



PERFORMANCE CHARACTERISTIC OF BROILER BIRDS FED VARYING LEVELS OF ALOE-VERA GEL IN WATER

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ABSTRACT

The study was carried out at the Poultry Unit of the Teaching and Research Farms of Oyo State College of Agriculture and Technology, Igboora, Nigeria. A total number of 96 day old unsexed broiler chicks were purchased from a reputable farm at Ibadan for the experiment. At 8 days of age, birds were weighed and randomly allotted into 4 feeding treatments of 3 replicates consisting of 8 birds in a completely randomized design (CRD). T1 control, T2 (30 ml of AVGE + 1 litre of water), T3 (60 ml of AVGE + 1 litre of water), T4 (90 ml of AVGE + 1 litre of water). The experiment lasted for 49 days. Results showed that, there were no significant ($p>0.05$) differences existing among treatments groups in final body weight gain, feed conversion ratio and total water intake as well as the mortality except for the overall feed intake. Birds in T1 had the highest final body weight of 1870.33g which is followed numerically by birds in T4 with 1860.00g, T2 with 1798.33g and T3 with a numerical value of 1775.67g respectively. FCR was non-significant ($p>0.05$) but differs numerically across the treatment groups with birds in T4 having the least value of 2.01. Mortality value was highest in T1 (control) with a non-significant ($p>0.05$) value of 0.67 while T2 had no mortality recorded. It can be concluded from the experiment that the groups treated with Aloe vera gel extract showed better performance in weight, FCR, and mortality compared to the control.

Key words: Broiler, Aloe vera gel extract, Weight gain, FCR, Mortality

INTRODUCTION

Antibiotic growth promoters have been helpful in improvement of growth performance and feed conversion ratio in poultry (Miles *et al.*, 2006; Dibner and Buttin, 2002; Izat *et al.*, 1990). However, constant treatment of poultry by antibiotic may result in residues of these substances in poultry products and bacteria resistance against treatments in human body. Due to such threats to human health, use of antibiotics in poultry is banned (Owens *et al.*, 2008; Alcicek *et al.*, 2004; Botsoglou and Fletouris, 2001; Hinton, 1988). Many studies have been carried out on using additives, including herbs, as alternatives to antibiotics, with direct or indirect effects on intestinal microflora, in poultry products (Taylor, 2001). *Aloe vera* is used as a multi-purpose medicine with anthelmintic, antimicrobial, antiinflammatory and anti-oxidative properties. They also contain carotenoids, vitamins, terpenoids and phenols among other compounds (O'Brien *et al.*, 2011). They are used in treating newcastle disease, internal parasites, fowl typhoid, coccidiosis, gall sickness and inflammation (Dold and Cocks, 2001). Apart from the above, anti-mutagenic effects and anti-hypersensitivity effects of *Aloe vera* have also been reported by some researchers (Snezana *et al.*, 2007 and Strickland, 1993). With numerous properties, *Aloe vera* is among the most well-known herbs. Thus, the study aim to examine the use of oral supplementation of aloe vera gel without commercial antibiotics and multivitamin for broiler chicken

MATERIALS AND METHODS

The study was carried out at the Poultry Unit of the Teaching and Research Farms of Oyo State College of Agriculture and Technology, Igboora, Nigeria

Preparation of 50 % Aloe vera gel extract

Fresh Aloe leaves were harvested from Igbo-ora community and environs. Aloe gel infusion was prepared accordingly to the method of Durrani *et al.* (2008). The leaves were washed with clean water to remove dirt. Aloe Vera gel was extracted from 1kg leaves manually by making a cut on the leaves with a pocket



knife. The gel was scooped out with a small spoon and drained into in a beaker. A 50% concentrated infusion was prepared by taking 500 ml of fresh gel in a glass bottle and 500 ml of boiled water at room temperature was poured on it. The bottle was then agitated for about 5-7 minutes to ensure thorough mixing, after which it was kept for 30 minutes to 40minutes at room temperature prior to use. The homogenized gel extract was prepared at the intervals of two (2) days and served to the animals fresh according to treatments.

