EFFECT OF WATER EXTRACT OF PARSLEY (*PETROSELINUM SATIVUM*) LEAVES IN SOME PRODUCTIVE TRAITS OF BROILERS

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Abstract

The study was carried out in farm poultry of research station in College of Agriculture in Al-Muthanna University, A total 240 chicks, one day old of broiler chickens Ross308 were used, were randomly distributed to four treatments by 60 chicks per treatment with three replicates (20 chicks per replicate). The parsley leaves water extract treatments were added 0, 5, 10 and 15 ml per 1 liter of drinking water of broilers. The results showed that the existence of a significant increase ($p \leq 0.05$) on some productive performance (body weight, weight gain, feed intake, feed conversion, water consumption and production index), with a significant decrease ($p \leq 0.05$) on mortality in all parsley leaves water extract treatments compare with control treatment.

Keywords : Water extract, parsley leaves, productive traits, broilers.

Introduction

The therapeutic properties of medicinal plants are due to the presence of certain chemical compounds in plant tissues that have a certain effect on the human body or animal, these compounds may be alkaloids, clavocidides, aromatic oils or other compounds (Sofowora *et al*., 2013). Medical plants also contain flavonoids, which are considered effective compounds, Which have an important role in improving the health of the body, Reducing the risk of disease, These compounds are also antioxidants which help protect against free radicals (Nantz *et al*., 2006). One of these herbs and medicinal plants is a parsley plant *Petroselinum sativum*, Metal leaves contain more volatile oils than roots. The leaves contain mineral salts, iron, calcium, phosphorus and vitamin A, C (Filho *et al*., 2018). The oil extracted from the parsley plant is an antioxidant and brake of free radicals (Zhang *et al*., 2006). It was found that the leaves of parsley contain the oil known as Myristicin and the most important compounds of this oil is Apiole (Razzaghi-Abyaneh *et al*., 2007). The aim is to study the effect of the use of parsley leaves as a water extract for poultry in some of the productive traits of broilers.

Materials and Methods

The study was carried out in farm poultry of research station in College of Agriculture in Al-Muthanna University, during the period from 5/10/2018 – 10/11/2018. This study was conducted to determine the use of different levels of water extract of parsley leaves in drinking water in some productive traits of broiler chicks. 240 chicks, one day old of broiler chickens Ross308 were used, in four-floor batteries, each floor contains a cage measuring 1 x 1.5 m and were randomly distributed to four treatments by 60 chicks per treatment with three replicates (20 chicks per replicate) were rearing in the batteries containing the cage dimensions of 1.5×1.0m. The treatments as follows: T1 : (control treatment without any addition). T2: add water extract of parsley leaves at 5 ml/liter of drinking water.T3: add water extract of parsley leaves at 10 ml /liter of drinking water. T4: add water extract of parsley leaves at 15 ml /liter of drinking water.

The leaves of the parsley plant were collected, the leaves were well washed, dried and grinded by an electric mill (Morter) and the powder was kept in clean plastic bags, mix dry powder of parsley leaves by 1 g: 2 ml distilled water in a 60 °C water bath for 1 hour, leave the solution for 24 hours at room temperature and aspirate the resulting mixture with sterile medical gauze (Hernandes *et al*., 1994). The studied production characteristics are the weekly mean weight, weekly weight gain, weekly feed consumption and feed conversion. Completely Randomized Design (CRD) was used to study the effect of different coefficients on the studied traits, comparison of the mean differences between the means of the Duncan (1955) multiples test under a significant level of 0.05 and 0.01, SAS (2001) was used in statistical analysis.

Results and Discussions

Table 1 shows no significant differences between all experimental treatments at the first week of the age of chicks in the body weight, in the second week, all parsley leaves water extract treatments showed

significant increased (P≤0.05) compared to the control treatment, in the third and fourth weeks of life, the T4 treatment was significantly higher (P≤0.05) than T2, which was significantly higher (P≤0.05) than the control treatment, at the same time, the results showed no significant differences between T3 and T4 on the one hand and T2 and T3 on the other, at the age of marketing (35 days), treatment T4 showed a significant superiority (P00.05) compared to T3, which was significantly higher (P00.05) than T2 significantly superior to control treatment.

