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Response of African Giant Snail (Archachatina Marginata) in Captivity to Deifferent Feed Items

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Abstract
Thirty six (36) one-week old hatchling of giant snail were randomly selected and grouped into 4 batches on the basis of body weight. Each group was fed in captivity with either of the following feed items: water leaf, cocoyam leaf, potato leaf or compound feed (24.43% crude protein). Diets were fed *ad libitum* for 20 weeks. The result showed that snails raised on compounded feed had the highest body weight gain which was not significantly different (P>0.05) from those fed cocoyam and water leaves. Snail fed potato leaf had significantly lowest (P>0.05) body weight gain. Mean flesh weight of snails fed compounded diets and cocoyam leaf were 158±5.31 and 153± 4.04g respectively, these were significantly different(P>0.05) from those fed water leaf (148± 1.00g) and sweet potato leaf (139±1.10g). It was concluded that African giant snail can be raised successfully in captivity on cocoyam without any adversely response.
Keywords: Giant Land Snail, Cocoyam, Potato leaf, water leaf, compounded feed, captive rearing.

INTRODUCTION

Snail farming has a great potential for supplying the much required animal protein in human diet (Morkramer, 1992). African giant snail *(Archachatina marginata*) is rich in high quality protein and essential amino acid (arginine and lysine) which could be used as supplement for those found in the conventional livestock such as beef, pork, and poultry (Omole, 1998).

Snail meat is relatively abundant and could serve as a cheap source of protein and iron in the diet of school-age children and young mothers. It contributes in the fight against iron deficiency anemia, and a lack of protein in the diet of young mothers and their children in many developing countries (Ojebiyi et al, 2011).

Snail meat contains iron, calcium, magnesium, phosphorus, copper, zinc, vitamins A, B6, B12, K and healthy essential polyunsaturated fatty acids (Imevbore, 1990)

The high-protein, low-fat content of snail meat makes it a healthy alternative food for those suffering from cardiovascular diseases such as high blood pressure and artero-schlerosis (Omole,1998).

Inadequacy and scarcity of information on the diet of giant land snails in captivity constitute one of the reasons for its short supply and difficulty in propagation among many snail farmers. This work was carried out to study the response of African giant snail in captivity to water leaf, cocoyam leaf, potato leaf and compounded diet.

MATERIALS AND METHODS

Thirty six African giant snail hatchlings, I week old, were randomly divided into 4 equal groups on the basis of body weight. There were 4 experimental diets namely: water leaf, cocoyam leaf, sweet potato leaf and compounded feed. The snails were fed ad libitum for 20 weeks. The following parameters were determined: feed intake, body weight gain, flesh weight, shell thickness, shell length and percentage mortality. The proximate analysis of the diets was carried out as per AOAC (1990). Data were subjected to analysis of variance and significant differences were determined following Duncan's (1955) multiple range test.

RESULT AND DISCUSSION

The result are presented in table 1 and 2 the compound diet had the highest protein content (24. 28%), followed by cocoyam leaf 924. 10% waterleaf (20.25) and sweet potato had the least (18.22%). The fibre content of the feeds was in reverse order of the protein content of the feeds was in reverse order of the protein content. The significant difference (P<0.05) observed in growth performance between those snails raised on sweet potato leaf and compounded feed might be due to the relatively high amount of fibre and lower protein content in the former than the later which may affect digestibility and feed utilization. The similarity in the performance of snails fed compounded diet and cocoyam leaf might be as a result of the closeness in the nutritive value of the two (Stievenart, 1992). The significant difference (P<0.05) observed in the performance of snails raised on cocoyam leaf compared with sweet potato and cassava leaf might be an indication that cocoyam leaf is higher in crude protein and is more palatable (Adegbola and smith 1982). The shell thickness followed the same order in all the diets. The low percentage recorded in all the diets is an indication that they could all support snail production without any adverse effect (Ngonpayou, 1992).

CONCLUSION

African giant snail can be raised successfully in captivity on cocoyam leaf without lowering growth performance and flesh weight.

Table1: Proximate composition of the experimental feeds

Nutrients	Compound feed	Cocoyam	Water leaf	Sweet potatoes
Crude protein	24.28	24.10	20.25	18.22
Fibre	7.34	16.51	18.93	19.44
Ether Extract	3.28	10.58	18.49	4.09
Ash	8.96	11.64	20.08	13.69
Nitrogen Extract	56.14	27.17	22.25	44.56
Moisture	9.34	18.54	22.43	22.58

Table 2: Performance of Snail fed different food items

Parameter	Feed Items			
	Compounded diet	Cocoyam	Waterleaf	Sweet potato leaf
Feed intake (g)	28.98 ± 4.10^{a}	23.54 ± 3.00^{a}	37.15 ± 2.1^{b}	36.88 ± 5.21^{b}
Body weight (g)	26.91 ± 5.01^{a}	21.02 ± 4.02^{a}	17.61 ± 1.31^{a}	14.40 ± 1.05^{a}
Feed conversion	0.89 ± 0.16^{a}	0.59 ± 0.24^{b}	0.47 ± 0.11^{b}	0.39 ± 0.10^{c}
Shell length (cm)	11.7 ± 0.40^{a}	11.3 ± 0.13^{a}	8.6 ± 0.13^{b}	7.91 ± 0.20^{b}
Flesh weight (g)	168 ± 5.31^{a}	153 ± 4.04^{a}	142 ± 1.00^{b}	139 ± 1.10^{b}
% mortality	1	2	1	3

Means bearing different superscripts within the same row are significantly different ($P<0.05$)

REFERENCES

Adegbola A.A and Smith O.B (1982) Studies on the feed value of Cocoa pod Husk for cattle, Tropical Ani.Prod 7270-293

AOAC, (1990), Official Association of Analytical Chemist. Washington D.C.

Duncan D.B (1995), multiple range and multiple Test. Biometrics (11) 1-42

Imevbore E.A. (1990) Observations on the response of the African giant

Snails to varying moisture content. African J. of Ecology 31 265-267

Kramer,M.E.R (1992), garden snail as food and feed. Proceeding of seminar on invertebrate ECC Philippines

Ngoupayou (1992). Guinea pig raising for meat production

Proceeding of Seminar research on feed and feeding summary, 15-19

Ojeniyi,O.O, Jayelola,O.G , Oladunjoye,I.O,Shittu M.D (2011): Performance characteristics of Africa Giant Land Snail (*Archachatina marginata)* fed diets containing soya bean milk residue mixture.

World.J.life Science and Medical Research, 1(5); 105

Omole,A.J, Ultilisation of different Energy Suppliment on the performance characteristics of Giant edible land Snail (*Archachatina marginata*).M.Sc Dissertation ,Animal Science Department ,University of Ibadan.

Stievenart C. (1992) giant Snail as food or feed. In Hardouin J. proceedings of the *Seminar invertebrate* (mini livestock) farming EEC DaxII/CTA/IFS/DMMMS4/ITM Philippines.,Nov 1992,180-182

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