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PROTEIN VALUES OF OMASUM MEAL AND BLOOD-OMASUN MEAL FOR BROILERS WITH MAIZE MILLING WASTE AS BASAL.

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Target Audience: Livestock farmers and Scientists.

ABSTRACT

A total of one hundred and sixty-eight broilers of four weeks old were used to determine the protein value of omasum meal and blood-omasum meal. There were four experimental diets in which maize milling waste served as the basal diet. The broiler on the abattoir wastes (omasum meal and blood-omasum meal) had comparable (P>0.05) feed intake which were higher (P<0.05) than the intake on the milling waste diets. All the animals gained weight except for the birds fed on the omasum meal that lost 14.17g of weight. The net protein utilization of 44.69% for blood-omasum meal was comparable with those obtained on the maize milling waste diets, while those on omasum meal had a very low (P<0.05) protein utilization value of 7.65%.

Key words: Maize milling waste, omasum meal, blood-omasum meal, protein utilization.

DESCRIPTION OF PROBLEM

The rising cost of livestock production has emanated mainly from increased cost of feed; 65-80% of the cost of producing the chicken is due to the cost of feed (1). Reduced feeding cost will bring about increase in the output of meat and eggs at affordable prices to the populace. In an attempts to reduce the price of poultry feeds effort are made to utilize abattoir wastes as feeds (2). The rumen content, omasum content and blood are still wastes, which constitute disposal problems in Nigerian abattoirs.

The blood-rumen content (also an abattoir waste) has been reported not to be harmful to chicks and can be fed at 10% of their diet (3). Adeniji and Balogun (4) recommended that the blood-rumen content meal can be flavour treated to improve their palatability and acceptability by the animal and fed to laying hens at 8% of their diet.

The omasum is one of the four stomach compartments of the ruminants. It is round with the interior partially filled by a variable number of longitudinal folds or leaves called laminae omasi. The omasum contains

approximately 7% of the volume of the ruminant stomach. It is filled with feed, which has been regurgitated and chewed again. In the present circumstances where conventional protein feed-stuff are very expensive and scare, the omasum content should be considered as an alternative feed-stuff.

This study was therefore aimed at determining the protein value of omasum content and a mixture of blood and omasum content in the diets of broilers.

MATERIALS AND METHODS

Bovine Blood and omasum were collected separately at the abattoir at the time of slaughtering. There were two separate preparations. One was the omasum content alone, while the second was the mixture of blood and the omasum content at ratio 1:1.

The materials were cooked in separate drums at about 100°C with intermittent stirring which lasted for about two, and half-hours. The boiled materials were later sundried also separately untill their moisture content was below 15% giving two feedstuffs omasum meal (OM) and the blood-omasum meal (BOM).

One hundred and sixty eight, four weeks old hubbard broilers were used to assess the four experimental diets, there were three replicates each containing fourteen broilers. The experimental diets (Table 1) consist of

Table 1: Compostion of experimental diets (KG/100KG)

Ingredients:	1	2	3	4
Maize milling waste (chaffy)	95.90	0.00	76.72	76.72
Maize milling waste (fine)	0.00	95.90	0.00	0.00
Omasum meal (OM)	0.00	0.00	19.18	0.00
Blood-omasum meal (BOM)	0.00	0.00	0.00	19.18
Salt	0.5	0.5	0.5	0.5
Bone meal	3.0	3.0	3.0	3.0
Vitamin-mineral Premix*	0.6	0.6	0.6	0.6
Total	100.00	100.00	100.00	100.00
Proximate content (% analysed)				
CP	9.89	12.28	9.83	16.75
CF	6.43	4.30	9.13	6.59
EE	4.50	5.75	4.30	2.20
Ash	3.68	4.78	3.44	1.49

*The vitamin-mineral premix used contain the following per kg:- Vit A- 7,500,000 IU; Vit D3 1,000,000IU; Vit B2 41; VitE 5,000IU; vitK 2g; VitB3 20; VitB5 9g; Vit B128mg;

maize-milling wastes MMW(MMWI-chaff and MMWII-fine) as basal. The birds were fed and watered in excess throughout the four weeks feeding period. The birds were housed in metabolic cages with wire mesh floor for ease of faecal collection. They were acclimatized for 3 weeks during which standard broiler finishers diet was given. The experimental period consisted of 7days adjustment to the experimental diets, followed by a four-day faecal collection. Chromic oxide was used as a marker for the on set and end of collection (5). Records of daily feed intake, weekly weight gain and daily faecal output were kept for the balance trial. All proximate analysis were carried out by method (6). The protein values of the test ingredients were calculated (7). The data were subjected to the completely randomized design and were significant, treatment means were compared using the Duncan's multiple range test (8).

