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Chemical Composition and Energy Nutritional Value of the Meat of Guinea Fowls (*Numidameleagris*), Fattened to different Ages

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Abstract*—The aim of the study was to investigate the chemical composition and energy content of the meat of young guinea-fowls, with different duration of the fattening period, raised in a free-range, semi-intensive production system.*

The authors establish the following data: dry matter content- from 27.08 to 28.82% in breast muscle and from 23.83 to 26.56% in thigh muscle; crude protein in dry matter –from 86.19to 93.54% in breast and from 82.02 to 87.84% in thigh muscle; crude fat in dry matter - from 5.64 to 7.58% in breast and from 9.02 to 11.05% in thigh muscles.

The average energy content in 100 g dry matter varies from 23.7 (breast muscle, 16 weeks of age) to 25.07 kJ (thigh muscle, 24 weeks of age).

Keywords—chemical composition, energy content, guinea fowl, meat.

I. INTRODUCTION

Over the last 30 years, much of Europe estimatedguinea-fowl as a source of dietary meatof a wild game flavour, attractive for the luxury food markets. Nevertheless, in Europe itself, there is a large gap in the production and marketing of that type of meat (Baeza et al., 2001; Sharma and Singh, 2006; Santiago et al., 2007).

The carcass of that type of fowlis characterized by a lower fat and cholesterol content and higher content of protein, essential amino acids and mineralsubstances, compared to broilers and pullets (Surdjiyska et al., 2006; Aisha Elfaki M. et al., 2012; Ayorinde, 2004; Cappa and Casati, 1978; Singh and Raheja, 1990). Consequently, guinea-fowl meat may be a more attractive alternative to meat of most other domestic animals and birds (Santiago et al., 2007).

Guinea-fowlmeat is an excellent and healthy alternative for the consumer, but studies in that area, except for France, are still scarce (Aisha Elfaki et al., 2012).

Considering the fact that,despite the rich composition and dietary characteristics, there are no traditions of consumption of meat of the species in our country, we set the aim of the study to investigate the chemical composition and energy content of the meat of young guinea-fowls, with different duration of the fattening period, raised in a free-range, semi-intensive production system.

II. MATERIAL AND METHODS

The experimental work was carried out at the poultry farm of the Training and Experimental Base of the Agricultural University – Plovdiv with three experimental groups in two replicates.

Studieswere conducted with a local for South Bulgaria guinea-fowlpopulation with a pearl-gray color of the plumage, distributed by the analogue method in three groups of 24 birdseach in the first and 20 birds each in the second year of study (an equal number of both genders). Birds were fedon complete compound forage, prepared according to recipes by Marinov et al. (2015).

Phase feedingwas applied according to the following scheme: First group (16 weeks fattening period): starter (0-5 week), grower (6-12 week), finisher (13-16 week); Second group (20 weeks fattening period): starter (0-5 week), grower (6-16 week), finisher (17-20 week). Third group (24 weeks fattening period: starter (0-5 week), grower (6-20 week), finisher (21-24 week).

The compound feed contained maize, wheat, soybean meal 46, sunflower meal 37, fish meal 72, L-lysine, DL-methionine, chalk, dicalcium phosphate, salt, sodium bicarbonate, vitamin mineral premix and sunflower oil.

During the three fattening periods (starter, grower and finisher), the basic substanceswere supplemented with different percentages of the major substances in 1 kg of native forage:

Starter:ME–12.1 MJ;crudeprotein (CP)– 26.27%; lysine – 1.63%; methionine+cysteine(M+C) – 0.98%; threonine – 1.09%;tryptophan – 0.27%;calcium (Ca)– 1.27%; available phosphorus (Avail.P)– 0.5%; Natrium (Na) – 0.18%.

Grower: ME– 12.41 MJ;CP– 21.82%;lysine – 1.3%;M+C – 0.87%;threonine – 0.95%; thryptophan – 0.21%Ca – 1%;Avail. P – 0.42%; Na – 0.18%.

