

## CHEMICAL COMPOSITION OF BROILER CARCASS INFLUENCED BY DIFFERENT LEVELS OF PROTEIN AND PESTICIDE

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## ABSTRACT

Eight experimental starter rations were formulated to contain 19% and 20% crude protein with 0, 50, 100 or 150 ppm levels of pesticide (Lennate). Likewise, another eight finisher rations containing 20% and 23% crude protein, each with 0, 50, 100 or 150 ppm levels of pesticide were formulated. Moisture content of meat increased significantly by increasing pesticide level in the rations. Protein content of the carcass decreased by decreasing crude protein and increasing pesticide level in the diet. The crude fiber and nitrogen free extract content of meat decreased significantly by high level of protein (23%). High mortality was noted on higher level of pesticide.

## INTRODUCTION

Poultry industry is being handicapped on account of higher cost of poultry feeds which account for more than 60 percent of total cost of production. It is known that cotton-seed meal, cotton-seed cake and wheat are important ingredients in poultry feeding. Different dangerous insecticides and pesticides are being used in spraying wheat and cotton crops. The toxic effects of pesticide thereof appeared as hydropericardium, ascities and mycotoxin, lesions consisting of swelling and congestion in the kidneys (Qureshi 1988). The present study was conducted to evaluate the influence of different levels of crude protein and pesticide in the diet on carcass characteristics of broiler.

## MATERIALS AND METHODS

Two hundred and forty day-old broiler chicks were raised for a period of 7 weeks. Eight experimental starter rations were formulated containing protein 19 and 20 percent (3200 K. Cal ME/Kg) each with 0, 50, 100 and 150 ppm level of pesticide (Lennate). Similarly eight finisher rations containing 20 and 23 percent protein (3000 K. Cal ME/Kg) each with above mentioned levels of pesticide were formulated. Feed containing starter 19 percent and finisher 23 percent rations was designated as Group I, while 20 percent starter and 20 percent finisher ration fed to these chickens were marked as Group II. Room temperature was maintained at 35°C at the start of the experiment and was lowered by 3°C each week till it reached to 23°C. At the end of experiment three birds were randomly selected from each group, slaughtered and scalded by the method describe by Jull (1976). Dry carcasses alongwith edible portions were ground and the samples were analyzed according to A.O.A.C. (1984) for moisture content, crude protein, crude fiber, ether extract, nitrogen free extract and ash content. The data was analyzed statistically (Steel and Torrie, 1980).

## RESULTS AND DISCUSSION

The average weight gain per chick during the experimental period was 1410.00, 846.00, 1133.00 and 1260.00 gm in the group I with pesticide level of 0, 50, 100 and 150 ppm, respectively. Average weight gain per chick in the group II reared on 0, 50, 100 and 150 ppm was 1407.00, 1140.00, 1129.00 and 1244.00 gm respectively. A significant difference in body weight was observed due to pesticide, protein feeding. The difference in body weight might be due to reduced feed consumption or high protein level caused an increase in the true growth of broiler birds. May be high protein concentration in the diet have led to the activity of pesticide as dominant leading to abnormal accumulation of water in the body and have contributed towards increase in the body weight.

The average dressing percentage of birds in group I was found to be 74.0, 68.0, 67.00 and 67.00, while those reared in group II with similar level of pesticide gave respective dressing percentage of 71.0, 67.0, 67.0 and 64.0. These values were

Table I. Analysis of variance of the data on moisture, Crude protein, Ether extract, ash, Crude fiber and Nitrogen free extract of carcass of birds fed different levels of proteins and pesticides.

