



Impact of redginseng adding methods on some blood parameters of laying hens.

Wafaa Nasar Allah Abd Al-Abbas Saad Atta Allah Abdul-Sada and Jassim Kassim Al-Gharawi

Animal Production Department, Agriculture College, Al-Muthanna University, Iraq.

E-mail: jasingharawi@gmail.com

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Abstract:

This experiment was conducted to study the effect of methods of adding redginseng root on physiologically parameters of ISABrown. A total of 60 birds, 43 weak were used, it was distributed among four treatments divided into four cages, was divided to 3 parts so that each part have 5 birds (15 per treatment). The treatments were as follows: T1 (control treatment): the usual diet was given without any additives. T2: Add the alcoholic extract to the drink water at a rate of 1 g / 1 L. T3: It was fed on a diet with redginseng root powder add at a rate of 1g/kg of feed. T4: The aqueous extract of the redginseng root was added to the drinking water at a ratio of 10 ml / L. The results indicated a significant improvement ($P \leq 0.05$) in blood parameters (cholesterol, glucose, triglycerides, albumin, globuline and total protein), in the treatment of adding alcohol extract in drinking water compared to the others.

Keywords: Red ginseng, aqueous extract, alcoholic extract, blood standards, laying hens.

Introduction:

Ginseng is a perennial plant that has been used for many years in most Asian, especially China, Korea and Japan as a herbal medicine to treat different diseases due to its ability to boost immunity (Lee *et al.*, 2008). It also has pharmacological effect like antioxidants (Bak. *et al.*, 2012). Redginseng (RG) contains ginsenosides (Choi *et al.*, 1998). It is a fibrous and insolubility by-product a hot water extract product, RGE shows many pharmacological activities including antioxidant, anti-cancer, anti-stress and anti-diabetic activities (Kim *et al.*, 1998). Recently, studies have shown that FRGM has pharmacological properties and powerful antioxidant effects (Vuksan *et al.*, 2010; Kaim *et al.*, 2022). These may be associated with bioactive

components such as saponins, polysaccharides and alkaloids that were retained in redginseng after water extraction (Yildirim *et al.*, 2013).

Through a study carried out by Jaang *et al.* (2007) it was found ferment wildginseng was added at a concentration of 5.2 and 5% of the feed weight to the diets of laying hens (55 weak), there were non-significant difference in the two albums between the treatments compared to the control treatment. When adding ginseng extract at concentrations of 0, 0.5 and 1% of the feed weight to the diets of laying hens, led to no-significant on total protein and albumin compared to the control treatment (Li *et al.*, 2016; Mohammed and Al-Gharawi, 2022).

As a result of the important role of ginseng roots, this study was conducted to find out the effect of adding red ginseng roots on some blood traits of laying hens, determine the best way to add red ginseng root.

2. Materials and Methods

Experiment design

This experiment was conducted in the laying hens field at the Agricultural Research and Experiment Station, College of Agriculture, Al-Muthanna University, from 10/15/2022 to 1/7/2023 for a period of 12 weeks, to study the effect of methods of adding red ginseng root on some blood parameters of laying hens. Using 60 laying hens (ISA Brown) at 43 week it was to 4 groups pens (3x3 m), divided to 3 equal parts (5 birds). The treatments were as follows: T1 (comparative). T2: Add the alcoholic extract to the drink water at a rate of 1 gm / 1 L. T3: It was fed on a diet with red ginseng root powder added at a rate of 1 gm/kg diet. T4: The aqueous extract of the red ginseng root was added to the drinking water at a ratio of 10 ml / 1 L.

Preparation of red ginseng root in experimental treatments:

The roots of red ginseng (the Chinese type) were obtained from the local markets in the required quantities, to be used in the experiment.

Crush the roots of red ginseng:

The red ginseng roots were crushed in a mill using the National laboratory mill (Chinese origin).

Preparation of alcoholic extract of red ginseng roots:

The weight of 100 grams of red ginseng roots, to which 600 ml of ethyl alcohol 96% was added, using a phosphate buffer with a pH of 7, extraction was done using a Reflux device for 10 hours, filter the extract with filter paper. The resulting extract was completely dried by placing

the resulting extract in glass dishes in an incubator at 50 °C for 24 hours, it was observed that there were two layers after drying, an oil layer and a dry layer, the dry extract was skimmed, placed in a special vial, and kept at a temperature of 4 °C until use (Mashhadian and Rakhshandeh, 2005).

Preparation of the aqueous extract of red ginseng roots:

According to the method of Hernandez *et al.* (1994), the extracts were prepared, by adding ginseng root with a sterilizer by 1 g: 2 ml, bathed at a temperature of 60 °C for one hour, the rest of the solution for 24 hours at room temperature, filtered with gauze to be ready.

Studied traits

Biochemical characteristics of blood:

cholesterol, triglycerides, glucose, protein, albumin and globulin.

3. Results and discussion

Table No. (1) shows glucose, cholesterol and triglycerides in the blood plasma of birds (43-54 week), as it was observed at 43 weeks that no-differ between the experimental treatments in the blood. The characteristic of blood glucose was significantly superior ($P \leq 0.05$). At 54 weeks for all add-on compare to T1, the average glucose concentration was 160.92, 160.59, 155.08 and 161.33 g. /100 ml of blood for T4, T3, T2, and T1 treatments, respectively, It was also noted at 43 weeks that No-differ between the experimental treatments in blood characteristics. cholesterol, increase ($P \leq 0.05$) was observed at the end of the experiment at the age of 54 weeks for all add-on treatments compared to the control treatment, and the mean cholesterol concentration was 260.82, 260, 35, 256, 13 and 261.30 g/ml of blood for the T4, T3, T2 and T1 treatments on respectively, It was also noted at 43 weeks, no-differ

between the treatments in the characteristic of blood triglycerides. bird plasma, increase ($P \leq 0.05$) was observed at the end of the experiment at the age of 54 weeks for all addition treatments compared to the control treatment, the

average triglyceride concentration was 136.91, 136.64, 132.93 f. 137.28 g/100 ml blood for T4, T3, T2, and T1 treatments, respectively.

