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### Efficacy of Bay Laurel Leaves with Creatine and their Combination on productive Performance and Physiological Characteristics of Bekini Ducklings

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#### Abstract:

The research had been conducted to investigate the impact of Bay laurel leaves with creatine on the productive performance of Bekini ducklings. A total of 15 day old ducklings had been used in the research , those ducklings had been randomly allocated on four equal treatments, the first treatment fed on a basal diet with any Supplement (Control) , the second treatment fed on 8mg/kg feed Bay laurel leaves powder, the third treatment fed on 500mg/kg feed creatine. Meanwhile the fourth treatment fed on a blend of 8mg/kg Bay laurel leaves powder plus 500mg/kg feed. Results had been induced a significant amelioration of the productive performance as well as improvement of some blood traits represented by Packed Cell Volume (pcv), total plasma protein plasma cholesterol.

Keywords: Bay Laurel Leaves, Creatine, Bekini ducks.

#### Introduction:

The latest years had been witnessed Supplementation of natural products to the poultry diets Such as the medicinal plants as well as herb extracts as growth promoters for poultry as an alternative antibiotic growth promoter , (*young et al . 2003*). More over the energetic Complements had been used to improve the performance of growing birds (*Johnes et al. 2004*). Bay Laurel (*Laurus nobilis*) is one of the medicinal herbs that had been used as feed supplement in the poultry diet. Laurel Leaves Contain several active Compounds such as Aliening ,

Leuteolin, Kaempferol, Cinole and glycosides (*Gomez-coronado et al 2003*), these active Compounds play an important role in elimination of gastric disorders in birds and thus it increases the gastric fluids (*Kumar et al. 2001*). Additionally, laurel acts as antifungal and antibacterial potentials with anti-oxidant characteristics (*Eeturk, et al 2006*). Among the energetic Compounds that had been Supplemented to poultry diet is Creatine , Creatine is an amino acid derivative that is Synthesized in side the body form Arginine , Glycine and Methionine (*Johnes et al. 2004*) .Creatine plays on important role in replenishing Adenophosphate (ATP) in the skeletal muscles during its contraction providing high phosphate energy in re phosphorylation of Adenosine Diphosphate (ADP) to ATP after rapid energy expenditure , So it prevents formation of Adenosine Monophosphate (AMP) that Reactive Oxygen species (ROS) to further break down (*Braun and Dodenecker, 2015*).

The previous Scientific literatures had not been reported the effect bay Laurel or creatine an the productive performance of bikini ducks So the current study had been designed to shed more light on the impact of bay laurel leaves and creatine on performance of Bekini ducklings.

### Materials and Methods:

The research had been carried out in the poultry field that belongs to the animal production Techniques/AL-Mussaib Technical institute during the period 23 November till 17 January 2023.

A total of 96 Bekini ducklings, 15 day old had been brought from the native markets and used in the research; those ducklings had been distributed randomly on four equal treatments.

Each treatment had been involved 2 equal replicates (12 bird/replicate).

Birds had been raised in pens (2\*3 meter); the floor of each pen is covered by shaving wood, and fumigated by formaldehyde gas. Feed and water had been supplied ad libitum.

Basal diet had been fed to the birds and the feed supplements had been added to the basal diet. Bay laurel leaves had been obtained from the native market, those leaves had been grinded in order to become powder, and it was added to the basal diet at a rate 8gm/kg feed.

Creatine had been supplied from ON company (American company), it contained creatine Manoldehyde –Creatine has been added to the basal diet at rate of 500mg/kg feed.

The basal diet had been formulated in table1.

**Table 1: Ingredients and chemical Composition of the basal diet**

Ingredient	G/kg
Maize	484.57
Soybean meat	275.85
Wheat	150.00
Sun flower oil	10.00
Lime stone	60.45

Dicalcium phosphate	11.45
NaCl	3.50
Vitamin premix	1.00
Mineral premix	1.0
DL_ methionine	1.74
Lysine Hcl	o.44

Calculated contents (per/kg)

Metabolizable energy, kcal	2.800
Crude protein	185.00
Methionine	4.50
Lysine	10.00
Threonine	6.90
Ca	26.00
Available p	3.50
Na	1.60

NRC, 1994

Treatments had been arranged as follow:

Treatment 1(T1): Basal diet without any supplement (control).