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Finisher: ME– 12.7MJ;CP– 17.71%;lysine – 0.95%; M+C – 0.72%; threonine – 0.78%;tryptophan – 0.2%, Ca – 0.95%;Avail.P – 0.42%; Na – 0.18%.

Drinking water was given to the birds *ad libitum* throughout the fattening period.

Chemical and biochemical analysis of the meat was carried out in the Laboratory Test Complex of the Agricultural University – Plovdiv.

The analyses were carried out on standard parts of the carcass, skin-free, according to AOAC (2007) and included the following physical,chemical and biochemical analyses (Todorov et al., 2010): moisture content (according to BDS – ISO 6496); crude protein(%) by Kjeldahl (BDS – ISO 5983), crude fat (%) by Soxhlet (BDS – ISO 6492), crude ash (according to BDS – ISO 5984), gross energy – directly by microprocessor calorimeter KL 11 Mikado.

III. RESULTS

Table 1 shows the chemical composition and energy content of breast muscle depending on gender andeconomic yearand also the average data.

The dry matter content did not show statistically significant differences depending on bird gender and the duration of the fattening period and it was in the range of 27.08% and 28.82% in total for both replicates. This result was due to the insignificant accumulation of body fat with aging (Marinov, 2004). On the other hand, the result shows indirectly that in thatfowl species, the delicacy of the meat remains tender to an older age, even when raised in a free-rangefarming system. The lower rate of maturity (38 weeks) in thatspecies supports the above conclusion (Angelov,2017).

Variations in crude protein content were also not large. The reported values ranged from 86.19% (24-week old female birds in the experiment in 2016) to 93.54% (24-week old female birds in the experiment in 2015) in the dry matter. The statistical significance of the difference between the birds of 20and 24weeks of agewas mainly observed in the first year, while in the second, statistical significance was established only in the contentin the native muscle and only in females of the same age. The crude protein values of theseparate replicates showed significant differences, more on the basis ofthe native muscle, whereas when compared on the dry matter basis, the differences were smaller and in most cases insignificant.The data obtained, however, did not show any important trends to linear changes proportional to the age of fattening. The same trend was observed in terms of gender and between different replicates.

More significant differences, both by gender and age, were observed in the crude fat content, especially recalculated on the basis of the dry matter content. In the first year (2015), the highest content was reported in 20-week old birds – male (7.58%) and female (7.01%). In the second experimental year, the highest fat content was found in both sexes at 24 weeks of age (5.64 and 7.37%, respectively). In 24-week old birds, there was a marked tendency to higher fat deposition in the females, especially in fat recalculation based on the dry matter content. This can be explained by the deposition of body reserves in connection with the forthcoming egg-laying.

*Table.1: Chemical composition of guinea fowl's breast muscles**

		Indexes, %	16 weeksof age				20 weeksof age				24 weeksof age			
			Drymatter		Native		Drymatter		Native		Drymatter		Native	
			X	Sx	X	Sx	X	Sx	X	Sx	X	Sx	X	Sx
2015	Male	DM[1]	26,11	0,23	–	–	26,72	0,32	–	–	26,69	0,34	–	–
		CF[1]	5,45a	0,01	1,42a1	0,01	7,58ab	0,01	2,03a1b1	0,02	4,07a	0,33	1,09a1	0,09
		CP[1]	89,45	0,17	23,35a1	0,25	89,37ab	0,01	23,88b1	0,29	90,80ab	0,01	24,24a1	0,3
		Ash	4,70ab	0,01	1,22a1b1	0,01	3,25	0,25	0,87a1	0,07	3,93a	0,22	1,05a1	0,06
		Energy (MJ*kg-1)	23,64a	0,04	6,17	0,06	24,40b	0.01	6,52a1b1	0,08	23,46ab	0,12	6,26a1	0,09
	Female	DM	25,83	0,51	–	–	27,08	0,29	–	–	26,55	0,2	–	–
		CF	5,49a	0,16	1,42a1	0,07	7,01ab	0,19	1,90a1b1	0,04	4,23a	0,09	1,12a1	0,02
		CP	89,17a	0,12	23,04a1	0,49	92,59ab	0,01	25,08a1b1	0,27	93,54ab	0,01	24,84	0,18
		Ash	4,32b	0,01	1,11b1	0,0	3,48	0,52	0,94	0,14	4,17	0,16	1,13	0,05

