INFLUENCE OF SLAUGHTER WEIGHT AND SEX ON CHEMICAL COMPOSITION OF PORK*

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The objective of this work was verification of influence of slaughter weight and sex on basic chemical composition (intramuscular fat, proteins, dry matter and ashes) of major meaty parts of pork (neck, shoulder, roast meat and leg). 40 (17 gilts and 23 barrows) slaughter hogs of a hybrid combination (CLW_m x CL) x (H x PN) were engaged in the test. Hogs were sorted in 4 groups according their live weight. Representative muscle samples were taken from the right halves of these hogs which were homogenized and submitted for chemical analysis. The results showed that the slaughter hogs of the same final hybrid combination but different live weight and sex proved different values of chemical composition of meat. Significant differences were found in all evaluated parameters, i.e. content of dry matter, intramuscular fat (IMF) as well as N-substances and ashes. It was confirmed that with increased live weight IMF increases linearly as well as dry matter in neck (barrows) and shoulder parts (barrows). The content of N-substances on the other hand decreases by higher live weight. As regards ashes, the highest values were achieved in a group of hogs up to the live weight of 115 kg, while the content of ashes decreased by further increase of live weight over 115 kg. As regards comparison of influence of sex on parameters listed above it was found out that in the part of neck the values of dry matter were higher in gilts (of all groups) than in barrows and on the other hand, the part of roast meat (apart from the second group) the values of dry matter content were significantly higher in barrows. As regarded IMT, the gilts showed (apart from the first and third group in the part of shoulder) significantly higher content of IMT than the barrows. As regarded the part of roast meat (in all groups), shoulder (the first, second and third group), leg (the first and second group) and neck (only the first and third group) gilts had higher presentation of N-substances than the barrows. Contrary to that, the barrows (in all groups) showed significantly higher content of ashes in the part of roast meat.

pig; meat quality; chemical composition; slaughter weight; sex

INTRODUCION

Pork is the most frequently consumed type of meat both in our country and all over the world. The statistical data and prognosis report of the worldwide increasing demand and consumption of pork (Pig Int., 2004; Mikule, 2005).

The consumers' interest in pork and pork products is maintained and originated upon many factors. Composition of pork and thereby its nutrition value, sensoric perception, especially its fine taste, softness, crispness and juiciness plus variety of culinary preparations may serve as the examples (Lamb, 1994).

As presented by Wood et al. (1994) and Jeleníková (2003), a consumer considers meat having an optimum composition regarding its nutritious value to be a quality meat. Meat is a very rich and universal source of nutrients (Ruprich, 2003). Primary importance of meat is based in protein content especially (Jedlička, 1988; Lawrie, 1998). Amino-acids are used for growth and renovation of body cells. Fatty acids, vitamins, minerals, energy, water are present in syntheses of proteins, fats, cell membranes (Batterham, 1994; Close, 1994; Sensky et al., 2003).

It has been known for long already that quality of meat may fluctuate significantly in a uniform genetic basis of animals (Sellier, 1988). According to Šimek et al. (2002), hybrid genotypes of hogs are presently used for pork production. They are originated by cross-breeding of mother and father breed, while breeds of Yorkshire and Landrace are used worldwide for mother lines origination, and breeds of Belgium Landrace, Piertain, Duroc, Hampshire and father Yorkshire are used for father lines origination.

Many factors influence quality and composition of meat. Genetic influence of parents belongs among them especially, but sex, slaughter weight and level of applied nutrition have also a significant influence. Last but not least, season of the year when fattening of slaughter hogs is realized belongs also among the factors (Jedlička, 1988; Jakubec, 1990).

As presented by Pipek et al. (1995), percentage of the individual components in net muscle matter changes and it is a function of fat tissue growing.

Gonzalez et al. (2001) and Tibau et al. (2002) studied chemical composition of pork in relation to slaughter value, sex and genotype. Chemical composition of pork was analyzed in final hybrids of slaughtered

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animals in weight interval between 25 and 140 kg body weight. It is obvious that by increase of body weight up to 70 kg the content of proteins and fats linearly increases, in higher weights then the gain of protein decreases and content of fat remains linear up to the weight of 140 kg.

M a t o u š e k et al. (1997) evaluated quality of meat in final hybrids of hogs and correlation between the selected qualitative and quantitative features. They discovered and confirmed the fact that quality of meat deteriorates by increasing share of lean meat.

F r a n c i et al. (1993) monitored physical and chemical composition of three muscles (m.biceps femoris, m. semimembranosus and m.semitendinosus) of 5 hog breeds (LW, L, BL, D and Sienna), while in groups divided according to genotype significant differences in color of meat, content of IMF, dry matter, crispiness and losses by cooking were found. In groups according to sex significant differences were proved in IMF and dry matter content.

A r n o š t o v á et al. (2000) has come to similar conclusions including proving significant differences in contents of dry matter, fat and protein with a view to genotype and sex.