Treatment 2(T2): Bay laurel leaves powder 8mg/kg feed.

Treatment 3(T3): Creatine 500 mg/ kg feed.

Treatment 4(T4): Bay laurel leaves powder 8mg/kg plus creatine 500mg/kg.

The experiment had been lasted for 8 Weeks.

Birds had been weighed weekly to evaluate the live body weight gains. Utilized feed and feed conversion ratio had been calculated weekly.

At the end of the experiment, blood samples had been collected from birds in the treatments by using the wing vein in order to evaluate some of the blood characteristics.

Packed Cell Volume (PCV %) had been evaluated according to (Haen, 1995).

Total plasma protein (mg/100ml) had been evaluated according to (Varley etal.1980).

Plasma cholesterol had been evaluated according to (Richmond, 1973).

Results had been analyzed depending on Completely Randomized Design (CRD) according to (SAS 18).

Differences between means had been calculated according to Duncan Multiple Test (Duncan, 1995).

## Results and Discussion:

Supplemented laurel leaves powder with creatine to the duckling rations had no significant effect on live body weights of ducklings in the first week of the experiment (Table 2). Mean while these feed supplements caused significant effect ( $P < 0.05$ ) on the body weights in the second week with highly significant effect ( $P < 0.01$ ) from the third to the eighth week in comparison with the control treatment

Table 2: Mean body weights of ducklings ( $\pm$  SE) fed on Laurel powder with creatine.

week	Treatments				P
	T1 (Control )	T2 laurel (8gm/kg)	T3 creatine (50mg/kg)	T4 laurel +creatine	
1	0.50 $\pm$ 199.50a	197.50 2.50 $\pm$ a	199.00 1.00 $\pm$ a	199.50 0.50 $\pm$ a	N.S.
2	$\pm$ 462.50 12.50b	477.50 2.5 $\pm$ ab	482.50 2.50 $\pm$ ab	492.50 2.50 $\pm$ a	*
3	12.50 $\pm$ 762.50 c	795.00 5.00 $\pm$ c	877.50 22.50 $\pm$ b	947.50 7.50 $\pm$ a	**
4	1087.50 12.50 $\pm$ c	1150.00 25.00 $\pm$ c	1250.00 0.00 $\pm$ b	1400.00 25.00 $\pm$ a	**
5	1462.50 12.50 $\pm$ c	1487.50 12.50 $\pm$ c	1700.00 0.00 $\pm$ b	1812.50 37.50 $\pm$ a	**
6	1800.00 25.00 $\pm$ b	1850.00 25.00 $\pm$ b	2150.00 50.00 $\pm$ a	2325.00 75.00 $\pm$ a	**
7	2150.00 25.00 $\pm$ c	2225.00 25.00 $\pm$ c	2577.50 77.50 $\pm$ b	2775.00 25.00 $\pm$ a	**
8	2512.50 37.50 $\pm$ b	2550.00 50.00 $\pm$ b	3012.50 187.50 $\pm$ a	3225.00 25.00 $\pm$ a	**

Means carrying different letters under the same column differ significantly in between.

N.S.: Non significant \*= $P < 0.05$  \*\*= $P < 0.01$

Amelioration of duckling body weights in the third and fourth treatments may be attributed to the laurel powder and creatine with their combination.

Laurel plays an important role in increasing the body weights of duckling due to the active substances in the leaves such as flavonoids, Linalool and phenols which motivate and stimulate the digestive enzymes such as chymotrypsin, lipase, amylase and trypsin (Milau et al. 2008), so the digestion process increases the benefit of the ducklings from the diet, these results are in agreement with (Ali and AL-Shuhab 2021).

Who mentioned improvement of the production performance of broiler chickens that fed on supplemented diets with 1, 2 and 3 gm/kg feed.