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		Energy (MJ*kg-1)	23,59a	0,08	6,09	0,14	24,97ab	0,07	6,76a1b1	0,06	24,19ab	0,03	6,42a1	0,05
		DM	25,95a	0,29	–	–	26,9	0,21	–	–	26,62a	0,19	–	–
		CF	5,48ab	0,09	1,42a1b1	0,04	7,30ab	0,13	1,96a1b1	0,03	4,15ab	0,17	1,11a1b1	0,05
	Average	CP	89,29a	0,11	23,17a1	0,28	90,98a	0,49	24,48b1	0,26	92,17	0,41	24,54a1	0,19
		Ash	4,48a	0,08	1,16a1b1	0,02	3,37a	0,28	0,90a1b1	0,07	4,05a	0,13	1,09a1	0,04
		Energy (MJ*kg-1)	23,61ab	0,05	6,13a1	0,08	24,69b	0,09	6,64a1b1	0,06	23,82ab	0,12	6,34a1	0,05
		DM	26,5	0,11	–	–	26,4	0,14	–	–	25,82	0,27	–	–
		CF	6,95ab	0,01	1,84a1b1	0,01	5,28a	0,25	1,39a1	0,06	5,64a	0,22	1,46	0,07
	Male	CP	88,34	0,2	23,41	0,15	89,16	0,51	23,54	0,23	88,14	0,42	22,76	0,27
		Ash	3,79b	0,01	1,01b1	0,01	4,15	0,18	1,1	0,04	4,44	0,24	1,15	0,05
		Energy (MJ*kg-1)	23,92a	0,05	6,34a1	0,04	23,51	0,1	6,21a1	0,04	23,39a	0,04	6,04	0,07
		DM	26,59	0,39	–	–	26,32a	0,12	–	–	26,78a	0,32	–	–
		CF	5,97b	0,01	1,59b1	0,02	5,57	0,21	1,47	0,05	7,37	0,79	1,98	0,24
2016	Female	CP	88,91	0,32	23,64	0,32	89,31	0,45	23,51a1	0,22	86,19	1,11	23,07a1	0,09
		Ash	4,15b	0,06	1,09b1	0,01	4,33	0,33	1,14	0,08	4,26	0,67	1,14	0,19
		Energy (MJ*kg-1)	23,7	0,08	6,3	0,09	23,65	0,1	6,22	0,05	23,55	0,06	6,31	0,09
		DM	26,55a	0,21	–	–	26,36ab	0,09	–	–	26,3	0,29	–	–
		CF	6,39b	0,2	1,70a1b1	0,05	5,43b	0,16	1,43a1b1	0,04	6,50b	0,53	1,72b1	0,16
	Average	CP	88,66	0,22	23,54	0,18	89,24a	0,32	23,52a1b1	0,15	87,16a	0,69	22,92a1	0,14
		Ash	3,99	0,08	1,05b1	0,02	4,24	0,18	1,12b1	0,04	4,35	0,32	1,14	0,09
		Energy (MJ*kg-1)	23,80ab	0,06	6,32a1	0,05	23,58b	0,07	6,22b1	0,03	23,47ab	0,05	6,17a1	0,08

* The differences in the chemical composition are significant ($p<0,05$): a-a – in the dry matter under the different ages; a1-a1 – in the native muscles under the different ages; b-b - inthedrymatterbetween the sexes in the same age; b1-b1 - inthenative muscles between the sexes in the same age

[1]DM = dry matter; CF= crude fats; CP= crude protein

Ash content varied considerably depending on age and gender in each replicate. However, there were nostatistically proven differences by gender and duration of the fattening period between the separate replicates. Mineral content ranged from 3.25 in 20-week oldmales, (experimentin 2015) to 4.70% in 16-week oldmales (experimentin 2015) indrymatter.

