



## Studying the effect of different levels of aqueous extract of sage (*Salvia officinalis*) leaves on some carcass quality traits of Chinese ducks

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### Abstract

This study was conducted at the agricultural research station for raising ducks in Al-Muthanna Governorate, from 14/12/2021 to 14/02/2022 (60 days). A total of 60 one-day-old Chinese duck chicks were reared with an average weight of 42 gm. Ducklings were prepared from local markets in Al-Diwaniyah Governorate, Chicks were held in a semi-enclosed hall with dimensions of 25 x 10 m, were randomly distributed into four treatments, each treatment was three replicates (5 chicks/replicate). It was placed in 12 pennies, an area of 1.5 x 1 m, and the experiment's parameters were as follows: the control treatment (T1), and treatments T2, T3 and T4, water extract of sage leaves was used at a concentration of 2.5, 5 and 7.5 ml per liter of drinking water, respectively. The results show that all treatments of the sage leaf extract gave the best results as a significant ( $P \leq 0.05$ ) for carcass quality traits compared to the control treatment. The T4 treatment gave the best performance as a significant ( $P \leq 0.05$ ) of carcass traits compared to the rest of the treatments of the aqueous extract of sage leaves.

**.Keywords:** sage leaves (*Salvia officinalis*), aqueous extract, carcass quality traits, Chinese ducks.

### Introduction

Medicinal plants have been used for many centuries for their antibacterial as well as antispasmodic, expectorant and antifungal properties (Glisic, 2010)

As a result, interest in these plants has emerged as an alternative feeding strategy to replace stimulants and antagonists (Baricevic and Bartol, 2000).

Sagebrush is a small perennial herbaceous plant that rises approximately 30 cm from the ground. The leaf of the sage plant (*Salvia officinalis*) is usually more in length than width. The leaf length is about 2-4 cm and the width is about half (Sutton, 2004).

It was first found in the Mediterranean countries and later spread to England and then France and Switzerland in the fourteenth century (Krutch, 1965).

Sage helps boost brain health and memory

As it is rich in many compounds that act as antioxidants,

which constitute a good medium for maintaining brain health,

In addition to its role in inhibiting the breakdown of the chemical transporter acetylcholine called acetylcholine, which is important for memory.

Its levels are reduced in people with Alzheimer's (Andrew et al., 2008)

The aqueous extract of sage reduces pain in the somatosensory system and has anti-inflammatory properties (Mir Nouri et al., 2011).

and reducing diarrhea, as it was found that the consumption of raw extract of sage is associated with relief, as it has anti-diarrheal properties, it has an antispasmodic effect, which may be useful for spasms and spasms in the gastrointestinal tract (Aslam et al., 2011; Abdul-Razzaq et al., 2016).

The current study aims to show the effect of different levels of aqueous extract of sage leaves on some carcass traits of Chinese ducks.

## Material and methods

Experiment birds:

This study was conducted agricultural research station for raising ducks in Al-Muthanna Governorate, from 14/12/2021 to 14/02/2022. A total of 60 one-day-old chicks were reared from Pekingese ducks, with an average weight of 42 g, ducklings were prepared from local markets in Al-Diwaniah Governorate. The chicks were reared in a semi-enclosed hall with dimensions of 25 × 10 m. Chicks were randomly distributed into four treatments, each treatment was three replicates (10

chicks/replicate). Placed at 12 Pens, the area of one pen is 1.5 × 1 m. The experiment treatments were as follows:

T1: control treatment (no addition).

T2: Water extract of sage leaves at a concentration of 2.5 ml/ L drink water.

T3: Water extract of sage leaves at a concentration of 5 ml/ L drink water.

T4: Water extract of sage leaves at a concentration of 7.5 ml/ L drink water.

Sage leaves were brought from local markets in Al-Muthanna Governorate.

Preparation of water extract of sage leaves:

The aqueous extract was prepared according to Hernandez *et al.* (1994) method, which includes mixing a quantity of dry powder of sage leaves, with an amount of distilled water in a ratio of 1 g: 2 ml of distilled water, put it in a water bath at 60°C for one hour, then leave the solution for 24 hours at room temperature, the resulting mixture was filtered by several layers of sterile medical gauze, then the liquid concentrate was ready to use by different levels in the study, the first concentration was 2.5 ml / liter of drinking water, second concentration 5 ml / liter drinking water, the third concentration was 7.5 ml / liter of drinking water.

