EFFECT OF ADDING DIFFERENT LEVELS OF GREEN TEA POWDER (*CAMELLIA SINENSIS*) AS ANTIOXIDANT TO BROILER DIETS IN PRODUCTION PERFORMANCE

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Summary

This experiment was conducted in the poultry field of the Department of Animal Production, Faculty of Agriculture / University of Diyala to demonstrate the effect of adding different levels of green tea powder to meat broilers in production performance. A total of 225 non-naturalized Rose species were used at a mean age of 38 g and randomly distributed at 5 treatments with 3 replicates per treatment (15 chicks per bis). The first treatment was free of addition (control treatment) and the second, third, fourth and fifth treatments included 0.1%, 0.2%, 0.3% and 0.4% of green tea powder respectively. The results of this study showed a significant superiority (0.01 <P) for the addition of green tea powder in the productivity traits. The fourth and fifth treatments exceeded the other factors in body weight, weight increase, ratio consumption rate, food conversion coefficient, and the percentage of losses in it compared with the control treatment and the rest of the treatments.

Key words: Green Tea, Antioxidant, Chicken Meat

Introduction

Modern breeds of meat breeds are characterized by rapid growth and high body weights when marketing and consumption of large quantities of ratio to meet growth needs. This results in an increase in metabolic processes leading to the production of free radicals that destroy the biological molecules in the body's cells such as fats, proteins, carbohydrates and nucleic acids. A defect in the natural balance system in the body between the production of free radicals and resistance to oxidation through the antioxidants found naturally in the body and then occurs oxidative stress, which works on the damage of DNA, proteins, vitamins and carbohydrates as well as It works to oxidize unsaturated fatty acids in cell membranes (Altan *et al.,* 2003) and from natural sources that possess antioxidant properties of green tea because it contains active substances in the form of flavonoids, glucotoxicillicosides, aerosols and volatile compounds (Al-Janabi *et al.* 2015). Therefore, the present study aims to investigate the effect of adding green tea powder as a natural antioxidant at different levels to the meat breeds in production performance.

Materials and methods

This experiment was conducted in the poultry field of the Department of Animal Production at the Faculty of Agriculture, University of Diyala for the period from 25/10/2017, which was used by 225 Ross dynasties) with an initial weight of 38 g / chick. The first treatment was T1 (control), the second was T2, the third was T3, the fourth was T4, and the fifth was T5, 0.1%, 0.2%, 0.3% and 0.4% Of green tea powder respectively. The birds had received the necessary administrative and veterinary care according to the company's recommendations, where all the conditions for raising broilers were available.

(Jackie, 2003) The use of the Brocon-5 protein concentrate from the Dutch company WAFI containing 40% crude protein, 3.85% lysine, 3.7 methionine, 4.12% methionine + cysteine, 2183.7 kcal, representative energy / kg, 5% crude oil, 2.26% raw fiber , Vitamin D3, vitamin D3, vitamin D3, vitamin D3, vitamin D3, vitamin D3, vitamin D3, vitamin D3, Kg / kg, vitamin B2, vitamin B6, 800 mg / kg niacin, 20 mg / kg folic acid, 2 mg / kg baiotin, 6073.20 mg / kg choline chloride.

Altan *et al.,* (2003) by chemical composition according to the analysis of ratiostocks contained in NRC

Table 1: The percentage of ratio materials in the composition of the primer, and the growth rate used in the experiment with the calculated chemical analysis of the leaves

Rationing material%	Rationing the initiator (1-21 days)	Growing growth ratio (22-42 days)
Yellow corn	54	63.5
Soybeans 44% protein	36.5	31
Protein concetret (1)	5	2.5
Oil (sun flower)	2.6	3
Limestone	1.5	0
Di Calcium Phosphate	0.4	0
Total	100	100
Calculated Chemical Analysis (2)		
Energy represented as (kg/kg)	2966	3153.65
Raw protein (%)	22.65	20.28
Lysine (%)	1.31	1.33
Methionine (%)	0.51	0.53
Methionine + cysteine (%)	0.87	0.83
Calcium (%)	0.93	0.70
Phosphorus (%)	0.48	0.77

(NRC, 1994).

The Chicks were weighed at the end of each week and the body weight, total weight gain, ratio consumption, and the total conversion factor were calculated according to Zubaidi (AL- Zubaidi, 1986).

Using the complete random design (CRD, Complete Randomize Design), the statistical program SPSS (2008) was used to analyze the evidence and tested the differences between the transactions using the multi-level Duncan test (Duncan, 1955).

