NUTRIENT AND PHYTOCHEMICAL IMPLICATION OF DRY GUINEA HEN WEED (*PETIVERIA ALLIACEA*) AS GROWTH PROMOTER IN GROWING PIG DIET

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ABSTRACT
In a 10-week experiment to determine the phytogenic effect of supplementing growing pig diets with dry Guinea Hen Weed (GHW), thirty-six unsexed (Large white x Landrace) pigs were randomly assigned to four Diets where GHW was supplemented at 0, 0.5. 0.75 and 1.0%. The pigs were placed nine per treatment with each treatment having three replicates of three pigs each. Dried leaves of the GHW was analyzed for its nutrient and phytogenic composition before incorporation into the diets and the compounded ration was equally analyzed. Feed and cool clean water were offered the pigs ad-libitum during the period of the trial. Growth performance characteristics of the pigs were measured weekly and the average were taken. The result showed that the phytogenic components of the dry leaf of GHW were seldom higher than those earlier reported in the leaf extract. It also revealed that dry GHW led to a reduced feed intake in the pigs when compared to the control. Better feed conversion ratio was observed in pigs fed the diet supplemented with 0.5% GHW. Similarly, highest weight gain was observed therein. The research concluded that pig's diet can be supplemented with 0.5% GHW for optimum performance and thus recommended.

INTRODUCTION

Pig remain one of the fastest meat producers to compliment the shortage of animal protein (Ogunbode *et al*., 2017) especially in developing countries such as Nigeria despite its religious implication (Kalla *et al*., 2003). Pig produces about four times its weight in a production year (Mafimidiwo, 2023). However, pig's insatiable feed consumption coupled with the current hike in the prices of feed ingredients have been one of the intricacies to its large-scale production. Effective feed conversion to pork is of paramount importance than the feed consumption itself. Meanwhile, effective feed utilization sometimes requires growth promoters which can be organic or synthetic. Growth promoters often aids a complete feed digestion, absorption and assimilation. The aftermath effect of the use of synthetic antibiotic growth promoters had incurred its ban. Farmers and researcher are therefore left with the onus of sourcing for organic alternatives in plants and herbs. Amongst the known alternative growth promoters are Scent leaf (*Ocimum grassisimum)*, Neem leaf (Fasae and Adenuga, 2017) and Bitter leaf (Mafimidiwo *et al.,* 2021). The use of Guinea Hen Weed (*Petiveria alliacea*) in broiler chicken and egg type chicken have been elucidated (Sobayo *et al.,* 2018). The high content of saponin, flavonoids and terpenoids in Guinea Hen Weed (Ayodele *et al*., 2018)) is an added advantage to its growth promotion properties. Guinea Hen Weed is often ascribed with the reduction in worm eggs (Adebayo *et al.,* 2022) in livestock which pigs are susceptible to. Therefore, this research work, attempts incorporating dry leaves of *Petiveria alliacea* into the diet of grower pigs to determines its impact on the pig's growth performance.

MATERIALS AND METHODS

Experimental site and leaf preparation

The experiment was carried out at the Teaching and Research Farm of the School of Agricultural Technology, Yaba College of Technology, Epe Campus situated on latitude 6.65°N, longitude 3.99°E (Google Earth, 2023). lying on Km 11, Epe-Ijebu-Ode express way, Odoragunshin, Lagos.
Matured leaves of Guinea Hen Weed were harvested fresh and brought to the farm complex for a 3-days of air drying and later oven-dried at 65^0C for 30 minutes. The dried leaves were then milled using 2mm sieve and bagged until usage. 20g portion was also collected for analysis of the proximate composition and phytochemical constituent (Table 1).

Preparation of test diets

Four experimental diets for grower pig were formulated using Guinea Hen Weed (GHW) at four graded levels comprising of the control T1 (0%), T2 (0.5%), T3 (0.75%) and T4 (1.0%) following NRC (2012) as presented in table 2.

