CHEMICAL COMPOSITION OF BREAST AND THIGH MUSCLES IN FATTENED PHEASANT POULTS

KEMIJSKI SASTAV PRSIJU I MIŠIĆA BATAKA U TOVLJENJU FAZANSKIH PILIĆA

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SUMMARY

This work presents the results of chemical analysis of breast and thigh muscles in common pheasants fattened until the age of 90 days, and evaluates changes in the quality of pheasant meat between the 40th and 90th day of fattening.

Water content in breast muscles of female pheasants conclusively decreased ($P \leq 0.05$) to 745.41 g/kg on the 90th day of fattening while the dry matter content increased to 254.59 g/kg. A similar trend, i.e. decrease of water content and increase of dry matter level, was observed in males on the 90th day of fattening but the changes were inconclusive. Changes in protein levels (NS) in breast muscles were also inconclusive. The mean protein levels in female pheasants were ca. 229.05 g/kg, in the case of males they ranged from 229.88 g/kg to 245.03 g/kg. The fat content in breast muscles in pheasant poults increased with age. Particularly females exhibited a very conclusive increase in fat content ($P \leq 0.01$) on the 90th day (7.79 g/kg) while in males the fat content increased inconclusively (8.87 g/kg). The levels of ash determined in breast muscles ranged from 12.31 g/kg to 11.62 g/kg and from 12.72 g/kg to 11.72 g/kg in females and males, respectively. This parameter was not significantly affected by the age of young pheasants.

The mean water content in thigh muscles ranged between 730.56 g/kg and 759.91 g/kg in females and between 725.03 g/kg and 753.37 g/kg in males. The changes in water content were related to the changes in dry matter levels. The mean protein levels in thigh muscles of female pheasants decreased to 189.90 g/kg on the 90th day of feeding ($P \leq 0.05$), while in males a highly conclusive decrease to 197.92 g/kg ($P \leq 0.01$) was found. Fat levels in both breast and thigh muscles gradually increased. Thus, fat levels in thigh muscles of females increased from 21.06 g/kg (on the 40th day) to 57.49 g/kg (on the 90th day). In the case of males the fat levels increased from 19.66 g/kg (on the 40th day) to 45.24 g/kg (on the 90th day). Similarly, the mean levels of ash ranged from 12.62 g/kg to 12.66 g/kg in females and from 12.82 g/kg to 12.44 g/kg in males. However, no conclusive differences due to the duration of fattening were found.

Key words: common pheasant, breast and thigh muscles, chemical composition

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LITERATURE OVERVIEW

There is no experimental work published on the fattening of feathered game for the purpose of game meat production.

Poultry meat is gaining in popularity particularly thanks to its dietetic properties and easy preparation of meals. Meat originating from fowl-like birds belongs to a group of high-quality meats because of its valuable dietetic and nutritional properties. Particularly the meat from intensively fattened young poultry is easily digestible and juicy and contains only a very low amount of fat. It also has a typical delicious taste and flavour. The taste of meat arises due to the presence of salts and aromatic substances. Meat from fowl-like birds belongs to a group of low-energy meats (Matušovičová, 1986).

From both a dietetic and qualitative point of view pheasant meat offers an important alternative to chicken meat. Pheasant production would therefore extend a range of poultry products. However, literature provides only sporadic references concerning the quality of game meat.

Partial studies on this topic were published for example by Straka and Simeonovová (2003), Zabloudil and Novák (2000).

On the basis of the analysis of meat from different kinds of wild animals (pheasant, wild boar, moufflon, deer, hare) Uherová et al. (1992) drew a conclusion that meat originating from wild animals has a higher nutritional value than bovine meat and pork.

The chemical composition and the ratio between muscles and fat in carcass are distinctive quality parameters of poultry meat. According to Matušovičová (1986), poultry meat consists of dry matter and water. Dry matter contains inorganic substances (ash) and organic substances such as nitrogen-containing substances (proteins, amides) and non-nitrogen substances (sugars, starches, fat and organic acids).

