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Nutrient Digestibility and Growth Performance of Red Sokoto Bucks fed Processed *Piliostigma reticulatum* Pods

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Abstract

The nutrient digestibility and growth performance of Red Sokoto bucks fed diets containing different processed forms of *Piliostigma reticulatum* pods were assessed in an experiment. A completely randomized design was used to assign fifteen bucks at random to three different dietary treatments. Treatment one served as control as such, did not undergo processing, while in treatment two, the *P. reticulatum* pods were soaked in water for twenty-four hours and in treatment three, the pods were roasted under controlled time and temperature. The experiment lasted for 63 days. The findings showed that there were no significant (P>0.05) differences in digestibility. However, dry matter digestibility (DMD), neutral detergent fiber digestibility (NDFD) and crude fiber digestibility (CFD) were numerically highest in treatments 2 (92.72, 87.13 and 92.24%), and lowest in treatments 3 and 1 (72.00, 85.69 and 89.53%) and (81.76, 75.56 and 81.67%) On the other hand, ash digestibility (ASHD), acid detergent fiber digestibility (ADFD) and crude protein digestibility (CPD) were higher in treatment 3 (89.13, 85.92 and 81.62%). These values were lowest in treatments 1 and 2 (83.51 and 82.81%), (76.03 and 83.70%) and (77.70 and 78.41) respectively. The dietary treatments had an impact on growth performance where live weight gain; treatment 1 had the lowest average daily weight gain (13.17 g/day) and treatment 3 had the highest (23.25 g/day). The animals that were fed diet 3 (7.19) and diet 2 (14.12) made better utilization of their feed than the others. Treatment 2 where animals were fed with water-soaked *Piliostigma reticulatum* pods was suggested for raising Red Sokoto bucks due to the higher dry matter digestibility (92.72%), neutral detergent fiber digestibility (87.13%), crude fiber digestibility (92.24%), total weight gain (0.82kg) and superior feed conversion ratio (16.73) compared to other treatments

Keywords: Digestibility, Growth Performance, *Piliostigma reticulatum*, Red Sokoto Bucks

Introduction

Nigeria's agricultural economy revolves around livestock production, which plays a crucial role in creating jobs, income, and food security. Ruminants; cattle, sheep, and goats are highly prized among livestock because of their capacity to transform fibrous plant materials into meat and milk that are high in protein (Chaudhry and Khan, 2023). As a source of animal nutrition, financial stability, and cultural legacy, small ruminants, goats in particular are vital to rural livelihoods (Moehl et al., 2023). However, the high cost and seasonal unpredictability of conventional feed resources are two of the biggest problems livestock farmers confront, necessitating the investigation of alternate feed sources. In northern Nigeria, red Sokoto goats are the most common breed and are prized for their meat quality, hardiness, and adaptability (Ibrahim et al., 2023). Red Sokoto goats are a popular livestock choice in northern Nigeria because of their characteristic reddish-brown coat and ability to flourish in arid and semi-arid environments (Salihu and Bala, 2023). Because of their resilience and exceptional growth rates, which enhance meat output, red Sokoto bucks in particular are a valuable genetic resource in regional breeding efforts (Mustapha et al., 2024). *Piliostigma reticulatum* is a leguminous shrub native to the Sahel and Sudan regions, has shown promise as a feed resource due to its resilience to arid conditions and its nutritional content (Buba and Ibrahim, 2022).

Small-scale livestock farmers are now compelled to look for more affordable and easily accessible alternatives to conventional feed sources due to their high cost and limited availability. Nevertheless, a lot of non-traditional feed sources have anti-nutritional elements that restrict their use and digestion. For example, unprocessed *Piliostigma reticulatum* pods contain phytates, tannins, and saponins that prevent ruminants from absorbing nutrients. These pods have the potential to jeopardize animal productivity and health if improperly processed (Oladipo *et al*., 2024). Because *Piliostigma reticulatum* pods are abundant throughout Nigeria, an excellent source of protein, and available all year round, they offer a viable alternative. Interestingly, these pods are not vulnerable to human-animal competition for food, which makes them a cost-effective and environmentally friendly choice for feeding cattle (Buba and Ibrahim, 2022). The nutritional value of *Piliostigma* pods can be maximized by processing them into more palatable forms, which may improve Red Sokoto bucks' development and productivity. The aim and objective of the study is to determine the nutrient digestibility of Red Sokoto bucks fed with different processed forms of *Piliostigma reticulatum* pods