Table 2 shows that there were no significant differences between all treatments in the first week of the chicks age, in the second week there was a significant improvement (P≤0.05) in favor of the extracts of water of parsley leaves compared to control treatment, in the third and fourth weeks the T4 was significantly higher (P≤0.05) on the superior T2 (P≤0.05) on the superior T3 (P≤0.05) on the T2 treatment which in turn significantly exceeded (P≤0.05) the control treatment, there were no significant differences between T4 and T3 on the one hand and T3 and T2 on the other, in the fifth week and cumulative weight gain, the mental superiority (P≤0.05) was in favor of T4 treatment, which exceeded T3 and T2, which significantly exceeded (P≤0.05) on the control treatment.

The increase in body weight and the increase in weight in the water extract of parsley leaves compared to control treatment, may be due to the active substances found in metal sheets such as (phenols, flavonoids, turbines, sapphones, clicosides), which acts as catalysts for the digestive system by increasing the elasticity of the intestinal vasculature of the intestine (Safamehr et al., 2012), thus increasing the secretion of enzymes that help digestion such as trypsin, chymotrypsin, amylase, lipase, (Varely *et al*., 1980; Muthamma *et al*., 2008). Parsley also contains Apigenin, a component of Flavonoids and has an anti-inflammatory effect (Duke, 1985), then the high proportion of absorbed nutrients has a positive role on body weight and the difference in weight gain is evident, there is a positive correlation coefficient between digestion rate, body weight and amount of feed intake (Wood and Enser, 1997). The continued significant superiority of the fourth treatment from the rest of the transactions may be due to the high concentration of water extract and thus increase the active substances in them, the effect of the rise of the active compounds in accumulative form during the duration of the experiment and therefore its effect on the weight of the bird and the weight increase (Hamady *et al*., 2015).

Table 3 indicates that there are no significant differences between all treatments during the first week

of the chicks age, in the second week the significant superiority (P≤0.05) in all the hydrolysis coefficients of the parsley leaves appeared on the control treatment, In the third, fourth and fifth weeks of the age of birds, the relative improvement (P≤0.05) in the feed consumption ratio for T4 was significantly higher (P≤0.05) on T2, which in turn significantly exceeded (P≤0.05), while no significant differences were found between T4 and T3 on the one hand and T3 and T2 on the other hand, in the cumulative feed consumption (P≤0.05), the moral superiority (P≤0.05) was in favor of the fourth treatment, while the third treatment exceeded the second treatment, which in turn exceeded the control treatment significantly (P≤0.05).

The increase in the amount of feed intake for the extracts of water of parsley leaves due to the high concentration of active compounds and flavonoids in the extract of parsley leaves, which have an anti-bacterial effect and pathogenic fungi by destroying their cellular membrane and being an antioxidant (Zhang *et al*., 2005). Parsley is also rich in apigenin, which are highly effective against bacteria such as Escherichia coli, *Salmonella typhi* and *Candida albicans* (Lide, 1997), this reduces the number of harmful microorganisms and thus improves digestion efficiency and increases the consumption of feed (Sandru *et al*., 2017).

Table 4 shows no significant differences in all water extracts of parsley leaves with control treatment during the first week of chicks age, in the second and third weeks of the age of the chicks, was a significant superiority (P≤0.05) in all treatments of the water extract of parsley leaves with the control treatment, in the fourth and fifth week, the mental superiority (P≤0.05) was in favor of treatment T4, which surpassed the treatment T2 and in turn significantly exceeded (P≤0.05), while there were no significant differences between T4 and T3 on the one hand and between T3 and T2 on the other hand, significantly exceeded (P≤0.05) also obtained in the rate of the food conversion coefficient for all the extracts of the parsley leaves on the control treatment.

Note from the results of Table 4. significantly exceeded (P≤0.05) for all treatments of water extract of parsley leaves in the rate of food conversion efficiency compared with the control coefficients, this improvement is due to the role of active compounds that increase the strength of gut tissue, thus efficiently utilizing food components and increasing metabolic rates of food (Skergert *et al*., 2005), as well as an increase in the effectiveness of the secretion of digestive enzymes in the digestive system and microbial balance within the gut (Gülçin *et al*., 2004).

Table 1 : Effect of parsley leaves water extract on the weekly body weight (g) of broilers ± standard error.