As reported by Steinhauser et al. (2000), proteins are the most important components of meat from both the nutritional and technological point of view. The proteins are “highly nutritious“ and contain essential amino acids. It is often reported that the level of proteins in pure muscles ranges between 18 and 22 %. An average level of proteins in chicken meat is 21.30 %. However, individual parts of the carcass differ in protein content. In comparison with dark-red thigh muscles, light-red breast muscles contain more proteins, less fat and less myoglobin per 1 g of muscle tissue. The highest portion of proteins can be found in breast muscles from chicken and turkey. According to Simeonovová (1999) breast muscles contain approximately 22.00 % of proteins while thigh muscles, which contain more fat, consist of ca 17.20 % of proteins. Petkov (1988) reports the average levels of proteins in pheasant muscles being 19.10 % and 20.73 % (in thigh and breast muscles). In our view, protein levels found by Straka and Simeonovová (2003) in pheasant muscles are very reliable. These authors found that average protein levels in breast and thigh muscles of pheasants were 19.2 g and 20.9 g per 100 g of particular muscles. The above results are in good agreement with conclusions drawn by Zakula (1976) who in the 1980ies pointed to the fact that game was a very important source of dietary proteins. A high protein level in pheasant muscles was also published by Faruga et al. (1975) who reported the value of 24.6 %.

Fat (esters of fatty acids and glycerol) represents the highest portion of all lipids (99 %) present in meat. The remaining part consists of phospholipids and other associated substances. Abdominal fat represents a relatively high portion of the total body weight of chickens causing a significant loss during carcass processing. As reported by Skřivan (2000) extensive accumulation of abdominal fat in broilers results from an increased intake of feed rich in energy. With reducing the intake of high-energy feed the portion of abdominal fat decreases.

Gender is one of the factors affecting fat accumulation during growth. As a result of different growth intensity, females accumulate more fat in comparison with males. A very interesting work was published by Straka and Simeonovová (2003) who found that average levels of fat in muscles in hens and roasters were 2.4 g and 2.6 g per 100 g of muscles, respectively. It follows from our results that pheasants contains less fat. This finding is confirmed by Ricard et Petitjean (1989) and Petkov

(1984) who report the range of fat in pheasant muscles being 1.01 % - 3.10 %. Pheasants reared at farms were studied by Mikulík et al. (1979). These authors found that the levels of fat in muscles of these pheasants were higher compared with wild pheasants. Due to variation of fat levels in muscles, ranges are often published, e.g. Faruga et al. (1975) report a range from 0.89 % to 1.15 % (breast muscles).

Although the level of ash represents only a very low portion of the total weight (ca. 1 %), it is a significant criterion for evaluation of the mineral content in muscles. The mineral substances content in muscles of selected game species was studied by Strmisková and Strmiska (1992). These authors report the level of ash in pheasant meat being 1.13 g per 100 g of tissue, concluding that game is an important source of both macro- and micro-elements in comparison with farm animals. The ash content in pheasant meat (breast, thigh) is reported by Petkov (1984, 1.16 % and 1.08 %) and Raesaenen et al. (1972, 1.30 % in thigh and 1.20 % in breast).

MATERIALS AND METHODS

Experimental monitoring was performed on 110 poults of common pheasant obtained from feathered game nursery in Jinačovice u Brna. The experiment was carried out for a period of 90 days. Both male and female pheasants were fed the same feeding mixtures. The poults were housed on deep bedding in an approved experimental enclosure equipped with air conditioning, light and temperature controls and with controlled zoo-hygienic and feeding regimens at the Institute of Nutrition, Dietetics, Zoo-Hygiene and Food Crop Production at the Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences in Brno. The rearing conditions complied with the requirements for feeding of broiler chickens. The poults were fed and watered using plastic tube feeders and hanging drinkers for poultry (Plasson MK II) supplied by the company Pro Import Plus, s.r.o. The poults were fed ad libitum on special complete feeding mixtures BR 1, BR 2 and BR 3 which complied with nutritional and energetic requirements of broiler chickens. The feeding mixtures used in this experiment were prepared in Agricultural Co-operative Hlučín (Hospodářské družstvo Hlučín). Thus, the poults were fed the mixture BR 1 (powdery) until the 21st day of age, then the mixture BR 2 from the 22nd to the 40th day, and finally with BR 3 from the 41st till the 90th day (granules).

Microclimatic parameters in the experimental enclosure were as follows: average air temperature ranged from 31 °C to 21 °C depending on age; average relative humidity was 70-75 %; light regimen during the whole period of fattening was set to 23 light hours and 1 hour of dark. The experiment also included laboratory analysis of feeding mixtures performed at the Institute of Nutrition, Dietetics, Zoo-Hygiene and Food Crop Production, in order to determine the nutrients, minerals and energy content.

