

HAEMATOLOGICAL PROFILE OF WEANER RABBITS FED DIETS CONTAINING DRIED SCENT LEAF (*Ocimum gratissimum*) MEAL

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ABSTRACT

A study was conducted to evaluate the effect of feeding scent leaf *Ocimum gratissimum* meal on haematological profile of weaner rabbits. Thirty (30) mixed breeds of weaner rabbits with an average weight of 1675g were used to investigate the haematological profile of rabbits fed diets containing different inclusion levels (0, 5, 10, 15 and 20%) of scent leaf *Ocimum gratissimum* meal. The rabbits were randomly assigned to five dietary treatments comprising of six rabbits per treatment, in a completely randomized design (CRD), the study lasted for 72 days. The rabbits were individually housed in iron gauze cages. Diet was formulated to contain 18% CP, and the controlled diet was free of *O. gratissimum*. Feed and clean water were provided ad libitum. Blood samples were collected for haematological profile analysis after the feeding trial. The inclusion of scent leaf *O. gratissimum* in the diets significantly ($P<0.05$) influenced haematological profile of the rabbits. The Packed Cell Volume (PCV) values ranged from 27-38g/dl and was significantly higher ($P<0.005$) for rabbits fed diet containing 5% *O. gratissimum* meal. Haemoglobin (Hb) values were highest ($P<0.05$) for rabbits fed diet containing 5% *O. gratissimum* meal (38.333) but ranged from 27-38g/dl in the animals. Rabbits fed diet with 0% level of inclusion of *O. gratissimum* had the highest white blood cells count (WBC). All the haematological profile obtained were within the normal range of healthy rabbits, thus the scent leaf had no detrimental effect on the haematological profile of the rabbits.

Keywords: Haematology, rabbits, *Ocimum gratissimum*, scent leaf

INTRODUCTION

The growing interest in the use of natural herbs and medicinal plants as alternative feed additives in rabbit diets has led to evaluation and use of bio-active botanicals. Such alternatives are currently being promoted as prebiotics, probiotics, organic acids, essential oils, and other medicinal plants products (Charles and Simon, 1992). Phytochemical analyses of these botanicals have shown the presence of essential oil and phytochemicals that improve performance and reduces bacterial load in non-ruminant livestock (Poole, 1987), *Ocimum gratissimum* is one of such plants. Scent leaf possesses all the potentials of an effective natural growth promoter which can safely replace antibiotic growth promoters. From enhancing growth and productive performances, to influencing carcass traits and improving blood profile of the rabbits (Poole, 1987; Yashim, *et al.* 2017).

Blood is an important reliable medium for assessing the health status of an individual animal. Gupta *et al.*, (2007) reported that blood constituents are used to monitor and evaluate health and nutritional status of animals. It is a medium through which nutrients are conveyed to various parts of the body system of an organism. A readily available and fast means of assessing clinical and nutritional status of an animal on a feeding trial is by the use of blood analysis (Yashim *et al.*, 2016). Therefore, this study was carried out to evaluate the haematological profile of weaned rabbits fed diets containing scent leaf (*Ocimum gratissimum*).

MATERIALS AND METHODS

The experiment was conducted in the Department of Animal Science teaching and research Farm, Ahmadu Bello University Zaria, Kaduna State. The experimental material *Ocimum gratissimum* (Scent leaf) leaves were locally sourced, milled and stored in jute bags until it was used. Thirty mixed-breeds weaned rabbits with an average weight of 1.53 kg were randomly allocated to five dietary treatments in a completely randomized design with 6 rabbits per treatment, the study lasted for 8 weeks.

The rabbits were kept individually in all-wire metabolic cages which has a provision for feeder, drinker and for easy collection of urine and faeces. Five iso-nitrogenous diets were formulated to contain 18% CP with *Ocimum gratissimum* at inclusion levels of 0, 5, 10, 15 and 20% (Table 1). The cages were properly disinfected using Morigald® before the commencement of the study. The animals were prophylactically treated for internal and external parasites using subcutaneous injection of Ivomec® and a broad-spectrum antibiotic (Oxytetracycline 10%) was administered intramuscularly at the manufacturer's recommended rate. Fresh and clean drinking water was provided to the rabbits daily *ad libitum* as well as the experimental diets. Blood samples were collected using blood sample collection techniques for rabbits as described by Yashim (2017). Data collected from this study were subjected to statistical analysis and significant means were compared (SAS, 2002).