As presented by F o r t i n (1982), slaughter weight influences its chemical composition more than physical indicators. These conclusions are confirmed by tests by H o l k o v á , B e č k o v á (1993) and B e č k o v á (1996), in which percentage of IMF in 78 final hybrids with a view to various slaughter weight were monitored. P o l t á r s k y , P a l a n s k á (1991), M i k u l e (2005) studied the optimum slaughter weight influencing the basic chemical composition of meat, who also confirm conclusions presented above.

J a c y n o et al. (1995) studied qualitative and quantitative indicators of slaughter value and chemical composition of pork in relation to the genotype and sex in 4 genotypes. Significant differences regarding the content of proteins and intramuscular fat were found among all genotypes and contents of dry matters and ashes among sexes. These statements are in harmony with works of other authors like W a g n e r et al. (1999), C a n d e k - - P o t o k a r et al. (2002), Z u l l a et al. (2003), and others.

MATERIAL AND METHOD

The objective of the work was to verify influence of slaughter weight and sex on basic chemical composition of main meaty parts of pork.

Slaughter hogs of a final hybrid combination (CLW_m x CL) x (H x PN) were engaged in the test. The testing was implemented in standardized conditions in a trial and testing station at Ploskov (Lány). Hogs were housed in pairs in the individual pens. The average live weight of hogs engaged in the test was approximately 26.7 kg and their average age was 70 days from birth. They were fed in feeders ad libidum with continuous transition from the complete starting feeding mixture (KKS) – P1 (at the start of feeding up to 45 kg of live weight) to P2 (from 45 kg of live weight up to the end of feeding), which contained three components – wheat, barley, soy extracted meal and feeding additive (Table 1), mixed for each pen individually.

Table 1. Compositions of the swine diets and nutrient content

Components	Unit	P1	P2
Wheat	%	50.0	55.0
Barley	%	25.0	32.0
Soy extracted meal	%	21.7	10.5
Premix 1	%	3.3	X
Premix 2	%	x	2.5
Nutrient content	Unit	P1	P2
Mep	MJ/kg	12.8	12.8
Crude protein	g/kg	188.6	150.1
Stock	g/kg	38.7	36.3
sLYSINp	g/kg	9.6	7.1
sMETHIOp	g/kg	2.7	2.1
sm + Cp	g/kg	5.7	4.6
sTHREONp	g/kg	6.3	4.8
sTRYPTOp	g/kg	2.0	1.6
Ca	g/kg	7.5	6.0
P – total	g/kg	6.4	5.1
P – consumable	g/kg	3.3	2.3
Na	g/kg	1.9	1.6

40 slaughter hogs were sorted into 4 groups according to the sorting criterion of live weight. As it is presented in Table 2, 11 heads were present in the first groups (i.e. the live weight up to 95 kg) – out of which 7 gilts and 4 barrows. The second group (i.e. live weight from 95.1 kg to 105 kg) consisted of 9 heads out of which 3 gilts and 6 barrows. The third group (i.e. the live weight from 105.1 kg to 115 kg) consisted of 8 heads out of which 4 gilts and 4 barrows; and the fourth group (i.e. the live weight of 115.1 kg and more) consisted of 12 heads out of which 3 gilts and 9 barrows. In total 17 gilts and 23 barrows were monitored within the test.

After completion of the testing fattening dissection of the right slaughter halves was carried out, where slaughter indicators were assessed with subsequent taking of representative samples from the main meaty parts – neck (*musculus serratus ventralis*), roast meat (*musculus*

Table 2. Sorting 4 groups according to the sorting criterion of live weight and sex

Group	Gilts	Barrows	Total
1	7	4	11
2	3	6	9
3	4	4	8
4	3	9	12
Total	17	23	40

Table 3. Dividing hogs according to classification criterion – live weight and sex

	Live weight	Gilts	Barrows	Total equal
		$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD
1	up to 95 kg	83.6 ± 6.26	91.6 ± 1.39	86.5 ± 6.34
2	95.1–105 kg	102.7 ± 1.52	101.1 ± 2.79	101.6 ± 2.46
3	105.1–115 kg	112.0 ± 2.94	107.8 ± 0.96	109.9 ± 3.02
4	115.1 kg and more	127.5 ± 9.26	121.4 ± 5.86	123.0 ± 6.93

longissimus lumborum et thoracis), shoulders (*musculus cleidocephalicus*) and leg (*musculus semimembranosus*). The representative samples then were homogenized and submitted for chemical analysis for the purposes of determination of dry matter content (it can be determined from the difference of the sample weight before and after drying with sea sand), intramuscular fat (use of gravimetric determination after extraction with petrolether), N-substance (determination of amino-nitrogen according Kjeldahl) and ashes (by burning the sample at 550 °C until perfect burning of organic substances).

The results of the test were evaluated by regular mathematical and statistical methods *SAS*.

