EFFECT OF PARSLEY SEEDS (*Petroselinum crispum*) AS FEED ADDITIVE ON PRODUCTIVE PERFORMANCE IN JAPANESE LAYING QUAILS

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ABSTRACT

This study was conducted in the Animal farm, department of Animal Resources, College of Agriculture, University of Tikrit during the period from 11 March,2014 to 11 May,2014 to investigate the effect of adding Parsley seeds (*Petroselinum crispum*) in the diets on feed consumption, feed efficiency and egg production in the performance of Japanese quails (*Coturnix coturnix japonica*).

Ninety six laying quails (72 females and 24 males) at 48 weeks of age were reared in cages and randomly allocated with 4 dietary treatments one was the control group (without any additives) (T1); the others were (0.5 %, 1.0 % and 1.5 % parsley) added to (T2, T3 and T4) respectively, each group consist of 24 birds and divided to 3 Replicates (8 birds). Water and feed were provided *ad libitum* during the experimental period. There were no significant difference in egg weight and feed efficiency among the groups while there were significant in hen day egg production (H.D %), total cumulative egg number, egg mass and feed consumption due to parsley seeds in quail compared with control.

Concluded from this study that use of parsley to improve productive performance of Japanese quails.

Key Words: Japanese quail, Parsley seeds, Productive performance**.**

INTRODUCTION

Feed additives can improve the efficiency of feed utilization and animal performance. However, the use of chemical products especially those of antibiotics and hormones may cause unfavorable effects. Many attempts in the field of animal nutrition are being done to achieve an increase in animal production and thereby profit Abdou (2001). Leafy vegetables play crucial roles in alleviating hunger, food security and that is why they are very important in the diet of many people. They are valuable sources of nutrients where they contribute substantially to proteins, minerals, vitamins, fibers, and other nutrients which are usually in short supply in daily diets Solanke and Awonorin (2002). Some studies indicated that various plants extracts can improve feed

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efficiency, increase carcass quality, decrease the market age of broiler and reduced their rearing cost (Javed *et al*., 2009).

Parsley (*Petroselinum crispum*) is an important culinary herb native to the Miditerranean area. Parsley is a member of the Umbelliferae family that has been employed in the food, pharmaceutical, perfume, and cosmetic industries (Lopez *et al*., 1999). Parsley has been reported to have a number of possible medicinal attributes including, antimicrobial Wong and Kitts(2006), parsley used as a diuretic and the hypoglycaemic activity shown by Ozsoy-Sacan *et al*. (2006). Parsley seed contains 2-8% essential oil with alpha-pinene, apiol, myristicin and tetramethoxyally benzene as the major constituents. It also contains 13-22% fixed oil consisting mainly of petroselinic acid and smaller amounts of linoleic, myristic, myristolic, oleic, palmatic and stearic and 7- octadecenoic acids (Leung ,1980). Abbas (2010) found that dietary parsley resulted in significant improvement in live body weight, feed efficiency and feed intake in broiler chickens. Osman *et al*.(2004) indicated that the high vitamin C, beta carotene, B12, chlorophyll and essential fatty acids content of parsley enhance immunity. Parsley is an immune–enhancing multi–vitamin and mineral complex in green plant form and one of the most important herbs for providing vitamins to the body (Hassan *et al*., 2004). Al-Daraji, *et al*. (2012) found that supplementing the diet of geese with different levels of fresh parsley leaves (80, 160 or 240 gram / day) resulted in significant improvement in most haematological characteristics , parsley could be used as an efficient feed additive for enhancement general physiological status of birds. Tahan and Bayram (2011) they concluded that use dry parsley in the laying quail rations as feed additives have a synergetic effect on body weight gain, egg production and hatchability. Jaffer (2013) concluded that chicks fed with 0.4%, 0.8%, 1.2% mixtures of thyme and parsley had significantly affect ($P<0.05$) in body weight gain, feed intake and feed efficiency compared with control group.

The present study was conducted to determine the effect of dietary Parsley seed *(Petroselinum crispum)* supplementation in the rations of laying quails and their impact on egg weight, feed consumption, feed efficiency, egg mass and egg production.

MATERIALS AND METHODS

This study was carried out in the Animal farm, Department of Animal Resource, College of Agriculture, University of Tikrit. The aim of study was investigating effect of Parsley Seeds (*Petroselinum crispum*) which supplementation in the feed on the productive performance of Japanese quails during the period from 11/3 to 11/5/2014. In this study, a total of 72 female and 24 male quails (*Coturnix coturnix japonica*) at 48 weeks age were used. The ingredients of diet were shown in Table 1.

