

EFFECT OF GRADED LEVELS OF COTTONSEED CAKE AND POULTRY LITTER AS SUPPLEMENT IN TOTAL MIXED RATIO ON HAEMATOLOGICAL INDICES OF FATTENING YANKASA RAMS

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Abstract

This study was conducted to investigate the effect of graded levels of cottonseed cake and poultry litter based diets on the haematological indices of fattening rams. Sixteen (16) rams with an average weight of 25kg-35kg were allotted to four treatments. The treatments evaluated were 0%, 5%, 10% and 15% for treatment 1, 2, 3 and 4, respectively in a Complete Randomized Design (C R D). The results showed on significance ($P>0.05$) difference among the treatment mean. For Packed Cell Volume (PCV), Haemoglobin (HB), White Blood Cell (WBC), Red Blood Cell (RBC), Mean Corpuscular Volume (MCV), Mean Corpuscular Haemoglobin (MCH), and Mean Corpuscular Haemoglobin Concentration (MCHC). The results obtained showed that all the haematological parameters obtained were within the normal range values. It is concluded that inclusion of cottonseed cake and poultry litter in diets of fattening rams have no any effect on treatment and effects on parameters evaluated.

Key words: Sorrel seed, Poultry litter, Haematological analysis and Sheep.

Description of Problem

The majority of ruminants in Nigeria are raised on natural pasture which decline rapidly during the dry season. Change in nutritional status result in very irregular growth and market size. Small scale farmers can fluctuation in seasonal weights in small ruminant (1)not afford the investments require to establish improve pasture and feed concentrate supplement to alleviate dry season growth . Small scale farmers are increase relying on crop residue, browse and Agro industrial by product to supplement roadside grazing during the dry season. Some of these material are potentially good feed source which degrade readily in the rumen (2)

Material and Methods

Study Area

The study was carried out at the Small Ruminant Unit of the Livestock Teaching and Research Farm of the Department of Animal Science, University of Maiduguri. Borno state.

Feed Ingredients and Preparation

The feed ingredients used for the study are sorrel seed, cowpea husk, groundnut haulm as a protein source wheat bran, maize bran and sorghum husk as energy sources. While poultry litter as a non-protein nitrogen sources, and locust bean pulp used as binder and also for energy source for multi nutrient blocks.sThe ingredients used in compounding the diets were cottonseed Cake and poultry litter, wheat bran, Sorghum husk, maize bran, cowpea husk and groundnut haulms. The ingredients were purchased at kasuwan shanu Maiduguri, Borno State. Five (5) diets were formulated such that cottonseed cake and poultry litter was not included in the control diet (Treatment T1) but incorporated in diets T2, T3, and T4 at 5%, 10%, and 15% respectively. The cottonseed cake and poultry litter was ground before mixing with other ingredients. The feed was formulated on the basis of energy, and protein ration respectively.

Feeding and Management

Prior to the commencement of the study, the animals were given prophylactic treatment consisting of intra- muscular injection of

oxytetracycline (LA: 1ml/10kg body weight, multi vitamin and ivermectin 1m/50kg).

Table 1: Show Gross Composition (%) of Experimental Diets

Ingredients	TI (control)	T2	T3	T4
Cotton seed cake and poultry litter	0	5	10	15
Wheat bran	15	15	15	15
Sorghum husk	30	30	30	30
Groundnut haulm	20	20	15	15
Cowpea husk	20	15	15	10
Maize bran	15	15	15	15
Total (kg)	100	100	100	100

Experimental Animals and their Management

Sixteen (16) rams of 1-2 years weighing 25 – 35kg were used for the feeding trials. The animals were adapted for one week. During this period, the animals were treated with antibiotic and anti-helminth against external and internal parasite and some infectious disease so as to stimulate fat deposition to the animal. Animals were fed with experimental diet. The rams were weighed and randomly allotted to four (4) treatment groups with four (4) animals per treatment and each standing as a replicate in a completely randomized design (CRD). The animal were weighed fortnightly so as to adjust for feeding and the study lasted for 8 weeks. All routine management were strictly carryout.

Blood Collection

At the end of the experiment blood sample were collected from one randomly selected animal per treatment group. The operation is done very early before morning feeding via jugular vein and the blood collected were placed in to the EDTA bottle.