RESULTS

As presented in Table 3, the tested hogs were divided according to classification criterion – live weight – into four groups according their slaughter weight and sex (gilts / barrows). The first group, i.e. up to 95 kg of live weight, reached the average live weight in total equal to 86.5 kg, while gilts were 83.6 kg and barrows 91.6 kg. The second group i.e. live weight from 95.1 kg to 105 kg had the average live weight in total equal to 101.6 kg, while gilts were 102.7 kg and barrows were 101.1 kg. The third group i.e. live weight from 105.1 kg to 115 kg had an average live weight in total equal to 109.9 kg, while gilts were 112.0 kg and barrows 107.8 kg. The fourth group i.e. the live weight of 115.1 kg and more had an average live weight in total equal to 123.0 kg, gilts 127.5 kg and barrows 121.4 kg. Table 4 characterizes statistically provable differences between the weight groups within the monitored sex group (gilts / barrows).

Results of the basic chemical analyses are presented in Tables 5, 7, 9 and 11.

The Table 5 characterizes contents of dry matter (%) in relation to sex and achieved live weight in major meaty parts of pork. The highest average dry matter value was found in the neck part, in particular of 34.13% in the fourth group – gilts. Contrary to that, the lowest average value was achieved by the shoulder part, in particular of 21.97% in the first group – barrows. In the first up to fourth groups the highest average content of dry matter was assessed in the part of neck, in particular in gilts of 30.57%, 31.71%, 30.92% and 34.13% and the lowest average value showed the part of shoulder in case of the first and the second group of barrows – 21.97% and 22.21% and in the third and the fourth group of gilts – 22.89% and 22.65%.

Statistically provable difference ($P \le 0.05$) was found by means of GLM-test in gilts, the part of neck (Table 6,

Table 4. GLM-test between the weight groups within the monitored sex group

	1 : 2	1 : 3	1 : 4	2 : 3	2 : 4	3 : 4
Gilts	***	***	***	–	***	**
Barrows	**	***	***	*	***	***

* ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001

Table 5. Contents of dry matter (%) in relation to sex and achieved live weight in major meaty parts of pork

Group	Neck (%)		Leg (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD
1	30.57 ± 3.64	28.56 ± 0.93	29.40 ± 2.86	28.44 ± 1.71
2	31.71 ± 4.92	29.86 ± 1.87	30.26 ± 2.54	28.71 ± 2.16
3	30.92 ± 0.96	29.96 ± 3.01	28.81 ± 3.21	29.38 ± 2.07
4	34.13 ± 2.74	31.86 ± 3.25	29.66 ± 3.36	28.24 ± 1.53
Group	Roast (%)		Shoulder (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD
1	25.81 ± 0.94	29.54 ± 5.58	22.57 ± 1.72	21.97 ± 1.09
2	30.02 ± 6.86	27.09 ± 3.98	24.12 ± 0.95	22.21 ± 0.78
3	26.28 ± 1.17	27.10 ± 0.66	22.89 ± 1.34	23.06 ± 1.61
4	25.96 ± 0.92	27.43 ± 4.02	22.65 ± 1.74	23.65 ± 2.89

Table 6. GLM-test between the weight groups – contents of dry matter (%) within the monitored sex group

Sex	Parts	1 : 2	1 : 3	1 : 4	2 : 3	2 : 4	3 : 4
Gilts	Neck	–	–	*	–	–	–
	Leg	–	–	–	–	–	–
	Roast	*	–	–	*	*	–
	Shoulder	*	–	–	–	–	–
Barrows	Neck	–	–	**	–	*	–
	Leg	–	–	–	–	–	–
	Roast	–	–	–	–	–	–
	Shoulder	–	–	–	–	–	–

* ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001

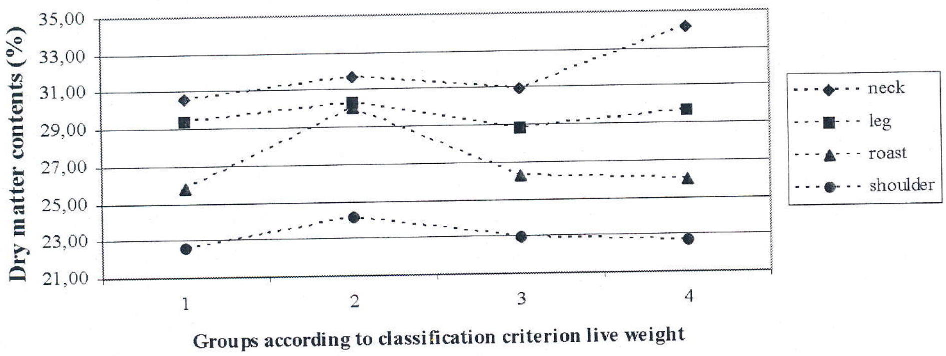

Fig. 1. Contents of dry matter (%) in relation to gilts and achieved live weight in major meaty parts of pork

