

SERUM BIOCHEMISTRY PROFILES OF WEANER RABBIT (*Oryctolagus cuniculus*) FED DIET CONTAINING GRADED LEVELS OF AFRICAN WILD GRAPE (*Lannea microcarpa*) LEAF MEAL

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ABSTRACT

A feeding trial of 70 days was conducted to evaluate the serum biochemistry index of weaner rabbits. Five diets were formulated, comprising treatment 1, 2, 3, 4 and 5 at 0%, 5%, 10%, 15% and 20% inclusion levels of African wild grape leaf meal, respectively. Sixty (60) Mongrel weaner bucks' weighing 750 g $\pm$ 50 g were randomly allotted into five different treatments consisting four rabbits per replicate and twelve per treatment in a Completely Randomized Design (CRD). Data generated were subjected to the analysis of variance (ANOVA) with Duncan Multiple Range Test to compare the means. The total protein, creatinine, blood urea and albumin did not differ significantly ($P > 0.05$). However, significant differences ($P < 0.05$) were observed in globulin. African wild grape leaf is found to improved production quality up to 20% and can be included in the diet of weaner rabbits without any detrimental effect.

KEYWORDS; Serum biochemistry, African wild grape, Weaner, Rabbit and Quality.

DESCRIPTION OF PROBLEM

Rabbit production has been identified as a possible means to mitigate the protein shortage of the malnourished average third-world population (1). Rabbit's meat contains high protein levels (about 20.8%) and its consumption is bereft of cultural and religious biases (4). reported that rabbit meat is rich in protein as it is a major source of protein supply in Nigeria.

The physiology of farm animals is affected by several factors, one of which is nutrition (7). Nutritional status of an individual is dependent on dietary intake and effectiveness of metabolic processes. These can be determined by either or combinations of chemical, anthropometric, biochemical or dietary methods (9).

Grape leaves and shoots are pruned after are harvested, these residues are generally disposed by mulching vineyard or by burning on site (11). In the Mediterranean basin, leaves and shoots are traditionally browsed by sheep and goat. Grape leaves and shoots have been reported as a potential source of natural antioxidants and as a food supplement (Cetin *et al.*, 2011).

MATERIALS AND METHODS

Description of Experimental Site

The research was conducted at the Teaching and Research Farm of Federal University Dutse, Jigawa State, Nigeria. Dutse is located between latitude 11° 45' 22.25" and longitudes 9° 20' 20.26" E, at an altitude of 485 m above sea level (3). The fresh leaf was collected from Jahun LGA Jigawa state and put in sacks and

conveyed to the Teaching and Research Farm of Federal University Dutse, air-dried and later milled with a milling machine Abro (P 207). Five experimental diets were formulated as complete diets each as shown in Table 1. The African wild grape leaf meal was included at 0%, 5%, 10%, 15% and 20% inclusion levels, designated as diet T₁, T₂, T₃, T₄ and T₅, respectively. In the 10th week of the trial, four rabbits per replicate were randomly selected. Approximately about 1 mL of blood was collected from each rabbit via

the ear vein using 1ml sterilized syringes and needles, the blood were immediately transferred into 1 mL of Lithium Heparin containers. The data generated from this study was subjected to standardized procedure of the Generalized Linear Model (GLM) of the Statistical Analysis System (SAS, 2013). Significant differences within treatments means were separated using Duncan's Multiple Range Test and the data on sensory evaluation was been evaluated using descriptive statistics.

Table 1: Composition and Calculated Analysis of the Experimental Diet (%)

Ingredient	Experimental diets				
	(T ₁) 0%	(T ₂) 5%	(T ₃) 10%	(T ₄) 15%	(T ₅) 20%
Maize	43.00	43.00	43.00	43.00	43.00
Soya bean	15.90	15.90	15.90	15.90	15.90
African wild grape leaf	0.00	5.00	10.00	15.00	20.00
Wheat offal	36.60	31.60	26.60	21.60	16.60
Bone meal	3.50	3.50	3.50	3.50	3.50
Salt	0.30	0.30	0.30	0.30	0.30
Lysine	0.20	0.20	0.20	0.20	0.20
Methionine	0.20	0.20	0.20	0.20	0.20
Vitamin. Premix	0.30	0.30	0.30	0.30	0.30
Total	100.00	100.00	100.00	100.00	100.00
Crude Protein (%)	16.00	16.00	16.00	16.00	16.00
Metabolized Energy(kcal/kg)	2270	2267	2263	2259	2256
Crude Fibre (%)	15.23	19.17	17.90	16.63	15.34
Ether Extract (%)	4.56	4.45	4.98	5.33	5.12

RESULTS AND DISCUSSION

Serum Biochemistry Parameters of Weaner Rabbit Fed Diet Containing Graded Levels of African Wild Grape Leaf Meal.

The result of serum biochemistry parameters of a weaner rabbit fed diet containing graded levels of African wild

grape leaf was presented in Table 2. The findings showed that, across all treatments, the diet had no effect ($P > 0.05$) on total proteins, creatinine, blood urea, and albumin. However, significant differences ($P < 0.05$) were observed in globulin. T₅ had the highest globulin while T₁ scored the lowest.

Table 2: Serum Biochemistry Parameters of Weaner Rabbit Fed Diet Containing Graded Levels of African Wild Grape Leaf Meal.

Parameters	T ₁ (0%)	T ₂ (5%)	T ₃ (10%)	T ₄ (15%)	T ₅ (20%)	N.R	P-V	Ref
Total protein (g/dl)	59.8±0.9	60.7±1.4	61±1.3	59.5±1.6	62.5±1.9	55-62	0.611	(5)
BUN (mg/dl)	14±2.4	13.3±1.3	13.5±2.8	11±0.7	13±1.8	12-14	0.360	(10)
Albumin (g/dl)	35.8±0.6	36.5±0.5	35.8±0.5	34.5±0.1	36.7±0.9	28-38	0.816	(5)
Globulin (g/dl)	24±1.5 ^c	24.3±1.9 ^c	25.3±1.3 ^b	25±1.6 ^b	26.8±2.3 ^a	18-31	0.004	(2)
Creatinine	0.57±0.1	0.55±0.20	0.65±0.3	0.63±0.9	0.70±0.2	0.7-1	0.926	(2)

^{abc} Means with different superscripts within the same row are significantly different (P< 0.05).

The range of values for total proteins obtained in this experiment compared favourably with the values of 55.99–61.07 g/l as reported by (4). Normal total protein levels suggested that the rabbit received sufficient protein in the formulated diet. The creatinine value was below the range of 0.77-1.05mg/dl as recorded by (8). This indicated that the kidney is functioning normally. Creatinine is produced by the muscle tissue; rabbits with more muscle mass may have lower creatinine levels. Globulin values were within the normal range of 18.20-31.07 as reported by (2). This indicated that no immune system disorders. Blood urea values of this study agreed with the findings of (10) who observed that amino acid imbalance would increase blood urea concentration, The values for albumin obtained in this study were within the normal range of 28.23-38.21 g/l as reported by(5) this also indicated that the experimental animals did not have intestinal damage.

CONCLUSION AND APPLICATION

The study concluded that African wild grape is found to improved meat quality up to 20%, without any effect on rabbit carcasses and no detrimental effect.

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