Results and discussion

The results in table 2 indicate that there are no significant differences in the first and second weeks of bird life between the addition treatments and control treatment in the mean body weight. In the period (2-6 weeks) we observe a significant superiority $(0.01 < P)$ 0.3 and 0.4% green tea powder. These results were consistent with (Guray *et al.* 2011; Shahid, *et al.,* 2013; Abdul-Hai, 2001), which observed an improvement in live body weight in broiler coefficients, which added green tea extract to their diets. Active compounds that have a role in reducing harmful microbes and increasing the growth of leukocytes (Seidavi and Simoes 2015) These bacteria play an important role in

Table 2: Effect of adding different levels of green tea powder to meat broilers in average live body weight (gm) ± standard error during weeks of experiment

Transa-ctions	Average body weight (gm) (± standard error)					
	First week	second week	third week	fourth week	fifth week	sixth week
T1	141.33 ± 1.45	380.33 ±7.79	701.66 ±4.37b	1161.66 ±6.64d	1731.33 ±6.38c	2326.33 5.81±c
T2	140.66 ±1.20	381.66 ±3.48	708.00 ±2.08b	1162.00 ±3.60d	1735.66 ±3.84c	2340.00 ±2.88c
T3	141.66 ±0.88	385.66 ±4.80	713.66 ±9.40b	1182.33 ±1.45c	1776.33 ± 8.11b	2399.33 ±2.40b
T4	141.33 ±2.40	382.66 ±3.92	742.00 ±6.41a	1218.33 ±1.66b	1832.00 ±5.13a	2473.00 ±7.09a
T5	142.66 ±0.88	35 ±9.02	750.66 ±2.96a	1233.33 ±4.40a	1846.66 ±1.66a	2485.00 ±2.64a
Moral level	N.S	N.S	**	**	**	**

** The averages with different letters within the same column are significantly different (P <0.01)

N.S: No significant differences

T1: Add 1 kg / ton of green tea powder, T3: Add 2 kg / t of green tea powder, T4: Add 3 kg / t of green tea powder.

T5: Add 4 kg / t of green tea powder

improving digestion through the production of many important enzymes within the digestive tract of meat breeds. (Abdulrahim *et al.,* 1999) Because green tea

Table 3: Effect of adding different levels of green tea powder to broiler broilers in mean weight increments (gm) ± standard error during trial weeks

Transa-ctions	Mean weighted increase (gm) (± standard error)						Cumul-ative
	First week	second week	third week	fourth week	fifth week	sixth week	
T1	103.33 1.45±	239.00 ±6.35	312.33 ±4.17b	460.00 ±3.00c	569.66 ±0.88c	595.00 ±0.57c	2288.33 ±5.81c
T2	102.66 ±1.20	241.00 ±2.64	326.33 ±5.54b	454.00 ±2.33c	573.66 ± 0.33c	604.33 ±4.05c	2302.00 ±2.88c
T3	104.33 ±0.88	243.33 ±4.84	328.00 ±14.0b	468.66 ±8.17ab	594.00 ±7.76b	623.00 ±10.39b	2361.33 ±2.40b
T4	104.66 ±2.40	240.00 ±5.56	359.33 ±3.17a	476.33 ±6.11a	613.66 ±6.38a	641.00 ±2.00a	2435.00 ±7.09a
T5	103.66 ±0.88	245.00 ±9.86	364.00 ±10.59a	482.66 ±1.45a	613.33 ±4.40a	638.33 ±4.25a	2447.00 ±2.64a
Moral level	N.S	N.S	*	*	**	**	**

* Meanings with different letters within the same column differ significantly P <(0.05)

** The averages with different letters within the same column are significantly different (P <0.01)

N.S: No significant differences. T2: Add 1 kg / ton of green tea powder, T3: Add 2 kg / t of green tea powder, T4: Add 3 kg / t of green tea powder, T1: T5: Add 4 kg / t of green tea powder

Table 4: Effect of adding different levels of green tea powder to broiler diets in average ratio consumption (gm) ± standard error during trial weeks.

Transa-ctions	Average feed consumption (gm.) (± standard error)						Cumul-ative
	First week	second week	third week	fourth week	fifth week	sixth week	
T1	162.66 ±1.45	379.33 ±5.81	551.00 ±5.56b	800.00 ±7.63	1020.00 ±2.88b	1085.00 ±7.63c	3998.00 ±16.52C
T2	163.33 ±0.66	384.66 ±2.84	554.33 ±6.35b	788.33 ±6.00	1018.33 ±4.40b	1091.66 ±9.27bc	4000.66 ±13.44C
T3	164.00 ±1.52	387.00 ±3.60	553.66 ±12.86b	803.33 ±10.92	1036.66 ±10.92ab	1108.33 ±1.66ab	4053.00 ±10.14B
T4	162.33 ±1.45	381.33 ±5.69	593.66 ±2.40a	805.00 ±11.54	1040.00 ±6.00ab	1108.33 ±2.88ab	4106.00 ±4.50A
T5	164.66 ±0.66	390.00 ±2.88	597.66 ±11.20a	811.66 ±3.33	1048.33 ±7.63a	1115.00 ±4.40a	4112.33 ±8.41A
Moral level	N.S	N.S	**	N.S	*	*	**

* Meanings with different letters within the same column differ significantly P <(0.05)
** The averages with different letters within the same column are significantly different (P <0.01)
N.S: No significant differences. T2: Add 1 kg / ton of green tea powder, T3: Add 2 kg/t of green tea powder, T4: Add 3 kg / t of green tea powder, T1: T5: Add 4 kg / ton of green powder

