EFFECT OF ADDING DIFFERENT LEVELS OF ROSE WATER IN BROILER DRINKING WATER ON CARCASS PERFORMANCE AND SOME HISTOLOGICAL TRAITS IN ROSS308

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ABSTACT

The aim of this research is to study the effect of using different concentrations of aqueous extract of damask flowers on the ratios of some major and minor parts and some histological qualities. There are a few studies on the effect of the use of rose water in various agricultural animals. 250 one-day-old commercial ross308 broiler chicks were randomly divided into 5 groups of 50 birds. In the treatment (T1control treatment) plain water was used without additives, while in the transactions T2, T3, T4 and T5 rose water was added to drinking water at a concentration of 5%, 10%, and 5% for 12 hours, and 10% for 12 hours, respectively. The results showed the superiority of coefficients T2 and T5 in live body weight, the percentage of clearance with and without the presence of eaten viscera, the percentage of drummer's stick, the percentage of chest piece and the rest of the other pieces, as well as a significant increase in the height of the villi and the depth of the crypts for the second and fifth coefficients compared to other coefficients at (P≥ 0.05) .

Keywords: weight gain, feed consumption, water consumption.

تأثير إضافة مستويات مختلفة من ماء الورد في ماء الشرب في بعض الصفات الإنتاجية لفروج اللحم ROSS308

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المستخلص

الهدف من هذا البحث هو دراسة تأثير استخدام تراكيز مختلفة من المستخلص المائي للأزهار الدمشقية قي نسب بعض القطعيات الرئيسية والثانوية وبعض الصفات النسيجية. هنالك عدد قليل من الدراسات حول تأثير استخدام ماء الورد في الحيوانات الزراعية المختلفة. تم تقسيم 250 طيرا من افراخ فروج اللحم التجارية ROSS308 البالغة من العمر يوما واحدا إلى 5 مجموعات مكونة من 50 طيرا بشكل عشوائي. في المعاملةT1 (معاملة السيطرة) تم استخدام الماء العادي بدون اضافة، بينما في المعاملات T2 و T3و T4و T5تم إضافة ماء الورد إلى ماء الشرب بتركيز 5%، 10%، و5% لمدة 12 ساعة، و10% لمدة 12 ساعة على التوالي. أظهرت النتائج تفوق المعاملات T2 وT5 في وزن الجسم الحي ونسبة التصافي مع و بدون وجود الاحشاء الداخلية المأكولة ونسبة عصا الطبال والنسبة المئوية لقطعة الصدر وباقي القطعيات الأخرى وكذلك ظهر ارتفاع معنوي في ارتفاع الزغابات وعمق الخبايا للمعاملتين الثانية والخامسة مقارنة بالمعاملات الأخرى عند (P≥ 0.05)

الكلمات المفتاحية: زيادة الوزن، استهلاك الأعلاف، استهلاك المياه.

Received:12 /7/2023, Accepted:29/11/2023, Published:December 2025

INTRODUCTION

The use of antibiotics as growth factors in agricultural animals has been associated with significant financial gains (6, 7, 9). However, the frequent use of antibiotics has led to an increase in bacterial resistance to them, which makes the treatment of bacterial infections more difficult (6, 7, 9). As a result, the use of antibiotics as growth stimulators in animal feed is considered illegal. Since the restrictions on the use of antibiotics and other chemical compounds acting as growth factors, researchers have been exploring other alternatives to feed additives (7, 9). Nowadays, it is common to use various additives in animal feeds, including prebiotics, probiotics, enzymes, organic acids, plant extracts and humates. This is because these organic methods are safer for humans and animals, better for the environment, and produce higher quality goods (7, 9, 11). Extracts from aromatic plants have recently attracted the attention of the scientific community as potential novel feed additive chemicals. Antifungal, antibacterial, antiviral, antioxidant, and anti-lipidemic characteristics are some of the most prominent benefits of plant extracts. Two separate studies (3) support this theory. As a result, in our research, we used rose water extracted from Rosa damascene Mill flowers grown in Burdon (Lisena), Turkey. Among the Rosaceae family of plants, and particularly prevalent in the Middle East, is Rosa damascene Mill (8). When it comes to extracting rose oil, Rosa damascene Mill is king. Turkey and Bulgaria are the world's two largest producers of rose oil (3,8). The essential oil from the Rosa damascene plant mostly consists of -citronellol (23%), nonadecane (16%), geraniol (16%), and hen eicosane (5%). Phytochemicals such as flavonoids, glycosides, terpenes, and anthocyanins were extracted from Rosa damascene leaves and petals (3,19). Damask Rose is a rich source of useful compounds such as quercetin, gallic acid, kaempferol, cyanidin 3,5 and D-glycoside. In a study conducted by him (3, 8), the important chemical components of volatile fatty acids of Damask rose flowers were identified namely: nonadecane, geraniol, neroli, kaempferol, and citronellol. The antimicrobial, antiviral and antiseptic properties of roses have been well documented (8, 11), and the general public has relied on Rose Water as a natural remedy for various ailments. Conditions such as asthma, chronic bronchitis, skin disorders, cancer, ulcers and wrinkles have shown improvement with the use of rose water, as evidenced by anecdotal reports (12, 21). Studies have also shown that taking rose oil has no adverse effects or toxicity (21, 25). Recent years have seen a surge in research on the benefits of aromatic plant extracts. The available literature lacks sufficient information on the effect of rose water on intestinal tissue and the diet performance of broiler chickens. Thus, this study aimed to evaluate the effects of different concentrations of rose water on important factors such as nutritional conversion efficiency, water intake, body weight, weight gain and food intake, considering the potential benefits of the plant and extract.