Studied traits

Dressing Ratio

At the end of the experiment, samples of six birds were selected from each treatment after taking the live weight of each one, then they were slaughtered and the feathers, head and legs were removed, and the carcasses from the internal viscera were cleaned well and then weighed individually to calculate the percentage of dressing without or with giblet (heart, liver and gizzard) to live body weight as

reported by Al-Fayyadh and Naji (2012) and as shown in the following two equations:

dressing ratio without giblet = (carcass weight without giblet / live body weight g) x 100

dressing ratio with giblet = (carcass weight with giblet / live body weight g) x 100

Relative weight of giblet

Six birds from each treatment (2 birds/replicate) were randomly slaughtered. The internal organs (giblet) were extracted from the carcasses according to the method mentioned by Al-Fayyadh and Naji (2012), separating the heart from the carcass after removing the internal organs because it is not connected to them, after that separated the liver, the gizzard, weigh the edible entrails separately using a sensitive scale, to extract percentages from live weight before slaughter, the proportion of each of them was calculated from the weight of the living body according to the following equation:

Relative weight of giblet (%) =

Organ Weight (gm) / live body weight (gm) x 100

The relative weight of the main and secondary cuts of carcasses

After the carcasses were weighed to calculate the dressing ratio, the carcass was cut into the main cuts that included (breast, thigh, and drumstick) and the secondary cuts (back, wings, and neck) as reported by Al-Fayyadh and Naji (2012). The weight of the carcass according to the following equation:

Relative weight of the carcass cut = Carcass cut Weight (gm) / carcass weight (gm) x 100

Complete random design (CRD) was used to study the effect of different treatments on the studied traits. Significant differences between means were compared with Duncan's (1955) multiple-range test at a significance level of 0.05. SPSS (2012) program was used in the statistical analysis.

## Results and Discussion

Table (1) shows the effect of using aqueous extract of sage leaves on the dressing ratio with or without of giblet (%) of Chinese duck carcasses at eight weeks of age. It was show a significant improvement ( $P \leq 0.05$ ) for T4 in hot carcass weight, relative weight of gizzard and dressing ratio. The significantly superior ( $P \leq 0.05$ ) in T3, was significantly superior ( $P \leq 0.05$ ) on T2 compared to the control treatment. As for the relative weight of the heart and liver, a significant superiority ( $P \leq 0.05$ ) in T4 compare with T3 and T2, compared to the control treatment.

No significant differences were observed between the third treatments T3 and T2. As for the dressing ratio with giblet, we notice a significant ( $P \leq 0.05$ ) for T4 compare with T3, which is significantly ( $P \leq 0.05$ ) superior to treatment T2, which, in turn, was significantly ( $P \leq 0.05$ ) superior to the control treatment. The dressing ratio with giblet were 65.26, 66.26, 66.88 and 67.84% for treatments T1, T2, T3 and T4, respectively.

**Table (1): Effect of using aqueous extract of sage leaves on hot carcass weight and dressing ratio with or without giblet (%) of Chinese duck carcasses**

| Treatment | Life body weight | Hot carcass weight | Dressing ratio without giblet | Relative weight(%) |                  |                  | Dressing ratio without giblet |
|-----------|------------------|--------------------|-------------------------------|--------------------|------------------|------------------|-------------------------------|
|           |                  |                    |                               | Heart              | Liver            | Gizzard          |                               |
| T1        | 1318.00          | 821.12<br>d±5.74   | 62.29 d ±<br>0.08             | 0.20 c ±<br>0.00   | 1.26 c ±<br>0.00 | 1.50 d ±<br>0.02 | 65.26 d ±<br>0.11             |
| T2        | 1486.00          | 936.22<br>c±2.53   | 62.99 c ±<br>0.02             | 0.21b ±<br>0.00    | b 1.36 ±<br>0.02 | 1.68 c ±<br>0.01 | 66.26 c ±<br>0.02             |
| T3        | 1534.66          | 974.31<br>b±6.05   | 63.48 b ±<br>0.10             | 0.22 b ±<br>0.00   | 1.36 b ±<br>0.02 | 1.82 b ±<br>0.01 | 66.88 b ±<br>0.13             |
| T4        | 1676.66          | 1073.95<br>a±2.26  | 64.04 a ±<br>0.08             | 0.23a ±<br>0.00    | 1.57 a ±<br>0.00 | 1.98 a ±<br>0.01 | 67.84 a ±<br>0.08             |
| Sig.      | -                | *                  | *                             | *                  | *                | *                | *                             |