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Table.2: Chemical composition of Guinea fowl's thigh muscles

		Indexes, %	16 weeksof age				20 weeksof age				24 weeksof age			
			Drymatter		Nativ		Drymatter		Nativ		Drymatter		Nativ	
			X1	Sx	X	Sx	X	Sx	X	Sx	X	Sx	X	Sx
2015	Male	DM[1]	23,83ab	0,08	–	–	24,73	0,23	–	–	25,62a	0,4	–	–
		CF[1]	10,77	0,33	2,56	0,07	11,05b	0,01	2,73b1	0,02	11,03b	0,44	2,83	0,14
		CP[1]	83,36ab	0,18	19,86a1 b1	0,11	87,84ab	0,01	21,73a1	0,2	87,12ab	0,01	22,32	0,35
		Ash	4,49b	0,01	1,07b1	0,01	3,19	0,56	0,79	0,14	4,1	0,45	1,01	0,11
		Energy (MJ*kg-1)	24,11a	0,08	5,75a1	0,01	25,30a	0,01	6,26a1	0,06	25,12	0,16	6,44	0,12
	Female	DM	24,57b	0,08	–	–	25,32	0,53	–	–	25,25	0,38	–	–
		CF	10,20a	0,01	2,51a1	0,01	13,36ab	0,06	3,38b1	0,07	13,29b	0,25	3,35a1	0,06
		CP	86,13b	0,88	21,16b1	0,17	87,37ab	0,01	22,12a1	0,46	87,26ab	0,01	22,03a 1	0,33
		Ash	5,01ab	0,01	1,23b1	0,01	4,36a	0,14	1,1	0,04	4,55	0,12	1,15	0,01
		Energy (MJ*kg-1)	24,58a	0,21	6,04a1	0,04	26,03	0,02	6,59	0,14	25,98a	0,09	6,56	0,09
	Average	DM	24,25a	0,16	–	–	25,03	0,29	–	–	25,44a	0,27	–	–
		CF	10,45a	0,17	2,53a1	0,03	12,20a	0,35	3,06	0,1	12,16	0,42	3,09a1	0,11
		CP	84,94a	0,73	20,60a1	0,28	87,61ab	0,07	21,92b1	0,25	87,19ab	0,02	22,18a 1	0,23
		Ash	4,79ab	0,1	1,16a1b 1	0,03	3,78ab	0,33	0,95a1b1	0,08	4,33	0,23	1,08	0,05
		Energy (MJ*kg-1)	24,38a	0,15	5,91a1	0,06	25,67ab	0,11	6,42b1	0,09	25,55b	0,16	6,50a1	0,08
2016	Male	DM	24,52	0,17	–	–	24,84	0,1	–	–	26,31	0,87	–	–
		CF	9,02ab	0,01	2,21a1	0,02	10,2	0,54	2,53	0,14	11,14a	0,09	2,93a1	0,12
		CP	85,23	0,01	20,9	0,14	83,75	1,12	20,8	0,22	82,47	0,69	21,69	0,53
		Ash	4,29a	0,01	1,05a1	0,01	4,31	0,29	1,07	0,07	4,62a	0,02	1,22a1	0,04
		Energy (MJ*kg-1)	23,93	0,01	5,87	0,04	24	0,25	5,96	0,06	24,04	0,14	6,32	0,17
	Female	DM	24,37a	0,24	–	–	25,39	0,48	–	–	26,56a	0,28	–	–
		CF	10,95b	0,75	2,67	0,19	11,91	1,67	3,04	0,48	11,84	0,66	3,15	0,21
		CP	84,29	0,93	20,54	0,34	82,27	1,55	20,86a1	0,14	82,02	1,28	21,78a 1	0,3
		Ash	4,41	0,2	1,08a1	0,05	4,86a	0,1	1,23a1	0,03	4,29a	0,13	1,14	0,04
		Energy (MJ*kg-1)	24,41	0,31	5,95a1	0,11	24,27	0,28	6,16	0,17	24,18	0,16	6,42a1	0,09
	Average	DM	24,44a	0,15	–	–	25,11a	0,25	–	–	26,43a	0,41	–	–
		CF	10,12	0,56	2,47a1	0,14	11,05	0,87	2,79	0,25	11,49	0,34	3,04a1	0,12
		CP	84,69a	0,53	20,7	0,2	83,01b	0,93	20,83a1b 1	0,12	82,25ab	0,66	21,73a 1	0,27
		Ash	4,35b	0,11	1,07a1b 1	0,03	4,58b	0,18	1,15b1	0,05	4,46	0,09	1,18a1	0,03
		Energy (MJ*kg-1)	24,2	0,19	5,91a1	0,06	24,13b	0,18	6,06b1	0,09	24,11b	0,1	6,37a1	0,09

