

EFFECT OF WILD SUNFLOWER (*Tithonia diversifolia*) AND GOAT WEED (*Agerantum conyzoides*) LEAF MEALS ON HAEMATOLOGICAL INDICES OF BROILER CHICKENS

Adeyeye S.A.^{*}, Agbede J.O.[†], Aletor V.A.[†], Oloruntola O.D.[†], Ayodele, S.O.[€], Fadiyimu, A.A.^{*} and Ogunsipe, M.H.[†]

^{*}Department of Animal Health and Production, Federal College of Agriculture, Akure, Nigeria

[†]Department of Animal Production and Health, The Federal University of Technology, Akure, Nigeria

[†]Department of Animal Science, Adekunle Ajasin University, Akungba Akoko, Nigeria

[€]Department of Agricultural Technology, The Federal Polytechnic, Ado Ekiti, Nigeria

[†]Department of Agricultural Science, Adeyemi College of Education, Ondo, Nigeria

^{*}Corresponding author: Adeyeye S.A, samwaleadeyeye@gmail.com

ABSTRACT

This study was carried out to determine the influence of wild sunflower, and goat weed leaf meal composite leaf mix (CLM) on the haematological indices of broiler chickens. A total of three hundred (300) healthy day-old Cobb 500 broiler chicks were randomly distributed into five (5) dietary treatments containing six replicates (10 birds/replicate) in a complete randomised design. The five experimental diets were formulated and designated as Diet 1 (Control), Diet 2 (0.11% Oxytetracycline supplemented), Diet 3 (0.40% CLM), Diet 4 (0.80% CLM) and Diet 5 (1.20% CLM). The birds were fed *ad-libitum* and given cool, clean water for 42 days. Haematological parameters evaluated were red blood cells (RBC), haemoglobin concentration (Hbc), packed cell volume (PCV), cell volume (MCV), mean cell haemoglobin (MCH), mean cell haemoglobin concentration (MCHC), white blood cells (WBC), granulocytes, lymphocytes and monocytes. At six weeks of age, birds were randomly selected (two birds from each replicate), and blood samples were obtained from the birds and analysed for haematological indices. The result obtained from all the parameters measured were not significantly ($p < 0.05$) influenced by the treatment fed to the birds. The PCV varied from 39.00-44.50%, WBC varied from $3.20 - 6.96 \times 10^9/l$ and RBC varied from $1.66 - 1.90 \times 10^{12}/l$. In conclusion, the composite leaf mix (CLM) meals have no detrimental effects on broiler chickens' blood formation process.

Keywords: Sunflower, Goat weed, Haematological indices, Broiler chickens

INTRODUCTION

Broiler production is one of the most important sources of animal protein all over the world today. This could be attributed to the high rate of feed utilisation efficiency and fast growth rate of the birds. Poultry production has been challenged by unavailability of good quality feed on a sustainable basis at stable prices. The escalating cost of conventional feedstuff has stimulated research into alternative feedstuffs with the aim of reducing the cost of poultry production, maintaining the feed quality, increasing the production rate and improving the health status of the birds (Jiwuba *et al.* 2016). Several alternative feedstuffs have been successively used as possible replacement either partially or wholly of conventional feedstuff (Bolu *et al.*, 2009). The wild sunflower (*Tithonia diversifolia*) and goat weed (*Agerantum conyzoides*) is a potential phyto-genic feed supplement for broiler chickens' production because they are abundantly available and are good sources of protein and other nutrients (Buragohain, 2013). The determination of blood component values provide reliable results and may also give inputs research studies on nutrition, physiology status of the farm animal (Fasuyi, 2005). Blood parameters are an excellent diagnostic tool used in examining the influence of feedstuffs or anti-nutrients on the physiological well-being of livestock (Bonsu *et al.*, 2013). Therefore, this study was carried out to determine the influence of wild sunflower, and goat weed leaf meals composite-mix supplementation on the haematological indices of broiler chickens.