Sources of Experimental Animals and their Management

To conduct the study, fifteen Red Sokoto bucks weighing an average of 5 ± 2 kg were purchased. Five (5) Red Sokoto bucks were divided into three (3) diets at random and kept alone in two-by-two-meter cubicles with sloped concrete flooring in the same pen under a shared roof. The house was regularly sanitized, had adequate ventilation, and was completely lit. Diskol-ES (Tiscol) was used to clean and disinfect the cubicles at a rate of 10 milliliters per four liters of water before the bucks arrived. Additionally, 10% of formalin was employed as a fumigant. The bucks were confined and acclimated for three weeks after their arrival. During this time, they received preventative treatment, which involved spraying their bodies with an acaricide (Amitraz® 1 ml/litre) to ward off external parasites. Albendazole, at 12.5 mg/kg1 body weight, was used to deworm them to combat internal parasites. Oxytetracycline L. A. (Kepro®) 20%, an antibiotic, was given intramuscularly at a rate of 1 milliliter per 10 kg of body weight. Three (3) weeks before the commencement of the trial, the bucks were given groundnut haulms and maize offal during the quarantine and adaption periods.

Experimental Diets and Animal Feeding

Three (3) diets were formulated containing 12% crude protein with thirty (30%) raw and processed *Piliostigma reticulatum* pods. The diets were designated as T1, T2, and T3 containing (30%) raw, thirty (30%) water soaked and thirty (30%) roasted *Piliostigma reticulatum* pods meals. Other ingredients were; groundnut cake, maize offal, rice offal, bonemeal and common salt as presented in Table 1. Diet 1, is a control as such did not undergo any processing. Each buck was offered its respective diets twice a day i.e. every morning (8:30 to 9:30 am) and evening (2:30 to 3:30 pm) *ad libitum*. Fresh

drinking water was provided in plastic bowls. The total daily allocation of the diets was adjusted considering the previous day's intake. The experiment lasted for 63 days (9 weeks) after two weeks of adaptation and adjustment to the experimental diets.

Collection and processing of test ingredients

The ingredients for the research were purchased at the Kano, Dutsin-Ma and Katsina Local Government Metropolis open markets. The ingredients purchased include *Piliostigma reticulatum* pods, maize offal, groundnut cake, rice offal, bonemeal and common salt.

***Piliostigma reticulatum* pods processing**

1. Soaking: The pods were poured inside plastic buckets, water was added and allowed to stay for twenty-four (24) hours, the water was not changed thereafter the water was drained off using plastic baskets that have perforations. The pods were then air-dried and crushed to particle sizes ranging from 1 - 2 cm (Abdu, 2011). The sub-samples were pooled together, mixed thoroughly and packed into empty polythene bags out of which a small quantity was taken to the laboratory for chemical analysis to analyze their nutritive value and anti-nutritional factors while the remaining was compounded to prepare the three (3) experimental diets.
2. Roasting: The pods were placed inside a half drum containing sand, the sand was sieved to remove organic matter before placing the pods in it (roasting). The drum was placed under fire-wood, at a temperature that fluctuates between 105 and 110^{o}C. The mixture was turned for three (3) minutes at a short interval of two (2) minutes. Temperature was checked at intervals of five (5) minutes. After roasting the sand was sifted using a sieve (Abdu, 2011). The sub-samples were pooled together, mixed thoroughly and packed into empty polythene bags out of which a small quantity was taken to the laboratory for chemical analysis to analyze their nutritive value and anti-nutritional factors while the remaining was compounded to prepare the three (3) experimental diets.

Experimental Design

The fifteen (15) bucks were allocated into dietary treatments 1, 2 and 3 which contained five (5) bucks each serving as a replicate in a completely randomized design (CRD).

Data Collection

Data were collected based on the following parameters

Nutrient digestibility and growth performance

Nutrient Digestibility (%)

After the feeding trial, three (3) bucks were randomly selected from each treatment which served as representative of each treatment. They were placed in individual metabolic crates with slanted floors adopted for faecal and urine collection. After a week (7 days) of adjustment to the experimental diets and the metabolic crates, nutrient digestibility was conducted. The bucks

