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REPRODUCTIVE PERFORMANCE OF GESTATING RABBITS FED *VERNONIA AMYGDALINA* LEAF MEAL

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ABSTRACT

This study assessed the effect of dietary levels of Vernonia amygdalina leaf meal on the performance of gestating rabbit does. Twenty female rabbits were mated to bucks and fed experimental diets containing 0, 5, 10 and 15 % levels of Vernonia amygdalina leaf meal (VLM) in four groups for five weeks. The feed intake, conception rate, gestation length, litter size, litter weight at birth were recorded. All data obtained were subjected to statistical analysis. The result obtained showed no detrimental effect of the leaf meal on performance of the gestating rabbit does. Feed intake was not significantly influenced by dietary levels of VLM. Vernonia amygdalina had no significant effect on all reproductive parameters assessed. All the experimental groups had 100% conception rate. The mean gestation length recorded ranged from 29.5 to 31 days for the rabbit does. Rabbit does fed diet with 15% VLM had the least average litter size compared to those on the control group. The average litter weight at birth was similar across the groups (42.20 – 43.15 g). It was concluded that Vernonia amygdalina can be fed to gestating female rabbits without deleterious effects on their reproductive performance.

Keywords: Bitter leaf, Conception rate, Litter size, Litter weight

INTRODUCTION

Rabbits are prolific and require adequate nutrition for optimum productivity. Several raw materials fed solely or incorporated with other ingredients to rabbits have been evaluated (Lebas, 2004). Rabbits' diet is usually high in fibre; hence, they can survive on some plants as a component of their diet. The effect of some plants on the performance of rabbits has been reported from several studies (Ogbuewu *et al*., 2011; Osho *et al*., 2014; Adeyemi *et al*., 2021). *Vernonia amygdalina* (bitter leaf) is one of such plants widely grown in Africa, consumed in various forms with high nutritional and medicinal properties (Garba *et al*., 2015). Several bioactive substances which include flavonoids, saponin, steroids, phenolic acids, linans, xanthones, anthraquinones, edotides and sesquiterpenes have been identified in *Vernonia amygdalina* (Ijeh and Ejike, 2011; Farombi and Owoeye, 2011). The nutritional, medicinal, pharmacological, and antioxidant activities of *Vernonia amygdalina* have been documented (Kadiri and Olawoye, 2016). *Vernonia amygdalina* leaf in fresh or dried form can be consumed as food or food supplement (Garba *et al*., 2015). It has been used in the treatment of diseases and health management in animal production. Osho *et al*. (2014) reported improved body maintenance in broiler chicken administered VLM extract. The aqueous extract has great potentials that could be explored for the treatment of helminth diseases in goats (Adediran and Uwalaka, 2015). Dietary replacement of *Vernonia amygdalina* can effectively attenuate obesity of dietary origin without affecting food intake in rats (Atangwho *et al*., 2012). Feeding influences kindling rate, litter size, kit survival and birth weight (Rommers *et al*., 2004). Inclusion of VLM in the diet of male rabbits improved weight gain 10kg/100kg diet with no adverse effect on reproductive parameters (Adeyemi *et al*., 2020; Adeyemi *et al*., 2021). The young leaves of VLM are used as fertility inducer in subfertile women in folk medicine (Adedapo *et al*., 2014). However, there is paucity of information on the impact of *Vernonia amygdalina* in female animals and their productivity. This study therefore assessed the effect of dietary *Vernonia amygdalina* leaf meal on the reproductive performance of gestating rabbits.

MATERIALS AND METHODS

This study was carried out in the Rabbitry Unit of Obafemi Awolowo University Teaching and Research Farm, Ile-Ife Osun state. Fresh *Vernonia amygdalina* leaves were harvested, air dried under shade and

then milled before incorporation into diets 0, 5, 10 and 15 %. Twenty (20) female rabbits of heterogeneous stock were used for this experiment. They were mated to viable males and supplied the experimental diets at 120g/rabbit/day during gestation till parturition. Clean water was provided ad-libitum for 5weeks. Daily feed intake was recorded as amount consumed after weighing the leftover feed every morning. Conception rate, gestation length, litter size and litter weight at birth were recorded. The intial and weight of doe at parturition were also recorded. Data obtained from the study were analyzed using Analysis of Variance (ANOVA) according to Statistical Analysis System (SAS, 2009) and means were separated using Duncan's Multiple Range Test at $p<0.05$.

