

EFFECT OF BLACK TEA EXTRACT ON THE GROWTH PARAMETERS OF BROILER CHICKENS

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ABSTRACT

An experiment was conducted to evaluate the performance of Black Tea Extract (BTE) on the growth rate, feed intake, feed conversion and livability of broiler chickens. One hundred and twenty (120) broiler chickens of 2 days old raised for 8 weeks were randomly allotted to 4 treatments groups with 3 replicates. BTE was added into the drinking water at four levels of concentration; 0ml, (control), 100ml, 150ml and 200ml for treatment 2, 3 and 4 respectively. The results indicated that feed consumption, water and body weight gain were significantly ($P < 0.05$) affected by BTE. The results suggested BTE offered to broiler chickens promote improved growth performance.

Key words: black tea extract, broiler chickens, growth parameters.

INTRODUCTION

Nigeria has a varieties of medicinal herbs spread over the country due to favourable weather condition. All these herbs posses a number of chemical substances for the use in poultry (Akhtar *et al.*, 1984). Several studies have proved tea leaves and their extracts are beneficial to human beings (Hsieh and Chen, 2007; Khan and Mukhtar, 2007; Chen *et al.*, 2008; Wang *et al.*, 2008). Tea which is consumed at moderate heat and amount can be defined as beverage which does not have any acute or chronic toxic effect and beneficial for health. Additionally, tea is known to have antioxidant, anticarcinogenic, antiatherosclerotic (Celik, 2006) and antimicrobial (Hamilton-Miller, 1995) effects. Tea produced with different methods is splitted into 3 main groups as green, black and oolong. Green tea is non-fermented, black tea is fully fermented and oolong tea is semi fermented (Wang *et al.*, 2008). During the production stages of black tea; bending, fermentation and dry process are applied and the unique taste of black tea is mostly because of the drying process (Altug and Elmaci, 1998). Black tea containing ant oxidative tea catechin, have a variety of pharmacologic effects is widely consumed by humans through all over the world (Lin *et al.*, 1996). In addition to human consumption, low graded green tea has been used as ingredients in broiler diets (Cao *et al.*, 2005). This study investigated the growth performance of broiler chickens offered black tea extract at different levels.

MATERIALS AND METHODS

The study was conducted at the experimental poultry unit of the Department of Animal Science, Kebbi State University of Science and Technology, Aliero, Kebbi State, Nigeria.

Preparation of Black Tea Extract

Tea sample used was bought commercially. Black tea of Lipton tea trade mark was used as tea sample. Two gram of tea was added to 3 levels (100ml, 150ml and 200ml) of boiled water at 100° c and were left to brew for 30 minutes and cooled.

Bird's management and layout

A total of 120 (2 days old) broiler chicks of Anak strain was randomly distributed to the formulated diets (Table 1) in a Completely Randomized Design (CRD) comprising of 30 birds per groups and replicated three times. The experiment lasted for 8 weeks during which feed and water were served *ad libitum*. BTE was served to birds in group 2, 3 and 4 at the rate of 100ml, 150ml and 200ml respectively. While fresh water was served to the control group 1. Vaccination and medication were carried out as at when due during the experiment. Daily feed, water intake and weekly weight gain were measured and recorded per group. Data on feed intake, water intake, body weight gain, feed conversion ratio and mortality were recorded.

Statistical Analysis

All data collected were subjected to analysis of variance using SPSS (2013) and means separation was done by Least Significant Difference (LSD) at 5% confidence level.

RESULTS AND DISCUSSION

Performance characteristics of broiler chickens offered BTE is presented in Table 2. The results indicated that all the parameters measured were significantly ($p < 0.05$) affected by the inclusions of BTE offered to the birds. Feed consumption increased significantly with increased levels of BTE. Birds in T2 had the highest intake than the control group and T3 and T4. Lucy (2002) reported that 0.5 to 1.5 % green tea supplemented to broiler's diet had effectively reduced feed intake of broiler chickens. The variation of feed intake experienced might be originated from the concentration levels of BTE. Body weight gain of birds in T4 had the highest weight than those of T1 and T2 with T3 having the least weight gain. The weight gain increases as the level of BTE decreases. This result was similar to (Khalaji *et al.*, 2011) who proved that black cumin used in poultry feed significantly increased body weight without any harm to effects on feed intake. Also Yang *et al.* (2003) reported that 1.0, 2.5 and 5.0% of green tea in broiler's diet nearly reduced body weight gain of chicks. Water intake increases as the level of BTE decreases. The control treatment had the highest water intake while T2 had the least water intake than T3 and T4. This findings was similar to Yang *et al.* (2003) who reported that 0.6 to 2.0% green tea supplementation in broiler's diet had effect to reduce water intake. The variations of water intake experienced in this study might be due to the concentration levels of BTE. The feed conversion ratio shows a non significant difference among the treatments. Non significant variations were also found by Atiq and Durrani (2007) in the feed conversion ratio of birds fed Aniseed and ginger extract mixture in broiler chicks.

A low and non significant ($P < 0.05$) mortality rate for birds across all treatments is an indication that BTE had positive effect on growth performance and FCR of broilers which also indirectly shows health status of birds and antibacterial activity of black tea (Cao *et al.*, 2005).

CONCLUSION

The results of this study suggest aqueous extract of black tea shows significant higher results by promoting good health, efficient weight gain and feed conversion ratio in broiler chickens.

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Table 1: Gross composition of experimental Diet

Ingredients	Broiler starter diet (%)
Maize	58.10
Groundnut cake	15.00
Wheat offal	19.50
Fish meal	2.00
Blood meal	1.50
Bone meal	0.80
Lime stone	2.50
Salt	0.30
Premix	0.30
Calculated values	
Crude protein (%)	18.89
ME (Kcal/kg)	2854.30
Crude fiber (%)	3.60

Table 2: Performance characteristics of Broiler chickens offered BTE

Parameters	Inclusion Levels of BTE			
	1(0ml)	2(100ml)	3(150ml)	4(200ml)
Initial Body wt. gain (g/b)	47.60	47.00	46.50	48.50
Final Body wt. gain (g/b)	1990.85 ^a	1679.33 ^b	1644.17 ^c	2031.04 ^a
Ave. Body wt. gain (g/b)	1943.25 ^b	1632.33 ^c	1597.67 ^c	1982.54 ^b
Ave. feed intake (g/b)	4360.24 ^a	4382.52 ^a	4329.60 ^b	4298.18 ^b
Ave. water intake (ml/b)	1024.18 ^a	853.32 ^c	889.47 ^b	892.02 ^b
Feed conversion ratio	2.19	2.61	2.63	2.12
Mortality (%)	1.00	1.50	1.00	1.00

abc: Means within the same row with different superscripts are significant (P<0.05)