EFFECTS OF FEEDING DIFFERENTLY PROCESSED DOUM PALM (*Hyphaene thebaica*) PULP MEAL ON PERFORMANCE OF BROILER CHICKENS

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ABSTRACT
The effects of feeding differently processed Doum Palm Pulp (DPP) were tested on performance of broiler chickens in a feeding trial which lasted for 28 days. In a completely randomized design, a total of 150 one- day-old broiler chicks (Agrited strain) were randomly allotted to five dietary treatment groups of 30 chicks with three replicates of ten chicks each. The treatment diets were labelled as T1=0% Control, T2=25% - Raw Doum Palm Pulp Meal (RDPM), T3=25% - Soaked Doum Palm Pulp Meal (SDPM), T4=25% - Boiled Doum Palm Pulp Meal (BDPM), T5=25% - Roasted Doum Palm Pulp Meal (RDPM). Feed and water were given ad libitum throughout the experimental period. Feed intake was recorded on a daily basis while weight gain was recorded on a weekly basis. Data collected were subjected to analysis of variance (ANOVA) using SAS package. The results revealed non-significant (p>0.05) differences across all the treatment means observed. Daily feed intake (DFI) (66.56g/b/d) and final weight (1072.27g/b) were higher in T3 (soaked). T2 (raw) recorded the least value of daily feed intake (64.51g/b/d) and daily weight gain (34.78g/b/d). Cost of feed (₦/Kg) and cost of feed consumed per bird (₦/d) deceased with inclusion level of raw and differently processed doum palm pulp meal in the diet of broiler chickens. It was concluded that inclusion of DPP reduced cost of feed ₦/kg and revealed no significant (p>0.05) differences compared to control group and can be used to improve feed intake and wait gain in broiler chicken.
Keywords: Doum palm, Broiler chicken, Performance

INTRODUCTION

Livestock industry is facing difficulties in meeting the demand for feeds which account for about 60-80% of the cost of production Amaza *et al.* (2020). In Nigeria the industry is operating below its capacity because of the high cost and scarcity of feed resources (Aduku & Olukosi, 1990). Maize has been playing significant role as a main source of energy constituting about 50-60% of poultry diets and it is also used as a human food and an industrial raw material (Saidu & Yakubu, 2021). However, the scarcity and high cost of maize has forced many farmers to explore alternative sources of energy feedstuffs for poultry feeding (Titima *et al.,* 2021). This necessitates the attention of researchers to continue the search for alternative feed ingredients for livestock feeding especially non ruminants (Lamidi *et al.,* 2008). However, alternative feed ingredients from tree fruits were used as replacement for maize as energy source mostly connected with anti-nutritional factors that were harmful to animals and high fibre content which decreases the feed value, but processing before use can add feed utilization by animal (Oluremi *et al*., 2017). One of such alternative feed ingredients is the Doum palm (*Hyphaene thebaica* L.) fruit. It belongs to Palmae family, smell taste like ginger and with a shiny orange-brown to deep chestnut skin colour; and the carbohydrate content was found as high as 89.25% (Nwosu *et al.*, 2008).

MATERIALS AND METHODS

The experiment was carried out at the Teaching and Research farm, Federal University Dutse (FUD), Jigawa State, Nigeria. It is located east of the faculty, lies between Latitudes 11^0 42'30" and $11^0$44'00" as well as between longitudes $9^0$23'23" and $9^0$24'00" (NAERLS and FMARD, 2020). In a completely randomized design, a total of 150 one- day-old broiler chicks (Agrited strain) were randomly allotted to five dietary treatment groups of 30 chicks with three replicates of ten chicks each. The treatment diets were labelled as T1=0% Control, T2=25% - Raw Doum Palm Pulp Meal (RDPM), T3=25% - Soaked Doum Palm Pulp Meal (SDPM), T4=25% - Boiled Doum Palm Pulp Meal (BDPM), T5=25% - Roasted Doum Palm Pulp Meal (RDPM) (Table 1). Feed and water were given *ad libitum* throughout the experimental period. Feed intake was recorded on a daily basis while weight gain was recorded on a weekly basis. The chicks were reared using the deep litter system. During the experimental period, feeders and drinkers were thoroughly cleaned before the arrival of the chicks. Vaccinations against diseases (Gumboro and Newcastle) prevalent in the area were adhered to. Supplementary heat was provided using charcoal pot. Data collected were subjected to analysis of variance (ANOVA) using SAS (1999) package.

