

Effect of Palm Oil Mill Exudate (POME) on Performance of Broiler Finishers

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Abstract: A study was carried out at the poultry section of the Lagos State College of Primary Education, Epe, Nigeria. The experiment lasted 8 weeks. The experiment was carried out to evaluate the effect of supplementing broiler finisher rations with palm oil mill exudates. The palm oil mill exudates used was collected from local palm oil extraction centre araga. The broiler finisher ration used was bought from sanders feed depot at Ijebu-Ode and contains 20% crude protein. The white Leghorn breed of broilers used for the study was obtained from Agricultural Centre Boyede Karonwi (Nig. Ltd.). A total of 90 broilers were divided into 3 groups of 30 broilers per group. The 30 broilers in each group were subjected to 3 levels of treatment at 0, 10 and 15% supplementation of dry residue of oil palm exudates beginning from the 4th week. At the end of the experiment, 2 birds per replicate were randomly selected and slaughtered for sampling and data collection. The data generated were subjected to Analysis of Variance (ANOVA) at 5% probability level (LSD = 0.05). Significant improvements were observed in the growth attributes of birds fed with palm oil mill exudates supplements. In the present circumstances, palm oil mill exudates seems to be a good carbohydrate and protein source for poultry feeding and a means of reducing feeding cost in poultry production if properly managed.

Key words: Pome, broiler, finishers, palm oil, poultry, circumstances

INTRODUCTION

The livestock industry in Nigeria is dependent on conventional and non conventional feed stuffs and many researchers have opined that the feed account for about 60-70% of the total cost of livestock production (Ranjhan, 2001). Devandra and Fuller reported 70-80%. This could be attributed to the high cost of feed stuffs which are also consumed by human beings and serve as raw materials for agro-processing industries. Nutrients from plants by products are perhaps the most naturally abundant and the cheapest potential source of feeds. Natural resources are available for the synthesis and polymerization of glucose into less mobile forms and stored as such in plant.

However, the build-up energy sources in plants are also accomplished with other anti-nutritional factors that render them less nutritious for consumptive purpose in man and animal. Such factors limiting the nutritive value of plant by products are the high fibre content and other anti-nutrients. However, in considering the nutritional potentials of Palm Oil Mill Exudates (POME) for possible substitution in boiler diets, investigation of its effect on the overall performance and carcass characteristics is important. The ability to attain market weight as early as possible, good health and overall quality of the meat from

the birds are indices of good nutrition. This study was designed to access the effect of replacing the energy from dietary maize with energy supplied by palm oil sludge on carcass characteristics, relative organ weight and muscle development of boiler chickens. The level of meat and animal protein consumed by Nigerians is low. Nigerians consumes about 109 g/head/day (Tewe, 1997). This is about 29% of the recommended amount of 135 g/head/day. Thus, there is the need to increase animal productivity vis-a-vis making animal protein sources available and affordable to the Nigerian populace. Babatunde and Tewe (1987) had earlier suggested that the best logical solution to the national meat scarcity is to increase poultry production.

Poultry meat has a wide acceptance with little or no limitation in terms of traditional religious taboos as compared to pork rejected by Muslims (Afolabi and Oladimeji, 2003). The importance of well documented nutritional effect on carcass traits and muscles of the chest and hind limbs in avian species is well evidenced (Aletor *et al.*, 1989; Agbede and Aletor, 1997). Previous report by Aletor *et al.* (1989) showed that apart from changes in nitrogen balance and biochemical parameters, nutrition or dietary manipulation exert several influence on the development of carcass traits, organs and certain muscles in boilers. However, in considering the nutritional

potentials of palm oil mill exudates for possible substitution in boiler diets, investigation of its effect on the overall performance and carcass characteristics is important. The ability to attain market weight as early as possible, good health and overall quality of the meat from the birds are indices of good nutrition.

Palm oil mill exudates is a by-product of the palm oil mill and has been reported to be a good substitute for cereal (grain) in the diet of finisher pigs and it has been suggested that pome (palm oil mill exudates can be used as a complete replacement of rice bran in the diet of monogastric animal like poultry also Ocampo. Carew and Rangkuti showed that POME can be successfully used to feed small and large animals. Aside from reducing the cost of production, the inclusion of palm oil mill exudates in the diet of farm animals has been reported to improve feed quality. Cheeks and Shull reported that the inclusion of high level of POME in the diet of birds led to high feed consumption as a result of improved feed aroma and palatability.

This study was designed to access the effect of palm oil mill exudates on carcass characteristics of broilers with energy supplied by POME, relative organ weight and muscle development of boiler chickens.

MATERIALS AND METHODS

The breed of poultry birds; white Leghorn used for this study were purchased from Agricultural Centre, Boyede Karonwi Nig. Ltd. Agege, Lagos state, Nigeria. The birds were purchased at day old and reared for 4 weeks before they were transferred to cages and used for the experiment. The birds were given recommended vaccinations against Newcastle, Gomboro, Coccidiosis and Fowl pox diseases and daily poultry management practices were strictly observed. A total of 90 birds were used for the study.

The birds were divided into 3 groups of 30 birds each. The 30 birds in a group were subjected to the same level of palm oil mill exudates as supplement to their concentrate broiler finishers feed on daily basis. Three levels of POME were used and these are 0, 10 and 15% supplements per meal.

