PARAMETERS ON MEAT QUALITY TO BE SELECTED IN DEPENDENCE OF SEX AND BROILER GENOTYPE

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Background

The quality of a particular genetic material in poultry can be assessed from several aspects. Thus, with respect to slaughter industry and consumers interests, it seems very important that fattened chickens have good slaughetr yields, good conformity, as much carcass meat as possible, the optimal distribution of fat tissue, adequate skin colour and as less damages arising over the fattening, loading and transportation as possible.

Breast fleshiness and fat amount in carcasses are, no doubt, the two highly essential elements determining meat quality in the broilers. These two properties and carcass quality are, in a broader sense, influenced by numerous factors. As far as biological factors are concerned, carcass quality is naturally influenced most by genotype, sex and age.

Objectives

The paper was aimed at studyng slaughter yields and shares of the essential carcass parts as well as at seeking abdominal fat in the hens and cocks of the proveniance Hybro and Arbor Acres. In other words, on the basis of the difference significance analysis, we primarily tended to find out the effects genotype and sex had had on the parameters of carcass quality in the broilers.

Methods

The total of 60 broilers 42 days old was used to study the effects of the genotype and sex on the individual parameters of the dressed carcasses quality. Studies embraced 15 cocks and 15 hens from the proveniances Hybro and Arbor Acres each. All the trial broilers were weighted prior to slaughter. After slaughtering and adequate dressing had been performed, the dressed carcasses were weighted, which was necessary for establishing slaughter yields (traditionally dressed, ready to cook and oven ready carcass). The dressed and cooled carcasses were cut into the basic carcass parts. In order to determine abdominal fat share, fat tissue was separated from the stomach's hollow unconnected to the carcass. Thus, the basic carcass parts and abdominal fat were weighted and their share in the body mass prior to slaughter calculated.

So obtained data were analysed, using usual methods of the variation statistics. The significance of the differences was tested, using the variance analysis model in conformity with the two-factorial trial design (two genotypes and two sexes).

Results and Discussion

From table 1., one can see the data about slaughter yields (traditionally dressed carcass, ready to cook and the oven ready ones) of the broilers and cocks of the proveniances studied.

From the tab.1., one can see similar values of the traditionally dressed carcasses in both, hens and cocks of the genotypes studied. Namely, both, the differences between the sexes and proveniances, were slight and statistically non-significant. No significant differences were revealed in view of the other two slaughter yields examined (ready to cook and oven ready carcass). However, from the point of view of sex, data analysis for these two yields suggested significantly higher ($P \leq 0.05$) ready to cook and oven ready carcass yields in the hens than those in the cocks.

The shares of the basic carcass parts and of abdominal fat in the hens and cocks of the genotypes studied, are presented in the tab.2.

The Hybro cocks had the highest (19.83%), and the Arbor Acres hens the lowest (19.42%) breast carcass share. In this sense, no differences existed between the sexes and those between the genotypes were minor and statistically negligible, as well.The Arbor Acres cocks had the highest (12.58%) and the Hybro hens the lowest (11.48%) drumsticks share. The difference in drumstick share appeared to be significant only in terms of sex. Namely, the cocks had significantly higher ($P \leq 0.05$) drumstick share than the hens did. The share of thighs ranged from 12.72% in the Hybro females to 13.02% in the Arbor Acres males. The differences in thigh share didn't seem to be statistically significant.

The carcass abdominal fat was the lowest in the Hybro cocks (1.22%) and the highest in the Arbor Acres hens (1.67%). The differences between the trial broilers of the differing proveniances were low in terms of the abdominal fat share, whereas the statistically significant ones ($P \leq 0.01$) were recorded between the sexes. Namely, compared to the cocks, the hens had a higher abdominal fat share by 0.36%.

The shares of the basic carcass parts and of the abdominal fat didn't seem to be significantly affected by the genotype and sex, which was in agreement with results of Heath and Owens (1985), Masic et al., (1985) and Hopic et al., (2000).

Certain discrepancies in the obtained results in relation to the literature ones are likely to have resulted from the genotypes studied (Ristic, 1993), followed by the differences in body weight prior to slaughter (Benewidew, 1988; Orr et al., 1984), carcass dissection modes (Ricard, 1988), statistical data processing (Bilgili et al., 1992) and the size of the sample (Ristic, 1993) embraced by a number of researches, as well.

Conclusion

Based upon effects of the broilers genotype and sex on the individual parameters of meat quality, the following may be concluded;

-slaughter yield, breast, drumsticks and thighs and the abdominal fat shares didn't seem to be significantly affected by the genotype studied;

-the differences between the sexes in terms of the traditionally dressed carcasses and drumsticks and thighs dressing, were also non-significant;

-the hens had significantly higher ($P \leq 0.05$) slaughter yields for ready to cook and oven ready carcass and a significantly higher ($P \leq 0.01$) abdominal fat share compared to the cocks, and

-the difference between the sexes also existed in view of the drumsticks share. Thus, the cocks had a significantly higher ($P \leq 0.05$) drumstick share compared to that in hens.

Pertinent literature

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Table 1: Slaughter yield in carcasses of examined chicks (in % of live weight)

Genotype	Sex		Carcass mass in % of live weight		
			Trodicitonaly dressed carcass	Ready to cook	Oven ready carcass
Hybro	M	$\bar{x}$	81.81	75.59	67.11
		cv	0.92	1.10	1.71
	F	$\bar{x}$	82.18	75.94	67.55
		cv	1.02	0.87	1.14
	M+F	$\bar{x}$	81.99	75.77	67.33
		cv	0.99	1.00	1.46
Arbor Acres	M	$\bar{x}$	81.38	75.11	66.52
		cv	0.65	0.85	1.65
	F	$\bar{x}$	82.54	76.63	68.21
		cv	0.88	1.14	1.48
	M+F	$\bar{x}$	81.96	75.87	67.36
		cv	1.05	1.42	2.00

M-Males
F-Females

Table 2: The yields (in % of body weight) of most important main carcass parts and abdominal fat in Hybro and Arbor Acres chicks

Genotype	Sex		Breast	Thigh	Drumstick	Abdominal fat
Hybro	M	$\bar{x}$	19.83	12.31	12.84	1.22
		cv	3.53	7.31	5.37	21.31
	F	$\bar{x}$	19.52	11.48	12.72	1.58
		cv	2.92	5.75	5.97	9.49
	M+F	$\bar{x}$	19.68	11.89	12.78	1.40
		cv	3.25	7.40	5.63	20.00
Arbor Acres	M	$\bar{x}$	19.56	12.58	13.02	1.30
		cv	4.35	5.80	3.46	13.08
	F	$\bar{x}$	19.42	12.01	12.83	1.67
		cv	3.35	6.66	5.77	9.58
	M+F	$\bar{x}$	19.49	12.30	12.93	1.49
		cv	3.80	6.59	4.72	16.78

M-Males
F-Females