Table 5: Effect of adding different levels of green tea powder to broiler diets in average food conversion coefficient (gg / g) (± standard error) during the trial weeks

Transa-ctions	Average food conversion factor (g) (± standard error)						Cumul-ative
	First week	second week	third week	fourth week	fifth week	sixth week	
T1	1.57 ±0.01	1.58 ±0.01	1.71 ±0.005A	1.73 ±0.005a	1.79 ±0.003a	1.82 ±0.012a	1.74 ±0.006a
T2	1.59 ±0.01	1.59 ±0.008	1.69 ±0.009Ab	1.73 ±0.005a	1.77 ±0.006a	1.80 ±0.006a	1.73 ±0.003a
T3	1.57 ±0.002	1.59 ±0.02	1.69 ±0.034Ab	1.71 ±0.007b	1.74 ±0.013b	1.78 ±0.028b	1.71 ±0.005b
T4	1.55 ±0.04	1.58 ±0.01	1.65 ±0.008Ab	1.68 ±0.003c	1.70 ±0.009c	1.73 ±0.002b	1.68 ±0.003c
T5	1.58 ±0.009	1.59 ±0.05	1.64 ±0.018B	1.68 ±0.009c	1.69 ±0.006c	1.73 ±0.004b	1.68 ±0.001c
Moral level	N.S	N.S	*	**	**	**	**

* Meanings with different letters within the same column differ significantly P <(0.05)
** The averages with different letters within the same column are significantly different (P <0.01) N.S: No significant differences.
T2: Add 1 kg / ton of green tea powder, T3: Add 2 kg / t of green tea powder, T4: Add 3 kg / t of green tea powder, T1: T5: Add 4 kg / t of green tea powder

contains vitamin C, which has positive effects on the cells of the body and activates its effectiveness and increases the consumption of oxygen and thus contribute to stimulate the thyroid gland. To

contribute to increase the vitality of the body and that thyroid hormone has an important role in the secretion of growth hormone growth hormone and increase the rate of basic metabolism in the body as there is a significant correlation between the secretion of thyroid hormone and body weight (AL- Shukri and Nabi 2001).

We note in table 3 that there are no significant differences in the weight increase between the addition and control treatments in the first and second weeks of the experiment. The period (2-6 weeks). We note a significant superiority (0.05 <P) in the treatments containing 0.3 and 0.4% green tea powder. It may be due to the presence of phenolic compounds in green tea, which act as antioxidants and antibacterial and fungal, For birds, which are reflected on the productive performance of birds (AL- Hamid *et al.,* 2015).

In table 4, there are no significant differences in the average ratio consumption between the addition and control treatments in the first and second weeks of the experiment. In the third week there was a significant increase (0.01 <P) in the average ratio consumption in the added treatments containing 0.3 And 0.4% green tea powder compared with control and other treatments. In the fourth week, there were no significant differences. In the fifth and sixth weeks, we observed significant superiority (0.05 <P) in the average ratio consumption in the treatments containing 0.3 and 0.4%. These results are in line with the findings of Rowghani *et al.,* (2016) which showed an increase in the consumption of fodder for meat breeds on a diet containing green tea powder. The reason for the containment of green tea is the effective chemical compounds that play an important role in increasing the efficiency of the digestive enzymes of carbohydrates, Body needs are needed (McKay and Blumberg 2002).

Table 5 shows that there is no significant difference in the food conversion coefficient in the first and second weeks between the addition and control treatments. In the third week until the sixth week, as well as in the general average of the experiment (0-6 weeks) The effect of dietary conversion factors may be due to the presence of polyaccharides in green tea, which

Fig. 1: The effect of the addition of green tea powder to broiler broilers for the period (0-42 days) in the percentage of total losses T2: Add 1 kg / ton of green tea powder, T3: Add 2 kg / t of green tea powder, T4: Add 3 kg / t of green tea powder, T1:

T5: Add 4 kg / t of green tea powder Differences in the letters on the columns indicate significant differences between the averages of the transactions.

increases the secretion of insulin, which helps to increase the utilization of ratio. (Erba, 2005) This result is consistent with (Rowghani *et al.,* 2016; Saraee, 2015), who observed a titration in the food conversion coefficient of meat breeds fed on a diet containing green tea.

We note from fig. 1 a significant decrease (P <0.05) in the percentage of total losses in the treatments added to the tea powder green tea where the transactions T4 and T5 the lowest percentage of losses in each of them 2% compared to control, which amounted to 11% Transactions remained insignificant. The cause of the reduction in losses in addition to the role of active substances in green tea, such as alkaloids, flavonoids, resins, and sativa, may stimulate the cells that enhance immunity against bacteria and viruses that attack the body. Reygaert, (2015) Alkaloids activate cellular immunity in the body (Richard, 2007). This finding is consistent with the conclusion of a mechanism (Cao *et al.,* 2005) who observed a decrease in the percentage of losses in the transactions to which green tea powder was added compared to the control treatment.

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