Experimental Procedure

A total number of ninety-six (96) day old unsexed broiler chicks were purchased from a reputable farm at Ibadan for the experiment. At 8 days of age, birds were weighed and randomly allotted into 4 feeding treatments of 3 replicates consisting of 8 birds in a completely randomized design (CRD). T1 control, T2 (30 ml of AVGE + 1 litre of water), T3 (60 ml of AVGE + 1 litre of water), T4 (90 ml of AVGE + 1 litre of water). Treatment 1 served as the control which contained vitalyte and antibiotics, representing the common commercial drug supplement that is usually made available to birds.

RESULTS AND DISCUSSION

Table 3: Effects of aloe vera gel extract (AVGE) on the performance characteristics of broiler birds

Parameters	Treatments				SEM ±
	T1	T2	T3	T4	
Initial body weight (g)	53.84	53.84	53.84	53.84	0.00
Final body weight (g)	1870.33	1798.33	1775.67	1860.00	24.00
Feed intake (g)	3890.03 ^a	3745.72 ^b	3729.38 ^b	3742.09 ^b	37.90
Average feed intake (g)	648.34 ^a	624.29 ^b	621.56 ^b	623.67 ^b	6.32
FCR	2.08	2.09	2.11	2.01	0.03
Water intake (L)	738.77	787.51	754.57	751.19	12.77
Mortality	0.67	0.00	0.33	0.33	0.14

^{a,b,c}Means on the same rows with different superscript differs significantly ($p < 0.05$)

* FCR= Feed Conversion Ratio, AVGE=Aloe Vera Gel Extract, SEM= Standard Error of the Mean

Birds in treatment T1 (control) had the highest non-significant ($p > 0.05$) final body weight of 1870.33g which is followed numerically by birds in Treatment T4 (90 ml of AVGE + 1 litre of water) with 1860.00g and T2 (30 ml of AVGE + 1 litre of water) with 1798.33g as well as T3 (60 ml of AVGE + 1 litre of water) with a numerical value of 1775.67g respectively. The overall feed intake as well as the average feed intake /week were significantly ($p < 0.05$) highest in treatment T1 (control), while T2, T3 and T4 had a comparable significant ($p < 0.05$) means. Feed conversion ratio was non-significant ($p > 0.05$) but differs numerically across the treatment groups. Birds in T3 (60 ml of AVGE + 1 litre of water) had the highest value of 2.11 while birds in T4 (90 ml of AVGE + 1 litre of water) had the least value of 2.01. The higher body weight gain and improved feed conversion ratio (FCR) values observed in this findings with the birds in treatments 4 (90 ml of AVGE + 1 litre of water) could be due to better performance of the broilers and the diversified antimicrobial activities of the aloe vera gel extract that had also been demonstrated by Swaim *et al.* (1992), giving aloe vera extract to chicken. The increase in body weight may be attributed to the fact that AVGE possesses a tonic effect on the intestinal tract, with a reduced transit time. The bacterial flora in the gastrointestinal tract could also survive and thrive better because of a reduction in the presence of yeasts and a reduction in the PH. Danhoff and McAnally (1988) reported that Aloe vera accelerates the growth of new cells, thereby resulting to increased body weight. This also supports the previous findings done by Barbak *et al* (2011) using 10 ml of aqueous extract of aloe gel per liter of drinking water.

Water intake was numerically highest in T2 (30 ml of AVGE + 1 litre of water) 787.51L followed by T3 (60 ml of AVGE + 1 litre of water) 754.57L and T4 (90 ml of AVGE + 1 litre of water) 751.19L while T1 (control) had the least non-significant ($p > 0.05$) value of 738.77L. There were no significant ($P > 0.05$) differences in total water intake of the birds. This is in support with Durrani *et al* (2008) who reported no significant difference in mean water intake among groups. Ismail *et al.* (2004) and Chand *et al.* (2005) also



reported similar findings whereas; Mehmet *et al.* (2005) and Barbak *et al.* (2011) reported higher water intake in aloe vera groups than antibiotic group. The reasons why there was no differences in water intake may be ascribed to the fact that avians have no developed taste bud. Another reason may be that the birds got adapted to the bitter taste of the aloe vera gel extracts.

CONCLUSION AND RECOMMENDATION

it can be concluded from the experiment that the groups treated with Aloe vera gel extract showed better performance in weight, FCR, and mortality compared to the control groups. It is recommended that farmers adopt the use of 30 - 90 ml of aloe vera gel extract in oral supplementation as an alternative to commercial antibiotics and probiotics

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