Table (2) shows the effect of using aqueous extract of sage leaves on the relative weight of the main and secondary cuts of Chinese duck carcasses. In cold carcass weight, we notice a significant superiority ( $P \leq 0.05$ ) of treatment T4 at the expense of treatment T3, which in turn significantly outperformed treatment T2 compared to treatment T1, a significant superiority ( $P \leq 0.05$ ) of treatment T4 in the relative weight of the main cuts (breast, thigh and drumstick) at the expense of

treatment T3, which significantly ( $P \leq 0.05$ ) outperformed treatment T2, which significantly ( $P \leq 0.05$ ) outperformed treatment T1. As for the relative weight of the secondary cuts (wings, back and neck), we notice a significant ( $P \leq 0.05$ ) for the control treatment T1 at the expense of treatment T2, which was significantly ( $P \leq 0.05$ ) superior to the treatment T3, which, in turn, was significantly ( $P \leq 0.05$ ) superior to treatment T4.

**Table (2): Effect of using aqueous extract of sage leaves 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        | 806.75 d<br>±5.17   | 24.96 d<br>±0.03 | 14.18 d<br>±0.03 | 11.86 d ±<br>0.02 | 6.18 a<br>±0.02 | 12.81 a<br>±0.01  | 29.99<br>a ±<br>0.06 |
| T2        | 917.75 c<br>±3.65   | 25.54 c<br>±0.04 | 14.51 c<br>±0.02 | 12.18 c ±<br>0.02 | 5.92 b<br>±0.02 | 12.58 b<br>0.01 ± | 29.23 b<br>±0.03     |
| T3        | 955.74 b            | 25.72            | 14.72 b          | 12.28 b ±         | 5.74 c          | 12.46 c           | 29.05 c              |

|      | $\pm 5.90$              | $b \pm 0.01$          | $\pm 0.02$            | $0.01$                | $\pm 0.02$           | $0.01 \pm$            | $\pm 0.03$            |
|------|-------------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|
| T4   | 1059.55<br>$a \pm 1.29$ | 26.09 a<br>$\pm 0.06$ | 15.02 a $\pm$<br>0.05 | 12.47 a $\pm$<br>0.01 | 5.55 d<br>$\pm 0.02$ | 12.37 d $\pm$<br>0.02 | 28.47 d<br>$\pm 0.05$ |
| Sig. | *                       | *                     | *                     | *                     | *                    | *                     | *                     |

The significantly improvement occurred in all treatments compared to the control treatment, T4 treatment achieved the best improvement in carcass characteristics represented by (hot carcass weight, dressing ratio, giblet, cold carcass weight, relative weight of main and secondary cuts), this may be attributed to the improvement of live weight and carcass characteristics when adding sage to feed mixtures for chickens (Lenuta and leonte, 2015). The addition of sage leaves powder led to an increase in the weight of the wings caused by the active compounds found in sage leaves, especially flavonoids that act as an antioxidant, leads to an improvement in live weight, as well as flavonoids that destroy cells as well as the growth of beneficial bacteria, it improves the intestines as well as the absorption of nutrients and further enhances the nutritional status of chickens and increases the weight of chickens (Abdul- Razaq *et al.*, 2016).

### Conclusion

It is concluded that all treatments of the sage leaf extract gave the best results for carcass characteristics of Chinese ducks compared to the control treatment, and the best of Water extract of sage leaves at a concentration of 7.5 ml/ L drink water.

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