Birds on the 0% level of treatment were not given any palm oil exudates in their feed, they were given broiler finisher concentrate feed throughout the period of experimentation while those with exudates supplements had portions of feed given to them per meal complemented with 10 and 15% exudates level, respectively.

The dried exudates were added to the broiler finisher feed. The method employed was to deduct the percentage by weight of the level of exudates from the feed concentrate for each group and making up by adding the same quantity of exudates. The birds were given 100 g of feed bird day⁻¹. The birds were fed 2 times daily; morning and evening. The weight gains by the birds under different feed regimes were taken every week and the average body weight per treatment calculated. Faecal discharges were collected daily, weighed with their averages computed.

At the end of the experiment 2 birds were randomly selected from each replicate, kept from feed but with access to water for 12 h before slaughtering. After slaughtering, feathers were removed manually from the birds after warm water scalding and weighed. The slaughtered birds were weighed to obtain the dressed weight. The birds were cleaned, cut opened into different parts to obtain eviscerated weight as described by Oluyemi and Roberts.

The percentage of the cut parts were calculated in relation to the respective eviscerated weights. The results obtained for the different parts were transformed, subjected to analysis of variance and the differences between the means compared using the Least Significant Difference (LSD). Correlation analysis was carried out between to show the effect of palm oil mill exudates on feed consumption, feed conversion, faecal collection and average growth rate.

RESULTS AND DISCUSSION

The results obtained on the performance of broiler birds under different levels of palm oil exudates are shown in the Table 1. The inclusion of palm oil mill exudates in

Table 1: Average performance of broiler birds on oil mill exudate supplements

Parameters	Level of palm oil exudate in feed		
	0%	10%	15%
Live weight (kg)	1.00	1.075	1.135
Defeathered weight (g)	900	936	984
Eviscerated weight (g, %)	660	720	738
Breast weight (g)	195	216	223
Wing weight (g)	75	90	103
Thigh weight (g)	105	108	123
Gizzard weight (g)	18	29	21
Head weight (g)	24	18	21
Shank weight (g)	120	144	143
Drumstick weight (g)	90	90	82
Viscera weight (g)	75	108	90
Feather weight (g)	90	108	82
Back weight (g)	120	144	144
Neck weight (g)	18	18	21
Liver weight (g)	18	25	14
Faecal collection (kg)	0.89±0.451	0.89±0.441	1.04±0.518
Feed consumption per bird (kg)	2.13±1.049	2.05±1.014	1.10±0.985
Feed conversion efficiency	2.09±1.029	1.92±0.985	1.97±0.996
Average growth rate (kg)	0.72±0.401	0.75±0.123	0.79±0.479

the ration of broiler birds exerted significant effects on the growth attributes of the birds. The live weight of the birds increased progressively as the percentage level of inclusion increases. The highest live weight of 1.135 kg was obtained with 15% of exudates inclusion (Table 1). The inclusion of palm oil exudates in the feed of birds improved eviscerated body parts. Breast, wing, thigh, back and neck weights increased with increasing level of oil palm exudates. Highest values for the parts were recorded with 15% exudates inclusion. Shank, feather, liver, gizzard weights were improved with 10% exudates supplementation than other levels of application while the 0% exudates inclusion has its greatest effect on the development of the head of the birds.

Feed consumption by birds was significantly higher with 0% exudates inclusion compared with other levels of inclusion (2.13 ± 1.049). Feed consumption was lowest with 15% exudates addition. Feed conversion efficiency was better with the application of 10% exudates addition (1.92 ± 0.985) while 15% exudates inclusion recorded the highest average growth rate (0.75 ± 0.479) (Table 1).

The inclusion of palm oil mill exudates in the ration of broiler birds exerted significant effects on the growth attributes of the birds. The live weight of birds with exudates in their feed was higher than those of birds without exudates. The highest average live weight of 1.135 kg per bird (Table 1) obtained under the 15% exudates inclusion is an indication that supplemental feed ingredients like palm oil mill exudates can be used to reduce the cost of production in poultry. Ranjhnan (2001), Devandra and Fuller reported that feed account for 60-70 and 70-80% of total cost of livestock production.

It is evident therefore that the inclusion of palm oil mill exudates as a substitute in poultry feeding is a sure way of lowering cost of production. Feed consumption was highest in the feed without exudates substitution (0% level). This did not support the view of Cheeks and Shull who reported that the inclusion of pome in the diet of birds led to high feed consumption as a result of improved feed aroma and palatability but in consonance with the views of Carew and Rangkuti that palm oil mill exudates can be successfully used to feed small and large animals since no bird mortality or diseases outbreak was recorded during this finding.

CONCLUSION

Feed conversion efficiency followed the same pattern with feed consumption. Highest feed conversion efficiency value of 2.09 ± 1.029 was recorded with pure concentrate feed i.e., 0% exudates inclusion level. This

could be due to high level of fibre in the exudates supplements which makes it more filling than concentrate feeds. Another reason could be that birds find it more convenient to digest concentrate feed than exudates supplements.

This in essence could be the most probable reason for the faecal collections recorded for the 15% exudates level (1.04 ± 0.518) compared to other levels of exudates inclusion.

The improvement observed in the body parts weight of birds given palm oil mill exudates in their rations is an indication that supplemental feed materials like pome can be used to obtain maximum growth within a short period of time in poultry and also serve as a means of reducing the cost of production in the poultry industry in Nigeria towards improving the level of meat and protein intake of Nigerians.

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