RESULTS AND DISCUSSION

The result of the haematological indices of weaner rabbits fed diet containing different inclusion levels of *Ocimum gratissimum* was shown in Table 2. The inclusion of *O. gratissimum* significantly ($P<0.05$) affected all parameters measured. Packed cell volume (PCV) was significantly ($P<0.05$) affected, with 5% inclusion level having higher value (38.33%) and the least value (27.07%) in 20% inclusion. The observed PCV values in this study were within the normal range of healthy rabbit as reported by Hillyer (1994). Haemoglobin (Hb) ranged from 9.20 to 12.63g/dl with the higher ($P<0.05$) values observed at 5% inclusion (12.63 g/dl) while 20% had the least value of 9.20g/dl. The haemoglobin concentration compared favourably with the values of 10.00 to 15.00g/dl reported by Hellyer (1994); 9.10-15g/dl by Njidda *et al.* (2014) and 11.86 to 13.91g/dl by Yashim *et al.* (2017). The white blood cell (WBC) count in this study ranged from $4.46-7.03 \times 10^9/l$, the values compared favourably with the normal values of 4.71 to $9.23 \times 10^3/mm^3$ in healthy rabbits (Yashim *et al.*, 2017). These results indicated that the animals were healthy at the beginning of the experiment, because decrease in number of WBC below the normal range could be an indication of allergic conditions, anaphylactic shock and certain parasitism. While elevated values (leukocytosis) may indicate the existence of a recent infection, usually with bacteria (Poole, 1987). Neutrophils and Lymphocyte values also differed ($P<0.05$) across treatment groups. Animals on 10% inclusion had higher concentration of lymphocytes. The observed values were within normal range of 40-80% reported by Poole (1987) and Yashim *et al.* (2017).

Table 1: Percentage ingredient Composition of the experimental diet

Ingredient	Inclusion level of scent leaf <i>Ocimum gratissimum</i> (%)				
	0	5	10	15	20
Groundnut cake	12.50	13.50	14.50	15.50	16.50
Soybeans cake	10.00	10.00	10.00	10.00	10.00
Dried Scent leaves	0	5	10	15	20
Maize offal	61.00	55.00	49.00	43.00	37.00
Rice Bran	11.25	11.25	11.25	11.25	11.25
Bone meal	3.00	3.00	3.00	3.00	3.00
Limestone	0.25	0.25	0.25	0.25	0.25
Common salt	1.50	1.50	1.50	1.50	1.50
Methionine	0.25	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25	0.25
Total	100	100	100	100	100
Calculated analysis					
ME (Kcals/kg)	2648.96	2687.05	2725.14	2763.14	2801.32
Crude Protein	17.58	17.63	17.74	17.79	17.79
Ca	1.23	1.22	1.22	1.22	1.22
P	0.59	0.58	0.57	0.57	0.56
Meth	0.45	0.45	0.44	0.44	0.44
EE	0.46	0.75	1.04	1.33	1.62
CF	11.82	11.85	11.89	11.92	11.96
Feed Cost (₦/kg)	93.6	107.23	120.79	133.67	146.12

Table 2: Haematological indices of weaner rabbits fed diet containing different inclusion levels of *Ocimum gratissimum*

Parameters	Inclusion level of <i>Ocimum gratissimum</i> (%)					SEM
	0	5	10	15	20	
Pack cell volume (%)	31.00 ^c	38.33 ^a	35.00 ^b	32.00 ^c	27.67 ^d	1.42
Haemoglobin (g/dl)	10.30 ^{ab}	12.63 ^a	11.63 ^a	10.67 ^{ab}	9.20 ^b	1.24
Red blood cell ($\times 10^{12}/L$)	5.13 ^{ab}	6.53 ^a	5.90 ^{ab}	5.37 ^{ab}	4.60 ^b	0.59
White blood cell ($\times 10^9/L$)	7.03 ^a	4.47 ^b	6.47 ^{ab}	5.30 ^b	6.40 ^{ab}	0.85
Neutrophil (%)	27.67 ^a	23.00 ^{ab}	17.67 ^b	22.67 ^{ab}	18.33 ^b	3.25
Lymphocytes (%)	71.00 ^c	75.67 ^{ab}	78.00 ^a	76.00 ^a	75.33 ^b	3.63

^{abcd} Means within row with different superscript are significantly different at $P < 0.05$; SEM = Standard error of mean

CONCLUSION

From this study, it can be concluded that the inclusion of *Ocimum gratissimum* in the diet of rabbits had no negative effect on the haematological indices, as all parameters investigated were within the normal range.

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