S.O.V	d.f.	F. ratio					
		Moisture	Crude protein	Ether extract	Ash	Crude fiber	NFE
Pesticide	3	210.73**	45.94**	53.92**	1.12 <sup>NS</sup>	164.54**	194.6**
Protein	1	2.29 <sup>NS</sup>	2.20 <sup>NS</sup>	6.34 <sup>NS</sup>	1.60 <sup>NS</sup>	289.73**	173.88**
Pesticide x protein	3	4.55**	5.02*	2.40 <sup>NS</sup>	1.03 <sup>NS</sup>	123.20**	1097.49**
Error	40						

significant different due to pesticide and protein level fed to these birds (Table I). This may be attributed to more availability of amino acids for tissue synthesis and ultimately more growth of birds in normal diet. The higher level of pesticide might have disturbed the utilization of amino acids in the body which ultimately resulted in low growth rate and lowest dressing percentage.

The average moisture percentage in the broiler dressed carcasses was 64.0, 68.0, 70.0 and 72.0 reared in group I and the chicks fed in group II had moisture content of 65.0, 67.0, 69.0 and 72.0 percent with 0, 50, 100 and 150 ppm pesticide level, respectively. Statistical significant difference due to pesticide feeding were observed. The results are in accordance with those of Shoya *et al.* (1979). This might be due to imbalance electrolytes which result into improper water metabolism thereby causing greater retention of water by the birds placed on feed supplemented with the pesticide.

The average percentage of crude protein in the dressed carcasses of broiler birds in group I was 20.0, 19.0, 17.0 and 17.0, while those fed in group II had 22.0, 20.0, 19.0 and 18.0 with 0, 50, 100, and 150 ppm of pesticide level respectively. Level of pesticide in the feed revealed significant difference on the crude protein contents of meat.

Average ether extract in dressed carcasses was 10.0, 8.0, 8.0 and 5.0 percent in birds of group I, while in group II ether extract content were 8.0, 7.0, 7.0 and 6.0 percent with out or with different level of pesticide respectively. These values were found to be significantly different due to pesticide feeding. The results are in accordance with Moran (1979) and Trindade *et al.* (1980) who reported similar results. It is possible that synthesis of fat in the body of chicken raised on 150 ppm of pesticide would have been blocked due to antimetabolite like activity.

The average ash percentage of meat in broiler in group I without or with 50, 100 & 150 ppm was 3.3, 2.9, 3.0 and 2.8, respectively.

While the birds in group II had ash percentage 3.0, 2.8, 2.9 and 3.0. Non-significant difference were observed in the ash contents of carcass due to protein and pesticide. The increased level of protein in the diet might have interacted with calcium metabolism.

The average crude fiber percent in the dressed carcasses of broiler in group I was 0.87, 1.1, 0.93 and 0.97 without or with 50, 100 and 150 ppm level of pesticide, respectively. While those in group II, with similar level of pesticide had crude fiber 0.84, 0.99, 0.92 and 0.95 percent, respectively. Statistical analysis (table 1) showed significant difference due to pesticide and protein feeding on these birds. Most probably the protein content of feed have exerted some adverse effect on carcass crude fiber.

The average nitrogen free extract in the dressed carcasses of broiler in group I was 0.10, 0.30, 0.30 and in group II, had NFE 0.14, 0.23, 0.30 and 0.60, without and with 0, 50, 100, and 150 ppm of pesticide respectively. Statistical significant difference between these values were observed due to pesticide and protein feeding. Such change as seen in the contents of nitrogen free extract in the carcasses appear to justify the corresponding contents of proteins and crude fiber in these birds.

40 chicks died during the experimental period. Out of them 25 died due to hydropericardium and remaining birds died due to miscellaneous causes. It was noted that high level of protein with low pesticide level caused high mortality. Mortality was minimum in birds reared on protein (20%) with 50 ppm of Lennate level. It is interesting to note that when protein levels were high in the ration, the lower dose of pesticide caused high mortality but as the pesticide level increased there was gradually decreased in mortality. This indicates that interaction between two factors and was positively working for the onset of hydropericardium. Mortality was minimum with the lowest level of pesticide (50 ppm) when low protein ration (20%) was offered to the birds, but increased to 20% with higher level of pesticide. The observation leads to conclusion that pesticide level did exert on the quality of meat.

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