. **Table 1**: Gross Ingredients Composition of Diets fed to Red Sokoto Bucks

Ingredients of (% DM)	Raw pods (Control)	Water soaked pods	Roasted pods
	T1	T2	T3
P. reticulatum	30.00	30.00	30.00
Groundnut cake	2.00	2.00	2.00
Maize offal	25.00	25.00	25.00
Rice offal	40.00	40.00	40.00
Bonemeal	2.50	2.50	2.50
Common salt	0.50	0.50	0.50
Total	100.00	100.00	100.00

Table 2: Chemical Composition of the Experimental Diets

Parameters (kg)	Diets		
	T1 (Control/Raw)	**T2 (Soaked)**	**T3 (Roasted)**
Dry Matter	87.01	87.33	90.30
Neutral Detergent Fibre	69.73	68.98	70.40
Acid Detergent Fibre	31.00	30.53	36.49
Crude Protein	12.15	13.47	10.30
Hemicelluloses	38.73	38.45	33.91
Crude fibre	29.53	29.35	31.59
Ash	9.84	9.09	13.12

were maintained on their respective diets throughout the seven (7) days period. Volumes of faeces and urine voided were collected daily for seven (7) days, 10 % of faecal samples were collected and were oven-dried at 65ºC for three days to determine the dry matter. Volatilization of Nitrogen from urine was prevented by using a urine collection container coated with 10mls of 10% H_2SO4 where 10% of the

daily urine voided was collected and stored in a refrigerator at 4ºC until bulked for each the diets was calculated as the difference between nutrient intake and excretion in the faeces expressed as a percentage of the nutrient intake (Maynard *et al.,* 1979; Marshal, 2001; Aduku, 2004).

Growth performance parameters

buck and analyzed for nitrogen content. The apparent digestibility of Growth performance of Red Sokoto bucks fed with diets containing different processed forms of *Piliostigma reticulatum* pods. Initial weights of the bucks were taken on the date of commencement of the experiment. Final weight gain was determined by subtracting the initial weight from the final weight.

$$\text{Average daily weight gain} = \frac{\text{Weight gain (kg)}}{\text{Number of days}}$$

$$\text{Weight gain (kg)} = \text{Final Weight} - \text{Initial Weight}$$

$$\text{Feed intake} = \text{Feed given to the animal} - \text{left over (Ort)}$$

$$\text{Feed conversion ratio} = \frac{\text{Dry Matter Intake}}{\text{Weight Gain}}$$

$$\text{Feed conversion efficiency} = \frac{\text{Weight Gain}}{\text{Dry Matter Intake}}$$

Statistical Analysis

The data collected from the research were subjected to Analysis of Variance (ANOVA) using a general linear model of SAS version 9.13 SAS (2002) in a completely randomized design. The significant differences among the treatments were separated using Fischer's LSD of the same package.

Results and Discussion

Chemical Composition of Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods (DM) fed to Red Sokoto bucks

The chemical composition of diets containing different processed forms of *Piliostigma reticulatum* pods are presented in Table 2. The dry matter contents for all the diet groups were within the range of 87.01 to 90.30%. The fibre fractions (NDF and ADF) were within the range of 60% and above, the highest value was obtained on T3 which had 70.40 NDF and 36.49 in T3 ADF respectively. The Crude Protein (CP) content showed that T2 and T1 had the highest CP, with 13.47 and 12.15% respectively. The lowest CP was obtained on T3 with a value of 10.30%. The values of hemicelluloses were within the range of 33.91 to 38.73%. The highest values were recorded in T1 and T2, with 38.73, while the lowest value was recorded in T3, with 33.91%.

Table 3: Phytochemical composition of the different parts of *P. reticulatum*

Plant Part	Phyto constituents reported	References
Leaves	Tannin, saponin, steroids, terpenoid, terpenines, phenols, phlobatannins, anthraquinones, carbohydrates, free reducing sugars, balsams, resins, glycosides, cardenolides, flavonoids, alkaloid and volatile oil.	(Halilu *et al.;* 2017).
Stem bark	Alkaloid, tannin, saponins, flavonoid, phenols, and steroids	(Thagriki, 2018).
Root bark	Terpenoid, flavonoid, anthraquinone, alkaloid, reducing sugar, tannins, cardiac glycosides, saponins, resins and phenol.	(Sospeter, 2015).
Flower	Steroid, flavonoid, anthraquinone, carbohydrate, tannins, cardiac glycosides, saponins.	(Simon, 2014).
Fruit	Alkaloid, carbohydrate, cardiac glycosides, flavonoid, steroid and tannins.	(Simon, 2014).

Table 4: Nutrients Digestibility of Red Sokoto bucks fed with Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods.