Ten females and 10 males were randomly selected on the 40th , 50th , 70th and 90th day of feeding, i.e. the total of 80 animals were subjected to analysis. The selected animals were weighed. The breast and thigh muscles were separated from slaughtered birds, ground and pre-dried, followed by homogenization. Subsequently, water content, dry matter, nitrogen substances, ash, calcium, phosphorus, and magnesium were determined.

The results were processed using mathematical and statistical methods, the arithmetic mean (x), standard deviation (s_{n-1}), mean error of the arithmetic mean (s_x) and variation coefficient (v) were calculated. The Student test with probability $P \leq 0.05$ (*) and $P \leq 0.01$ (**) was used to assess significance of differences between average values. Mathematical and statistical processing of the results obtained was performed with the aid of the program STATGRAPHICS.

RESULTS AND DISCUSSION

Breast and thigh muscles from both female and male pheasant poults at the age of 40, 50, 70, and 90 days were analysed in order to assess nutritional values of pheasant meat. It follows from the results that pheasant meat has a high nutritional value (Tables 1 and 2).

Table 1. Changes in chemical composition of breast muscles in young pheasants at the age of 40, 50, 70 and 90 days (F - females, M - males, x - arithmetic mean)

Fablica 1. Promjene kemijskog sastava prsnih mišića mladih fazana u dobi od 40, 50, 70 i 90 dana (F - ženke, M - mužjaci, x - aritmetička sredina)

Parameter Parametar	Day Dan	x	Sn	Sx	v	P	Parameter Parametar	x	Sn	Sx	v	P
Water Voda (g/kg) F	40	744,55	17,788	5,625	2,39		Water Voda (g/kg) M	741,96	5,082	1,607	0,68	
	50	759,91	27,649	8,743	3,64	1,477		746,34	16,096	5,090	2,16	0,821
	70	752,92	8,799	2,782	1,17	0,762		748,57	8,897	2,813	1,19	0,383
	90	745,41	6,412	2,028	0,86	2,181*		737,94	14,017	4,433	1,90	2,025
Dry matter Suha tvar (g/kg) F	40	255,45	17,788	5,625	6,96		Dry matter Suha tvar (g/kg) M	258,04	5,082	1,607	1,97	
	50	240,09	27,649	8,743	11,52	1,477		253,66	16,096	5,090	6,36	0,821
	70	247,08	8,799	2,782	3,56	0,762		251,43	8,897	2,813	3,54	0,383
	90	254,59	6,412	2,028	2,52	2,181*		262,06	14,017	4,433	5,35	2,025
NS (g/kg) F	40	243,41	16,678	5,274	6,85		NS (g/kg) M	245,03	5,031	1,591	2,05	
	50	229,05	26,931	8,516	11,76	1,434		239,16	14,735	4,659	6,16	1,192
	70	238,90	8,195	2,591	3,43	1,107		238,76	6,511	2,059	2,73	0,079
	90	240,20	4,064	1,285	1,69	0,449		229,88	5,896	5,027	6,92	1,635
Fat Masnoća (g/kg) F	40	6,14	0,792	0,250	12,90		Fat Masnoća (g/kg) M	6,67	1,082	0,342	16,23	
	50	5,77	0,970	0,307	16,80	0,935		7,36	1,439	0,455	19,55	1,212
	70	5,22	1,153	0,364	12,08	1,155		7,01	2,094	0,662	29,87	0,436
	90	7,79	1,430	0,452	18,36	4,428**		8,87	2,605	0,824	29,37	1,760
Ash Pepeo (g/kg) F	40	12,31	1,241	0,393	10,08		Ash Pepeo (g/kg) M	12,72	0,339	0,107	2,67	
	50	12,26	1,459	0,461	11,90	0,083		12,26	0,723	0,229	5,90	1,820
	70	11,92	0,679	0,215	5,70	1,455		11,90	0,531	0,168	4,46	1,268
	90	11,62	0,204	0,065	1,76	0,547		11,72	0,239	0,076	2,04	0,976

Sn - standard deviation, Sx - mean error of arithmetic mean, v - variation coefficient, P ≤ 0.05*, P ≤ 0.01**