RESULTS

The test feed stuffs on analysis contain 12.21 and 49.64% crude protein and 20.88 and 14.49% crude fiber for OM and BOM respectively.

The results for nitrogen balance are presented on Table 2. The broilers on the abattoir wastes had comparable (P>.0.05) feed intake values, which were significantly (P<0.05) higher than the feed intake on the milling waste diets. Birds on the MMWII gained 14g of weight which was significantly higher (P<0.05) than 6.83 and 3.83g gained by birds on BOM and MMWI respectively. The OM fed birds lost 14.17g of weight during the feeding period.

Table 2: Nitrogen Balance Value for OM and BOM for broilers.

Parameters	MMWI	MMWII	OM	BOM	EMS
Initial body weight (g)	596	598	598	597	
Final body weight (g)	638.13	752.00	442.13	672.13	
Total feed intake (kg/bird)	1.25	1.22	1.27	1.28	
Feed intake (g/bird /day)	113.48b	111.20b	115.54	116.00a	3.07
Weight gain (g/bird /day)	3.83b	14.00c	-14.17a	6.83b	5.28
Mortality (%)	0.00	0.00	0.00	0.00	0.00
Nitrogen intake (g)	1.70c	2.02b	1.92b	8.22a	3.25x10-6
Faecal nitrogen (g)	0.90c	1.04c	1.77b	4.55a	0.15
Nitrogen retained (g)	0.80b	0.98b	0.15c	3.67a	0.15
Net protein utilization (%)	47.00a	48.42a	7.65b	44.69a	33.9

Treatment means in the same row followed by the same letter superscript are not significantly different (P>01.05).

The broilers on the BOM had the highest ($P<0.05$) nitrogen intake 8.22g of all the test diets. The nitrogen intake by the birds on the MMWII and OM were comparable ($P>0.05$) with 2.02 and 1.92g respectively but greater ($P<0.05$) than the intake on the MMWI with 1.70g. The faecal nitrogen value for the milling waste diets were significantly lower ($P<0.05$) than the faecal value for the abattoir wastes. The BOM fed birds retained more nitrogen than birds on the other diets. The nitrogen retained values were comparable for the birds on the milling wastes diets which were higher ($P<0.05$) than that retained by the OM fed birds.

The protein from MMWII tended to be utilized best which seems comparable ($P<0.05$) with the utilization values of MMWI and BOM; but the OM had a significantly lower ($P<0.05$) protein utilization value.

DISCUSSION

The crude protein content of 12.21 and 49.64% for OM and BOM respectively is lower compared with 13.38 and 57.35% reported by Adeniji (9) for rumen content and blood-rumen content meal respectively. This difference might be due to the large microbial population of the rumen content and possible absorption that might have occurred in the rumen. Due to the fact that some nitrogen absorption takes place in the rumen, the other nutrients reaching the omasum tends to be concentrated, and this is responsible for the higher fibre content of the omasum (20.88%) as against 18% reported for rumen content (9)

The increased feed intake on the omasum-based diets is because these feeds are bulky with lower energy values. Hill and Dansky (10) Reported that birds would normally adjust their feed intake to meet their energy needs, while Pond (11) Was also of the view that there is a high intake on fibrous diets.

The protein utilization value obtained for BOM which compares with those of the basal implies that the protein in BOM is as good as that in the MMW-based diets. This value compares favorably with 44.21% protein utilization value reported for autoclaved millet milling waste (12). The protein utilization value reported for rumen content meal and blood-rumen content meal by Amao (68.35 and 65.45% respectively) (13) tends to be higher than what is obtained for OM and BOM. The very low utilization value for protein in the OM is as a result of its high fibre. Delorme and Wojcik (14) were of the opinion that fibre sources have negative influence on protein, particularly when the fibre source is contributing a significant amount of dietary protein.

CONCLUSION AND RECOMMENDATION

There was no mortality throughout the experimental period implying that these ingredients are not toxic, hence can be included in the diet of poultry without harmful effect. Adeniji (9) also reported that the blood-rumen content, when well processed is not harmful to layers and the utilization of these wastes would reduce the unhygenic environment of our abattoirs The BOM tends to be a more promissing feed-stuff compered to the OM. The feed-stuffs are easy to prepare with blood and omasum content available all year round at the abattoirs.

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