* The differences in the chemical composition are significant ($p<0,05$): a-a – in the dry matter under the different ages; a1-a1 – in the native muscles under the different ages; b-b - inthedrymatterbetween the sexes in the same age; b1-b1 - inthenative muscles between the sexes in the same age

[1] DM = dry matter; CF= crude fats; CP= crude protein

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The energy content of breast muscle ranged from 23.39 (males – 24 weeks of age, experiment in 2016) to 24.97 KJ (females – 20 weeks of age, experiment in 2015) in 100 grams of dry matter and 6.04 (males – 24 weeks of age, experiment in 2016) to 6.76 KJ (females – 20 weeks of age, experiment in 2015) in 100 grams of native muscle.

Statistically significant gender differences were reported between 20- and 24-week old birds in the first replicate, whereas the differences according to the age of fattening were significant in most cases between 16- and 24-week old birds. However, we assume that the energy content is relatively constant, both according to gender and the duration of the fattening period.

The chemical composition and the energy content of thigh muscle are presented in Table 2. The percentage of dry matter in thigh muscle was the lowest in 16-week old male birds in 2015 (23.83%) and the highest – in 24-week old females, experiment in 2016 (26.56%), which was due to the accumulation of age-related body reserves and it was more pronounced in the female birds in relation to egg-laying. Statistically significant differences were found between 16 weeks of age (23.83%) and 20 weeks of age (25.62%) in male guinea-fowls in the first year of the experiment and in female guinea-fowls in the same two periods of fattening in the second year – 24,37% (16 weeks) vs 26.56% (20 weeks), respectively. We also found out statistically significant differences in the dry matter content in male birds (23.83%) and in females (24.57%) in 2015 in the shortest period of fattening.

The average fat content in thigh muscle of guinea-fowls of both genders showed variations within 10.12% to 12.20% in the dry matter and 2.47% to 3.06% in native muscle. Significant differences in the average fat content between the two years of the study were not established. The differences between 16 weeks (9.02%), 20 weeks (11.05%) and 24 weeks (11.03%) of age of the males of these condreplicate were statistically significant. The same trend was observed according to the duration of fattening period in female birds of the same replicate – 10.95, 13.36 and 13.29% at 16, 20 and 24 weeks of age, respectively. In the first experimental year, differences in fat content in females from the shortest fat tening period (10.20%) and 20 weeks of age (13.36%) were also significant.

