



Effect of spraying with the extract of the local *anemone coronaria* flowers and isoflurane in reducing the economic losses caused by stress of transporting broiler*

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Abstract

The effect of the extract on the transport stress of broiler chickens transported during different seasons of the year was experimentally studied. During the months of February, March, July, August, and different regions of Iraq, with a density of 10 or 12 birds per cage, as the Ross 308 birds were divided into 10 treatments per move and three replicates for each treatment. The T1 treatment was control without spraying, and the number of birds was 10 in the cage. T2 control without spraying and the number of birds 12 in the cage. T3 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 2% and the number of birds is 10 in the cage. T4 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 4% and the number of birds 10 in the cage. T5 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 6% and the number of birds 10 in the cage. T6 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 2%. The number of birds is 12 in the cage. T7 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 4%. The number of birds is 12 in the cage. T8 Spraying the birds with an extract of local *Anemone coronaria* flowers at a concentration of 6% and the number of birds is 12 in the cage. T9 Spraying birds with isoflurane at a concentration of 6%, the number of birds is 10 per cage. T10 Spraying birds with isoflurane at a concentration of 6%. The number of birds is 12 per cage. The birds were sprayed for 5 minutes before the transfer process, according to the above treatments, and the duration of one transfer was 240 minutes $\pm$ 10 minutes, from the results of the field experiment, it can be noted that there was a significant decrease ($p < 0.05$) in the rate of weight loss during the months of February and March, as the spraying treatments T5, T9, T10 recorded (81, 76, 78) grams, respectively, compared with the treatments T1, T2 (108, 109) grams, respectively, and this was

reflected in the percentage of weight loss, as it recorded T5,T9, and T10 (3.01, 2.90, 3.19)% compared to the treatments T1, T2 (4.04, 4.07)%. While T5,T9 and T10 recorded (319.95,300.20, 308.10) Iraqi dinars are the least financial losses for the month of March, but during the summer season, it is noted that the lost weight decreased during the months of July and August in transactions T5,T9and T10 (186,180, 187,) gm, respectively, compared with T1, T2 (216, 220) gm Respectively, it is also noted that the percentage of loss in these transactions decreased, as it recorded T5,T9, T10, (7.71,7.11, 7.36,)% , respectively. It is noted that financial losses decreased in these transactions during the month of August, as it recorded T5, T9 and T10 (734.70, 711.00, 738.65) Iraqi dinars, respectively, compared with T1, T2 (853.200, 869.00) Iraqi dinars, respectively.

Key words: *Anemone, isoflurane, transport stress, broiler*

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Introduction

The numbers of poultry that are transported, handled and slaughtered are higher compared to other farm animals because poultry have a shorter generation period and a better feed conversion ratio and since mass production of these birds results in violation of animal welfare standards during stressful transportation and handling processes [1]. Therefore, transporting poultry is one of the most important steps in the life cycle of poultry [2]. The stress of transporting birds before slaughter has a significant impact on welfare, meat yield, meat quality, and live weight loss, causing significant economic losses in poultry enterprises [3], [4], Birds are exposed to different types of stress during transport, including physical stress, which includes keeping birds and shipping, which cause physical injuries in them. Environmental stress during transport includes temperature, cold, wind, car vibration and air flow, while psychological stress includes mixing birds, social peace, fear and pain, and deprivation of life. Feed

and water, all of these conditions deplete the natural antioxidant capacity of the bird, exposing the cells to harmful reactive oxygen species and thus decreasing the immunity of the birds [2]. Plants are considered and still are valuable natural treasures, as they provide an important source of nutrients and therapeutic agents due to the chemical compounds contained in some wild and medicinal plants and herbs of great benefit and importance that are by-products of the metabolism processes within the plant that are used for the purposes of perpetuating its life or protection and defense against other living organisms. These are called Natural, by-products or by-products with active ingredients [5], [6]. And the serious pursuit of researchers began to conduct experiments and scientific research to reduce the damage caused by types of stress through the use of medicinal drugs and medicinal plant extracts that can be obtained through extraction methods [7], [8]. Anemone flowers are considered medicinal plants that have been

used as a sedative or analgesic for pain, muscle relaxation, anticonvulsants, and histamine effects. It is considered an antioxidant that helps reduce neuronal hyperactivity due to the chemicals contained in these flowers [9]. Therefore, this study aims to:

This study was conducted, the first of its kind in Iraq and the world, on the use of the extract of local anemone flowers and identified its effective compounds to know its effect on the broilers transported during different seasons and reduce the economic losses resulting from the operations of transporting and handling broilers from the production fields to the slaughterhouses and sales markets in Iraq as well as increasing the welfare of birds by reducing the stress of transportation.