Treatments	Age (week)				
	1	2	3	4	5
T_1	2.50 ±155.00	d4.40 ±348.3	d7.26 ± 691.67	d12.58 ±1160.00	d14.53 ± 1706.67
T_2	1.53 ±153.00	c2.90 ± 365.3	c3.28 ± 731.3	c4.61 ± 1255.00	c6.43 ± 1802.67
T_3	1.20 ± 155.67	b2.40 ± 374.67	b1.86 ± 746.33	b1.76 ± 1292.3	b3.76 ± 1859.33
T_4	0.58 ±156.00	a1.45 ± 387.67	a2.33 ± 769.33	a2.85 ± 1307.66	a8.09 ± 1907.67
Sig.	N.S	*	*	*	*

T1 :(control treatment). **T2**: add water extract of parsley leaves at 5 ml/ liter of drinking water. **T3**: add water extract of parsley leaves at 10 ml/liter of drinking water. **T4**: add water extract of parsley leaves at 15 ml / liter of drinking water. N.S no significant differences.*The different letters within the same column indicate significant differences between the totals at the probability level of 0.05.

Table 2 : Effect of parsley leaves water extract on the weekly weight gain (g) of broilers ± standard error.

Treatments	Age (week)					Total
	1	2	3	4	5	
T_1	2.50 ± 115.00	2.20 ± 193.33c	3.33±343.33c	6.00±468.33d	7.26±546.67c	14.52±1666.67d
T_2	1.53 ± 113.00	2.19±212.33b	0.58±366.0b	1.67±523.67c	4.17 ± 547.67c	6.44±1762.67c
T_3	1.20 ± 115.00	2.0 8±219.00b	2.33±371.67b	1.0±546.00a	2.08±567.00b	3.76±1819.33b
T_4	0.58 ± 116.00	2.03±231.67a	3.33±381.67a	3.33±538.33b	5.33±601.00a	7.00±1869.00a
Sig.	N.S	*	*	*	*	*

T1 :(control treatment). **T2**: add water extract of parsley leaves at 5 ml/ liter of drinking water. **T3**: add water extract of parsley leaves at 10 ml / liter of drinking water. **T4**: add water extract of parsley leaves at 15 ml / liter of drinking water.N.S no significant differences.*The different letters within the same column indicate significant differences between the totals at the probability level of 0.05.

Table 3 : Effect of parsley leaves water extract on the weekly feed consumption (g) of broilers ± standard error.

Treatments	Age (week)					Total
	1	2	3	4	5	
T_1	1.53±128.00	1.20±319.33c	3.21±560.00d	9.53±814.66 d	13.05±1081.00 c	21.28±2903.00 d
T_2	1.45±124.67	0.58±330.00b	1.33±568.67 c	4.48±858.66 c	4.10±1107.66 b	9.33±2989.67 c
T_3	1.20±126.67	1.53±338.00a	2.08±579.00 b	1.15±880.00 b	2.03±1123.33 ab	5.51±3047.00 b
T_4	1.15±128.00	0.58±341.00a	1.86±586.33 a	2.03±902.33 a	2.03±1137.33 a	2.52±3095.00 a
Sig.	N.S	*	*	*	*	*

T1 :(control treatment). **T2**: add water extract of parsley leaves at 5 ml/ liter of drinking water. **T3**: add water extract of parsley leaves at 10 ml / liter of drinking water. **T4**: add water extract of parsley leaves at 15 ml / liter of drinking water.N.S no significant differences.*The different letters within the same column indicate significant differences between the totals at the probability level of 0.05.

Table 4 : Effect of parsley leaves water extract on the weekly feed conversion (g diet/ g weight gain) of broilers ± standard error.

Treatments	Age (week)					Total
	1	2	3	4	5	
T_1	0.01±1.11	0.01±1.65 a	0.02±1.63 a	0.02±1.74 a	0.01±1.97 b	0.01±1.74 a
T_2	0.01±1.10	0.02±1.55 b	0.01±1.55 b	0.01±1.64 bc	0.02±2.02 a	0.01±1.70 b
T_3	0.02±1.10	0.01±1.54 b	0.01±1.56 b	0.00±1.61 c	0.01±1.98 b	0.00±1.67 c
T_4	0.01±1.10	0.01±1.47 c	0.02±1.54 b	0.02±1.68 b	0.01±1.89 c	0.01±1.66 d
Sig.	N.S	*	*	*	*	*

T1 :(control treatment). **T2**: add water extract of parsley leaves at 5 ml/ liter of drinking water. **T3**: add water extract of parsley leaves at 10 ml / liter of drinking water. **T4**: add water extract of parsley leaves at 15 ml / liter of drinking water.N.S no significant differences.*The different letters within the same column indicate significant differences between the totals at the probability level of 0.05.

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