The established variations of the crude protein content in thigh muscle ranged from 82.02% (24-week old female fowls from the experiment in 2016) to 87.84% (20 week sold male guinea-fowls in the experiment in 2015) in the dry matter and from 19.86 to 22.32% in native muscle. Statistically significant differences were observed in the first replicate, both in all the three fattening periods and between the males and females. In the experiment in 2016, proven differences were established only in female guinea-fowls of 20 weeks of age (20.86%) and 24 weeks (21.78%) in native muscle.

The ash content in thigh muscle was the lowest in the males from the first replicate at 20 weeks of age (3.19%) and the highest (5.01% in the dry matter) in the females from the same replicate at 16 weeks of age, the differences being statistically significant in both the dry matter and native muscle (1.07% vs. 1.23%) in favor of the females. Significant differences were also observed in the female birds at 16 weeks of age (5.01%) and 20 weeks (4.36%) in the experiment in 2015. In the second replicate, statistical significance was established between the differences in the two longer fattening periods – 20 weeks (4.86%) and 24 weeks (4.29%).

Table 3 shows the averaged results of the two genders in both replicates. Although many authors think that the chemical differences between breast and thigh muscle of muscle also determined the significantly higher gross energy content in it. However, differences in the chemical composition were not as high as in broiler chickens.

The energy content of thigh muscle was with in the range of 23.93 (males – 16 weeks of age, experiment in 2016) to 26.03 KJ (females – 20 weeks of age, experiment in 2015), basedon 100 grams of dry matter, and, from 5.75 (malesat 16 weeks of age, experiment in 2015) to 6.59 KJ (females, 20 weeks of age, experiment in 2015), based on 100 grams of native muscle.

IV. DISCUSSION

The value of poultry meat is determined by its nutrient content. The chemical composition of guinea-fowl meat is considered delicacy because of its lower fat content and higher protein content compared to broiler chicke nmeat. In this direction, sufficient information has been compiled, mainly in foreign literature.

Table.3: Average results of the two genders in both replicates

Indexes, %		Breast muscles			
		Dry matter		Nativ	
		X	Sx	X	Sx
16 weeksof age	Dry matter	26,25	0,19	–	–
	Crude fat	5,93a	0,16	1,56	0,05
	Crude protein	88,98a	0,15	23,36	0,17

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	Ash content	4,24	0,09	1,11	0,02
	Energy (MJ*kg-1)	23,70a	0,05	6,22	0,05
	Dry matter	26,68	0,14	–	–
	Crude fat	6,55A	0,23	1,75	0,06
20 weeks of age	Crude protein	90,28A	0,37	24,1	0,2
	Ash content	3,72	0,2	0,99	0,05
	Energy (MJ*kg-1)	24,24A	0,14	6,47	0,06
	Dry matter	26,52	0,16	–	–
	Crude fat	4,94b	0,33	1,31	0,09
24 weeks of age	Crude protein	90,50b	0,67	24	0,23
	Ash content	4,15	0,14	1,11	0,04
	Energy (MJ*kg-1)	23,71b	0,09	6,29	0,05
		Thigh muscles			
	Dry matter	24,34	0,11	–	–
	Crude fat	10,28a	0,28	2,5	0,07
16 weeks of age	Crude protein	84,82a	0,44	20,65	0,17
	Ash content	4,57	0,09	1,11	0,02
	Energy (MJ*kg-1)	24,29a	0,12	5,91	0,04
	Dry matter	25,06	0,19	–	–
	Crude fat	11,74A	0,41	2,95	0,12
20 weeks of age	Crude protein	85,77A	0,63	21,49	0,2
	Ash content	4,1	0,22	1,03	0,06
	Energy (MJ*kg-1)	25,05A	0,2	6,28	0,07
	Dry matter	25,77	0,25	–	–
	Crude fat	11,94b	0,3	3,07	0,08
24 weeks of age	Crude protein	85,54b	0,6	22,03	0,18
	Ash content	4,37	0,15	1,11	0,04
	Energy (MJ*kg-1)	25,07B	0,2	6,46	0,06

