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Dressing percentage and meat yield of Hybro G+ provenance broilers

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Abstract. The goal of this paper was to examine the slaughter characteristics of meat from Hybro G+ provenance broilers. Characteristics studied were dressing percentage, breast, leg (thigh and drumstick) and abdominal fat in chilled carcass, and percentage of meat, bones and skin in breast and leg. In this trial, one-day broilers of Hybro G+ provenance were raised under the same zoohygienic and ambient conditions that met the technological requirements for this provenance and were provided with feed and water *ad libitum*. After 42 days' fattening, broilers were slaughtered and the resultant carcasses were air chilled. The average dressing percentage was 73.15%, and in carcasses, the average percentage of breast was 34.33%, leg was 27.91% and abdominal fat was 1.13%. The percentage in breast and leg of meat was 72.61% and 70.38%, of skin was 8.00% and 9.45% and of bones was 19.79% and 19.59%, respectively. The meat:bone ratio was 0.27 for breast and 0.28 for leg.

1. Introduction

In the past decades broiler meat production accounted for 80% of total poultry meat production and underwent the greatest increase of any domestic animal. According to estimates, production and consumption of broiler meat continue to increase due to the birds' good food conversion ratio compared with other animal species, there being no negative cultural and religious aspects (meat is accepted from all nations and religions), the good proportion between meat and fat, attractive meat sensory properties, the animals' quick reproductive cycle and their low price and fast fattening. Domestic broilers are one of the main protein sources for humans and broiler meat has become a major consumer product in many countries [1], whereas white feather broilers with a fast growth rate account for a major portion of global broiler production. Such exponential growth of broiler production is a result of selective breeding, efficient production systems (floor, cage and free-range rearing), improved diet and veterinary care [2].

The main criteria used to evaluate the slaughter value of broilers are dressing percentage, percentages of culinary cuts and muscle content. Carcass composition is also important, as high muscle content, particularly in breast and leg meat, and low fat content are desirable characteristics for consumers. Genotype, feed and environmental conditions are the key factors affecting the carcass and meat quality of broilers. Breast and leg cuts possess great value in the food industry and in households and their external features, nutritional profile and chemical properties play a main role [3].

Dressing percentage depends on *pre mortem* and *post mortem* factors. The main *pre mortem* factors are genetic background, breeding, density, feed, age, sex, transport method and fasting before slaughter [4]. *Post mortem* factors include technological processing of carcasses, chilling method [5] and stunning

method [6]. Genetic background is one of the main factors that influence dressing percentage. That could explain differences between dressing percentage of different provenances.

The goal of this paper was to examine the slaughter characteristics of meat from Hybro G+ provenance broilers; dressing percentage, percentage of breast, leg (thigh and drumstick) and abdominal fat in chilled carcass, and percentage of meat, bones and skin in breast and leg.

2. Materials and methods

In this trial, one-day-old Hybro G+ provenance broilers were used. They were raised under the same zoohygienic and ambient conditions that met the technological normative for this provenance [7]. Feed and water were provided *ad libitum*. The composition of feed mixtures is presented in Table 1.

The proximate composition of feed mixtures was determined according to standard methods [8], and is shown in Table 2. Fattening lasted for 42 days, after which, broilers were slaughtered and carcasses were air chilled to 3°C. After chilling, carcases were butchered into main cuts and samples of leg, breast, and abdominal fat were taken. Meat, skin and bones were separated. Cuts and tissues were measured to an accuracy of 10^{-3}.

Table 1. Composition of feed mixtures

	Pre-starter 1-7 days	Starter 8-14 days	Grower 15-35 days	Finisher 36-42 days
Maize	54.45	50.79	53.84	54.20
Wheat meal	2.00	2.50	1.00	4.00
Soybean meal	25.00	25.00	23.50	23.00
Sunflower meal	5.00	5.00	6.00	5.00
Yeast	3.00	3.00	3.00	3.00
Fish meal	5.00	4.00	3.00	-
Dehydrated alfalfa meal	-	2.00	2.00	2.00
Soybean oil	3.00	5.00	4.50	5.50
Dicalcium phosphate	1.00	1.20	1.30	1.10
Limestone	-	-	0.20	0.40
Salt	0.20	0.20	0.30	0.30
Lysine	0.10	0.06	0.11	0.25
Methionine	0.25	0.25	0.25	0.25
Premix	1.00	1.00	1.00	1.00