The experimental groups were divided as control (T1) which were without Parsley supplementation and three treatment groups supplemented with 0.5 % Parsley (T2), 1% parsley (T3) and 1.5% parsley (T4) (respectively) after grinding parsley seed by electric blender and mixing with quails diet according to treatments, each group consisted of 24 animals (18 females and 6 males), each group divided to three replicates which consisted of (6 female and 2 male).

Table1: Ingredients and nutrient composition of experimental diet

Ingredients	%
Yellow Maize	53.1
Soyabean meal 44 %	33.1
Oil	4.0
Lime stone	7.0
salt	0.3
Premix	2.5
calculated composition	
ME (Kcal/kg)	2832.73
Crude Fiber (%)	3.62
Crude Protein (CP %)	20.50
Lysine (%)	1.12
Methionine (%)	0.47
Methionine +cystidine (%)	0.80
Calcium (%)	2.89
Phosphorus (%)	0.40

*Calculated values of Nutrient composition for Ingredients as (NRC, 1994).

Feed and water were provided *ad-libitum*, light was supplied for 16 hours/day throughout the experimental period by used bulbs (60 watt).

The data of feed consumption and eggs weight were recorded every week by used electronic balance also feed efficiency was calculated and expressed as gram feed consumed to produce gram egg (Al-faiadh and Naji,1989).

Egg production was recorded daily. H.D% and total cumulative egg number and egg mass collected per treatment were calculated (Prasad,2000).

The data analysis of variance using the General Linear Model method (SAS,2000). Test of significance for the difference between different treatment means was done by Duncan multiple range test (Duncan,1955).

RESULTS AND DISCUSSION

Table 2 showed significant difference ($P<0.05$) in feed consumption when supplemented with T3 Parsley seeds compared with control,T2 and T4 at first rearing period but no significant effect was observed in feed consumption of birds between treatment groups in second rearing period compared with control while the mean of rearing period showed that birds fed diets supplemented with Parsley seeds had the highest values ($p<0.05$) of feed consumption compared with control this result is supported by Jaffer (2013); Abbas (2010) found that dietary parsley resulted in significant improvement in feed intake in broiler chickens Tahan and Bayram (2011) concluded the use dry parsley in the laying quail rations have a synergetic effect on feed consumption. In Table 2 there were no significant effects ($P>0.05$) in egg weight between treatment throughout first rearing period even mean of total periods but at second rearing period there were significant differs ($P<0.05$) differences between treatments in egg weight compared to T4 this result agreed with Tahan and Bayram (2011) they concluded the use of dry parsley in the laying quail rations as feed additives have a synergetic effect on egg weight compared with control group. The feed efficiency per gram eggs Table 2 have not differs significantly between Treatments during first rearing period and mean of total periods this result were not agreed with Jaffer(2013); Abbas (2010) found that dietary parsley resulted in significant improvement feed efficiency in broiler chickens while similar results were observed by Tahan and Bayram (2011) they concluded the use of dry parsley alone in the laying quail rations have a synergetic effect on feed efficiency compared with control group there were significant differences in T1 and T3 compared with T2 and T4 in feed efficiency.

Table2: Effect of parsley seeds in feed consumption, egg weight and feed efficiency in Japanese laying quail (mean± S.E).

Rearing periods (Week)	Treatments			
	T1	T2	T3	T4
Feed Consumption(gram/bird/day)				
4	28.64±0.49 bc	27.18±0.31 c	31.89±1.00 a	30.49±0.14 ab
8	24.66±0.45	24.90±1.16	26.49±1.91	26.16±0.17
Mean	26.13±0.63 b	26.04±1.19 b	28.61±0.45 a	27.60±0.05 ab
Egg Weight(gram/egg)				
4	11.40±0.36	11.52±0.34	11.52±0.26	10.53±0.25
8	10.72±0.14 a	10.70±0.17 a	10.71±0.08 a	10.10±0.23 b
Mean	11.22±0.26	11.13±0.08	10.63±0.19	10.79±0.37
Feed Efficiency(gram feed/gram egg)				
4	3.89±0.32	3.67±0.08	3.40±0.21	3.89±0.17
8	3.91±0.08 a	3.49±0.10 b	3.99±0.12 a	3.28±0.08 b
Mean	3.60±0.06	3.66±0.17	3.55±0.06	3.35±0.05

*Each value is a mean of three observations.
*the different litters within a raw Means with superscript there are differ significantly (P<0.05).
*T1 Control, T2 0.5% Parsley, T3 1% Parsley and T4 1.5% Parsley.

