

A STUDY OF CARCASS QUALITY AND THE NUTRITIVE ANALYSIS OF EDIBLE PARTS OF TURKEYS FED ON RATIONS SUPPLEMENTED WITH DIFFERENT ANTIBIOTICS

By

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SUMMARY

Feeding antibiotics at a level of 30 p.p.m. for White Holland turkeys failed to assure any differences in either the carcass quality or the nutritive analysis between the supplemented and the unsupplemented groups in both sexes. The average percentage of the weight, main body weight and the total inedible parts from the live weight were 97, 90, 77, 65 and 23% respectively. Fat contents in males were lower than in females. Feeding penicillin and terramycin increased the fat and decreased the moisture especially in females. There was no obvious differences in the nutritive analysis between the unsupplemented and aureomycin supplemented turkeys. A knowledge of the carcass quality, dressing percentages and nutritive analysis is of a great importance for human dietetics. This work was undertaken to study the effect of different antibiotic supplementation on the carcass quality and the nutritive analysis of turkeys.

INTRODUCTION

Dynsza *et al* (1953), found a significant lowering in the moisture content when oxytetracycline was fed but no change in protein or other extract. Jukes *et al* (1957), stated that carcass analysis showed that birds receiving penicillin (10 or 100 p.p.m.) had slightly lower body moisture. Fat content was slightly increased while there was no obvious increase in protein or in ash. Saxena *et al* (1953) found that an increase in subcutaneous fat resulted from feeding penicillin. Tarver *et al* (1954) showed no change in the dressing loss or fleshing of chickens caused by feeding penicillin.

EXPERIMENTAL AND METHODS

The antibiotics used were procaine penicillin, terramycin and aureomycin at a level of 30gm. per ton of feed. Four males and four females of foreign turkeys (White Holland) were taken at random from the unsupplemented group and the other three supplemented ones. Birds were at 34 weeks of age. They were prepared for slaughter by keeping them without food for 24 hrs. Birds were slaughtered by cutting the neck near the cervical vertebra. The blood, feathers, inedible viscera

and other inedible parts (head, end of wings and legs) were estimated and discarded. The remaining carcass (main body and neck) along with the edible viscera (liver, empty gizzard and heart) were weighed to determine the total edible parts (T.E.P.) or the drawn weight.

The main body was divided into front and hind parts. Meat was separated from bones and minced twice by a suitable mincer. Samples were kept in a covered basin to be used for chemical analysis. Weighings 2-10 grams were taken by difference to the nearest second decimal.

Methods of analysis followed the general conventional method of the A.O.A.C. (1950) and Ghoneim *et al* (1952).

Moisture : in covered aluminium dishes at 95°C until constant weight.

Ash : at 600°C in a muffle-furnace.

Protein : Kjeldahl method was applied using mercury catalyst with conc. H₂SO₄. The conversion factor was 6.25%.

Crude fat : Ethyl ether was used for extraction using soxhlet apparatus after drying samples.

Total carbohydrate : It was obtained by difference.

The calorific value was calculated on the basis of 4,4 and 9 calories for one gram of protein, carbohydrate and fat respectively.

RESULTS AND DISCUSSION

(a) carcass quality

The carcass quality and the dressing percentages in turkey males and females fed on different antibiotic supplemented rations are shown in Tables 1 & 2.

It appears that the live weight of males were relatively higher than females. The absolute weight of the different parts in turkeys followed the same direction as the live weight in both males and females. For convenience the different parts would be discussed as percentages from the live weight.

The percentage of weight after slaughter, dressing weight, drawn weight and main body weight were practically the same with males and females of the different experimental turkeys. For practical approximation their average percentages from the live weight were 97, 90, 77 and 65% respectively.

The total inedible parts were slightly lower in males than females. The average figures in both sexes were 21.9 and 23.2% respectively.

The average percentage of the main body from the drawn weight for both sexes of turkeys was about 85%. Therefore, the rest of the edible parts (neck, liver, gizzard and heart) would be 15%. The average percentages of the front and the hind parts in both sexes were ca. 47 and 38% from the drawn weights respectively.

It can be noticed that the different antibiotic supplementation may have no effect on the percentages of the weight after slaughter, dressing weight, drawn weight and the main body weight from the live weight. The percentages of the front and the hind parts and the other edible parts from the drawn weight were also the same in the different treatments of antibiotics. The little variations which were observed may be due to individuality rather than antibiotic supplementation. Our results are in agreement with Tarver *et al* (1954), using penicillin.

(b) *Nutritive analysis*

Tables 3 & 4 showed the analysis of the meat of the edible parts of the experimental males and females.