Table 2. Proximate composition of feed mixtures

	Pre-starter 1-7. day	Starter 8-14. day	Grower 15-35. day	Finisher 36-42. day
Moisture	11.03	10.72	10.79	20.85
Ash	5.61	5.79	5.96	5.44
Crude protein	22.73	22.23	21.34	19.48
Crude fat	5.93	7.76	7.28	8.16
Crude cellulose	3.94	4.37	4.51	4.37
NNE*	50.76	49.12	50.12	51.69
Calcium	0.95	0.97	0.99	0.81
Phosphorous	0.86	0.85	0.85	0.71
Metabolisable energy, MJ/kg	12.92	13.23	13.12	13.43
Lysine	1.36	1.30	1.26	1.20
Methionine + cysteine	0.97	0.95	0.92	0.84

Tryptophan	0.31	0.31	0.29	0.27

*Non-nitrogen extract

3. Results and discussion

Results of the study are presented in Tables 3 and 4. It is well known there is a high level of direct correlation between weight of broilers before slaughter and dressing percentage [9,10]. The dressing percentage achieved in this study was 73.15%, better than the 68.01% for Hybro provenance broilers reported by Arsenijević et al. [11] and similar to the 71.6-72.1% for broilers fed with different feed mixtures reported by Ristić et al. [12], while Toledo et al. [13] cited better dressing percentages of 73.5-76.1%. Arbor Acres broilers had an average dressing percentage of 69.43% in the investigation by Živkov-Baloš [13], broilers of Hybro provenance achieved 68.1% [11] and Hybro G+ provenance broilers achieved 61.50% [14].

The average percentage of breast in chilled carcass in this study was 34.33% and that of leg in chilled carcass was 27.91%. The percentage of breast in chilled carcass was higher than was obtained by Ivanović [15], Castellini et al. [16] and Toledo et al. [17]. This parameter was under the influence of sex, since females have bigger breast muscles than males. The percentage of leg in chilled carcass was significantly greater than was reported by Ivanović [15]. The percentage of breast in chilled carcass in the current study was higher than the 31.25% reported previously [14], but the percentage of leg in our chilled carcasses was lower than the 32.91% for the Hybro G+ provenance broilers examined in the study by Đorđević [14]. The percentage of breast in chilled carcass in this trial was lower than was cited by Nikolić et al. [18], who found the percentage of breast in carcass ranged from 37.93% to 38.64%. Nonetheless, our results on the percentage of leg in carcass were in accordance with their results (27.60-28.72%) for Cobb broilers [18].

In general, with age, the proportion of bone in broiler carcasses decreases, and one of the main indicators of good carcass conformation is the meat:bone ratio. In another study, this was 1:0.26 for breast and 1:0.37 for leg [19]. In this study, the meat:bone ratio was 1:0.27 for breast and 1:0.28 for leg.

Table 3. Dressing percentage and percentage (%) of breast, leg and abdominal fat in carcass

Dressing percentage 73.15±1.32		
Breast	**Leg**	**Abdominal fat**
34.33±0.66	27.91±1.24	1.13±0.36

Table 4. Percentage (%) of meat, skin and bones in breast and leg

Meat	Skin	Bones
Breast		
72.61±1.70	8.00±0.74	19.79±1.47
Leg		
70.38±1.63	9.45±0.59	19.59±1.44

4. Conclusion

The average dressing percentage was 73.15%, and in-carcass percentage of breast was 34.33%, of leg was 27.91% and of abdominal fat was 1.13%. The percentage of meat in breast and leg cuts was 72.61% and 70.38%, of skin in breast and leg cuts was 8.00% and 9.45% and of bones in breast and leg cuts was 19.79% and 19.59%, respectively. The meat:bone ratio was 1:0.27 for breast and 1:0.28 for leg.

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