

Effect of Adding Different Levels of Antioxidant and Imported Ginseng (Panax) Roots to The Diet in The Microbial

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Abstract

The current study was carried out on a poultry farm that belongs to the Animal production department - College of Agriculture - University of Kufa, for the period from September 10, 2020, to October 14, 2020, for a period of 5 weeks, in which the effect of adding the ascorbic acid as antioxidant and ginseng root powder was studied. Red Ginseng (Panax) to reduce the effects of heat stress for broilers, the experiment included 420 unsexed Ross-308 chicks, one day old, with an average initial weight of 40 g, prepared from private hatcheries in the governorate of Babylon (Al-Anwar Al-Muradia hatchery). The chicks were divided into 7 treatments included for each Treatment of 60 chicks, with 3 replicates (each replicate is 20 chicks), and the treatments were divided as follows: T1: Standard (Control) without adding. T2, T3 and T4 were given 2, 4 and 6 g ginseng / kg of feed respectively, T5, T6, and T7 were given 2, 4 and 6g ascorbic acid /kg of feed respectively. The chicks were fed with starter diet for the duration of 1-21 days and finisher diet for the duration of 22-35 days. The results of the statistical analysis indicated that there was a highly significant ($p<0.01$) decrease in the numbers of *Escherichia coli* bacteria to T7, T6, T4, and T3 the treatments birds compared with the control treatment. The results also indicated a highly significant ($p<0.01$) increase in the numbers of *Lactobacillus* bacteria in T7 treated birds, T6, T5, T4 compared with the control treatment.

Keywords: Broilers, Ginseng root, Ascorbic acid, Antioxidant, Panax

Introduction

Exposure to high temperatures leads to a number of changes, the most important of which is a decrease in the rate of live body weight, a decrease in the rate of feed consumption, and the values of the Feed conversion ratio, in addition to the physiological changes represented in blood characteristics, hormone concentration and immunity (6). Several previous studies have indicated that heat stress leads to an increase in free radicals, which has an undesirable effect through the process of oxidation and immune imbalance of the immune organs of the Fabricia gland and the spleen (9; 8 and 3). There is great interest by poultry nutrition specialists in the use of medicinal plants as feed additives in the diet of poultry, which may be effective potential agents for alleviating heat stress due to their different biological activities (1 and 2), which have a positive role in reducing the negative effects of heat stress as it improves the productive and physiological traits of poultry during the summer months in the tropics, (10) Ginseng is a traditional medicinal plant, and it has been widely used over 2000 years in Korea, Japan and China (11) and ginseng plays a role in resisting stress and enhancing immunity due to its effectiveness and medicinal functions due to its high content of saponins (4). In general, there are saponins in ginseng, which are called ginsenosides among the most important pharmacologically active ingredients, distributed Ginsenosides are in every part of a plant such as roots, stems, leaves, flowers, and fruits and have immunostimulating and antioxidant activity. Previous studies in animals have shown the potential effects of ginseng as a fortifying agent. against various pathogens (12 and 7), so this experiment aims to demonstrate the

effect of adding the antioxidant ascorbic acid and red ginseng root powder to broiler diets conditions heat stress and to know the extent of their effectiveness in the microbial content of broiler intestines.

Materials and Methods

The current study was carried out on a poultry farm that belongs to the Animal production department - College of Agriculture - University of Kufa, for the period from September 10, 2020, to October 14, 2020, for a period of 5 weeks, in which the effect of adding the ascorbic acid as antioxidant and root powder was studied. Red ginseng (*Panax*) to reduce the effects of heat stress for broilers, the experiment included 420 chicks of the unsexed Ross 308, one day old, with an average initial weight of 40 g, prepared from Al-Anwar hatchery in El-Muradia / Babylon Governorate, the chicks were divided into 7 treatments, each treatment included 60 chicks with 3 replicates (each replicates 20 chicks), the treatments were divided as follows:

T1: Control (Control) without adding.

T2: add 2 g / kg feed of red ginseng root powder (*Panax*.)

T3: add 4 g / kg feed of red ginseng root powder (*Panax*).

T4: add 6 g / kg feed powder red ginseng root (*Panax*).

T5: add 2 g / kg feed of ascorbic acid.

T6: add 4 g / kg feed of ascorbic acid.

T7: add 6 g / kg feed of ascorbic acid.