It can be noticed that the moisture contents in males were relatively higher than in females while the fat contents followed an opposite direction. The fat content was the highest in the front part in males while it was the highest in the hind part for females. The protein and ash content were fluctuating without any special trend in both sexes. Antibiotic supplementation in general failed to assure any obvious differences in the chemical composition of the edible parts. Fat was the single component which increased in female and this was in case of penicillin and terramycin supplementation. The increase of fat caused a decrease of the other contents especially moisture. There was no obvious differences in the nutritive analysis between the unsupplemented and aureomycin supplemented turkeys. Our results were in agreement with Jukes *et al* (1957), Dymysza (1953) and Saxena *et al* (1953) in case of penicillin and terramycin supplementation in females. In case of aureomycin fed turkeys the results were in accordance with Tarver *et al* (1954).

TABLE 1.—The carcass quality and dressing percentages from the live weight in turkey males

Item	Control		Penicillin		Terramycin		Aureomycin	
	gm.	%	gm.	%	gm.	%	gm.	%
Live wt.	6935	—	7280	—	6695	—	6490	—
Wt. after slaughter	6600	95.2	7000	96.2	6440	96.2	6170	95.1
Dressing wt.	6265	90.2	6570	90.2	6140	91.7	5825	89.8
Drawn wt.	5380	77.6	5770	79.2	5300	79.2	4960	76.5
Main body	4540	65.5	4670	64.2	4475	66.8	4045	62.3
Front part	2620	37.7	2835	38.9	2895	43.2	2080	32.0
Hind part	1920	27.6	1840	25.2	1580	23.5	1965	30.2
Neck	580	8.4	775	10.6	555	8.3	565	8.7
Liver	86	1.2	100	1.4	106	1.6	104	1.6
Gizzard and heart	185	2.2	225	3.1	170	2.5	246	3.8
Total inedible parts	885	22.4	800	20.8	840	20.0	865	28.5

TABLE 2.—The Carcass Quality and dressing percentages from live weight in turkey females

Item	Control		Penicillin		Terramycin		Aureomycin	
	gm.	%	gm.	%	gm.	%	gm.	%
Live wt.	3390	—	4870	—	4720	—	4050	—
Wt. after slaughter	3250	95.9	4715	96.8	4590	97.2	3935	97.2
Dressing wt.	3040	89.0	4460	91.6	4335	91.8	3710	91.6
Drawn wt.	2520	74.2	3775	77.5	3695	38.4	3110	76.8
Main body	2195	61.0	3235	66.4	3240	68.6	2595	64.1
front part	1120	33.0	1800	36.9	1545	32.2	1845	34.4
Hind part	1075	31.2	1435	29.4	1695	35.9	1200	2.6
Neck	155	4.6	360	7.4	262	5.6	278	6.9
Liver	61	1.8	65	1.3	75	1.6	73	1.8
Gizzard and heart	108	3.2	115	2.4	118	2.5	169	4.2
Total inedible parts	520	25.6	685	22.8	630	21.6	600	23.2

TABLE 3.—Nutritive analysis of the edible parts in turkey males

Treatment	The edible parts	Moisture	Protein	Fat	Ash	Carbo- hydrate	Calorific value
		%	%	%	%	%	cal.
Control	Front part	63.66	18.63	16.70	1.01	0.00	2248
	Hind part	69.53	22.32	7.11	1.04	0.00	1533
	Liver	70.57	22.88	3.93	1.42	1.20	1317
	Gizzard & heart	72.81	20.90	5.32	0.97	0.00	1315
	Total	66.40	20.20	12.35	1.02	0.03	1921
Penicillin	Front part	66.79	21.11	11.15	0.95	0.00	1848
	Hind part	66.00	20.75	9.20	1.05	0.00	1658
	Liver	69.18	23.31	4.87	1.44	2.20	1419
	Gizzard & heart	67.26	19.53	12.27	0.94	0.00	1885
	Total	67.61	20.94	10.41	0.99	0.05	1777
Terramycin	Front part	63.80	19.96	15.35	0.89	0.00	2180
	Hind part	67.14	21.30	10.59	0.97	0.00	1805
	Liver	69.52	22.34	3.98	1.34	2.82	1365
	Gizzard & heart	69.46	20.40	9.20	0.95	0.00	1644
	Total	65.22	20.46	13.33	0.93	0.07	2021
Aureomycin	Front part	64.54	20.57	19.96	0.93	0.00	2079
	Hind part	68.43	21.61	8.99	0.99	0.00	1673
	Liver	71.21	24.16	3.21	1.42	0.00	1255
	Gizzard & heart..	64.90	17.56	16.65	0.89	0.00	2201
	Total	66.45	20.92	11.66	0.97	0.00	1886