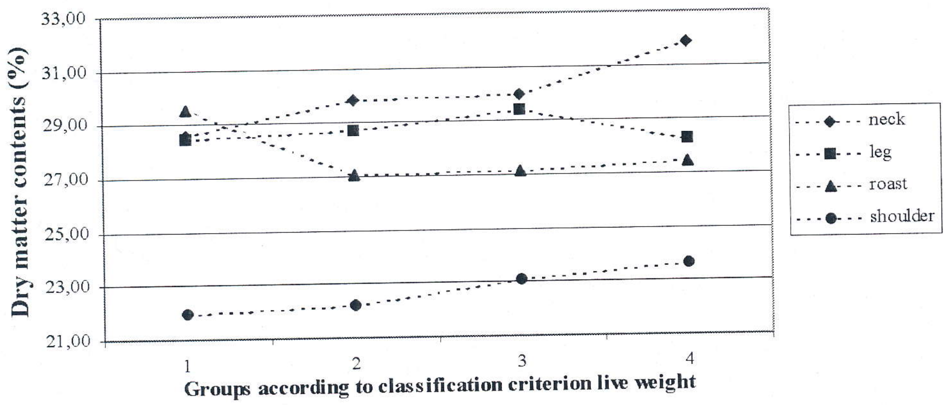

Fig. 2. Contents of dry matter (%) in relation to barrows and achieved live weight in major meaty parts of pork

Figs 1 and 2) between the first and fourth group, then in the part roast meat – between the second and the third group and the second and the fourth group, and in the part of shoulder – between the first and the second group. The difference in barrows was found statistically significant in the part of neck – between the first and fourth group ($P \leq 0.01$) and between the second and fourth group ($P \leq 0.05$).

The established percentage of intramuscular fat (hereinafter referred to as "IMF") was different for each group and part of meat. The highest IMF presence, as shown in Table 7, was in the fourth group, in the part of neck, gilts – 15.88% and the lowest IMT content was in the first group, the part of roast meat, gilts – 1.46%. The first group showed average values of IMF content in the interval between 10.95% (neck, gilts) and 1.46% (roast meat, gilts). The second group had the average IMF values in the interval between 11.82% (neck, gilts) and 2.01% (roast meat, barrows). In the third group, the average values fluctuated between 11.33% (neck, gilts) and 1.70% (roast meat, gilts) and the fourth group had average values in the interval between 15.88% (neck, gilts) and 1.93% (roast meat, barrows). Matoušek et al. (1997) found out in hybrid population of hogs 2.39% share of intramuscular fat. Bejerholm and Barton-Gade (1986), present optimum value for intramuscular fat in the longest back muscle 2.5%. As stated by Mikule et al. (2000) the average content of intramuscular fat in the monitored hog breed in the Czech Republic was between 1.02 and 1.94%.

As presented in Table 8 and Fig. 3 in gilts, the part of neck the measured average values of IMF were found statistically significant between the first and the fourth group ($P \leq 0.001$) and between the third and fourth group ($P \leq 0.01$). In the part of leg a statistically provable difference between the first and fourth group ($P \leq 0.05$) was

Table 7. Contents of IMF (%) in relation to sex and achieved live weight in major meaty parts of pork

Group	Neck (%)		Leg (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
1	10.95 ± 4.17	8.04 ± 0.86	3.78 ± 2.00	3.60 ± 1.05
2	11.82 ± 4.42	9.40 ± 2.35	4.45 ± 1.35	3.42 ± 2.94
3	11.33 ± 1.35	9.30 ± 0.88	5.39 ± 3.01	3.62 ± 1.35
4	15.88 ± 3.71	12.82 ± 4.59	6.20 ± 3.09	3.70 ± 2.29
Group	Roast (%)		Shoulder (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
1	1.46 ± 0.47	3.72 ± 3.08	2.47 ± 0.58	2.39 ± 0.76
2	2.98 ± 2.20	2.01 ± 1.05	3.42 ± 0.75	2.04 ± 0.37
3	1.70 ± 0.41	1.96 ± 1.39	3.02 ± 0.87	3.52 ± 2.16
4	2.50 ± 0.60	1.93 ± 0.87	3.89 ± 1.08	3.07 ± 1.14

Table 8. GLM-test between the weight groups – contents of IMF (%) within the monitored sex group

Sex	Parts	1 : 2	1 : 3	1 : 4	2 : 3	2 : 4	3 : 4
Gilts	Neck	–	–	**	–	–	*
	Leg	–	–	*	–	–	–
	Roast	**	–	*	*	–	–
	Shoulder	*	–	***	–	–	*
Barrows	Neck	–	–	**	–	**	*
	Leg	–	–	–	–	–	–
	Roast	*	*	*	–	–	–
	Shoulder	–	–	–	*	*	–

* ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001

established, then in the part of roast meat between the first and second group ($P \leq 0.01$), between the first and the fourth group (P 0.001) and the second and the third group ($P \leq 0.01$), in the part of shoulder statistically provable differences were established between the first and the second group ($P \leq 0.05$), the first and the fourth group ($P \leq 0.001$) and the third and the fourth group ($P \leq 0.05$).

In barrows (Table 8, Fig. 4) statistically provable difference was found out in the part of neck, in particular between the first and the fourth group ($P \leq 0.01$), the second and the fourth group ($P \leq 0.01$) and the third and the fourth group ($P \leq 0.05$); then in the part of roast meat between the first and the second group ($P \leq 0.05$), the first and the third group ($P \leq 0.05$) and the first and the fourth group ($P \leq 0.05$). And in the part of shoulder the provable statistical difference was established between the second and the third group ($P \leq 0.05$) and the second and the fourth group ($P \leq 0.05$).