The hen day egg production (H.D. %) differs significantly during first period between treatments which T3 showed differ significantly (P<0.05) compared with T2 and control Table 3 but in second period T4 showed differ significantly (P<0.05) compared to other treatments. The total mean of rearing periods the Hen Day egg production (H.D %) T3 and T4 showed significant (P<0.05) when compared to T2 and control, this result agreed with Tahan and Bayram (2011), significant increase was noticed in total cumulative egg number in T3 when compared with T2 and control at first rearing period Table 3 but during second rearing period T4 showed significant increase when compared with other treatments the total cumulative egg, in total mean of rearing periods the total cumulative egg was found significant increase(P<0.05) in T3 and T4 compared to T2 and control, the egg mass showed significant increase (P<0.05)

in T3 compared to T2 and the control in first rearing period but in second rearing period T4 showed significant increase compared to T2,T3 and control (Table 3) .

In conclusion supplementing the rations of Japanese laying quail with different levels of Parsley seeds resulted significant improvement in hen day egg production, total cumulative egg number, egg mass and feed consumption while it was not showed significant differ in egg weight and feed efficiency.

Table 3: Effect of parsley seeds in egg mass, total cumulative egg number and H.D% in Japanese laying quail (mean± S.E).

Rearing periods (Week)	Treatments			
	T1	T2	T3	T4
Hen Day Egg Production H.D.% (egg/bird/day)				
4	65.27±3.80 b	64.48±2.96 b	81.74±3.90 a	74.60±1.20 ab
8	58.99±2.98 b	66.66±2.42 b	61.90±3.20b	78.83±1.15 a
Mean	64.78±1.69 c	70.96±0.72 b	76.06±1.75 a	76.78±1.01 a
Total Cumulative Egg Number(egg/bird/period)				
4	18.27±1.06 b	18.05±0.82 b	22.88±1.09 a	20.88±0.33 ab
8	16.51±0.83 b	18.66±0.67 b	17.33±0.89b	22.07±0.32 a
Mean	18.14±0.47 c	19.87±0.20 b	21.29±0.49 a	21.50±0.28 a
Egg Mass(gram/bird/day)				
4	7.46±0.64 b	7.41±0.24 b	9.43±0.66 a	7.86±0.31 ab
8	6.31±0.25 b	7.13±0.27 ab	6.64±0.39 b	7.96±0.16 a
Mean	7.27±0.24 b	7.94±0.18 ab	8.08±0.03 ab	8.31±0.40 a

*Each value is a mean of three observations.
*the different litters within a raw Means with superscript there are differ significantly (P<0.05).
*T1 Control, T2 0.5% Parsley, T3 1% Parsley and T4 1.5% Parsley.

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تاثير إضافة بذور المعدنوس (*Petroselinum crispum*) إلى العليقة في الأداء الإنتاجي لطيور السلوى الياباني .

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المستخلص

أجريت هذه التجربة في حقول الثروة الحيوانية- كلية الزراعة- جامعة تكريت قاعة تربية طائر السلوى خلال الفترة من 11 آذار لغاية 11 أيار 2014. وكان الهدف من التجربة لمعرفة تأثير بذور نبات المعدنوس في الأداء الإنتاجي لطير السلوى الياباني (*Coturnix coturnix japonica*) . تم تقديم العلف والماء بشكل حر خلال فترة التجربة. تضمنت التجربة ستة وتسعين طيرا بعمر 48 أسبوعاً وزعت بشكل عشوائي على أربعة معاملات بواقع 24 طيرا لكل معاملة وكل معاملة تضم 3 مكررات وكل مكرر يضم 8 طيور(6 إناث و 2 ذكور). وكانت المعاملة الأولى هي معاملة السيطرة (بدون اضافة) والمعاملة الثانية احتوت على(0,5% من بذور نبات المعدنوس) أما المعاملة الثالثة فتم إضافة (1% من بذور نبات المعدنوس) في حين احتوت المعاملة الرابعة على(0,5% من بذور نبات المعدنوس). أظهرت نتائج التجربة بعدم وجود فروق معنوية بين المعاملات ($P>0.05$) في معدل وزن البيضة ومعدل كفاءة التحويل الغذائي مقارنة بمعاملة السيطرة لكن المعاملات أظهرت تفوق معنوي ($P<0.05$) في معدل استهلاك العلف و معدل كتلة البيضة ومعدل إنتاج البيض التراكمي ومعدل إنتاج البيض على أساس(H.D) عند استخدام بذور نبات المعدنوس مقارنة بمعاملة السيطرة.

نستنتج من هذه الدراسة أن استخدام بذور نبات المعدنوس ادى الى تحسين الاداء الانتاجي لطيور السلوى الياباني.

الكلمات المفتاحية: طيور السلوى، بذور المعدنوس، الأداء الإنتاجي.