Materials and methods

The field experiment was conducted throughout the different seasons of the year, and the transfers took place in different months, with densities of 10 or 12 birds in the transport cages. The first transfer was conducted in February, the second transfer in March, the third transfer in July, and the last transfer was during August. Birds of type 308 ROSS were divided into 10 treatments for each transfer and three replications for each treatment. T1, control without spraying, and the number of birds was 10 in the cage. T2 Control without spraying and the number of birds 12 in the cage. T3 Spray the birds with an extract of local anemone flowers at a concentration of 2% and the number of birds 10 in the cage. T4 Spray the birds with an extract of local anemone flowers at a concentration of 4% and the number of birds 10 in the cage. T5 Spray the birds with an extract of local anemone flowers at a concentration of 6% and the number of birds 10 in the cage. T6, spray the birds with an extract of local anemone flowers at a concentration of 2%, the number of birds is 12 in the cage. T7 Spray the birds with the active substance

of local anemone flowers, at a concentration of 4%, and the number of birds is 12 in the cage. T8 Spraying the birds with an extract of local anemone flowers at a concentration of 6% and the number of birds is 12 in the cage. T9 Spraying birds with isoflurane at a concentration of 6%, the number of birds is 10 in the cage. T10 Spraying the birds with isoflurane, at a concentration of 6%, the number of birds is 12 in the cage. The process of spraying the Ross 308 breed birds to be marketed after placing them in plastic boxes prepared for transportation with dimensions (96×67×15) with anemone extract and isoflurane, and then these cages are placed on (2) iron supports, as shown in the picture (5). The spraying process started with an electric evaporator with materials, while an insulating cover was placed on the cages to isolate the birds from the air and to ensure that these birds inhaled the materials. Then the birds were transferred from the fields to the slaughterhouse, and the temperature and humidity were recorded on the day of the transfer, and the fumigation process lasted 5 minutes. The following traits were studied: Weighing of birds before and after transfer: The weight of the birds was measured individually before and after the transfer to the slaughterhouse.

Lost weight during transportation: It was calculated using the following formula: $\text{Weight lost during transportation} = \text{weight before transportation} - \text{weight after transportation}$

Percentage of lost weight: It was calculated by using the following equation: $\text{Percentage of lost weight} = \frac{\text{lost weight}}{\text{weight of birds before transportation}} \times 100$

Financial losses resulting from transportation: They were calculated on the basis of the price of a live kilo at the time of implementation of the study, which amounted to 3950 Iraqi dinars, using the following equations: $\text{Financial losses resulting from weight loss} = \text{weight lost during transportation} \times \text{price of live weight (for two seasons)}$.

Statistical analysis

The Completely Randomized Design-CRD was used to study the effect of the studied coefficients on the different traits, and the averages were compared using the Duncan polynomial test [10]. and the ready-made statistical program (The Statistical Analysis System-SAS) was used in the statistical analysis according to The following mathematical mode $Y_{ij} = \mu + T_i + e_{ij}$

Results

Effect of spraying with local anemone flower extract and isoflurane on weight, loss percentage, and economic losses during February.

It is clear from the results of Table (1) that there are no significant differences in the weight of the birds before and after the transfer, but there are significant differences ($P>0.05$) in the weight lost during the month of February during the transfer process. It is noted that the lost weight decreased in the spraying treatments, as the treatment recorded T9 and T10 (37, 39) gm, T5 and T8 (45, 47) gm, T4 and T7 (57, 59) gm, respectively, and there was no significant difference between T7 and T3 Where it recorded T3 (61) and then T6 (63) compared to the control treatments T1 and T2 (74.00, 75) gm, respectively. This result was reflected in the percentage of loss and economic losses, where the percentage of loss in spraying treatments decreased significantly (0.05) ($P>$). The percentage of loss recorded the lowest value in treatment T9 and T10 (1.33, 1.41)%, and T5 and T8 (1.66, 1.71%) T4 and T7 (2.04, 2.12)%, and there was no significant difference between T7 and T3, as T3 recorded (2.24)%, then T6 (2.28) compared to the control treatments T1 and T2 (2.66, 2.70), respectively. It is also noted that the economic losses were low in spraying treatments, as T9 and T10 recorded (146.15 and 154.05) dinars, T5 and T8 (175.75, 154.05) T4 and T7 (225.15,

233.05) and there was no significant difference between T7 and T3, as T3 recorded (240.95). Hence T6 (248.85) dinars compared to the control treatments T1 and T2 (292.30, 296.25) dinars, respectively.

Effect of spraying with local anemone flower extract and isoflurane on weight, loss percentage, and economic losses during the month of March.