The average values of N-substances are presented in the Table 9, Figs 5 and 6. According to Pipek and Pour (1998), the content of proteins in clean lean meat uses to be between 18 and 22%.

The highest average values of N-substance, i.e. rough proteins were assessed in the third group, the part of roast meat, gilts – 23.73% and the lowest average values were showed by the fourth group, the part of neck, gilts – 17.18%. In the first up to the fourth group the highest values were assessed in the part of roast meat, gilts, i.e. 22.38%, 22.67%, 23.73% and 23.24%. The lowest values were determined in the first and the third group in the part of shoulder, barrows – 18.11% and 18.30% and in the second and the fourth group in the part of neck, gilts – 18.85% and 17.18%.

Table 10 presents statistically provable differences between the groups according to GLM-test in the content of nitrogenous substances (in relation to sex). In gilts statistically provable differences were found between the first and the fourth group ($P \leq 0.01$) and between the third and the fourth group ($P \leq 0.001$) in the part of neck, then values between the first and the third group ($P \leq 0.05$) and the first and the fourth group ($P \leq 0.01$) in the part of leg and between the first and the third group ($P \leq 0.01$) in the part of roast meat.

In barrows the statistically provable difference was established between the first and the fourth group ($P \leq 0.05$), the second and the fourth group ($P \leq 0.01$) in the part of neck and between the first and the third group ($P \leq 0.01$), the first and the fourth group ($P \leq 0.05$), the second and the fourth group ($P \leq 0.01$) and the second and the fourth group ($P \leq 0.05$) in the part of roast meat.

The content of ashes as listed in Table 11 and Figs 7 and 8 again showed different interval values. The third group, the part of leg, gilts showed the highest average values of ashes – 2.21% and contrary to that the lowest

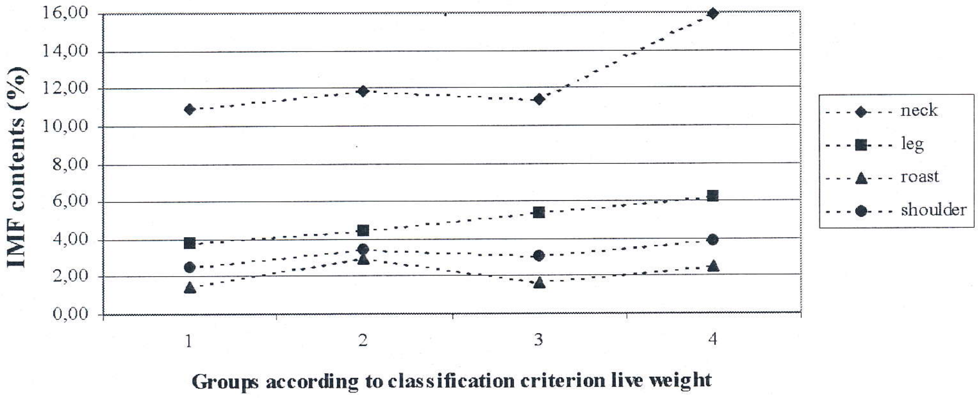

Fig. 3. Contents of IMF (%) in relation to gilts and achieved live weight in major meaty parts of pork

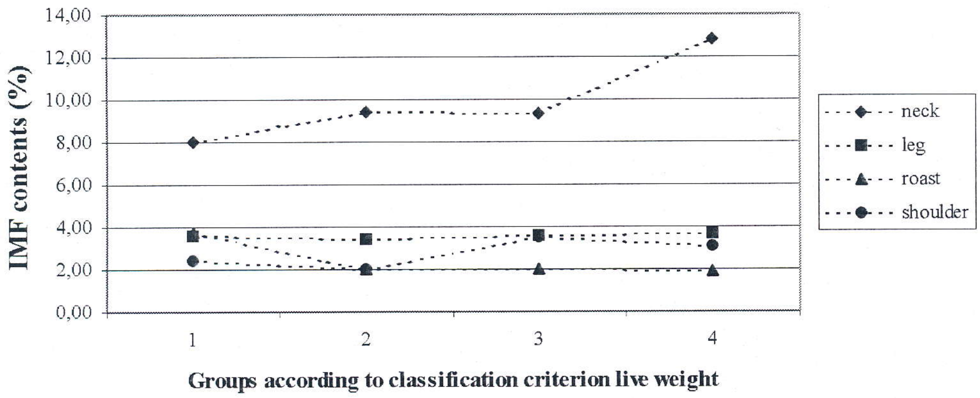

Fig. 4. Contents of IMF (%) in relation to barrows and achieved live weight in major meaty parts of pork

Table 9. Contents of N-substance (%) in relation to sex and achieved live weight in major meaty parts of pork