Sn - standardna devijacija, Sx - srednja greška aritmetičke sredine, v - koeficijent varijacije, P ≤ 0,05*, P ≤ 0,01**

The average levels of water in breast muscles ranged from 744.55 g/kg to 759.91 g/kg in females and from 737.94 g/kg to 748.57 g/kg in males between the 40th – 90th day of fattening. Water content did not change significantly with pheasants' age. However, a conclusive decrease to 745.41 g/kg was found in females on the 90th day. Changes in water content in breast muscles were parallel to those in dry matter. The average levels of dry matter varied from 240.09 g/kg to 255.45 g/kg in females and from 251.43 g/kg to 262.06 g/kg in males. A conclusive decrease of water content (P≤0.05) in breast muscles of female pheasants on the 90th day was accompanied with a conclusive increase (P≤0.05) of dry matter.

A high protein level in breast muscles, ranging from 229.05 g to 243.41 g/kg in females and from 229.88 g/kg to 245.03 g/kg in males, is a promising finding from a dietetic point of view. It follows from the results that the protein levels in breast muscles in males and females did not conclusively change during the monitored period. The protein levels found in breast muscles are higher than those reported by Petkov (1984, 20.73 %, 207.73 g/kg) or Straka and Simeonovová (2003, 19.2 g/100g muscles, i.e. 129 g/kg). However, they are in good

Table 2. Changes in chemical composition of thigh muscles in young pheasants at the age of 40, 50, 70 and 90 days (F-females, M-males, x-arithmetic mean)

Tablica 2. Promjene kemijskog sastava mišića bataka mladih fazana u dobi od 40, 50, 70 i 90 dana (F - ženke, M - mužjaci, x - aritmetička sredina)

Parameter Parametar	Day Dan	x	Sn	Sx	v	P	Parameter Parametar	x	Sn	Sx	v	P
Water Voda (g/kg) F	40	746,29	21,944	6,939	2,94		Water Voda (g/kg) M	750,99	9,448	2,988	1,26	
	50	759,91	27,649	8,743	3,64	1,220		753,37	6,342	2,005	0,84	0,661
	70	746,89	28,250	8,933	3,78	1,042		725,03	15,487	4,897	2,14	5,356**
	90	730,56	16,523	5,225	2,23	1,578		726,66	39,370	12,450	5,42	0,122
Dry matter Suha tvar (g/kg) F	40	253,71	21,944	6,939	8,65		Dry matter Suha tvar (g/kg) M	249,01	9,448	2,988	3,79	
	50	240,09	27,649	8,743	11,52	1,220		246,63	6,342	2,005	2,57	0,661
	70	253,11	28,250	8,933	11,16	1,042		274,97	15,487	4,897	5,63	5,356**
	90	269,44	16,523	5,225	6,13	1,578		273,34	39,370	12,450	14,40	0,122
NS (g/kg) F	40	220,50	22,373	7,075	10,15		NS (g/kg) M	217,04	3,355	1,061	1,55	
	50	229,05	26,931	8,516	11,76	0,772		218,77	4,265	1,349	1,95	1,008
	70	218,75	25,939	8,203	11,86	0,871		223,54	4,804	1,519	2,15	2,348*
	90	189,90	24,306	7,686	12,80	2,566*		197,92	5,604	1,772	2,83	10,977**
Fat Masnoća (g/kg) F	40	21,06	4,315	1,364	20,49		Fat Masnoća (g/kg) M	19,66	4,597	1,454	23,38	
	50	22,40	5,329	1,685	23,79	0,618		24,82	6,678	2,112	26,91	2,012
	70	22,97	7,412	2,344	32,27	0,197		33,4	6,261	1,980	18,75	2,964**
	90	57,49	16,719	5,287	29,08	5,969**		45,24	18,298	5,786	40,45	1,936
Ash Pepeo (g/kg) F	40	12,62	1,079	0,343	8,55		Ash Pepeo (g/kg) M	12,82	0,132	0,042	1,03	
	50	11,92	1,459	0,461	12,24	1,218		12,82	0,316	0,100	2,46	0,000
	70	12,56	1,684	0,533	13,41	0,908		12,83	0,442	0,140	3,45	0,058
	90	12,66	1,076	0,340	8,50	0,158		12,44	0,643	0,203	5,17	1,582

Sn - standard deviation, Sx - mean error of arithmetic mean, v - variation coefficient, P ≤ 0.05*, P ≤ 0.01**

Sn - standardna devijacija, Sx - srednja greška aritmetičke sredine, v - koeficijent varijacije, P ≤ 0,05*, P ≤ 0,01**

agreement with those published by Faruga et al. (1975) who report the proteins content in pheasant muscles being 24.6% (240 g/kg). The results confirm conclusions by Zakula (1976) who pointed out in the 1980-ies that game meat is a very significant source of dietary proteins.

