

Study the effect of different levels of aqueous extract of licorice on the carcass traits of Chinese ducks

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Abstract

This study was carried out at a private farm for duck breeding in Al-Muthanna Governorate, from 14/12/2021 to 14/2/2022. The field experiment was included to study the effect of adding aqueous extract of licorice to drinking water on the carcass trait from Chinese ducks. A total 60 unsexed, Chinese duck chicks one-day old were used, prepared from one of Al-Qadisiyah Governorate hatcheries, the chicks were distributed randomly to 4 treatments, included 3 replicates, (5 chicks each replicate), the treatments were as follows: T1: control treatment (without addition). T2, T3 and T4 treatments were 5, 10 and 15 ml aqueous extract of licorice /liter of drinking water, respectively. The results showed a significant improvement in all characteristics of the studied carcass (dressing percentage with and without geblet, the ratio of main and secondary cuts), when aqueous licorice extract is added to drinking water, in addition to the high level of water licorice extract (15 ml of licorice per liter of drinking water), which gave the best results and significantly.

.Keywords: aqueous extract, licorice, carcass traits, Chinese ducks.

Introduction

Medicinal plants have a large and important role in medicine because they contain active and medicinal substances capable of treating a particular disease, or reduce infection with it or contain raw materials used in the preparation of medical materials, medicinal plants and herbs are considered alternative ways to use antibiotics added to poultry diets. As the addition of these medicinal plants and herbs in the diets of domestic birds, led to the emergence of different effects on the productive and immune traits, as well as

the characteristics of the carcass because it contains natural chemicals and nutrients (Zahra *et al.*, 2014; Deniz *et al.*, 2012).

One of the most important medicinal plants used in feeding domestic birds is licorice plant (*Glycyrrhiza glabra* L). The used part of the plant is the roots that contain glycyrrhizin acid, glebridine, glycyrrhizine and apigenin, they are the main active ingredients in licorice extract, whose antimicrobial, antioxidant and anti-inflammatory effects have already been demonstrated (Somjen *et al.*, 2004), Which has a major role in improving the

effectiveness of the body by containing some effective compounds that regulate the work of some hormones for birds, when using the aqueous extract of licorice in the drinking water of birds, we notice positive results in improving growth rates, improving the birds' immunity against many diseases and improving the characteristics of the carcass (Soufy *et al.*, 2012).

The use of licorice in drinking water leads to obtaining the best results with regard to the proportions of cuts, the ratio of dressing without the giblet, and some physical characteristics of duck carcasses (Beski, 2019).

Because licorice contains some nutrients and minerals, such as protein, oils, reducing sugars, calcium, phosphorous, magnesium and iron compared to many herbs

It made licorice an important medicinal herb because it provides essential minerals and nutrients to the dermis for physiological activities inside the body (Mousa *et al.*, 2003). As this improvement in the characteristics of the carcass is a direct reflection of the positive changes

Which have occurred in active cellular elements and blood metabolic components in ducks treated with licorice extract (Al-Daraji *et al.*, 2003).

This study aims to know the effect of aqueous extract of licorice on the carcass characteristics of Chinese ducks.

Material and methods

This study was carried out at a private field for duck breeding in Al-Muthanna Governorate, from 12/14/2021 to 02/14/2022. The field experiment was included to study the effect of adding

licorice aqueous extract to drinking water on the productive performance of Chinese ducks.

A total 60 unsexed, one day Chinese duck chicks were used, prepared from one of the Al-Qadisiyah Governorate hatcheries, were randomly distributed to 4 treatments, and each treatment included three replicates, (5 chicks each replicate), the treatments were as follows:

T1: control treatment.

T2: 5 ml/L water aqueous extract of licorice.

T3: 10 ml /L water aqueous extract of licorice.

T4: 15 ml /L water aqueous extract of licorice.

The chicks were reared on the floor in a special room for raising ducks, it provided all the conditions for breeding ducks. The hall has been divided into 12 pens with dimensions 200 cm x 125 cm per pen.

Licorice extract was obtained from local markets, which was extracted by cutting licorice and then crushing it, transferred to large basins for soaking with water, by heating with steam, the juice is extracted, which constitutes 10% of the substance. The juice is then transferred, where it is heated to a certain degree, to extract 50%, then this extracted juice is transferred to the licoricer, which was used in drinking water for ducks.

Studied traits

Different concentrations of aqueous extract of licorice were used to find out its effect on percentage of dressing with and without giblet and relative weight for main and secondary cuts.

Results and Discussion

Effect of using aqueous extract of licorice on the dressing ratio with or without giblet of Chinese ducks \pm standard error.