MATERIALS AND METHODS

this study was carid out from 18th of march until 23th of April 2023 in poultry farm /department of animal production /college of agricultural engineering sciences

Baird's feeding and management

to studying the effect of the aqueous extract of the damask rose flower on chicken production, 250 one-day chickens of the commercial ross 308 breed were randomly distributed to five treatment groups of 50 birds each. Such combinations are observed from the age of 1 to 42 days. The study aimed to determine the effects of different levels of Damask rose plant extract added to the drinking water of chickens in these groups. The experimental diet used in this study was the chicken diet of the modern company, as shown in Table 1.

Table 1. Chemical components of Doxa Broiler Diets in 3 stages

Material	Stage 1	Stage 2	Stage 3
Humidity / gram	12.7	12.69	13.1
Metabolic energy (kcal/kg live weight)	2900	3020	3155
Protein / %	21.5	19.5	18
Calcium/ %	0.87	0.87	0.80
Available phosphorus/%	0.44	0.49	0.38
Methionine/%	0.56	0.58	0.52
Lysine/gram	11.7	12.27	11.48
Lipids /gram	21.27	29.43	42.69
Fibers /gram	26	24.40	21.59
Methionine + cysteine /gram	11.30	10.29	8.20
Ash / gram	64.45	60.32	42.98

Table 1 shows three stages of nutrition ,Stage1 : Broiler starter , stage 2:broiler grower, stage 3 :broiler finish

Preparation of aqueous extract of damascena flowers: Several 0.5-liter samples of the aqueous extract of the Damascus flower can be obtained in local markets such as those in Germany, Syria and other locations. A screening process was carried out in the laboratories of the Ministry of Science and technology using a structural instrument from Germany to identify active ingredients and assess the level of purity. The results of the examination showed that the Syrian version of the aqueous extract contains the highest amount of the active substance and the purest form of the extract.

Body weight measurement: Body weight was measured weekly using a sensitive scale (EK-I-EW-I). According to the method of (2) and (5).

Weight gain measurement: The weekly weight gain (g) and Total wight gain (g) was measured according to the method of (2) and (5).

Feed consumption measurement: The difference was calculated between the amount of feed provided daily and the amount of feed remaining in the feeders, which represents the daily and then weekly feed consumption according to (2) and (5).

Food conversion factor measurement (FRC): The food conversion factor was calculated through the following equation (2) and (5)

Feed conversion factor=amount of feed eaten (gram)÷ live body weight(gram)

Water consumption measurement

The calculation of daily and weekly water consumption was determined by (2) and (5), which involves measuring the disparity between the amount of Water spent per day and the amount of water remaining in the drinking equipment.

RESULTS AND DISCUSSION

Body wight : The results of an experiment on the effect of aqueous extract of Damask rose on broiler chickens of the Ross 308 commercial breed are shown in Table 2. The results detail the results of combining different concentrations of the extract in the drinking water of broiler chickens. The results indicate a substantial and statistically significant rise in body weight during the initial week of the two treatments (T2 and T5) compared to the remaining treatments. The increase was found to be significant at a significance level of($P<0.05$). Specifically, the second treatment resulted in a mean weight gain per bird, while the fifth treatment led to a mean weight gain per bird. No statistically significant differences were found in the weekly body weight for all parameters examined ($P > 0.05$). However, during the third, fourth, and fifth weeks, treatments T2 and T5 exhibited the highest levels of weekly body weight compared to the other treatments. A statistically significant increase ($P > 0.05$) was seen in the two treatments (T2 and T5) over all weeks of the trial. The aforementioned discovery was made. The findings suggest that employing a 5% concentration of the aqueous extract derived from Damascus flowers, together with the treatment regimen denoted as T5 (10%) for a duration of 12 hours, yielded the most favorable outcomes in terms of body weight during the whole duration of the trial. There were no statistically significant variations seen in the weekly body weight measurements