Group	Neck (%)		Leg (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD
1	19.84 ± 1.24	19.79 ± 0.61	22.22 ± 1.32	20.65 ± 0.82
2	18.85 ± 1.95	19.81 ± 1.60	21.49 ± 0.91	21.38 ± 0.95
3	20.11 ± 1.55	19.09 ± 0.73	21.23 ± 0.58	21.51 ± 1.72
4	17.18 ± 1.22	18.26 ± 1.56	20.47 ± 1.14	21.16 ± 1.64
Group	Roast (%)		Shoulder (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD	$\bar{x}$ ± SD
1	22.38 ± 1.04	21.80 ± 1.35	19.00 ± 1.49	18.11 ± 1.14
2	22.67 ± 0.46	22.08 ± 0.90	19.31 ± 0.82	18.91 ± 0.97
3	23.73 ± 1.27	23.57 ± 1.23	19.14 ± 0.52	18.30 ± 1.38
4	23.24 ± 0.99	23.07 ± 1.17	18.37 ± 1.32	18.52 ± 1.64

Table 10. GLM-test between the weight groups – contents of N-substance (%) within the monitored sex group

Sex	Parts	1 : 2	1 : 3	1 : 4	2 : 3	2 : 4	3 : 4
Gilts	Neck	–	–	**	–	–	***
	Leg	–	*	**	–	–	–
	Roast	–	**	–	–	–	–
	Shoulder	–	–	–	–	–	–
Barrows	Neck	–	–	*	–	**	–
	Leg	–	–	–	–	–	–
	Roast	–	**	*	**	*	–
	Shoulder	–	–	–	–	–	–

* ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001

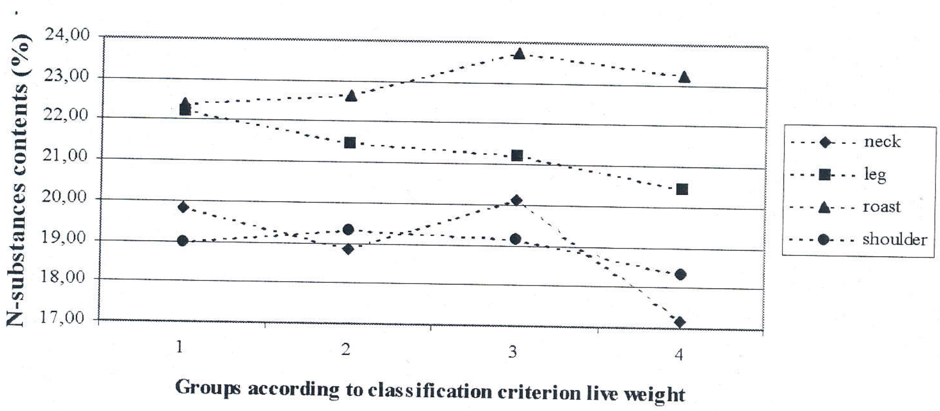

Fig. 5. Contents of N-substance (%) in relation to gilts and achieved live weight in major meaty parts of pork

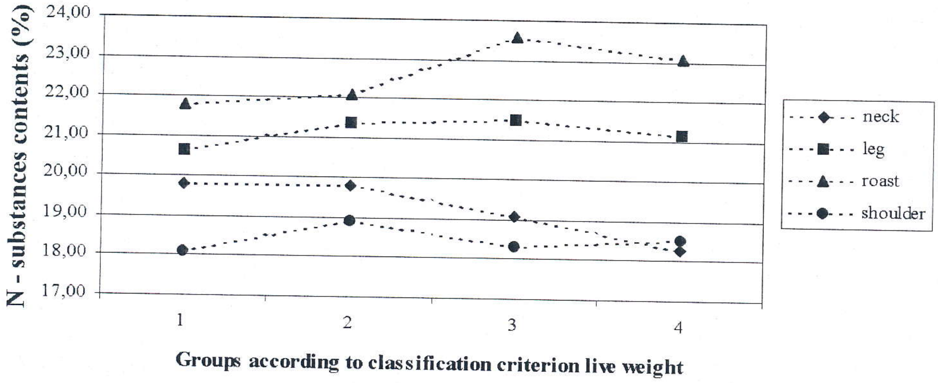

Fig. 6. Contents of N-substance (%) in relation to barrows and achieved live weight in major meaty parts of pork

values were identically established in the first and the fourth group, in the part of shoulder, gilts – 0.78%. The part of leg, gilts reached the highest average value – 1.83%, the lowest average values were in the part of shoulder, gilts – 0.78%. In the second group the highest value was assessed in the part of leg, barrows – 1.61% and the lowest average value was in the part of neck, gilts – 0.86%. In the third group the average content of ashes was assessed in the interval between 2.21% (the part of leg, gilts) and 0.92% (the part of shoulder, barrows). In the last fourth group the highest values were measured in the part of leg, gilts – 1.87% and the lowest values were in the part of shoulder, gilts – 0.78%.

According to Arnoštová et al. (2000), the values of ashes content reached in average an interval between 0.95 and 1.23%. Also Lagin et al. (2002) present lower values of ashes in the part of roast meat in hybrid breeds (Seghers – 1.12%, Kahyb – 1.14%, Slovhyb 2 – 1.15%).