The results of Table (2) show that there are no significant differences in the weight of the birds before and after the transfer, but there are significant differences, but there are significant differences in the weight lost during the month of March during the transfer process. Where it is noticed that the lost weight decreased in the spraying treatments, as treatment T9 and T10 recorded (76, 78) gm, T5 and T8 (81, 82) gm, T4 and T7 (87, 88) gm, respectively, and T6 and T3 recorded (93, 93) grams, compared to the control treatments T1 and T2 (108, 109) grams, respectively. This result was reflected in the percentage of loss and economic losses, where the percentage of loss in spraying treatments decreased significantly ($P<0.05$). The percentage of loss recorded the lowest value in treatment T9 (2.90%), followed by T10, T5, T8, T4, and T7 (3.01, 3.17, 3.17, 3.19, 3.45). 3.39)%, and there was no significant difference between these treatments, while T3 and T6 recorded (4.04, 3.62, 3.50)%, respectively, and T2 recorded (4.07%). It is also noted that the economic losses in spraying treatments decreased, as T9 and T10 recorded (300.20 and 308.10) dinars, T5 and T8 recorded (319.95, 323.90) dinars, respectively, T4 and T7 recorded (343.65, 347.60) and T3 and T6 recorded (367.34, 367.35) dinars, respectively, compared to In the two control treatments T1 and T2

Table (1) Effect of spraying with local anemone extract and isoflurane on lost weight, loss percentage, and financial losses for the month of February (mean $\pm$ standard error)

Treatments	Weight before transportation (g)	Weight after transportation (g)	lost weight (g)	Loss ratio(%)	Financial losses (Iraqi Dinars)
T1	2739 $\pm$ 10.92	2665 $\pm$ 12.45	74 $\pm$ 1.68 ^a	2.66 $\pm$ 0.19 ^a	292.30 $\pm$ 4.08 ^a
T2	2777 $\pm$ 13.51	27011 $\pm$ 2.85	75 $\pm$ 1.61 ^a	2.70 $\pm$ 0.16 ^a	296.25 $\pm$ 4.13 ^a
T3	2721 $\pm$ 18.88	2660 $\pm$ 9.52	61 $\pm$ 1.66 ^c	2.24 $\pm$ 0.03 ^{bc}	240.95 $\pm$ 3.26 ^c
T4	2792 $\pm$ 19.59	2735 $\pm$ 13.39	57 $\pm$ 1.62 ^d	2.04 $\pm$ 0.25 ^d	225.15 $\pm$ 3.63 ^d
T5	2706 $\pm$ 15.23	2661 $\pm$ 11.68	45 $\pm$ 1.68 ^e	1.66 $\pm$ 0.02 ^e	177.75 $\pm$ 2.34 ^e
T6	2763 $\pm$ 10.13	2700 $\pm$ 8.88	63 $\pm$ 1.85 ^b	2.28 $\pm$ 0.61 ^b	248.85 $\pm$ 2.73 ^b
T7	2778 $\pm$ 11.11	2719 $\pm$ 16.03	59 $\pm$ 1.33 ^{cd}	2.12 $\pm$ 0.34 ^{cd}	233.05 $\pm$ ^{cd} 3.13
T8	2740 $\pm$ 13.54	2693 $\pm$ 14.25	47 $\pm$ 1.45 ^e	1.71 $\pm$ 0.32 ^e	185.65 $\pm$ 2.95 ^e
T9	2709 $\pm$ 17.40	2672 $\pm$ 9.72	37 $\pm$ 1.39 ^f	1.33 $\pm$ 0.09 ^f	146.15 $\pm$ 2.13 ^f
T10	2750 $\pm$ 11.81	2711 $\pm$ 8.81	39 $\pm$ 1.25 ^f	1.41 $\pm$ 0.11 ^f	154.05 $\pm$ 2.43 ^f

* The different letters within the same column indicate that there are significant differences ($P > 0.05$) between the treatments. Financial losses were calculated on the basis of the price per kilo of 3950 Iraqi dinars.

T1 Control treatment without spraying, the number of birds is 10. T2 Control treatment without spraying, the number of birds is 12. T3 The treatment of spraying with anemone extract at a concentration of 0.02. T4 The treatment of spraying with anemone extract at a concentration of 0.04. T5 Spray treatment with anemone extract at a concentration of 0.06. T6 Spraying treatment with anemone extract at a concentration of 0.02, number

of birds 12. T7 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.04. T8 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.06. T9 bird spray and isoflurane, number of birds 10 concentration 0.06 T9 bird spray and isoflurane, number of birds 12 concentration 0.06

Table (2) Effect of spraying with local anemone extract and isoflurane on lost weight, loss percentage, and financial losses for the month of March (mean $\pm$ standard error)