Parameters (%)	Diets			SEM	LS
	T1 (Control/Raw)	T2 (Soaked)	T3 (Roasted)		
DMD	81.76	92.72	72.00	12.74	NS
NDFD	75.56	87.13	85.69	9.44	NS
ADFD	76.03	83.70	85.92	9.68	NS
CPD	77.70	78.41	81.62	10.31	NS
ASHD	83.51	82.81	89.13	14.32	NS
CFD	81.67	92.24	89.53	10.96	NS

a, b, c, d, e = Means within rows with different superscripts are significantly different ($p<0.05$); Dried Poultry Litter DMD = Dry Matter Digestibility; OMD = Organic Matter Digestibility; NDF = Neutral Detergent Fibre Digestibility; ADF = Acid Detergent Fibre Digestibility and CPD = Crude Fibre Digestibility; ASHD = Ash Digestibility;. Means with the same letter are not statistically ($p>0.05$) different; SEM = standard error of means, NS = Not Significant;

Crude fibre (CF) content showed T3 had the highest CF, with 31.59% while T1 and T2 had the lowest values of 29.53 and 29.35% respectively. Ash values were within the range of 9.09 to 13.12%.

Nutrients Digestibility of Red Sokoto bucks fed with Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods

The nutrient digestibility of Red Sokoto bucks fed with diets containing different Processed Forms of *Piliostigma reticulatum* Pods is presented in Table 4. Dry matter digestibility was highest for Red Sokoto bucks at (T2) yielded the highest DMD at 92.72%, significantly outperforming both the raw (T1) and roasted (T3) forms, which were 81.76% and 72.00%, respectively. Ash Digestibility (ASHD) was highest for Red Sooto bucks fed with T3 (89.13%) and the least value was recorded in T2 (82.81%). Neutral Detergent Fiber Digestibility (NDFD) was higher at T2 (87.13%) and least value was recorded in (T1) and roasted (T3) forms, with values of 75.56% and 85.69%, respectively.

Acid Detergent Fiber Digestibility (ADFD) was highest for Red Sokoto bucks (T3) at 85.92%, and the lowest value was recorded at T1 at (76.03%). Although roasted pods had the highest ADFD, the difference between the soaked and roasted treatments was not statistically significant.

Crude Fiber Digestibility (CFD): Crude Fiber Digestibility (CFD was highest for Red Sokoto bucks fed with T3 (81.64%) and the least value was recorded in T2 (77.70%).. This finding indicates that soaking may be an effective treatment for improving crude fiber digestibility without negatively impacting other aspects of the diet's digestibility. Ash Digestibility (ASHD) was highest for Red Sokoto bucks fed with T3 (89.13%) and the lowest value was recorded in T2 (82.81%). Crude Fiber Digestibility (CFD was highest for Red Sokoto bucks fed with T3 (92.24%) and the lowest value was recorded in T2 (81.67%).

Growth Performance of Red Sokoto bucks fed Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods.

The performance of Red Sokoto bucks fed with the experimental diets is presented in Table 5. There was a significant ($p<0.05$) difference in dry matter intake was significantly ($p<0.05$) different among the diets. The values ranged from 246.14 – 321.67 g/day. Total weight gain was similar ($p>0.05$) across the diets. Bucks fed with diet 2 (0.82) and 3 (0.81 g/day), recorded the highest means and Diet 1 the least (0.46kg) respectively. There was a significant ($p<0.05$) difference observed in the average daily weight gain, diet 3 (23.25 g) recorded the highest means and Diet 1 (13.17 g) recorded the least. Dry matter intake was significantly ($p<0.5$) different across the treatment diets. Diet 3 (321.67 g/day) recorded the highest means while Diet 2 (246.14) and 1 (258.34 g/day) recorded the lowest means. The feed conversion ratio varied ($p<0.05$) significantly among the diets. Diet 3 (14.12) recorded the highest means, while Diet 1 (20.22) recorded the least value. Best feed conversion efficiency

was recorded in dietary treatment 3 (7.19) followed by bucks fed with diet 2 (6.00), however, the values were similar (p>0.05).