Haematological Analysis

The haematological indices measured include packed cell volume (PCV), white blood cell (WBC) count, red blood cell. (RBC) count differential Leucocytes counts and Haemoglobin Concentration (HB). Also the Erythrocyte indices which include the mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH) and mean corpuscular hemoglobin concentration (MCHC) were computed In accordance with standard formulae.

$$MCV = \frac{PCV}{RBC \text{ Count in } 10^6 / \text{mm}^3} \times \frac{10}{1}$$

MCH

$$= \frac{Hb(g/dl)}{RBC \text{ in } 10^6 / \text{mm}^3} \times \frac{10}{1}$$

$$MCHC = \frac{Hb(g/dl)}{PCV (\%)} \times \frac{100}{1}$$

Statistical Analysis

All data collected were subjected to analysis of variance using Statistix 10. Significance differences among the treatment means were compared using least significant differences (LSD).

Result and Discussion

Table 1 shows the haematological indices of Yankasa rams fed graded levels of cottonseed cake and poultry litter as supplement in total mixed ration.

Packed Cells Volume (%)

The result of packed cells volume (PCV) showed that there no significant (P>0.05) difference among the treatment means. The values fell within the T2 (31.33) recorded the lowest value and T4 recorded the highest value. Are within the normal range value (27.00-45.00) reported by (3).

Haemoglobin (g/d)

The result of Haemoglobin (g/d) showed that there no significant (P>0.05) difference among the treatment means. T2 (11.53) recorded the lowest value and T3 (29.83) recorded the highest value. The values recorded in the present study fell within the normal range of (8-16) (g/d). (4).

White Blood Cell (WBC)

The result of White Blood Cells (WBC) showed that there no significant (P> 0.05) difference

among the treatment means. T2 (18.90) recorded the lowest value and T4 (23.90) recorded the highest value. The values obtained fell within the normal range of $4-12 \times 10^3/\text{mm}^3$ reported by (4), but higher than the finding of, (6). Who reported $2-3 \times 10^3/\text{mm}^3$. Highest White Blood Cells (WBCs) In T4 is in an indicator of immune response to infection or toxic substance is the organism and lowest white blood cells (WBC) count is an indication of pathogenic infection or presence of antigens in the org (5).

Red Blood Cells

The result of Red Blood Cells (RBC) showed that there no significant ($P > 0.05$) difference among the treatment means. T2 (5.83) recorded the lowest value and T4 (12.00) the highest value within the normal range ($9-15 \times 10^6/\text{mm}^3$). Reported by (5). The differences red blood cells count associated with conditions that cause the body to make too many red blood cells (Polythethemia) or impaired pulmonary function low red blood cells (RBC) count may be associated with iron deficiency, internal bleeding, some types of anemia or some vitamin deficiency (4).

Mean Corpuscular Volume (MCV)

The Mean Corpuscular Volume (MCV) showed that there no significant ($P > 0.05$) difference among the treatment means. T3 (22.33) recorded the lowest value and T2 (25.00) recorded the highest value and values within the normal range (23-4) reported by (5) and (6).

Mean Corpuscular Haemoglobin (MCH)

The result of Mean Corpuscular Haemoglobin (MCH) showed that there were no significant ($P > 0.05$) among the treatment means. The value recorded in T1 (7.87) recorded as lowest value and T4 (9.13) recorded the highest value. The Mean Corpuscular Haemoglobin (MCH) range (28.8-31.4) reported by (4). The difference could be due to the environmental factors.

Mean Corpuscular Haemoglobin Concentration (MCHC)

The result of Mean Corpuscular Haemoglobin Concentration (MCHC) showed that there were no significant ($P > 0.05$) different amount the treatment means. T3 (33.63) recorded the highest value and T4 (33.30) recorded the lowest Values. The Mean Corpuscular Haemoglobin Concentration (MCHC) Values range (33.30-33.63). Were higher than the range value of (2.8 ± 0.44) reported by (6).

Table 1: Haematological indices of Yankasa rams fed graded levels of cottonseed cake and poultry litter as supplement in total mixed ratio

Parameters	T1	T2	T3	T4	SEM
Pack cell volume	35.00	31.33	34.00	38.67	3.72NS
Haemoglobin	12.63b	11.53c	29.83a	12.07b	8.46**
White blood cell	23.63	18.90	20.80	23.90	2.59NS
Red blood cell	8.77b	5.83c	6.30c	12.00a	2.95**
MCV	26.43	25.00	22.33	27.60	2.15NS
MCH	7.87	8.30	8.23	9.15	1.01NS
MCHV	33.20	33.65	33.63	33.30	0.24NS

Conclusion and Application

From the results obtained on the study it can be concluded that proximate composition of the feed ingredient were similar when compared to other work. This proper formulate of the diet. Therefore cottonseed cake and poultry litter could be used as part of ruminants diets since it has no deleterious effect of the health status of the animals.

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