Treatments	Weight before transportation (g)	Weight after transportation (g)	lost weight (g)	Loss ratio(%)	Financial losses (Iraqi Dinars)
T1	2668 $\pm$ 20.22	2560 $\pm$ 8.70	108 $\pm$ 0.66 ^a	4.04 $\pm$ 0.17 ^{ab}	426.60 $\pm$ 5.45 ^a
T2	2672 $\pm$ 20.81	2563 $\pm$ 9.39	109 $\pm$ 0.78 ^a	4.07 $\pm$ 0.13 ^a	430.55 $\pm$ 4.65 ^a
T3	2652 $\pm$ 15.72	2559 $\pm$ 11.05	93 $\pm$ 0.72 ^b	3.50 $\pm$ 0.28 ^b	367.35 $\pm$ 4.39 ^b
T4	2519 $\pm$ 17.65	2432 $\pm$ 15.66	87 $\pm$ ^c 0.52	3.45 $\pm$ 0.13 ^c	343.65 $\pm$ 4.28 ^c
T5	2685 $\pm$ 19.10	2604 $\pm$ 7.25	81 $\pm$ 0.48 ^d	3.01 $\pm$ 0.15 ^d	319.95 $\pm$ 4.15 ^d
T6	2565 $\pm$ 16.00	2472 $\pm$ 12.85	93 $\pm$ 0.30 ^b	3.62 $\pm$ 0.14 ^b	367.34 $\pm$ 4.33 ^b
T7	2595 $\pm$ 18.82	2507 $\pm$ 11.02	88 $\pm$ 0.33 ^c	3.39 $\pm$ 0.24 ^c	347.60 $\pm$ 4.21 ^c
T8	2586 $\pm$ 17.11	2470 $\pm$ 15.668	82 $\pm$ 0.74 ^d	3.17 $\pm$ 0.22 ^d	323.90 $\pm$ 4.09 ^d
T9	2615 $\pm$ 22.66	2539 $\pm$ 12.168	76 $\pm$ 0.57 ^e	2.90 $\pm$ 0.43 ^e	300.20 $\pm$ 4.29 ^e
T10	2438 $\pm$ 21.68	2360 $\pm$ 9.97	78 $\pm$ 0.53 ^e	3.19 $\pm$ 0.31 ^{cd}	^e 4.17 $\pm$ 308.10

*The different letters within the same column indicate that there are significant differences ($P > 0.05$) between the treatments. Financial losses were calculated on the basis of the price per kilo of 3950 Iraqi dinars.

T1 Control treatment without spraying, the number of birds is 10. T2 Control treatment without

spraying, the number of birds is 12. T3 The treatment of spraying with anemone extract at a

concentration of 0.02. T4 The treatment of spraying with anemone extract at a concentration of 0.04. T5 Spray treatment with anemone extract at a concentration of 0.06. T6 Spraying treatment with anemone extract at a concentration of 0.02, number of birds 12. T7 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.04. T8 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.06. T9 bird spray and isoflurane, number of birds 10 concentration 0.06 T9 bird spray and isoflurane, number of birds 12 concentration 0.06

Effect of spraying with local anemone flower extract and isoflurane on weight, loss percentage, and economic losses during July.

The results of Table (3) show that there are no significant differences in the weight of the birds before transportation and after transportation, but there are significant differences (0.05) (P) in the weight lost during the month of July during the transportation process. Where it is noted that the lost weight decreased in the spraying treatments, as the treatment recorded T9 (159) gm, followed by T10 (164) gm, T5 (166) gm, T8 (170) gm, T4 (174) gm, T7 (177) gm, and T6 (185) (179) gm and T3 compared to the two control treatments, as T1 and T2 recorded (.193) gm, respectively. This result was reflected in the percentage of loss and economic losses, as the percentage of loss in spraying treatments decreased significantly ($P < 0.05$). The percentage of loss in treatment T9 was (5.94)%, followed by T10, T5, T8, T4, T7, and T3 (6.46, 6.46, 6.22, 6.34, 6.68, 6.68%). (7.04, 6.95)%, and there was no significant difference between these treatments, while T6 and T1 were recorded (7.48, 7.27)%, respectively. There was no significant difference between T1 and T2, and T2 recorded (7.22%). It is also noted that the economic

losses decreased in spraying treatments, as it was recorded as T9 (628.06), followed by T10 (647.80) dinars, T5 (655.70) and T8 (672.97) dinars, respectively. dinars, respectively, compared to the two control treatments T1 (738.65) and T2 (762.35) dinars, respectively.

Effect of spraying with local anemone flower extract and isoflurane on weight, loss percentage, and economic losses during the month of August.

The results of Table (4) show that there are no significant differences in the weight of the birds before and after the transfer, but there are significant differences ($P > 0.05$) in the weight lost during the month of August during the transfer process. It is noted that the weight lost in the spraying treatments decreased, as the treatment recorded T9 (180) gm, followed by T10 (187) gm, T5 (186) gm, T8 (198) gm, T4 (198), T7 (194) gm, and T6 (210) gm). And T3 recorded (204) gm, compared to the two control treatments, as T1 recorded (216) and T2 recorded (.220) gm, respectively. This result was reflected in the percentage of loss and economic losses, where the percentage of loss in the spraying treatments decreased significantly ($P > 0.05$). The percentage of loss recorded the lowest value in treatment T9 (7.11%), followed by T10, T5, T8, T4, T7, and T3 (7.81, 7.71, 7.36, 7.36). 8.29, 7.88, 8.14%, and there was no significant difference between these treatments, while T1 recorded (8.78%) and T2 recorded (9.04%). It is also noted that the economic losses decreased in the spraying treatments, as T9 recorded (711.00), followed by T10 (738.65) dinars, T5 (734.70), T8 and T4 (782.10) dinars, T7 (767.31), T3 recorded (805.80) and T6 (829.50) dinars, respectively, compared to the two treatments. Control T1 (853.20) and T2 (869.00) kD, respectively.