Experimental Animals and Design

Thirty-six (Large White x Landrace) grower pigs weighing 23-24kg body weight were assigned on weight equalization basis into four dietary treatment where GHW was supplemented in the diet at 0, 0.5, 0.75 and 1.0% levels as growth promoter. Each treatment has nine pigs which were divided into three replicates of three pigs each. The experiment was on a complete randomized design. The pigs were fed for ten weeks during which growth performance parameters were collected and analyzed using analysis of variance (SAS, 1999) and the means were separated using Duncan Multiple range test of the same statistical package.

Results

Table 1: Proximate and phytogenic composition of Guinea Hen Weed and its Aqueous Extract

Parameters	Dry Guinea Hen Weed	Aqueous Extract of GHW
Dry Matter (%)	82.40	Not applicable
Crude Protein (%)	10.51	Not applicable
Crude fiber (%)	3.24	Not applicable
Ether Extract (%)	7.00	Not applicable
Nitrogen Free Extract (%)	57.69	Not applicable
Ash (%)	3.96	Not applicable
Energy (Kcal/g)	407.12	Not applicable
Saponins (g/100mL)	0.503	1.15-2.08
Tannins (g/100mL)	0.286	0.0075-0.0199
Alkaloid (g/100mL)	1.291	0.12-0.26
Phytates (g/100mL)	0.097	0.0017-0.0016
Oxalates (g/100mL)	0.048	0.0027-0.0030
Flavonoids (g/100mL)	1.067	0.0187-0.0414

Aqueous Extract as reported by Adebayo *et al*. (2022)

Table 2: Gross Composition of Experimental Diet (g/100g DM)

Ingredients	Control(T1)	T2 (0.5%)	T3 (7.5%	T4 (1.0%)
Maize	30	30	30	30
Soybean meal	12	12	12	12
Palm kernel cake	15	15	15	15
Wheat offal	39	38.50	38.25	38.00
Guinea hen weed	0	0.50	0.75	1.0
Bone meal	2.0	2.0	2.0	2.0
Limestone	1.4	1.4	1.4	1.4
Premix	0.1	0.1	0.1	0.1
Common salt	0.3	0.3	0.3	0.3
Lysine	0.1	0.1	0.1	0.1
Methionine	0.1	0.1	0.1	0.1
Total	**100**	**100**	**100**	**100**
Calculated Analysis				
Crude protein (%)	17.67	17.52	17.43	17.28
Crude fibre (%)	14.43	14.22	14.16	14.10
Ether Extract (%)	4.77	4.74	4.72	4.68
Ash (%)	3.22	3.17	3.14	3.09
Energy kcal/kg	2550	2548	2544	2540

Table 3: Growth performance of growing pigs fed uinea hen weed supplemented diets

Parameters	T1 (Control)	T2	T3	T4
Initial Wt.	23.28	24.23	24.31	24.30
Final Wt.	30.44^{ab}	35.98^{a}	29.25^{b}	29.24^{b}
Total Wt. Gain	7.16^{ab}	11.75^{a}	4.94^{b}	4.94^{b}
Daily Wt. Gain	0.10^{ab}	0.17^{a}	0.07^{b}	0.07^{b}
Total feed intake	19.33^{a}	18.72^{b}	18.58^{c}	18.58^{c}
Daily feed intake	0.28^{a}	0.27^{b}	0.27^{b}	0.27^{b}

DISCUSSION

The improved weight gain in Table 3 above could be as a result of the effect of the Guinea Hen Weed's suppression of worm multiplication in the pigs especially at 0.5% supplementation of GHW, this is in tandem with the report of Adebayo *et al*. (2022) thus making more nutrients available for growth. Similarly, the reduced feed intake and the consequent better feed conversion ratio of T2 could be adduced to the high phytogenic constituent of the dry GHW which might have stimulated better feed utilization as a growth promoter and this is in agreement with Sobayo *et al.,* 2018 of increased breast weight of broiler chickens fed 500mg of *Petiveria alliacea* supplemented diets.

CONCLUSION AND RECOMMENDATION

From the result of this experiment, one can confidently suggest that the supplementation of grower pig diets with 0.5% Guinea Hen Weed may reduce cost expended on feed for the pigs yet records a better feed conversion ration through improved weight gain and it is hereby recommended.

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