across treatments T1, T3, and T4. This aligns with the findings of previous researchers, including (10,22), who reported that the utilization of varying concentrations of Damascena flower mixture has resulted in enhanced immune response, improved tissue properties, and increased organ weight due to augmented protein synthesis in muscle tissue. Table 2 presents the findings about the impact of incorporating varying concentrations of aqueous extract derived from Damascus flowers into the drinking water of broilers belonging to the Rose 308 breed, often seen in commercial settings. It is evident that there was a substantial and statistically significant increase in body weight during the initial week of the two treatments (T2 and T5) in comparison to the remaining treatments. The increase was found to be significant at a significance level of ($P<0.05$). Specifically, the second treatment resulted in an average weight gain per bird, while the fifth treatment led to an average weight gain per bird. No statistically significant differences were found in the weekly body weight for all parameters examined ($P \leq 0.05$). However, during the third, fourth, and fifth weeks, treatments T2 and T5 exhibited the highest levels of weekly body weight compared to the other treatments. A statistically significant increase ($p > 0.05$) was seen in the two treatment groups (T2 and T5) over all weeks of the research. The discovery of this phenomenon was made. The findings suggest that employing 5% concentration of the aqueous extract derived from Damascus flowers, together with the treatment (T5) at a concentration of 10% for a duration of 12 hours, yielded the most favorable outcomes in terms of body weight during the whole duration of the trial. No statistically significant variations in weekly body weight were seen across treatments T1, T3, and T4. The result from this discovery is consistent with the hypotheses put forward by a number of researchers (27, 28). Who assumed that the use of different concentrations of the mixture of damask flower would lead to an amplification of the immune response, improvement of tissue properties, and an increase in organ mass because of increased protein synthesis.

Weight gain: The impact of incorporating varying concentrations of aqueous extract of Damascus flowers into drinking water on the weekly weight increase and overall weight gain of commercial Rose 308 broilers is evident in Table 3. The results of the study showed a significant increase in weekly weight gain during the first week of treatment T2 and T5 compared to other treatments (1), as indicated by statistically significant results ($P > 0.05$). However, there was no significant increase in the weight growth of birds during the second and sixth weeks for all the analyzed coefficients. Statistically significant increases ($P <0.05$) were observed in the third, fourth and fifth weeks of T2 and T5 compared to other treatments in the study. The general superiority of coefficients T2 and T5 over the remaining coefficients (13,23, 24, 25) was noted in terms of gross weight growth. The observed weight gain in treatment T5, while treatment T2 showed a weight gain. This result is consistent with the results revealed by the previous study. Table 2 presents data showing a significant increase in body weight over the study weeks in all treatment groups (29,30).

Table 2. Effect of adding different levels of aqueous extract of Damascus flowers on the weekly body weight of broilers of the ROSS 308 breed, measured in (g/bird)

TRETMENT	1ST WEEK	2ED WEEK	3ED WEEK	4TH WEEK	5TH WEEK	6TH WEEK	SAGNIFICANT
T1	184.51 ±3.61	480.20±8.76	918.14±17.67	1492.37±42.10	2126.94±49.83	2721.81±73.89	NS
T2	189.22±3.51*	480.18±8.67	929.92±17.71*	1501.39±42.62*	2144.91±50.65*	2809.96±74.01*	**
T3	184.10±3.23	480.17±8.71	916.06±17.65	1492.34±42.18	2128.38±49.78	2763.69±73.68	NS
T4	184.80±3.06	480.14±8.71	918.77±17.63	1495.36±42.19	2125.13±50.09	2721.12±73.88	NS
T5	189.60±3.54*	480.16±8.68	929.32±17.73*	1501.37±42.60*	2144.50±50.75*	2809.84±74.08*	**
SAGNIFICANT	**	NS	**	**	**	**	

T1, T2, T3, T4, and T5 represent the addition coefficients of the different proportions of the aqueous extract of Damascus flowers. (*) indicates the presence of significant differences between the treatments at a significant level (P≥0.05)

