.07	0.29	75.97±0.04	0.17	76.02±0.04	0.24
Proteins	22.02±0.06	0.90	21.99±0.04	0.51	22.01±0.04	0.72
Lipids	0.86±0.01	5.29	1.03±0.04	12.72	0.95±0.03	13.71
Mineral substances	0.83±0.02	5.75	0.81±0.02	6.76	0.82±0.01	6.20
Nitrogen free extract	0.22±0.01	11.20	0.20±0.01	11.79	0.21±0.01	12.39

The chemical analysis of the samples taken from the **whole leg musculature** revealed a dry matter content of 25.51±0.01 g/100 g in males and 25.73 ± 0.03 g /100 g in females, with an average of 25.62±0.03 g/100 g; the studied character was homogeneous, the values of the coefficient of variation being 0.15-0.49%.

The average water content of the whole leg was 74.38±0.03 g/100 g, against a background of 74.49±0.01 g/100 g in male meat and 74.27±0.03 g/100 g to that of females; and in this case, the analyzed characteristic showed a very good homogeneity (V%=0.05-0.17).

Proteins were found at levels of 20.11±0.05 g/100g in males (V%=0.75) and 20.16±0.03 g/100 g in females (V%=0.45), resulting in an average for both sexes of 20.13 ± 0.03 g/100 g (V%=0.62).

Lipid content was 4.28 ± 0.05 g/100 g in male whole leg (V%=3.77) and 4.45±0.02 g/100g in female (V%=1.61), with an average of both sexes of 4.37±0.03 g/100 g (V%=3.38).

The mineral substances were determined in amounts of 0.93±0.01 g/100 g in males and 0.94±0.01 g/100g in females (the average content for both sexes was 0.94±0.01 g100 g), and free extractive nitrogen recorded in quantities of 0.19±0.01 g/100 g in males and 0.18±0.01 g/100 g in females, resulting in an average value of 0.19±0.01 g/100 g. The two characteristics were quite homogeneous, the calculated values for the coefficient of variation being 3.46-3.51% for mineral substances and 7.85-8,42% in those of unaccounted extractive substances (tab. 2).

Table 2 Chemical composition of meat from whole leg musculature

Specification	Males (n=10)		Females (n=10)		Both sexes (n=20)	
	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\bar{X} \pm s_{\bar{x}}$ (g/100 g)	V%
Dry matter	25.51±0.01	0.15	25.73±0.03	0.31	25.62±0.03	0.49
Water	74.49±0.01	0.05	74.27±0.03	0.11	74.38±0.03	0.17
Proteins	20.11±0.05	0.75	20.16±0.03	0.45	20.13±0.03	0.62
Lipids	4.28±0.05	3.77	4.45±0.02	1.61	4.37±0.03	3.38
Mineral substances	0.93±0.01	3.51	0.94±0.01	3.46	0.94±0.01	3.48
Nitrogen free extract	0.19±0.01	7.85	0.18±0.01	8.42	0.19±0.01	8.29

Chemical analyzes performed on the **muscles of the wings** taken from males indicated contents of 26.46±0.08 g /100 g for the dry matter content, 73.54±0.08 g/100 g for water, 21.94±0,06 g/100 g for proteins, 3.50±0.05 g/100 g for lipids, 0.83±0.02 g/100 g for mineral substances and 0.19±0.01/100 g for nitrogen free extract.

The analyzed characteristics presented a good homogeneity, evidence being the small values of the coefficient of variation of 0.33-9.05%.

The chemical composition of the meat harvested from the female wings was as follows: dry matter content=26.58±0.06 g/100 g; water=73.42±0.06 g/100 g; protein = 21.89±0.05 g/100 g; lipid=3.69±0.03 g/100 g; mineral substances=0.8± 0.01 g/100 g; nitrogen free extract=0.19±0.01 g/100 g.

Calculating the value for the coefficient of variation (0.26-9.45%) proves a good homogeneity.

The average values obtained for the chemical composition of the wing muscles were 26.52±0.05 g/100 g in the case of the dry substance (V%=0.84), 73.48±0.05 g/100 g in the of water (V%=0.30), 21.92±0.04 g/100 g for protein (V%=0.76), 3.60±0.04 g/100 g for lipid (V%=4.43), 0.82±0.01 g/100 g for mineral substances (V%=5.94) and 0.19±0.01 g/100g for nitrogen free extract (V%=9.07) (Table 3).

Table 3 Chemical composition of meat from wings musculature

Specification	Males (n=10)		Females (n=10)		Both sexes (n=20)	
	$\overline{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\overline{X} \pm s_{\bar{x}}$ (g/100 g)	V%	$\overline{X} \pm s_{\bar{x}}$ (g/100 g)	V%
Dry matter	26.46±0.08	0.91	26.58±0.06	0.73	26.52±0.05	0.84
Water	73.54±0.08	0.33	73.42±0.06	0.26	73.48±0.05	0.30
Proteins	21.94±0.06	0.82	21.89±0.05	0.72	21.92±0.04	0.76
Lipids	3.50±0.05	4.20	3.69±0.03	2.95	3.60±0.04	4.43
Mineral substances	0.83±0.02	7.03	0.81±0.01	4.75	0.82±0.01	5.94
Nitrogen free extract	0.19±0.01	9.05	0.19±0.01	9.45	0.19±0.01	9.07

CONCLUSIONS

Following the evaluation of the qualitative characteristics of the meat obtained from the birds of the Kabir breed, a number of conclusions were drawn which will be presented in the following.

Meat harvested from the female breast area contained 0.1% more dry matter (24.03 vs. 23.93 g/100 g) and 0.17% more fat (1.03 vs. 0,86 g/100g) and that of males with 0.03% more protein (22.02 vs. 21.99 g/100 g). A similar situation was also in the musculature of the wings, where in the females were registered higher levels by 0.12% for the dry matter contet. (26.58 vs. 26.46 g/100 g) and 0.19% for lipids (3.69 vs. 3.50 g/100 g), but less than 0.05% for proteins (21,89 vs. 21.94 g/100 g).

In the case of the whole legs, the samples taken from females had higher contents both in the dry matter content (25.76 vs. 25.51g/100 g), as well as in proteins (20.16 vs. 20.11 g/100 g) and lipids (4.45 vs. 4.28 g/100 g).

The final conclusion of the study was that the birds of the Kabir breed slaughtered at 50 days old produce high quality meat from the point of view of the chemical composition.

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