MATERIALS AND METHODS

The experiment was carried out at the Poultry Unit of Teaching and Research Farm of the Federal College of Agriculture (FECA), Akure, Nigeria. The goat weed and sunflower leaves were plucked and washed in running tap water, suspended on under shade for 60 minutes, chopped into small pieces

and thereafter spread lightly on tarpaulin under the shed and then after milled (100µm size) to produce goat weed and sunflower leaf meals. After that, equal portions of goat weed meal (GWM) and sunflower meal (SFM) were mixed to form a goat weed and sunflower leaf meals composite mix (CLM) meal. Two basal diets were formulated for the starter and finisher phase (Table 1) according to NRC, (1994) recommendations. At each phase, the basal diets were divided into five (5) equal portion and labelled diets 1 to 5. Diet 1 (control), Diet 2 was supplemented with 0.11% Oxytetracycline while Diets 3, 4 and 5 were supplemented with 0.40, 0.80 and 1.20% of g/kg CLM respectively. The five diets were analysed for proximate composition (AOAC, 1995). Three hundred day-old Cobb 500 broiler chicks were distributed to five (5) dietary treatments (60 birds/treatment; 10 birds per replicate) in a complete randomised design. The birds were feed and water *ad libitum* throughout. At six weeks of age, 2 birds per replicate were randomly selected and bled into ethylene diamine tetra-acetate sample bottles and analysed.

RESULTS AND DISCUSSION

All the haematological indices measured for the broiler chickens fed graded levels of composite leaf mix (CLM) meal, as shown in Table 2 were not significantly ($P>0.05$) influenced by the dietary treatments. Haematological parameters are important indicators of health status in animals and have been an indispensable tool in diagnosing, treatment and prognosis of many diseases (Nwokolo, 1987). In this study, all the parameters measured falls within the normal range reported by Flecknell, (2000) and Oloruntola *et al.*, (2016). Besides, the stability of some of these haematological indices across the experimental diets implies nutritional competence and support of the composition of the diets for the normal haematological indices in the birds as in agreement with Ogunsipe *et al.*, (2017) in broiler chickens.

CONCLUSION

In conclusion, the CLM dietary supplementation has no deleterious effects on the haematological indices of the experimental birds.

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Table 1: Nutrient Composition of experimental basal diets

Ingredients (g/kg)	Starter (1 to 21 days)	Grower (22 to 42 days)
Maize	426.60	485.60
Wheat offal	121.00	101.00
Soybean meal	386.90	347.90
Vegetable oil	22.00	23.00
Di-calcium phosphate	18.00	17.00
Limestone	14.00	14.00
Premix	3.00	3.00
Methionine	3.00	3.00
Lysine	2.50	2.50
Salt	3.00	3.00
Chemical analysis (g/kg DM)		
Crude protein	220.00	205.60
Crude fibre	45.30	43.80
Calculated analysis (g/kg DM)		
Metabolizable Energy (kcal/kg)	2955.88	3 000.24
Calcium	10.20	9.30
Available Phosphorus	6.00	5.50
Methionine	6.30	3.80
Lysine	11.50	10.30

Table 2: Effects of wild sunflower and goat weed leaf meals on haematological indices of broiler chickens

Parameters	Diet 1 Control	Diet 2 Oxyt	Diet 3 0.4% CLM	Diet 4 0.8% CLM	Diet 5 1.2% CLM	SEM	P-value
Red blood cells ($\times 10^{12}/l$)	1.70	1.90	1.66	1.76	1.67	0.07	0.87
Haemoglobin conc. (g/dl)	13.00	14.16	14.86	13.66	13.33	0.24	0.10
Packed cell volume (%)	39.00	42.50	44.50	41.00	40.00	0.72	0.10
Mean cell volume (fl)	231.90	233.46	276.46	249.26	247.13	10.84	0.76
Mean cell haemoglobin (pg)	77.26	77.76	92.20	82.96	82.46	3.61	0.75
Mean cell haemoglobin conc. (g/dl)	33.26	33.30	33.30	33.30	33.31	0.01	0.45
White blood cells ($\times 10^9/l$)	4.00	3.40	4.80	3.20	6.96	0.49	0.08
Granulocytes ($\times 10^9/l$)	1.30	0.90	1.36	0.90	2.30	0.19	0.10
Lymphocytes ($\times 10^9/l$)	2.56	1.96	3.46	2.26	4.30	0.30	0.06
Monocytes ($\times 10^9/l$)	0.09	0.11	0.08	0.07	0.12	0.01	0.60

Oxyt : Oxytetracycline; CLM: Composite leaf meals; SEM: Standard error of the mean