Table (3) Effect of spraying sea anemones and isoflurane on lost weight, loss percentage, and financial losses for the month of July (mean $\pm$ standard error)

Treatments	Weight before transportation (g)	Weight after transportation (g)	lost weight (g)	Loss ratio(%)	Financial losses (Iraqi Dinars)
T1	2569 $\pm$ 23.18	2382 $\pm$ 23.18	187 $\pm$ 2.24 ^b	7.27 $\pm$ 0. 73 ^{ab}	738.65 $\pm$ 11.35 ^b
T2	2672 $\pm$ 24.66	2479 $\pm$ 21.78	193 $\pm$ 3.66 ^a	7.22 $\pm$ 0. 71 ^a	762.35 $\pm$ 13.45 ^a
T3	2572 $\pm$ 27.63	2393 $\pm$ 24.59	179 $\pm$ 2.33 ^d	6.95 $\pm$ 0.68 ^{cd}	707.05 $\pm$ 15.22 ^d
T4	2604 $\pm$ 21.33	2430 $\pm$ 25.30	174 $\pm$ 2.15 ^f	6.68 $\pm$ ^{cde} 0.36	687.30 $\pm$ 11.07 ^f
T5	2567 $\pm$ 19.85	2401 $\pm$ 18.86	166 $\pm$ 2.15 ^h	6.46 $\pm$ 0.28 ^{cde}	655.70 $\pm$ 12.08 ^h
T6	2472 $\pm$ 22.61	2287 $\pm$ 19.94	185 $\pm$ 2.57 ^c	7.48 $\pm$ 0.29 ^b	730.75 $\pm$ 4.58 ^c
T7	2513 $\pm$ 21.99	2336 $\pm$ 26.35	177 $\pm$ 2.38 ^e	7.04 $\pm$ 0.24 ^c	699.15 $\pm$ 5.53 ^e
T8	2678 $\pm$ 23.29	2508 $\pm$ 28.50	170 $\pm$ 2.77 ^g	6.34 $\pm$ 0.43 ^{ed}	671.50 $\pm$ 7.04 ^g
T9	2675 $\pm$ 24.02	2516 $\pm$ 29.79	159 $\pm$ 2.33 ^j	5.94 $\pm$ 0.36 ^f	628.06 $\pm$ 8.34 ^j
T10	2636 $\pm$ 26.61	2472 $\pm$ 24.67	164 $\pm$ 2.16 ⁱ	6.22 $\pm$ 0.44 ^{ef}	647.80 $\pm$ 9.51 ⁱ

*The different letters within the same column indicate that there are significant differences ($P > 0.05$) between the treatments. Financial losses were calculated on the basis of the price per kilo of 3950 Iraqi dinars.

T1 Control treatment without spraying, the number of birds is 10. T2 Control treatment without spraying, the number of birds is 12. T3 The treatment of spraying with anemone extract at a concentration of 0.02. T4 The treatment of spraying with anemone extract at a concentration of 0.04. T5 Spray treatment with anemone extract at a concentration of 0.06. T6 Spraying treatment with anemone extract at a concentration of 0.02, number

of birds 12. T7 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.04. T8 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.06. T9 bird spray and isoflurane, number of birds 10 concentration 0.06 T9 bird spray and isoflurane, number of birds 12 concentration 0.06

Table (4) Effect of spraying sea anemones and isoflurane on lost weight, percentage of loss, and financial losses for the month of August (mean $\pm$ standard error)

Treatments	Weight before transportation (g)	Weight after transportation (g)	lost weight (g)	Loss ratio(%)	Financial losses (Iraqi Dinars)
T1	2460 $\pm$ 27.04	2244 $\pm$ 27.58	216 $\pm$ 4.66 ^b	8.78 $\pm$ 0.84 ^b	853.200 $\pm$ 14.86 ^b
T2	2433 $\pm$ 24.40	2213 $\pm$ 26.72	220 $\pm$ 5.23 ^a	9.04 $\pm$ 0.83 ^a	869.00 $\pm$ 12.55 ^a
T3	2459 $\pm$ 28.57	2255 $\pm$ 29.09	204 $\pm$ 4.61 ^d	8.29 $\pm$ 0.76 ^c	805.80 $\pm$ 17.31 ^d
T4	2432 $\pm$ 27.44	2234 $\pm$ 27.26	198 $\pm$ 0493 ^e	8.14 $\pm$ 0.74 ^{cd}	782.100 $\pm$ 22.26 ^e
T5	2412 $\pm$ 24.84	2226 $\pm$ 25.03	186 $\pm$ 3.39 ^g	7.71 $\pm$ 0.25 ^d	734.70 $\pm$ 9.95 ^g
T6	2438 $\pm$ 25.72	2228 $\pm$ 25.05	210 $\pm$ 5.34 ^c	8.61 $\pm$ 0.52 ^b	829.50 $\pm$ 19.39 ^c
T7	2461 $\pm$ 23.66	2267 $\pm$ 26.55	194 $\pm$ 4.35 ^f	7.88 $\pm$ 0.66 ^{cd}	766.31 $\pm$ 15.88 ^f
T8	2534 $\pm$ 24.02	2336 $\pm$ 24.28	198 $\pm$ 3.54 ^e	7.81 $\pm$ 0.66 ^{cd}	782.10 $\pm$ 12.76 ^e
T9	2510 $\pm$ 29.20	2330 $\pm$ 29.88	180 $\pm$ 4.49 ^h	7.11 $\pm$ 0.62 ^e	711.00 $\pm$ 13. 11 ^h
T10	2540 $\pm$ 29.03	2353 $\pm$ 28.01	187 $\pm$ 3.66 ^g	7.36 $\pm$ 0.66 ^{de}	738.65 $\pm$ 12.63 ^g