Table (1): The effect of adding redginseng root in the laying hens diet on glucose, cholesterol and triglycerides in the blood plasma of laying hens at 43 and 54 weeks of age (mean \pm standard error).

Treatments	Glucose (gm/ 100 ml blood)		Cholesterol (gm/ 100 ml blood)		Triglycerides (gm/ 100 ml blood)	
	43	54	43	54	43	54
T1	0.023 \pm 165.52	2.64 \pm 155.08 b	0.02 \pm 263.79	1.84 \pm 256.13 b	0.012 \pm 139.69	1.62 \pm 132.93 b
T2	0.011 \pm 165.55	0.12 \pm 160.59 a	0.02 \pm 263.82	0.16 \pm 260.35 a	0.012 \pm 139.69	0.11 \pm 136.64 a
T3	0.011 \pm 165.52	0.10 \pm 160.92 a	0.01 \pm 263.81	0.11 \pm 260.82 a	0.017 \pm 139.72	0.07 \pm 136.91 a
T4	0.024 \pm 165.53	0.06 \pm 161.33 a	0.01 \pm 263.81	0.07 \pm 261.30 a	0.014 \pm 139.7	0.07 \pm 137.28 a
Sig.	NS	0.05	NS	0.05	NS	0.05

Table No. (2) shows albumin, globulin, globulin, and protein at the age of 43-54 weeks. It was observed at 43 weeks, there were statistically significant differences ($P \leq 0.05$) between the experimental treatments in the property of blood albumin, no-differ between the two treatments. T4 and T3, as well as their superiority on T2 and T1, where the average concentration of albumin was 2.66, 2.65, 2.62 and 2.68 g / 100 ml of blood for the treatments T4, T3, T2 and T1, respectively. By the age of 54 weeks, we observe a significant ($P \leq 0.05$) superiority of T4 treatment over T1, T2 and T3 treatments, while there were no significant differences between T2 and T3 treatments. T3, where they outperform T1. The average albumin concentration was 3.08, 2.83, 2.75, 2.28 g/100 ml of blood for T4, T3, T2, and T1 treatments, respectively. It was also observed at 43 weeks, no differ among treats on the blood

globulin property. It was also noted that there were differ among treatments, as the treatment of ($P \leq 0.05$) T4 was superior to the rest of the experimental.

No-differences between the two treatments T4 and T2, as well as a superiority on T1, while globulin concentration was 2.03, 1.96, 1.74, and 2.21 gm/100 ml blood for T4, T3, T2, and T1 treatments, respectively, at the beginning of the experiment at 43 weeks, increase for all additions compared to T1. The average protein concentration was 4.47, 4.43, 4.38, and 4.48 g/100 ml of blood for T4, T3, T2, and T1 treatments, respectively, and significantly between the treatment averages at 54 weeks, T4 had a significant ($P \leq 0.05$) superiority over addition treatments T2 and T3 and control treatment T1. There were also no statistically significant differences ($P \leq 0.05$) between treatments T2 and T3 and they were superior ($P \leq 0.05$) to control treatment T1.

Table (2): Effect of adding redginseng root in the laying hens diet on the concentration of albumin, globulin and protein in the blood plasma of laying hens at 43 and 54 weeks of age (mean \pm standard error).

Treatments	Albumin (gm/ 100 ml blood)		Globulin (gm/ 100 ml blood)		Protein (gm/ 100 ml blood)	
	43	54	43	54	43	54

T1	0.010±2.62 C	0.075±2.38 c	0.012±1.77	0.040±1.74 c	0.185±4.38 b	0.115±4.12 c
T2	0.005±2.65 Bc	0.035±2.75 b	0.012±1.80	0.028±1.96 b	0.016±4.45 a	0.060±4.72 b
T3	0.015±2.66 Ab	0.038±2.83 b	0.012±1.81	0.023±2.03 b	0.027±4.47 a	0.061±4.86 b
T4	0.003±2.68 A	0.023±3.08 a	0.003±1.79	0.040±2.21 a	0.003±4.48 a	0.064±5.30 a
Sig.	0.05	0.05	NS	0.05	0.05	0.05

The results obtained show that all treatments of adding redginseng roots, whether with fodder or drinking water, it improved the blood biochemical parameters, the addition of the alcoholic extract gave the best results compared to the others, which may be due to the increased concentration of active compounds compared to other treatments, the most important active compounds were ginsenosides, which stimulated an increase in the concentrations of glucose, cholesterol, triglycerides, albumin, globulin and total protein, which may be due to the blood vessels walls dilute, which improves the flow of blood flow, reducing the incidence of oxidative stress (Al-Waeli, 2019; Al-Gharawi and Ebade, 2020), or it may be because ginseng roots contain both saponins and glycosides, which have anti-pathological activity by increasing the secretion of digestive enzymes, improves the immune response, as well as protecting the gut tissue, leading to an increase in total protein concentration, which was a positive indicator of the health status of the bird (Fascina et al., 2012; Al-Gharawi et al., 2018).

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