Table 12 presents statistically provable differences in ashes content values (in relation to sex), when in gilts statistically provable values were found between the first and the second group ($P \leq 0.05$) in the part of neck, then in values between the first and the second group ($P \leq 0.05$), the first and the third group ($P \leq 0.05$) and the second and third group ($P \leq 0.001$) in the part of leg and in values between the third and the fourth group ($P \leq 0.05$) in the part of roast meat.

Statistically provable difference in barrows was established between the first and the fourth group ($P \leq 0.01$), the second and the third group ($P \leq 0.01$), the second and the fourth group ($P \leq 0.001$) and the third and the fourth group ($P \leq 0.05$) in the part of neck and between the first and the third group (P 0.05) and the first and the fourth group ($P \leq 0.01$) in the part of roast meat.

CONCLUSION

As we can see from the results presented above the slaughter hogs of the same final hybrid combination bred in identical technological conditions, fed with identical feeding ration but slaughtered at various live weights showed different values of chemical composition of meat

As regards the content of dry matter we have got to the following conclusion:

- in the part of neck the measured values of dry matter content were higher in gilts (in all groups) than in barrows, and contrary to that in the part of roast meat (apart form the second group) the values of dry matter content were significantly higher in barrows,
- the highest values of dry matter content had the part of neck, then the part of leg, the part of roast meat, and the part of shoulder had the lowest values,
- only in case of reached values in the content of dry matters in the part of neck, barrows and in the part of shoulder, barrows a presumption has been confirmed that "the content of dry matter also grows linearly with an increase of live weight",
- in the part of neck the measured values of the dry matter content in gilts were higher (in all groups) than in barrows, contrary to that in the part of roast meat (apart from the second group) the values of the dry matter content were significantly higher in barrows.

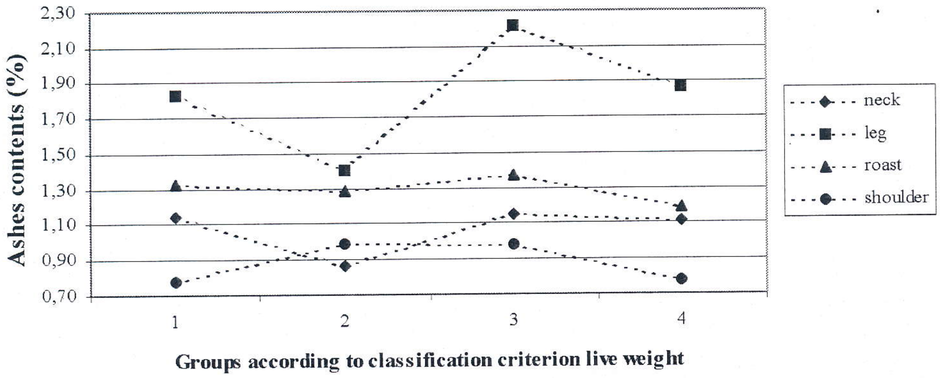

Fig. 7. Contents of ashes (%) in relation to gilts and achieved live weight in major meaty parts of pork

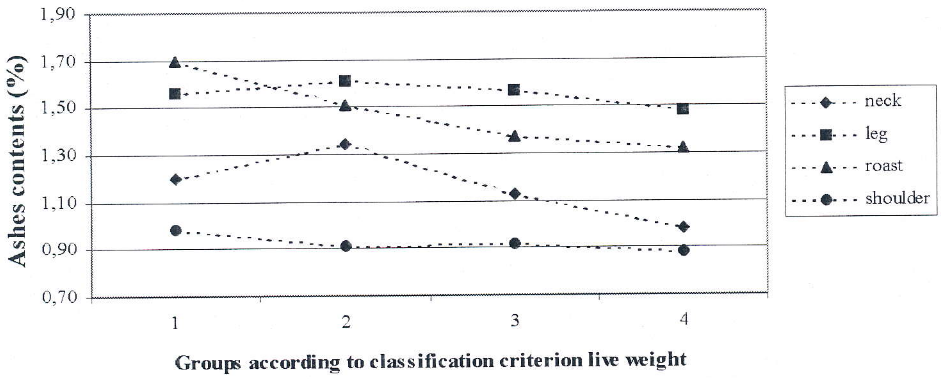

Fig. 8. Contents of ashes (%) in relation to barrows and achieved live weight in major meaty parts of pork

Table 11. Contents of ashes (%) in relation to sex and achieved live weight in major meaty parts of pork

Group	Neck (%)		Leg (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
1	1.14 ± 0.31	1.20 ± 0.09	1.83 ± 0.32	1.56 ± 0.21
2	0.86 ± 0.35	1.34 ± 0.22	1.40 ± 0.15	1.61 ± 0.39
3	1.15 ± 0.09	1.13 ± 0.03	2.21 ± 0.50	1.57 ± 0.33
4	1.11 ± 0.15	0.98 ± 0.17	1.87 ± 0.57	1.48 ± 0.30
Group	Roast (%)		Shoulder (%)	
	Gilts	Barrows	Gilts	Barrows
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
1	1.33 ± 0.21	1.70 ± 0.56	0.78 ± 0.17	0.98 ± 0,07
2	1.29 ± 0.11	1.51 ± 0.22	0.99 ± 0.22	0.91 ± 0,21
3	1.37 ± 0.09	1.37 ± 0.09	0.98 ± 0.19	0.92 ± 0,14
4	1.19 ± 0.08	1.32 ± 0.21	0.78 ± 0.12	0.88 ± 0,17