Feed consumption

The impact of incorporating varying concentrations of Damascus flower extract into the drinking water of commercial Rosa 308 AP broilers is clearly demonstrated in Table 4. The information in the table relates to the weekly and cumulative feed consumption of broiler chickens. It is worth noting that transactions T2 and T5 showed a noticeable increase in the rate of feed consumption compared to other transactions during Weeks 3, 4, 5 and 6, this is consistent with what the sources indicated (15, 18 and 26) . No statistically significant variations were seen in the rate of feed consumption during the first and second weeks across all treatments examined. The findings indicated that the two treatments, T2 and T5, exhibited a statistically significant superiority (P<0.05) in terms of the rate of total feed intake during weeks 3, 4, 5, and 6, as compared to the remaining treatments. This finding aligns with the information shown in Tables 2 and 3, which pertains to the utilization of a 5% concentration. The treatment combination of T2 with a 10% concentration for half of the day (T2-10%) yielded the most favorable outcomes in terms of the rate of total feed intake, (4,17,20) as assessed in grams per bird, when compared to the remaining treatments included in the research.

Table 3. Effect of adding different levels of aqueous extract of Damascus flowers on the weekly and total weight gain of broilers of the ROSS 308 breed, measured in units (g/bird)

TRETMENT	1ST WEEK	2ED WEEK	3ED WEEK	4TH WEEK	5TH WEEK	6TH WEEK	Total Gain	SAGNIFICANT
T1	142.51± 2.23	295.69± 8.37	437.94± 20.72	574.23± 23.55	634.57± 52.25	594.87± 23.51	2679.81± 71.82	NS
T2	147.22± 2.32*	290.96± 8.33	449.74± 20.78*	571.47± 23.68	643.52± 52.30*	665.05± 23.53*	2767.96± 72.16*	**
T3	142.10± 2.25	296.07± 8.27	435.89± 20.76	576.28± 23.41	636.04± 52.28	635.58± 23.52	2721.96± 71.83	NS
T4	142.80± 2.16	295.34± 8.25	439.63± 20.70	576.59± 23.14	629.77± 52.33	596.99± 23.54	2681.12± 71.81	NS
T5	147.60± 3.01*	290.56± 8.25	449.16± 20.72*	572.05± 23.87	643.13± 52.30*	665.34± 23.54*	2767.84± 72.17*	**
SAGNIFICANT	**	NS	**	NS	**	**	**	

T1, T2, T3, T4, and T5 represent the addition coefficients of the different proportions of the aqueous extract of Damascus flowers. (*) indicates the presence of significant differences between the treatments at a significant level (P≥0.05)

Table 4. Effect of adding different levels of aqueous extract of Damascus flowers on the weekly and total feed consumption rate of broilers of the ROSS 308 breed, measured in units (g/bird)

TRETMENT	1ST WEEK	2ED WEEK	3ED WEEK	4TH WEEK	5TH WEEK	6TH WEEK	Total Feed Consumption	SAGNIFICANT
T1	165.92 ±0.62	372.33 ±1.43	630.92± 4.34	920.55± 2.52	1192.78± 30.17	1400.49± 43.08	4682.99± 61.26	NS
T2	166.18 ±0.60	373.32 ±1.42	644.48± 4.36*	936.11± 2.52*	1203.16± 31.12*	1419.09± 43.18*	4742.34± 60.86*	**
T3	165.92 ±0.61	372.39 ±1.44	630.76± 4.39	922.82± 2.54	1192.36± 30.85	1404.82± 42.83	4689.07± 61.22	NS
T4	165.90 ±0.61	372.36 ±1.45	630.78± 4.34	928.64± 2.52	1192.75± 30.84	1408.92± 43.17	4699.35± 60.81	NS
T5	166.94 ±0.62	373.38 ±1.46	644.68± 4.39*	936.90± 2.51*	1203.86± 30.82*	1419.89± 42.88*	4745.65± 60.88*	**
SAGNIFICANT	NS	NS	**	**	**	**	**	

T1, T2, T3, T4, and T5 represent the addition coefficients of the different proportions of the aqueous extract of Damascus flowers. (*) indicates the presence of significant differences between the treatments at a significant level (P≥0.05)

Food conversion factor

The impact of incorporating varying concentrations of aqueous extract of Damascus flowers into drinking water on the weekly and overall feed conversion efficiency rate for commercial Rose 308 broilers is evident in Table 5. The table demonstrates a notable decline in feed conversion efficiency during the initial week for treatments T2 and T5, in comparison to the remaining treatments, with statistical significance at a level of P<0.05. Regarding the second week, a statistically significant rise was detected (P<0.05). In relation to the efficiency of food conversion, namely in treatment T3, no statistically significant changes were seen (p > 0.0) when compared to the other treatments, specifically during the second week. The findings indicated a statistically significant reduction (p<0.05) in feed conversion efficiency during the third week for both the control group and treatment (T5) when compared to the other treatment groups. Regarding the time frame including weeks 4 and 5, it was observed that treatments T2 and T5 exhibited the least statistically significant increase (P > 0.05) when compared to the remaining treatments included in the research. Based on the findings, it was generally noticed that the two treatments, namely T2 and T5, exhibited a considerably higher level of total feed conversion efficiency (16,14). The p-value for parameter P is more than 0.05 when compared to the other parameters being investigated.