Table 5: Growth Performance of Red Sokoto bucks fed Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods

Parameters	Diets			SEM	LS
	T1 (Control/Raw)	T2 (Soaked)	T3 (Roasted)		
IBW (KG)	9.16	9.03	9.33	0.2160	NS
FBW (KG)	9.63^{c}	9.86^{b}	10.14^{c}	0.0493	*
TWG (KG)	0.46	0.82	0.81	0.2205	NS
ADWG (g)	13.17^{b}	14.76^{b}	23.25^{a}	1.9758	*
DMI (g/day)	258.34^{b}	246.14^{b}	321.67^{a}	12.6099	*
FCR	20.22^{a}	16.73^{ab}	14.12^{b}	1.7453	*
FCE	5.14	6.009	7.19	0.6168	NS

a, b, c, d, e = Means within rows with different superscripts are significantly (p<0.05) different DPL = Dried Poultry Litter; DFI = Daily Feed Intake; DMI = Dry Matter Intake; IBW = Initial Body Weight; FBW = Final Body Weight; TWG = Total Weight Gain; DWG = Daily Weight Gain and FCR = Feed Conversion Ratio. Means with the same superscript are not significantly (p>0.05) different. SEM = standard error of means, NS = Not Significant;

Discussion

Nutrients Digestibility of Yankasa Sheep fed Complete Diets Containing Poultry Litter and Urea Treated Millet Stover

Dry Matter digestibility of the present study was similar (p>0.05) and the values were higher than the range of values 55.90 – 72.20% reported by Yusuf and Lukman (2022), 52.50 – 54.26% reported Adurrahman *et al.* (2018), 54.36 – 69.12% reported by Yusuf and Sarki (2023) for Red Sokoto bucks fed with different supplements during early rainy season grazing with supplementation, for Red Sokoto bucks fed graded levels of *P. reticulatum* pods. However, the values compared favourably with the values 89.66 – 91.12% reported by Hamisu *et al.* (2025) for Red Sokoto bucks fed with hydroponic maize fodder. The differences between the present research result and the previous could be a result of the seasons upon which the experiments were conducted. The dry matter digestibility was higher in treatment 2 which corresponded with T2 in Yusuf and Sarki (2023) research i.e. where the pods were processed by soaking in water. This is in agreement with the report of Smith *et al.* (1988) who found that soaking leguminous tree pods improves digestion.

Crude protein digestibility values of the experimental diets in the present study were similar ($p>0.05$) among the treatments and higher when the animals were fed with diets containing roasted *Piliostigma reticulatum* pods, i.e. T3. This conflict with the reports of Yusuf and Sarki (2023) where a significant ($p<0.05$) difference was recorded among treatments and the highest protein digestibility was obtained on the same treatment, but the pods were soaked not roasted. However, the findings in this study agreed with the research findings of Ghaly *et al.* (2020) who reported that roasting makes proteins accessible for digestion and absorption when leguminous tree pods are treated using heat by reducing anti-nutritional factors like tannins, which can inhibit protein digestion in raw pods. The crude protein digestibility of the present research was significantly ($p<0.05$) higher than 52.08 – 70.49 % reported by Abdurrahman *et al.* (2017) for red Sokoto bucks fed with different graded levels of the same test ingredients. The difference could be as a result of feeding the bucks untreated pods.

The mean values for the digestibility of neutral detergent fiber (NDFD) were similar ($p>0.05$) among the treatment diets. The higher mean was obtained for animals on soaked pods, i.e. T2. These results agreed with the results of NDFD of Yusuf and Sarki (2023) who observed increased NDFD of the diets when the pods were soaked in water. The means recorded in this research were higher than 34.93 – 40.53% reported by Abdurrahman *et al.* (2017) for Red Sokoto bucks fed graded levels of *P. reticulatum* pods. The difference could be as a result of feeding them with unprocessed pods which might have limited intake and digestibility. This also suggested that soaking might have assisted in breaking down fiber, a known inhibitor of digestibility in many plants. This aligns with the findings by Oyekunle et al. (2018) who reported that soaking improves fiber digestibility in various tropical forage species.

Ash digestibility across all the treatments was similar. The highest means were recorded on T3, where the bucks were fed with a diet containing a roasted form of *Piliostigma reticulam* pods. The values reported in this research were higher than 43.99 – 47.00% reported by Abdurrahman *et al.* (2018) and 5.65 – 6.55% reported by Hamisu *et al.* (2025) for Red Sokoto bucks fed graded levels of *Piliostigma reticulatum* pods and Red Sokoto bucks fed with hydroponic maize fodder.