Table 1 .the ratios of relational materials used in the NRC

Ingredients	Starter diet %	Finisher diet %
Yellow corn meal	54.00	58.5
Soybean meal	36.00	29.00
Crushed wheat	5.00	5.00
Premix*	2.50	2.50
Corn oil	1.00	3.50
Di-calcium phosphate**	0.1	0.1
Limestone	1.1	1.1
Salt	0.3	0.3
Total	100	100
Metabolizable energy Kcal / Kg	2991	3199.5
Crude protein %	23.04	20.08
Total calcium%	1.101	1.085
Available phosphorus%	0.75	0.72
crude fiber%		
systine%	0.35	0.31
methionine + cystine %	0.49	0.46
crude protein/ energy ratio	129.8	159.33

*Use premix produced by profemi Jordan contains ready-made energy 4900 kcal / kg, crude protein 18%, calcium 15-19%, lysine 9.4%, phosphorus 6.8%, sodium 4.8%, chlorine 5.8%, methionine 7.8%, methionine + cystine 7.8% and threonine 0.55% and contains a mixture of rare vitamins and minerals to ensure the needs of the bird.

**Contains Di-calcium phosphate containing: 22% inorganic calcium and 18% inorganic phosphorus.

Results and Discussion

Effect of adding ascorbic acid as antioxidant and Ginseng Root Powder in the Microbial Content in the intestine

It is clear from the table2. The results of the statistical analysis of adding different levels of the ascorbic acid as antioxidant and ginseng root powder to the diet of heat-stressed broilers in the microbial content of the intestines. T5 and T1, which amounted to 125 and 123 (cfu/ ml) on the coefficients T6, T3, T4, while if the coefficients T5, T2, T1 differed among themselves, and the coefficients T7, T6, T2 did not differ among themselves, and the

coefficients did not differ T7, T6, T4, T3 in between. As for the logarithmic number to Salmonella, the results indicated that there were significant differences at the level ($P < 0.05$), where the treatments T4, T6 with the lowest number of bacteria, which amounted to 84, 90 (CFU/ml) was superior to the treatment T1 which recorded 100 (CFU/ml) and the latter It did not differ significantly with treatments T7, T5, and T2, while treatments T7, T6, T3, and T2 did not differ between them. As for the logarithmic setting *Lactobacillus*, the results of the statistical analysis indicated that there were significant differences at the level ($P < 0.01$), where treatment T4, which amounted to 189 (CFU/ml),

outperformed the two treatments T5 and T1, which recorded 163, 140 (CFU/ml), while they did not differ. The treatments T7, T6, T4, and the coefficients T7, T6, T5, T3, T2 did not differ among themselves, did the treatments T3, T2, T1. The moral superiority of the *Lactobacillus* preparation in the intestine may be due to the fact that the roots of

ginseng contain sufficient nutrients necessary for the support and growth of bacteria (5). The results of the T4 treatment agreed with what was found by Kang *et al.* (5), who noticed a significant difference in the preparation of *Lactobacillus* gut bacteria when using ginseng root powder at a concentration of 5 g/kg in bird diets.

Table 2. Adding different levels of the antioxidant (ascorbic acid) and ginseng root powder to the diet of heat-stressed broilers *Microbial Content of The Intestine*

Treatments	<i>Escherichia coli</i> (cfu/ ml)	<i>Salmonella</i> (cfu/ ml)	<i>Lactobacillus</i> (cfu/ ml)
T1	^a 125 ± 2.88	^a 100 ± 2.88	^c 140 ± 7.50
T2	^{ab} 199 ± 0.57	^{abc} 92 ± 1.73	^{bc} 160 ± 10.39
T3	^{cd} 105 ± 2.88	^{bc} 90 ± 4.04	^{bc} 160 ± 4.61
T4	^c 98 ± 4.61	^c 84 ± 3.46	^a 189 ± 5.19
T5	^a 123 ± 2.88	^{ab} 97 ± 1.52	^b 163 ± 2.88
T6	^{bc} 110 ± 6.35	^{bc} 90 ± 4.04	^{ab} 179 ± 6.92
T7	^{bcd} 108 ± 1.15	^{abc} 93 ± 1.73	^{ab} 177 ± 5.19
Significant level	**	*	**

T1 (control), (T2, T3 and T4 represent 2, 4, 6 gm of ginseng root powder added to each kg of feed, respectively), (T5, T6, and T7 represent 2, 4, 6 gm of ascorbic acid added to each kg of feed, respectively) .

*Different letters within the same column mean that there are significant differences at the level ($P \leq 0.05$).

**Different letters within the same column mean that there are significant differences at the level ($p < 0.01$).

Conclusion

A rise in the logarithmic number of the beneficial bacteria *Lactobacillus* and a decrease in the logarithmic preparation of the pathogenic bacteria (*Salmonella*, *Escherichia coli*) in the intestines of broilers to which ginseng root powder was added to their diet.

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