

ARTICLE / INVESTIGACIÓN

Influence of sage leaf water extract on several economic characteristics of Chinese duck

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Abstract: This study was conducted in a private field for duck breeding in Al-Muthanna Governorate from 12/14/2021 to 02/14/2022. One hundred twenty-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; chicks were raised at 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 in 12 Pens, and the area of one pen was 1.5 × 1 m. The experiment treatments were as follows: the control treatment (T1), and other treatments, used the water extract of sage leaves at a concentration of 2.5, 5 and 7.5 ml per liter of drinking water for treatments T2, T3 and T4, respectively. The results indicate that all treatments of the sage leaf extract gave the best results for the economic parameters compared to the control treatment. The T4 treatment gave the best financial performance compared to the rest of the treatments of the aqueous extract of sage leaves.

Key words: Water extract of sage leaves, economic traits, Chinese duck.

Introduction

Medicinal plants have been used for centuries because of their antibacterial as well as antioxidant properties^{1,2}. Antispasmodic, expectorant and antifungal, as a result, these plants have shown many interests as an alternative feeding strategy to replace stimulants and antagonists³. Sagebrush was a medicinal plant of the oral family, originating in the Mediterranean countries⁴. As a result, it contains antioxidant properties, can activate oxidative enzymes and the oils in the sage plant, and can be used as a supplement to poultry feed to prevent or delay oxygen-free radicals in broilers⁵.

The sage plant was found for the first time in Mediterranean countries it was later spread to England, then France and Switzerland in the fourteenth century⁶. The sage plant is the most famous and oldest plant used in ancient and modern medicine; the plant was found in the Mediterranean basin. The plant is found mainly in mountainous areas and undeveloped lands, especially in the spaces between the mountain and the ground stone cliffs; in places, it is called locally (Al-Rumayyan), and in other places, it is called the bush⁷.

Gerrard mentioned in the seventeenth century that the sage plant strengthens weak memory and restores it quickly; the other active compounds of sagebrush are ocamine, cineole, limonene, and terpenes; most terpenes act as antioxidants, it can kill many types of bacteria⁸.

The current study aims to determine the effect of the aqueous extract of sage leaves on some economic traits of Chinese ducks.

Materials and methods

Experiment birds

This study was conducted in a private field for duck breeding in Al-Muthanna Governorate from 12/14/2021 to 02/14/2022. One hundred twenty-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 raised in a semi-enclosed hall with dimensions of 25 × 10 m. Chicks were randomly distributed into four treatments; each 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. 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 the 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

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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.

Economic traits

The economic traits include Economic Profit (EP), Net Cash Income (NCI), Pay Back Period (PBP), Benefic Cost Ratio (BCR), Operation Ratio (OR) and Productivity Profitability (PP), according to Donald and Malone⁹; Al-Qaisi and Al-Ezzi¹⁰; Al-Ezzi¹¹; Yousef¹²; Khader¹³; Al-Shammari¹⁴; Al-Ruwais¹⁵; Al-Mashhadani¹⁶; Al-Ezzi¹⁷; Abu Zaid¹⁸; Hawari *et al.*¹⁹.

Results

Economic Profit (EP)

EP measurement account has been known in Table 1; the calculation of the total EP for all treatments has been recorded, totaling 199,650,000 ID, in (aqueous extract of sage

leaves at a concentration of 7.5 ml/ L water), compared to all treatments, reached 58,800,000 ID.

Net Cash Income (NCI)

Table 2 shows the effect of the aqueous extract of sage leaves on the measure of net cash income (NCI), all treatments gave 215,280,000 ID, T4 gave the best net cash income (63,450.000) ID, superior to other treatments.

Pay Back Period (PBP)

Table 3 shows that PBP in all treatments was 1,428619 months, it was noticed through which to know the minimum period for recovering the capital in T4, it was noticed that the period of PBP was 1.360816 months; it was noted from the table that all treatments of aqueous sage extract were superior to the control treatment, reached 1.543808 months.

Benefit-Cost ratio (BCR)

Table 4 shows the study of the effect of the aqueous extract of sage in the drinking water of Chinese ducks on Benefic Cost Ratio (BCR), were reached 1.404024 dinars for all treatments; T4 was the best of BCR (1.470588 dinars), compared with T1 (1,296296 dinars).

Treatments	TC	TR	EP
T ₁	121.500	157.500	36.000
T ₂	123.000	173.250	50.250
T ₃	123.900	178.500	54.600
T ₄	124.950	183.750	58.800
Total	493.350	693.000	199.650

Table 1. Effect of sage leaves water extract on Total Cost (TC), Total Revenue (TR) and Economic Profit (EP) as a thousand dinars.

Treatments	Variable costs	Total revenue	Net Cash Income (NCI)
T ₁	118.500	157.500	39.000
T ₂	119.250	173.250	54.000
T ₃	119.700	178.500	58.800
T ₄	120.300	183.750	63.450
Total	477.720	693.000	215.280

Table 2. Effect of sage leaves water extract on Variable Costs (VC), Total Revenue (TR) and Net Cash Income (NCI) as a thousand dinars.

Treatments	PBP
T ₁	1.543808
T ₂	1.420778
T ₃	1.389074
T ₄	1.360816
Total	1.428619

Table 3. Effect of sage leaves water extract on Pay Back Period (PBP) as a month.

Treatments	BCR
T ₁	1.296296
T ₂	1.408536
T ₃	1.440677
T ₄	1.470588
Total	1.404024

Table 4. Effect of sage leaves water extract on Benefic Cost Ratio (BCR) as ID.

Operating Ratio(OR)

All the experimental parameters showed percentages less than 1 (Table 5), it was 0.713875 ID, T4 was the lowest OR (0.68 ID), which was outperformed compared with T1 and other treatments, which recorded 0.771428 ID.

Treatments	OR
T ₁	0.771428
T ₂	0.709956
T ₃	0.694117
T ₄	0.680000
Total	0.713875

Table 5. Effect of water extract of sage leaves on Operating Ratio (OR) as ID.

Productive profitability (PP)

Table 6 shows that all experiment treatments give the best PP (40.402476%); T4 was the superior compared to T1, as well as with the rest of the treatments of the aqueous extract of sage in the experiment with the productivity measures of profitability, as it recorded (47.058823%). The table also showed the superiority of all treatments of aqueous sage extract compared to the control treatment. PP profitability for the control transaction was about (29.629629%).

Treatments	PP
T ₁	29.629629
T ₂	40.853658
T ₃	44.067796
T ₄	47.058823
Total	40.402476

Table 6. Productive profitability of the research sample.

Discussion

The values of net cash income for all water-extraction treatments of sage leaves in duck projects achieve a good productive return. It is possible to recover the trial capital in a shorter period than T1 using an aqueous extract of sage. Moreover, it was noted that all the treatments of the aqueous extract of sage in the duck drinking water were superior to the investment dinar return index. Finally, the Chinese duck projects may achieve the best economic efficiency and good²¹. 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, several layers of sterile medical gauze filtered the resulting mixture, 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

Conclusions

The water extract of sage leaves at a concentration of 2.5, 5 and 7.5 ml per liter of drinking water for treatments T2, T3 and T4, respectively. The results indicate that all treatments of the sage leaf extract gave the best results for the economic parameters compared to the control treatment. The T4 treatment gave the best financial performance compared to the rest of the treatments of the aqueous extract of sage leaves.

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