Table 1: Ingredients and Calculated Nutrient Composition of the Experimental Broiler Starter Diets (0-4 weeks of age)

Ingredients	T1 (Control)	Level of inclusion (25%) T2 (RDPM)	T3 (SDPM)	T4 (BDPM)	T5 (RDPM)
Maize	51.00	38.25	38.25	38.25	38.25
Doum palm	0.00	12.75	12.75	12.75	12.75
Wheat offal	4.30	4.30	4.30	4.30	4.30
Soybean meal	34.80	34.80	34.80	34.80	34.80
Fish meal	3.50	3.50	3.50	3.50	3.50
Bone meal	3.70	3.70	3.70	3.70	3.70
Limestone	1.70	1.70	1.70	1.70	1.70
Salt	0.25	0.25	0.25	0.25	0.25
Premix*	0.25	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25	0.25
TOTAL	100	100	100	100	100
Calculated Nutrient Composition					
ME(kcal/kg)	2870.54	2898.83	2898.83	2898.83	2898.83
Crude protein (%)	22.58	22.06	22.06	22.06	22.06
Crude fibre (%)	3.83	4.28	4.28	4.28	4.28

RESULTS AND DISCUSSION

Performance of broiler chicken fed raw and differently processed doum palm pulp meal at stater phase is presented in Table 2. The results revealed non-significant ($p>0.05$) differences in all the parameters observed. This result is in agreement with the report of Tamburawa *et al.* (2013) and Odukoya *et al.* (2021) as regard to average feed intake. However, birds on T2 (raw) recorded the least value of daily feed intake (64.51g/b/d) and daily weight gain (34.78g/b/d) in this study. This decreased in feed intake and body weight gain might be related to the raw nature of the test material; this is in agreement with the findings of Makinde *et al.* (2018) who recommended further processing of test material before incorporated in the poultry diet. However, increase in feed intake and weight gain in T3 (soaked) agrees with the findings of Abdullahi *et al.* (2013) who reported that soaking improved better utilization of feed material when used in broiler diet. Cost of feed (₦/Kg) and cost of feed consumed per bird (₦/d) deceased with inclusion level of raw and differently processed doum palm pulp meal in the diet of broiler chickens at both phases. This is in consonance with the report of Onunkwo *et al.* (2019) who fed broiler chickens with processed African yam bean meal as protein source. The reduction of these costs was related to the lower cost of test ingredient (Doum palm pulp) compared to T1 (control) which has solely maize. This confirms previous studies which indicated that un-conventional tropical resource and their byproducts have potential used as alternative feed for mono-gastric animals to reduce cost of feeding (Sudik *et al.,* 2021).

Table 2: Growth Performance Indices of Broiler Chickens Fed Raw and differently processed Doum Palm Pulp Meal-Based Diets (Starter phase 0-4weeks of age)

Parameters	Treatments T1(control)	T2(raw)	T3(soaked)	T4(boiled)	T5(roasted)	LSD
Initial weight (g/b/d)	42.40	42.30	42.30	42.30	42.30	2.88
Final weight(g/b)	1066.70	1016.30	1072.27	1030.53	1032.50	71.10
Weight gain (g/b)	1024.30	972.30	1029.93	988.20	990.20	72.23
Daily weight gain (g/b/d)	36.58	34.78	36.78	35.29	35.36	2.60
Daily feed intake (g/b/d)	66.36	64.51	66.56	65.47	65.35	2.30
Feed conversion ratio	1.81	1.85	1.80	1.85	1.84	0.10
Cost of feed (₦/kg)	354.77	326.72	326.72	326.72	326.72	-
Cost of feed consumed (₦/d)	23.54	21.10	21.75	21.39	21.35	-

Means w within the same row are not significantly different ($P>0.05$).

CONCLUSION

It was concluded that inclusion of DPP reduced cost of feed ₦/kg and revealed no significant ($p>0.05$) differences compared to control group and can be used to improve feed intake and wait gain in broiler chicken.

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