The different letters within the same column indicate that there are significant differences ($P > 0.05$) between the treatments. Financial losses were calculated on the basis of the price per kilo of 3950 Iraqi dinars.

T1 Control treatment without spraying, the number of birds is 10. T2 Control treatment without spraying, the number of birds is 12. T3 The treatment of spraying with anemone extract at a concentration of 0.02. T4 The

treatment of spraying with anemone extract at a concentration of 0.04. T5 Spray treatment with anemone extract at a concentration of 0.06. T6 Spraying treatment with anemone extract at a concentration of 0.02, number of birds 12. T7

Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.04. T8 Treatment of spraying with anemone extract, number of 12 birds, at a concentration of 0.06. T9 bird spray and isoflurane, number of birds 10 concentration 0.06 T9 bird spray and isoflurane, number of birds 12 concentration 0.06

Discussion

Fasting before transportation and the process of catching birds and placing them in cages and transporting birds from breeding fields to slaughterhouses during the different months of the year and the high temperature during the transportation process during the summer months are stressful factors as well as the lack of special means of transport for birds such as those in the European Union, in addition to that the slaughter process itself. Once there is one or more of these factors, it has a negative impact on the health of marketed poultry and meat.

The process of transporting birds throughout the year negatively affected the lost weight, the percentage of loss, and economic losses. Broiler. It is noted that the lost weight increased during the seasons of the year due to the different circumstances facing each of the experimental transfers, as the financial losses increased for the two control treatments compared to the rest of the transactions. The total loss of body weight in the transported birds was attributed to the losses from the body itself in addition to a portion of the increased litter and was consistent with what was indicated by [11]. The loss resulting from droppings depends mainly on the period of fasting before transfer and the duration of transfer, which reaches several hours, and this is indicated by [12]. The decrease in body weight during the transfer process may be due to increased excretion as a result of the psychological stresses that the bird goes through, including fear. Or increased movement of the digestive system due to the movement of transport vehicles. This study agrees with what was indicated by [13], who

indicated a decrease in body weight during the process of transporting birds due to the expulsion of waste and glaucoma, so that the bird's body needs 4 to 6 hours to empty the contents of the digestive system, and this is one of the reasons for the decrease in body weight. As [14], indicated, the greater the exposure to hot air currents and the higher temperatures during the transport process, this will lead to the loss of moisture and fluids from the body and thus the occurrence of dehydration and weight loss. This study agrees with what [15], indicated that stressed birds As a result of the transportation process and the temperature rising above the natural limits, they resort to cooling their bodies by evaporating water through the respiratory system and thus increasing the breathing rate, and this in turn leads to dehydration and thus a decrease in weight. It is worth noting that broilers do not contain sweat glands, so thermoregulation may fail during stress Convection, thus accumulating heat and increasing the temperature it is forced to increase the respiration rate to lower the body temperature and dehydration occurs leading to weight loss [16], [17], [18]. To mitigate the harmful effect of transport stress and heat stress, several attempts were implemented using medicinal plants, through dietary intervention through feed and drinking water. 4) Anemone is a sedative substance that contains the compound (1,2,2-trichloro-1,1-difluoro Ethane), which is considered a sedative compound, and this is consistent with what was indicated by [19] and [20] that Anemones contain a compound similar in composition to fluorane, which is considered one of the narcotic compounds. These substances, when they enter the body through inhalation, target and inhibit the production of prostaglandins. These prostaglandins are responsible for the contraction of some muscles and muscles of blood vessels. Prostaglandins are responsible for feeling pain and high temperatures. Its inhibition works to reduce blood pressure and reduce temperatures, and this leads to a reduction in the stress of transport conditions on birds [21]. Anemones are medicinal plants that have many medicinal uses because they

contain flavonoids, saponins, and essential oils. These substances are considered antioxidants, and they are also a sedative and antipyretic substance, as they work to reduce the temperature of birds during the transport process by dissipating heat and reducing the speed of panting, thus reducing loss. Fluids reduce dehydration of the birds, and this in turn reduces weight loss during the transfer process [22]; [23]; [24]; [25]; [9] on the one hand, and on the other hand, these factors work Spraying calms and anesthetizes the birds during the transport process, and thus reduces the physical and psychological stress in the birds, which works to secrete adrenal cortex hormones and secrete corticosterone, which works to break down proteins and manufacture glucose from non-carbohydrate sources [26].