A positive finding from a nutritional point of view is that breast muscles contain a very low amount of fat which ranged from 5.22 g/kg to 7.79 g/kg in females and from 6.67 g/kg to 8.87 g/kg in males between the 40th and 90th day of fattening. However, increasing accumulation of fat in muscles was observed at the end of feeding (the 90th day). Fat accumulation in females was found statistically significant (P≤0.05).

Fat accumulation in muscles corresponds well with the results reported for broiler chickens. According to literature data, fat accumulation in females can be attributed to ageing. Fat levels in breast muscles of males were higher than those in females, which might be explained in terms of increased activity and therefore increased demands for energy. This finding is the opposite to that in broiler chickens. Literature provides only a very few

exact data on fat levels in pheasants. Fat levels in pheasant muscles ranging from 1.014% to 3.10% were reported by Ricard et Petitjean (1989) and by Petkov (1984). These levels are lower than those we found in our experiment. Increased levels of fat in chicken muscles may be attributed to intensive feeding. An increased level of fat in pheasants reared at farms in comparison with wild pheasants was discussed by Mikulík et al. (1979).

The level of ash in breast muscles is relatively constant, varying between 11.62 g/kg and 12.31 g/kg in females and between 11.72 g/kg and 12.72 g/kg in males. It follows from the results that ash levels did not vary significantly with age and gender. Our results are in good agreement with those reported by Strmisková and Strmiska (1992) who found that the level of ash in pheasant meat was 1.13 g per 100 g of tissue (11.3 g/kg). Similar findings concerning ash levels in breast muscles of pheasants were reported by Petkov (1984, 11.6 g/kg, i.e. 1.16 %) and Raesaenen et al. (1972, 12.0 g/kg, i.e. 1.20 %).

Chemical analysis of thigh muscles showed analogous trends. Thus, water content in thigh muscles ranged from 734.56 g/kg to 759.91 g/kg in females and from 725.03 g/kg to 753.37 g/kg in males while the dry matter content varied between 240.09 g/kg and 269.44 g/kg in females and between 246.63 g/kg and 274.97 g/kg in males. No significant differences in water content and the level of dry matter were found in thigh muscles over the monitored period (i.e. from 40^{th} to 90^{th} day of fattening) except for males in which water content in thigh muscles on the 70^{th} day of fattening decreased significantly ($P \leq 0.05$) to 725.03 g/kg and the level of dry matter significantly increased to 274.97 g/kg. The results show that breast and thigh muscles of pheasant poults did not differ substantially in water content and the level of dry matter.

When evaluating protein levels we found that protein levels in thigh muscles of females gradually increased from 220.50 g/kg (on the 40^{th} day) to 229.05 g/kg (on the 50^{th} day) followed by a very conclusive decrease ($P \leq 0.01$) to the value of 189.9 g/kg. Similarly, protein levels in thigh muscles of male pheasant also increased until the 70^{th} day of age, followed by a dramatic decrease ($P \leq 0.01$) to the value of 197.92 g/kg on the 90^{th} day of fattening. This can be associated with an increased level of fat in the muscles as concluded by Matušovičová (1986) who showed a statistically significant negative correlation between fat and protein levels in muscles. In spite of this finding, the protein level in thigh muscles in pheasant poults in our experiment was significantly higher than that reported by Petkov (1984; 191.0 g/kg, i.e. 19.10 %) and Straka and Simeonovová (2003; 209.0 g/kg, i.e. 20.9 g/100g muscles).