*The differences in the chemical composition of the DM of breast and thigh muscles are significant ($p<0,05$): a-a – by 16; A-A – by 20;b-b – by 24 week's fattening period

The dry matter in breast muscle in the present experiment with two replicates ranged from 27.08% to 28.82% and from 23.83% to 26.56% for thigh muscle, respectively. Kudryashov et al. (2015) found the same content of dry substance in both thigh and breast muscle in pearl gray, white and blue guinea-fowls. Those results were close to the results obtained in the present study, i.e. 25.32 – 26.93%. Moreki et al. (2012) also mentioned that the dry matter in guinea-fowls, fed on compound forages containing sorghum, ranged between 25.77% and 29.39% at the age of 6-12 weeks. In intensive and semi-intensive rearing of guinea-fowls, Saina (2005) established similar to our results: 22.9 – 26.1%.

The average content of crude fat in native muscle (male and female guinea-fowls) was comparable to that of Moreki et al. (2012). They announced the fat content of 2.18% (in 6- week old birds) to 2.99% (in 12-week old birds). According to the same author, fat accumulation was not influenced by the age of the birds. Similar to his finding, we also found that the age of guinea-fowls was not essential for the percentage of fats in the muscle.

In the first replicate, the fat percentage in breast (native) muscle in 16-week old males was 1.42%; in 20-week old – 2.03%; in 24-week old – 1.09%, and, in the females the results were as follows: 16-week old birds – 1.42%; 20-week old – 1.90%; 24-week old – 1.12%, respectively. Elhashmi et al. (2012) reported a fat content of 3% in breast muscle of 22-week old guinea-fowls, which differed significantly from our results. Tejerina et al. (2009), however, established that the fat content in thigh muscle of that bird species was within the range of 2.43 to 4%, which is close to our results.Tejerina et al. (2009), however, established that the fat content in thigh muscle of that bird species was within the range of 2.43 to 4%, which is close to our results.

The established results of the crude protein content in 2015-2016 (male + female guinea-fowls) were as follows: 22.92% to 24.54% in average in breast (native) muscle

and 22.18% – 20.60% in thigh muscle. Moreki et al. (2012) announced results close to those established in our study: for 6-week birds – 22.90% and higher; for 12-week – 31.55%. Similar to our results were also published by Tlhong (2008) – 22.7% of crude protein reported in guinea-fowl muscle.

Unlike Moreki et al. (2012), which established an increase of the ash content with bird aging (from 2.56% to 5.54%), we did not find such a tendency in thigh muscle. In breast muscle (male + female, experiment in 2016), the increase of the ash content was insignificant (3.99% to 4.35%). According to Mareko et al. (2008) the method of rearing the birds had an impact on the chemical composition of the meat.

V. CONCLUSIONS

The dry matter content in guinea-fowlmuscle fattened to different ages, did not show significant differences in both gender and age and ranged from 27.08 to 28.82%in breast muscleand from 23.83% and 26.56% in thigh muscle, respectively.

The crude protein content in breast muscle(dry matter) ranged from 86.19% (24-weekold female birds) to 93.54% (24-weekold female birds), and from 82.02% (24-weekold female birds) to 87.84% (20-weekold male guinea-fowls)in thigh muscle. An apparent influence of the fattening age on thatcharacteristicwas not observed.

The crude fat content of breast muscle(dry matter) varied from 5.64 to 7.58% and a tendency to higher values was reported in females fattened to a higher age. The crude fatcontentinthigh muscle(dry matter) ranged from 9.02 to 11.05%. The differences in the contents in the male birds between 16 and 20/24 weeks of age were larger.

The leanermeat of the male birds is explained by the accumulation of body reserves in females prior to egg-laying.

The average energy content in 100 g of dry matter varied from 23.7 (breast muscle, 16 weeks of age) to 25.07 kJ (thigh muscle, 24 weeks of age). The energy content in thigh muscle(dry matter) was significantly higher than in breast musclefor the three fattening periods.

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