Table 12. GLM-test between the weight groups – contents of ashes (%) within the monitored sex group

Sex	Parts	1 : 2	1 : 3	1 : 4	2 : 3	2 : 4	3 : 4
Gilts	Neck	*	–	–	–	–	–
	Leg	*	*	–	***	–	–
	Roast	–	–	–	–	–	*
	Shoulder	–	–	–	–	–	–
Barrows	Neck	–	–	**	**	***	*
	Leg	–	–	–	–	–	–
	Roast	–	*	**	–	–	–
	Shoulder	–	–	–	–	–	–

* ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001

As regarded the IMF content it was confirmed that:

- the slaughter hogs with higher live weight had higher presence of IMF,
- the highest content of IMF had the part of neck, contrary to that the lowest content was in the part of roast meat,
- the gilts showed (apart from the first and the third group in the part of roast meat and the third group in the part of shoulder) a significantly higher content of IMF than the barrows.

In respect of N-substances:

- the higher live weight the slaughter hogs had the lower content of N-substances could be found,
- the highest presence of N-substances were showed in the parts of roast meat and leg, on the other hand the lowest values had the part of shoulder,
- the gilts had higher presence of N-substances in the part of roast meat (in all groups), shoulder (the first three groups), leg (the first two groups) and neck (only the first and the third groups) than the barrows.

In respect of the content of ashes:

- the highest values were recorded in the second (95.1–105 kg) and the third (105.1–115 kg) group and with the highest live weights (i.e. 115.1 kg and more) the values of the ashes content decreased,
- the highest values of ashes content were measured in the part of leg, the lowest in the part of shoulder.
- in the part of roast meat the measured values were significantly higher in barrows than in gilts in all four groups.

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OKROUHLÁ, M. – STUPKA, R. – ČÍTEK, J. – ŠPRYSL, M. – KLUZÁKOVÁ, E. (Česká zemědělská univerzita, Fakulta agrobiologie, potravinových a přírodních zdrojů, Praha, Česká republika):

Vliv porážkové hmotnosti a pohlaví na chemické složení vepřového masa.

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Cílem práce bylo ověřit vliv porážkové hmotnosti a pohlaví na základní chemické složení (intramuskulární tuk, bílkoviny, sušina a popeloviny) hlavních masitých částí vepřového masa (krkovice, plec, pečeně a kýta).

Do pokusu bylo zařazeno celkem 40 kusů (17 prasniček a 23 vepříků) jatečných prasat hybridní kombinace (ČBU x ČL) x (H x PN). Prasata byla rozdělena podle živé hmotnosti do čtyř skupin.

Z pravých jatečných půlek těchto prasat byl proveden odběr reprezentativních vzorků svalů, které byly dále homogenizovány a podrobeny chemické analýze.

Z výsledků vyplývá, že jatečná prasata stejné finální hybridní kombinace, avšak s různou živou hmotností a různým pohlavím vykázala rozdílné hodnoty chemického složení masa. Byly nalezeny signifikantní rozdíly u všech sledovaných parametrů, tedy u obsahu sušiny, intramuskulárního tuku (IMT), jakož i N-látek a popelovin.

Potvrdilo se, že s nárůstem živé hmotnosti se lineárně zvyšuje obsah IMT a v případě partií krkovice (vepříci) a plece (vepříci) i obsah sušiny. Obsah N-látek se naopak s vyšší živou hmotností snižuje. Pokud jde o obsah popelovin, bylo nejvyšších hodnot dosaženo u skupin prasat do živé hmotnosti 115 kg, přičemž s dalším zvyšováním hmotnosti nad 115 kg se obsah popelovin snižoval.

Z hlediska porovnání vlivu pohlaví na sledované parametry bylo zjištěno, že u partie krkovice byly hodnoty obsahu sušiny u prasniček vyšší (u všech skupin) než u vepříků, naopak u partie pečeně (mimo druhou skupinu) byly hodnoty obsahů sušiny signifikantně vyšší u vepříků. U obsahu IMT prasničky vykázaly (kromě první a třetí skupiny u partie pečeně a třetí skupiny u partie plec) signifikantně vyšší obsah než vepříci. U partie pečeně (u všech skupin), plece (první, druhá a třetí skupina), kýty (první a druhá skupina) a krkovice (pouze první a třetí skupina) měly prasničky vyšší zastoupení N-látek než vepříci. Ti pak oproti prasničkám (u všech skupin) vykázali v partii pečeně výrazně vyšší obsah popelovin.

prase; kvalita masa; chemická analýza; porážková hmotnost; pohlaví

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