RESULTS AND DISCUSSION

Nutrition plays a major role in the reproductive performance of an animal. Figure 1 shows the feed intake of rabbit does fed *Vernonia amygdalina* leaf meal (VLM). Despite the dark green colour and bitter taste added to the diet from VLM no adverse effect on feed intake was recorded. Average daily feed intake ranged from 117.30 to 119.58 g/rabbit with the highest intake in the rabbits fed 15% VLM. It was also observed that all the parameters assessed were not significantly influenced by the levels of *Vernonia amygdalina* leaf meal (VLM) fed to the female rabbits. As shown in Figure 2, 100% conception rate was recorded in all groups. This shows that the levels of *Vernonia amygdalina* leaf meal consumed had no abortifacient effect in the female rabbits thus all does mated kindled. This is in contrast with the report of Anyanwu *et al*., (2020) who reported antifertility potentials of *Vernonia amygdalina* extract in adult female rat with extensive degeneration of the endometrium and loss of tissues. As shown in Table 1, the weight of the rabbits were similar across the groups and the average gain after gestation ranged from 260 – 300 g. Diets with VLM had no deleterious effect on the gestation length (GL) 29.5 - 31 days, litter size (4.2 – 6.25) and litter weight at birth (42.20 -43.15g). Values obtained for GL were within the standard range of 28-31 days for the rabbit does. Our findings followed a similar trend with that of Odeyinka *et al*. (2008). This implies that *Vernonia amygdalina* leaf meal had no adverse effect on survival of foetus till parturition and neither has abortificient effect in the female rabbits.

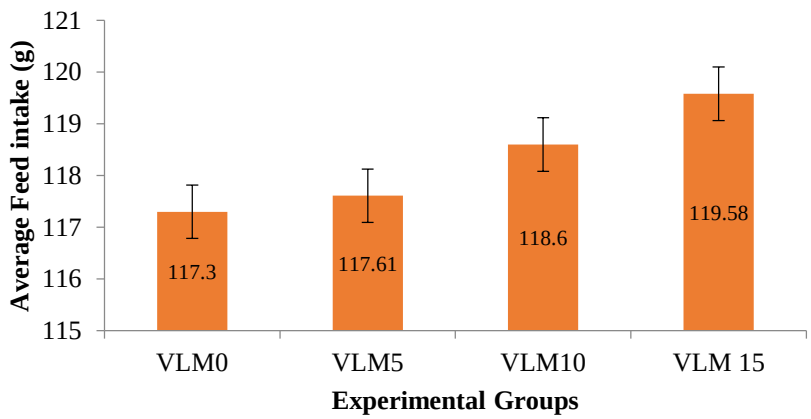

Figure 1: Average daily feed intake of female rabbits fed *Vernonia amydalina* leaf meal during gestation

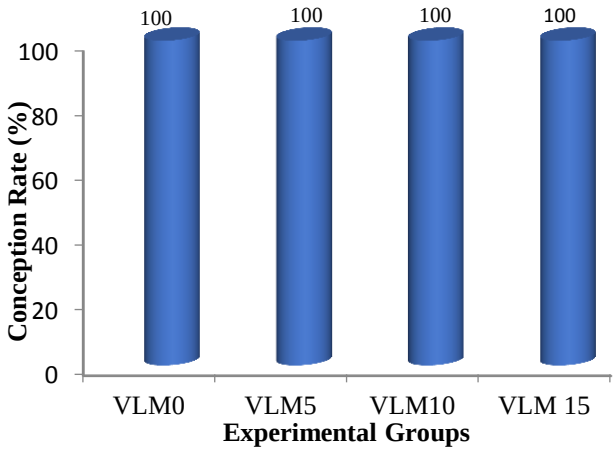

Figure 2: Conception rate of female rabbits fed *Vernonia amygdalina* leaf meal

Table 1: Performance of rabbit does fed *Vernonia amygdalin*a leaf meal during gestation

Parameters	VLM_0	VLM_5	VLM_{10}	VLM_{15}	P value
Initial weight of does (kg)	2.27 ± 0.17	2.22 ± 0.20	2.19 ± 0.17	2.13 ± 0.90	0.61
Weight of doe after parturition (kg)	2.53 ± 0.08	2.48 ± 0.19	2.49 ± 0.22	2.40 ± 0.46	0.60
Gestation length (days)	29.50 ± 0.65	30.00 ± 0.58	30.00 ± 0.58	29.50 ± 0.55	0.57
Average litter size at birth	6.25 ± 0.48	4.33 ± 1.45	5.75 ± 0.75	4.20 ± 0.20	0.14
Average litter weight at birth (g)	42.58 ± 1.08	42.20 ± 2.44	43.15± 2.43	42.56 ± 2.63	1.00

VLM – *Vernonia amygdalina* leaf meal, VLM_0 – diet with no VLM, VLM_5 – diet with 5%VLM, VLM_{10} – diet with 10%VLM, VLM_{15} – diet with 15%VLM

CONCLUSION

Female rabbits can be fed *Vernonia amygdalina* leaf meal as a feed component without adverse effect on their reproductive performance. However, for optimum performance of the female rabbits' dietary inclusion level should not exceed 10%.

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