TABLE 4.—Nutritive analysis of the edible parts in turkey females

Treatment	The edible parts	Moisture	Protein	Fat	Ash	Carbo- hydrate	Calorific value
		%	%	%	%	%	cal.
Control	Front part	57.87	22.28	18.95	0.90	0.00	2597
	Hind part	56.57	18.36	24.15	0.92	0.00	2908
	Liver	69.78	22.26	4.12	1.49	2.35	1355
	Gizzard and Heart	65.06	18.99	15.01	0.94	0.00	2110
	Total	58.05	20.38	20.57	0.93	0.06	2669
Penicillin	Front part	55.18	21.04	22.88	0.90	0.00	2901
	Hind part	48.01	18.48	34.50	1.01	0.00	3764
	Liver	69.39	22.03	5.52	1.51	1.55	1440
	Gizzard & Heart	67.16	20.87	11.04	0.93	0.00	1828
	Total	53.14	19.25	26.62	0.96	0.03	3177
Terramycin	Front part	49.55	16.50	33.20	0.75	0.00	3648
	Hind part	40.19	13.26	45.84	0.71	0.00	4656
	Liver	68.55	21.66	5.55	1.33	2.91	1482
	Gizzard & Heart	66.13	19.20	13.82	0.86	0.00	2012
	Total	46.14	15.16	37.88	0.75	0.07	4018
Aureomycin	Front part	63.70	23.69	11.57	0.99	0.00	1989
	Hind part	57.13	19.24	22.74	0.89	0.00	2817
	Liver	69.51	23.94	5.05	1.50	0.00	1412
	Gizzard & Heart	55.74	16.33	27.12	0.81	0.00	3094
	Total	60.65	21.34	17.06	0.95	0.00	2389

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نسبة التصافي والقيمة الغذائية في الرومي المغذى على مضادات حيوية

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الملخص

ذبحت في هذه التجارب ديوك ودجاجات أخذت عشوائيا من مجاميع الرومي المفدأة على علائق أضيف إليها المضادات الحيوية (البنسلين ، التيراميسين ، الارومايسين) ، وذلك بنسبة ٣٠ جم/طن من العليقة . وذلك في سن ٣٤ أسبوعا .

ولقد كانت نسبة الوزن بعد الذبح ٩٦٪ من الوزن الحى بينما كانت النسبة بعد التنظيف من الريش ٩٠٪ تقريبا في كل من أنث وديوك الرومي . أما الأجزاء المأكولة فكانت نسبتها ٧٧٪ .

وكانت نسبة الجزء الرئيسى للجسم (الجزء الأمامى والخلفى) في كل الأنث ٦٥٪ والديوك ٦٤٫٧٪ أما الأجزاء غير المأكولة فكانت نسبتها ٢٣٫٢٪ للأنث و ٢١٫٩٪ للديوك .

ومن نتائج التحليل الكيماوى كانت نسبة الرطوبة والبروتين منخفضة بينما نسبة الدهن مرتفعة في حالة الديوك في الجزء الأمامى عن الخلفى أما الناتج بالنسبة للأنث فكان عكسيا .

ولم تظهر التغذية على المضادات الحيوية أى تأثير في المكونات الكيماوية أو القيمة الحرارية للأجزاء المأكولة لديوك الرومي وان كانت هناك بعض الفروق فهى فروق فردية ولقد كانت النسبة المئوية للرطوبة في الأجزاء المأكولة في أنث المجموعتين المعاملتين بالبنسلين والتيراميسين أقل بمقدار ٤٫٩١٪ ، ١١٫٩١٪ بالنسبة لأنث مجموعة المقارنة على التوالى . بينما كانت نسبة الدهن لهذه المجاميع المعاملة أكبر بمقدار ٦٫٥٪ ، ١٧٫٣١٪ عن مجموعة المقارنة كما كانت القيمة الحرارية للحوم الأنث في المجموعتين المعاملتين بالبنسلين والتيراميسين أكبر بمقدار ١٩٪ ، ٥٤٫٣٠٪ من لحوم أنث مجموعة المقارنة وهذا يرجع بلا شك الى زيادة النسبة المئوية للدهن ذى القيمة الحرارية العالية . أما بالنسبة لأنث المجموعة المعاملة بالارومايسين فلم يلاحظ أية فروق ملحوظة في المكونات أو القيمة الحرارية بالنسبة لمجموعة المقارنة .