Table (1) shows the effect of using aqueous extract of licorice on the dressing percentage and giblet of Chinese duck carcasses at the age of two months of age. Significant superiority ($P \leq 0.05$) in T4 on hot carcass weight, heart weight and dressing percentage with giblet compare with T3, which in turn was significantly ($P \leq 0.05$) at the expense of treatment T2, which was significantly ($P \leq 0.05$) superior to the control treatment. As for the dressing percentage without giblet, we notice the superiority of the two treatments

T4 and T3 compared with T2 treatment, which in turn was significantly ($P \leq 0.05$) superior to the control treatment. No significant differences were observed between the two treatments T4 and T3.

Also the results in table 1. Indicate a significant improvement ($P \leq 0.05$) in liver weight for treatment 4 then T3 and T2 treatments compared with control group. No significant difference in gizzard weight between T4 and T3, also between T3 and T2 while control group recorded a lower value for gizzard weight. The value about dressing without giblets showed significant improvement in T4 compared with other treatments.

Table (1): Effect of using aqueous extract of licorice on hot carcass weight and dressing percentage with or without giblet (%) of Chinese duck carcasses.

Treatment	Live body weight	Hot carcass weight	Dressing percentage without giblet	Relative weight			Dressing ratio without giblet
				Heart	Liver	Gizzard	
T1	1318.00	5.74 \pm 821.12 d	c \pm 62.29 0.08 c	.20 \pm 0 .0010 d	1.26 \pm .0080 c	1.50 \pm .0240 c	65.26 \pm .1170 d
T2	1486.00	950.34 2.94 \pm c	63.22 \pm .020 b	.22 \pm 0 .0010 c	1.40 \pm .0020 b	1.69 \pm .0040 b	66.5 \pm 0.034. c
T3	1534.00	\pm 990.66 5.99 b	63.89 \pm .030 a	.23 \pm 0 .0010 b	1.42 \pm 0170. b	1.71 \pm .0020 ab	67.27 \pm .0550 b
T4	1676.00	1031.96 6.42 \pm	64.04 \pm 0.70 a	.25 \pm 0 2.000 a	1.50 \pm .0040 a	1.71 \pm .0040 a	67.56 \pm .0790 a
Sig.		*	*	*	*	*	*

Table (2) resulted the effect of using aqueous extract of licorice on cold carcass weight and relative weight for main and secondary cuts of Chinese duck carcasses. There were a significantly increased ($P \leq 0.05$) in cold carcass weight and relative weight for T4 treatment compared with other treatments followed by T3 then T2 of main cuts (breast, thigh and

drumstick). While relative weight for secondary cuts (wings, back and neck), a significant increased ($P \leq 0.05$) recorded for the control treatment compared to T2, which in turn was significantly superior ($P \leq 0.05$) compared to T3, which in turn was significantly superior ($P \leq 0.05$) compared to T4.

Table (2): Effect of using aqueous extract of licorice on cold carcass weight and relative weight of main and secondary cuts of Chinese duck carcasses.

Treatment	Cold carcass weight	Main cuts			Secondary cuts		
		Breast	Thigh	Drumstick	Neck	Wings	Back
T1	5.85± 807.69 d	±25.02 0.03 d	.02±14.25 0 d	.04 ±11.81 0 d	±6.22 .023 0 a	.10±29.85 0 a	±12.81 0.027 a
T2	4.91±932.95 c	.26.57 0.05 ± c	.02 ±14.52 .0 c	.02 ±12.12 0 c	±5.88 .026 0 b	±29.44 0.070 b	12.44 .026 ± 0 b
T3	6.74± 974.21 b	±25.80 0.01 b	± .14.74 0.01 b	±12.34 0.02 b	0.012±5.67 c	±29.12 0.027 c	±12.29 0.017 c
T4	6.73±1017.49 a	±25.98 0.02. a	±14.96 0.02. a	±12.56 0.02 a	0.032 ±5.47 d	28.88 0.092± c	± 12.11 0.029 d
Sig.	*	*	*	*	*	*	*

It appears from the results of this experiment that there was a significant improvement in the carcass characteristics of the licorice aqueous extract treatments compared to control treatment. As a result for the significant increase in final body weight rates, the dressing ratio with or without giblet increased in all treatments compared to control treatment. This result

was in agreement with what Al-Daraji *et al.* (2006) who indicated that treatment with licorice extract in drinking water, led to a significant increase in the dressing percentage with or without giblet, it also appears from these results that there was a significant superiority in the relative weight of the main cuts of carcasses of birds for the same treatment when

compared with control treatment and a decrease in the relative weight of the secondary cuts of carcasses of birds compared with the rest of the treatments, this was consistent with what was indicated by Al-Daraji *et al.* (2003), where a significant superiority in the relative weight of the main cuts (breast, thigh and drumstick) for broiler carcasses and a significant decrease in the relative weight of the secondary cuts (neck, wings, back) when treating birds with arak extract Licorice in drinking water.

Conclusion

We concluded from this study that all treatments added licorice extract to

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- drinking water gave the best results for carcass characteristics of Chinese ducks compared to control treatment.
- ### Acknowledgement
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