References

- [1] Bessei, W. (2018) Impact of animal welfare on worldwide poultry production. *World's Poult. Sci. J.*, 74, 211–224.
- [2] Vini'cius, M. Bruno, S. Dallago, L. Aline, M. Racanicci, ngela P. Santana, R., I. Cue, Francisco, E., M. Bernal.(2020). Effect of transportation distances, seasons and crate microclimate on broiler chicken production losses *PLoS One* 15(4)
- [3] Pan, L. Ma, X.K., Zhao, P.F., Shang, Q.H., Long, S.F., Wu, Y., Piao, X.S. (2018). Forsythia suspensa extract attenuates breast muscle oxidative injury induced by transport stress in broilers. *Poult. Sci.*, 97, 1554–1563.
- [4] Sun, F.; Zuo, Y. Ge, J. Xia, J. Li, X. Lin, J. Zhang, C. Xu, H. Li, J.L. (2018). Transport stress induces heart damage in newly hatched chicks via blocking the cytoprotective heat shock response and augmenting nitric oxide production. *Poult. Sci.*, 97, 2638–2646
- [5] Hamza, Magrab (2019). Medicinal and aromatic plants and methods of their use in medication. Master Thesis, Faculty of Natural and Life Sciences, Mentouri Constantine University.
- [6] Gebre,W. (2019). Phytochemical Analysis and Antibacterial Activities of Organic Solvent extracts of *Calpurnia aurea* seed, root bark and root. MSc Thesis, Debre- Berhan University -College of Natural and Computational Sciences
- [7] Azmir, J. I., . Zaidul S. M., Rahman, M. M., Sharif, K. M., Mohamed A., Sahena, F., Jahurul, M. H. A., Ghafoor, K., Norulaini, N. A. N. and Omar, A. K. M. (2013). Techniques for Extraction of Bioactive Compounds from Plant Materials *Journal of Food Engineering. Journal of Food Engineering*, Vol 117. Issue 4,, Pages 426-436.
- [8] Prihambodo, T. R., Muhammad, M. S., Novia, Q., Anuraga, J., Irmanida, B., Desianto, B. U. and Nahrowi, N.(2020). Effects of dietary flavonoids on performance, blood constituents, carcass composition and small intestinal morphology of broilers: a meta-analysis. *Anim Biosci* 34:434-442
- [9] Hao D, Xiaojie G, Peigen X. (2017). Anemone medicinal plants: Ethnopharmacology, phytochemistry and biology. *Acta Pharmaceutica Sinica B*.7(2):146–158.
- [10] Duncan, D. B.,1955 . MultiPle ranges and multiPle F-test . *Biometrics* 11 : 1-42.
- [11] Taylor N. L., Fletcher D.L., Northcutt J.K. and Lacy M.P.(2006). Effect of transPort cage height on broiler live shrink and defecation Patterns. *J. APPL. Poultry Res.*, 10: 335-339.
- [12]Taylor, N.L., Fletcher, D.L., Northcutt, J.K., Lacy, M.P., (2001). Effect of transport cage height on broiler live shrink and defecation patterns. *Journal of Applied Poultry Research* 10, 335–339.
- [13] Al-Assaf, Muhammad Hazim Muhammad (2013). The effect of transportation stress on the quality of slaughtered poultry meat. Study for obtaining a higher diploma - College of Veterinary Medicine - University of Mosul.
- [14] Orlic, D., M ., KaPetanov, D. Potkonjak and S. Dragica.2007. The Influence of feed withdrawal and transPortation on weight loss, mortality rate and carcass quality In broiler chickens at slaughter . http://www.usab-tm.ro/vol90_vol7.Pdf
- [15] Genç, L., and Portier, K.M. (2005). Sensible and latent heat productions from broilers in laboratory conditions. *Turk. J. Vet. Anim. Sci.* 29: 635–643.
- [16] Yalcin, S., Ozkan, S., Turkmüt, L., Siegel, P.B. (2001). Responses to heat stress in commercial and local broiler stocks. II. Developmental stability of bilateral traits. *Br Poult Sci.* 42: 153–160
- [17] Mack, L. A., Felter-Gant, J. N., Dennis, R. L., and Cheng, H. W. (2013). Genetic variations alter production and behavioral responses following heat stress in 2 strains of laying hens. *Poult. Sci.* 92:2589. doi: 10.3382/ps.2012-02589
- [18] Yerpes, M. Llonch, P. and X. Manteca. (2021). Effect of environmental conditions during transport on chick weight loss and mortality *Poultry Science* 100:129–137.
- [19] Water ransport (2015). <https://www.iloencyclopaedia.org/contents/part-xviii-65263/transport-industry-and-warehousing/water-transport?start=110>