Crude fiber digestibility was similar among the three treatments. However, T2 recorded the highest value compared to the remaining two treatments. This finding indicated that soaking may be an effective treatment for improving crude fiber digestibility without negatively impacting other aspects of the diet's digestibility. This study contradicted that of Ikwueke *et al,* (2021)who reported significant ($P<0.05$) in both roasting and soaking of pods. The difference could be a result of time, temperature and agronomic conditions of the test ingredient.

Performance of Red Sokoto Bucks fed Diets Containing Different Processed Forms of *Piliostigma reticulatum* Pods

The dry matter intake was significantly ($p<0.05$) different in this trial with the least values obtained in diet 1 (raw/control). The dry matter intake values obtained in this study were significantly ($p<0.05$) lower than 473.38 – 553.19 g/d reported by Abdurrahman *et al.* (2017) for growth performance of Red Sokoto bucks fed supplements containing graded levels of *Piliostigma reticulatum* pods, lower than 444.78 – 450.17g/d reported by Aruwayo *et al.* (2020) for performance of Red Sokoto bucks fed *Piliostigma reticulatum* and *Faidherbia albida* pods as supplements. However, the values were similar and in conformity with the range of values 210.00 – 310.00g/d reported by Yusuf and Alhaji (2023) for the growth performance of rabbits fed complete diets containing raw and processed forms of camel's foot pod. The difference between the present research and the previous could be a result of the duration and ages of the bucks used. The value was highest numerically in bucks fed diet 3 (roasted pods) compared to other diets. The lowest intake in diets 1 and 2 could be attributed to the lower processed pods in reducing antinutritional factors thereby reducing the bucks' ability to digest more. This is proved in the low feed conversion ratio observed in the two diets containing raw and soaked pods compared to other diets.

The highest daily weight gain in this study was lower and in disagreement with the value 47.00, 48.81 and 58.33g/d reported by Yusuf and Alhaji (2023), Abdurrahman *et al.,* (2017) and Aruwayo *et al.* (2020) for rabbits fed raw and processed forms of *P. reticulatum,* Red Sokoto bucks fed with graded levels of *P. reticulatum* and Sokoto red bucks fed *P. reticulatum* and *Faidherbia albida* as feed supplements. Still, the values were lower than the values 63.46 g/day reported by Abdulwaheed *et al.,* (2013) for Konkan-Kanyal goats fed millet straw supplemented with varying levels of dried poultry droppings-based diets. The difference in the daily weight gains between the present research and the previous could be due to the difference in duration upon which they were conducted.

Total weight gains were similar ($p<0.05$) among the treatments. The highest mean was obtained in T2, where the pods were processed by soaking in water only. The values were lower than 1.62 -2.95kg, 0.95 – 4.10 and 4.63 – 4.68kg reported by Yusuf and Alhaji (2023), Abdurrahman *et al.* (2017) and Aruwayo *et al.* (2020) for rabbits fed diets containing raw and processed *P. reticulatum* pods, Red Sokoto bucks fed graded levels of *P. reticulatum* pods and Sokoto Red bucks fed *P. reticulatum* and *F. albida* as supplements.

The feed conversion ratio in this study varied significantly ($p<0.05$) and fell within a range of values 11.33 – 41.85 reported by Abdurrahman *et al.* (2017) for Red Sokoto bucks fed graded level of *P. reticulatum* pods as supplemental feeds. However, the values were higher than the 4.66 – 8.87 reported by Millam *et al.* (2017) for the performance of Red Sokoto Bucks. The values for bucks fed with diets 2 and 3 are signals that indicated bucks' more efficient uilisation of their diets which gave rise to higher FCR. This could be a result of better dry matter intake and digestibility compared

to the controlled diet that did not undergo processing.

Conclusion

Based on the findings of the present research, it could be concluded that bucks fed with treatment 2, i.e., where *Piliostigma reticulatum* pods were processed by soaking in water yielded better results in terms of dry matter digestibility, neutral detergent fibre digestibility, crude fibre digestibility, total weight gain and better feed conversion ratio, as such, soaking as a processing method of reducing antinutritional factors in the test ingredient had greatly influenced all these parameters. Therefore can be used for processing *P. reticulatum* pods to be used for feeding small ruminants.

Recommendation

1. Soaking of *P. reticulatum* pods in water for 24 hours is recommended
2. Roasting of *P. reticulatum* pods also can be used because it enables high crude protein digestibility
3. It could be recommended that before supplementing *P. reticulatum* pods in diets for ruminants, they should be processed to reduce the antinutritional factors that interfere with digestion, absorption and nutrient utilization.

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