Fat levels in thigh muscles of pheasant poults gradually increased with age. Thus, fat levels in females increased from 21.06 g/kg on the 40^{th} day to 57.49 g/kg on the 90^{th} day of fattening while in males they increased from 19.66 g/kg on the 40^{th} day to 45.24 g/kg on the 90^{th} day. Furthermore, fat level in thigh muscles of females increased very significantly ($P \leq 0.01$) on the 90^{th} day, while fat level in males increased significantly on the 70^{th} day of fattening. Increased fat levels are probably closely related to increased physical activity and therefore increased demands for energy in muscles. When the fat levels in muscles at the end of fattening (the 90^{th} day) are compared it can be seen that female thigh muscles contain 7.38 times more fat than female breast muscles, while male thigh muscles contain 5.10 times more fat than male breast muscles. Fat levels found in thigh muscles of pheasant poults were higher than those reported by Straka and Simeonovová (2003) in chickens (males: 2.6 g/100 g of muscles, females: 2.80 g/100 g muscles).

No significant differences in the ash content in thigh or breast muscles related to age and gender of pheasant poults were found. Average levels of ash in thigh muscles varied between 11.92 g/kg and 12.66 g/kg in females and between 12.44 g/kg and 12.83 g/kg in males. It follows from the results that breast and thigh muscles did not differ significantly in ash level. Ash levels are in a good agreement with the levels of mineral substances (ash) published by Strmisková and Strmiska (1992), Petkov (1984), and Raesaenen et al. (1972). We have therefore confirmed conclusions drawn by Strmisková and Strmiska (1992) that pheasant game is an important source of mineral substances.

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SAŽETAK

U ovom radu izvršene su analize kemijskog sastava mišićne mase bataka i prsiju kod tovljenja fazana sve do 90. dana starosti, s ciljem razmatranja i vrednovanja izmjena kakvoće proizvedenog mesa u razdoblju između 40. do 90. dana tova fazana.

Kod mišićne mase u prsima ženki fazana utvrđeno je ($P \leq 0,05$) smanjenje sadržaja vode u 90. danu tova na 745,41 g/kg, a time i povećanje sadržaja suhe mase na 254,59 g/kg. Sličan trend u pogledu sadržaja vode i suhe mase primijećen je u 90. danu tova mužjaka fazana, s time da ove izmjene nisu dokazive. Nedokazive izmjene zabilježene su kod sadržaja bjelančevina (NL) u prsnoj mišićnoj masi, čije su prosječne vrijednosti varirale kod ženki fazana oko 229,05 g/kg, a kod mužjaka varirale su u rasponu između 229,88 g/kg do 245,03 g/kg. Što su bili pilići stariji, to veći je bio sadržaj masti u mišićnoj masi u prsima, što je bilo veoma očito ($P \leq 0,01$) posebno kod ženki fazana u 90. danu starosti 7,79 g/kg, dok je kod mužjaka zabilježena nedokaziva vrijednost 8,87 g/kg. Kod pepela, čiji se sadržaj u prsnoj mišićnoj masi kretao kod ženki između 12,31 g/kg do 11,62 g/kg, a kod mužjaka između 12,72 g/kg i 11,72 g/kg, u pogledu starosti fazana nisu utvrđene nikakve značajne razlike među prosječnim vrijednostima.

Kod mišićne mase bataka fazana sadržaj vode je varirao u rasponu prosječnih vrijednosti, i to kako slijedi: kod ženki fazana između 730,56 g/kg do 759,91 g/kg, a kod mužjaka između 725,03 g/kg do 753,37 g/kg. Za izmjene sadržaja vode logično su vezane i izmjene sadržaja suhe mase. Što se tiče bjelančevina, u butnoj mišićnoj masi fazana dokazano je ($P \leq 0,05$) kod ženki u 90. danu tova smanjenje prosječne vrijednosti na 189,90 g/kg, a kod mužjaka čak veoma očito (dokazivo) smanjenje ($P \leq 0,01$) na 197,92 g/kg. Slično kao kod prsnih mišića te butnih mišića utvrđen je trend postupnog rasta masti kod ženki s 21,06 g/kg (40. dan) na 57,49 g/kg (90. dan), a kod mužjaka s 19,66 g/kg (40. dan) na 45,24 g/kg (90. dan). Isto tako kod pepela, čije su se prosječne vrijednosti kretale u rasponu između 12,62 g/kg i 12,66 g/kg kod ženki fazana, te 12,82 g/kg do 12,44 g/kg kod mužjaka, nisu potvrđene dokazive razlike vezane za vrijeme trajanja tova fazana.

Ključne riječi: obični fazan, mišićna masa prsa i bataka, kemizam