- [20] Wang, Y., Ming X. X, Zhang, C. P. (2020). Fluorine-Containing Inhalation Anesthetics: Chemistry, Properties and Pharmacology. *Curr Med Chem.* 27(33):5599-5652.
- [21] Jeffrey L., Katsuhiko, S. John, B. Marsha, R. Kana, T. Toshihisa, I. Hyung-Suk, K. Patrick J. . Thomas M. John. D. McNeish, and Laurent P. (2000). The prostaglandin E2 EP1 receptor mediates pain perception and regulates blood pressure *Clin. Invest.* 107:325–331.
- [22] Sivapalan S., Ranjani, (2013). Medicinal uses and pharmacological activities of *Cyperus rotundus* Linn – A Review. Vol.,3, Issue,5.
- [23] Bahi A., and Necib Y. (2014). Hepatoprotective and antioxidant activity of aqueous extract of *Cyperus rotundus* rhizome against mercuric chloride induced oxidative stress. *Int.,J., Pharm.,Sc.,Rev., Rev.,* 27(1), No.,21, Pages:117-123.
- [24] Hao, D.C., Xiao, P.G, Ma, H.,Peng, Y., He, C.N. (2015). Mining chemodiversity from biodiversity: pharmacophylogeny of medicinal plants of the Ranunculaceae. *Chin JNatMed* 2015;13:507–20.
- [25] Panche, A. N.. A. D. Diwan, and. Chandra, S. R.(2016). Flavonoids . Department of Bio-Engineering, Birla Institute of Technology, Mesra, Ranchi, Jharkhand 835215, India. *Journal of Nutritional Science* vol. 5, e47
- [26] Arikan MS, Akin AC, Akçay A, Aral Y, Sariözkan S, Çevrimili MB, Polat M .(2017). Effects of Transportation Distance, Slaughter Age, and Seasonal Factors on Total Losses in Broiler Chickens *Poultry Science* v.19 / n.3 / 421-428



تأثير الرش بمستخلص أزهار شقائق النعمان *anemone coronaria* المحلية والايذوفلوران في خفض الخسائر الاقتصادية الناجمة عن اجهاد نقل فروج اللحم

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• تاريخ استلام البحث 26/02/2023 وتاريخ قبوله 26/03/2023

• البحث مسئل من رسالة ماجستير للباحث الاول .

المستخلص

تم دراسة تجربة تأثير مستخلص شقائق النعمان والايذوفلوران على اجهاد النقل لفروج اللحم المنقول خلال مواسم السنة المختلفة. خلال اشهر شباط واذار وتموز واب ومناطق مختلفة من العراق وبكثافة طيور 10 او 12 طير لكل قفص، اذ تم تقسيم الطيور نوعROSS 308 بواقع 10 معاملات لكل نفلة وثلاث مكررات لكل معاملة. اذ كانت المعاملة T1 سيطرة دون رش وعدد الطيور 10 في القفص. T2 سيطرة دون رش وعدد الطيور 12 في القفص. T3 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 2 % وعدد الطيور 10 في القفص. T4 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 4 % وعدد الطيور 10 في القفص. T5 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 6 % وعدد الطيور 10 في القفص. T6 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 2% عدد الطيور 12 في القفص. T7 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 4 % وعدد الطيور 12 في القفص. T8 رش الطيور بمستخلص ازهار شقائق النعمان المحلية بتركيز 6% عدد الطيور 10 في القفص. T9 رش الطيور بالايذوفلوران بتركيز 6% عدد الطيور 12 في القفص. T10 رش الطيور بالايذوفلوران بتركيز 6% عدد الطيور 12 في القفص. تمت عملية رش الطيور لمدة 5 دقائق قبل عملية النقل وحسب المعاملات أعلاه وكانت مدة النفلة الواحدة 240 دقيقة ± 10 دقائق، من نتائج التجربة يمكن ملاحظة حصول انخفاض معنوي ($p < 0.05$) في معدل الوزن المفقود خلال شهري شباط واذار اذ سجلت معاملات الرش T5، T9، T10 (78،76، 81) غم على التوالي مقارنة مع معاملي T1، T2 (108، 109) غم على التوالي وانعكس ذلك على نسبة الفقد بالوزن حيث سجلت T5، T9، T10 (3.01، 2.90، 3.19)% مقارنة مع معاملي T1، T2 (4.04، 4.07) %، فيما سجلت T9، T10، T5 (300.20، 319.95، 308.10) دينار عراقي اقل الخسائر المالية لشهر اذار اما خلال موسم الصيف يلاحظ انخفاض الوزن المفقود خلال شهري تموز واب في المعاملات T5، T9، T10 (186، 180، 187) غم على التوالي مقارنة مع T1، T2 (216، 220) غم على التوالي ويلاحظ أيضا انخفاض نسبة الفقد في هذه المعاملات اذ سجلت T5، T9، T10 (7.71، 7.11، 7.36) % على

التوالي ويلاحظ انخفاض الخسائر المالية في هذه المعاملات خلال شهر اب اذ سجلت T5 ، T9 ، T10 (711.00،734.70)،
(738.65،) دينار عراقي على التوالي مقارنة مع T1، T2 (853.200، 869.00) دينار عراقي على التوالي
الكلمات المفتاحية: شقائق النعمان، الايزوفلوران، اجهاد، نقل، فروج اللحم