Table 5. Effect of adding different levels of aqueous flower extract of Damascena flowers on the rate of weekly nutritional reactive change of CRF of the ROSS 308 family, in colored units (gm feed / kg weight gain

T1, T2, T3, T4, and T5 represent the addition coefficients of the different proportions of the aqueous

TRETMENT	1ST WEEK	2ED WEEK	3ED WEEK	4TH WEEK	5TH WEEK	6TH WEEK	Total CFF	SAGNIFICANT
T1	1.16±0.03	1.26±0.22	1.44±0.05	1.60±0.08	1.88±0.08	2.35±0.00	1.62±0.03	NS
T2	1.13±0.01*	1.28±0.21*	1.43±0.05	1.64±0.06*	1.87±0.08	2.13±0.01*	1.60±0.04*	**
T3	1.17±0.01	1.26±0.22	1.45±0.04	1.60±0.08	1.87±0.07	2.21±0.01	1.60±0.04	NS
T4	1.16±0.03	1.26±0.22	1.43±0.04	1.61±0.08	1.89±0.08	2.36±0.01	1.62±0.02	NS
T5	1.13±0.01*	1.28±0.22*	1.44±0.05	1.64±0.06*	1.87±0.07	2.13±0.00*	1.58±0.03*	**
SAGNIFICANT	**	**	NS	**	NS	**	**	

extract of Damascus flowers. (*) indicates the presence of significant differences between the treatments at a significant level (P≥0.05)

Water consumption

The impact of incorporating varying concentrations of water extract of Rose Damascus in drinking water on the average weekly and total water consumption of commercial ROSE 308 broilers is clearly demonstrated in Table 6. The data shown in the table indicates that treatments T2 and T5 exhibit higher rates of weekly and total water intake, assessed in milliliters per bird and for all weeks of the trial, in comparison to the remaining treatments. These findings align with the data shown in Tables 4 and 5, indicating a direct correlation between the quantity of water ingested and the observed outcomes. There exists a direct proportionality between the quantity of feed ingested by each bird over the various weeks of the research. The addition of the aqueous extract of the Damascus flower to the drinking water of broilers had a stimulating effect on the water intake of birds, especially in coefficients T2 and T5. The presence of phenolic compounds and some volatile oils in the extract may explain this increased desire to drink water, which in turn led to an increase in weekly and total water consumption rates.

Table 6. Effect of adding different levels of water extract of Damascus flowers on the average weekly and total water consumption of broilers of the ROSS 308 breed, measured in units (ml / bird)

TRETMENT	1ST WEEK	2ED WEEK	3ED WEEK	4TH WEEK	5TH WEEK	6TH WEEK	Total Water Consumption	SAGNIFICANT
T1	222.52 ±1.92	643.24 ±9.36	1025.60 ±9.32	1412.06 ±17.46	1735.64 ±22.08	1987.76 ±41.05	7026.82 ±67.08	NS
T2	237.85 ±1.93*	671.02 ±9.32*	1071.28 ±9.30*	1426.10 ±17.43*	1791.45 ±22.03*	2064.76 ±38.95*	7289.46 ±66.78*	**
T3	222.65 ±1.98	643.96 ±10.07	1025.68 ±9.36	1415.21 ±17.44	1732.01 ±22.01	1987.80 ±41.05	7027.31 ±67.06	NS
T4	224.74 ±1.97	645.74 ±10.06	1028.89 ±9.33	1412.09 ±17.45	1735.59 ±22.03	1989.52 ±40.17	7036.57 ±66.74	NS
T5	237.16 ±1.89*	671.96 ±9.34*	1071.67 ±9.30*	1426.67 ±17.46*	1791.39 ±22.04*	2064.96 ±38.92*	7263.81 ±67.16*	**
SAGNIFICANT	**	**	**	**	**	**	**	

T1, T2, T3, T4, and T5 represent the addition coefficients of the different proportions of the aqueous extract of Damascus flowers. (*) indicates the presence of significant differences between the treatments at a significant level (P≥0.05)

CONCLUSION

From the above, it is clear to us that the second treatment T2 with a concentration of 5% and the fifth treatment T5 with a concentration of 5% for 12 hours are superior in most of the studied productive qualities.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

DECLARATION OF FUND

The authors declare that they have not received a fund.

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