Likewise creatine enhances the elevation of Insulin like Growth Factor (IGF-1) in the blood of the birds that increases the muscular mass of the duckling bodies.

These results were consentient with (AL-Shammarei, 2017)

Who had indicated that creatine 100mg/kg feed of creatine enhanced live body weights of broiler chickens.

Results of table (3) had illustrated that supplementation the diets of duckling with laurel leaves with creatine enhanced weight gains of the growing duckling.

Weight gains of ducklings had been ameliorated significantly ( $P < 0.05$ ) during the first and fifth week in the third and fourth treatments where as it were highly significant ( $P < 0.01$ ) in the second fourth and the total weight and non-significant in the sixth and seventh week.

Table 3: Weigh gains of duckling fed on supplemented diet with Laurel leaves and creatine.

Week	Treatments				P
	T1 (Control )	T2 laurel (8gm/kg)	T3 creatine (50mg/kg)	T4 laurel +creatine	
1	12.00± 263.00 b	280.00 5.00±ab	283.50 3.50±ab	293.00 3.00±a	*
2	0.00± 300.00c	317.50 7.50±c	395.00 20.00±b	455.00 5.00±a	**
3	25.00± 325.00 b	355.00 20.00±b	372.50 22.50±ab	452.50 17.50±a	*
4	0.00± 375.00c	337.50 12.50±d	450.00 0.00±a	412.50 12.50±b	**
5	12.50± 337.50 b	362.50 12.50±b	450.00 50.00±ab	512.50 37.50±a	*
6	0.00± 350.00a	375.00 0.00±a	427.50 27.50±a	450.00 50.00±a	N.S.

7	12.50± 362.50 a	325.00 25.00±a	435.00 110.00±a	450.00 50.00±a	N.S.
Total	2313.00 38.00±b	2352.50 47.50±b	2813.50 188.50±a	3025.50 24.50±a	**

Means carrying different letters differ significantly in between in the same column.

N.S. =Non-significant. \*=P<0.05      \*\*=P<0.01

Supplemented blend of laurel leaves with creatine had improved the weekly weigh gains of the growing duckling in the third and fourth treatments during the first till the fifth week as well as the total weight gains, this improvement may be attributed to the active compounds of the laurel such as cinol, eugenol, linalool and tripineol (Karaalp and Genc, 2013).

More over creatine affects the weekly weight gains of the growing duckling since creatine causes on increased sizes of the muscular cells and it helps the water holding capacity of the muscles (Nissen and Young, 2006).

Results of supplementation of laurel leaves with creatine had indicated low feed consumption of duckling in comparison with the control non supplemented (Table 4) with these supplements.

The differences were significant (P<0.05) in the first, fourth and the sixth week as well the total feed consumption.

Moreover these differences were highly significant (P<0.01) in the second and fifth week.

Table 4: Feed Consumption of ducklings fed supplement of Laurel leaves with creatine (±SE)

Week	Treatments				P
	T1 (Control )	T2 laurel (8gm/kg)	T3 creatine (50mg/kg)	T4 laurel +creatine	
1	25.00± 675.00 b	737.50 12.50±a	762.50 12.50±a	772.50 2.50±a	*
2	1125.00 25.00±a	1237.50 37.50±b	1265.00 10.00±b	1362.50 12.50±c	**
3	1437.50 62.50±a	1352.50 2.50±a	1362.50 12.50± a	1425.00 25.00±a	N.S.
4	1675.00 75.00±ab	1625.00 25.00±b	1825.00 25.00±a	1752.50 2.50±ab	*
5	1700.00	1775.00	2150.00	2425.00	**

	50.00±b	75.00±b	150.00±a	25.00±a	
6	0.00± 1575.00 b	1775.00 25.00±ab	2175.00 175.00±a	2125.00 125.00±a	*
7	1837.50 62.50±a	1650.00 100.0±a	2012.50 337.50±a	2250.00 250.00±a	N.S.
Total	10025.00 200.0±b	10152.50 227.50±b	11552.50 647.50±ab	12112.50 357.50±a	*

Means carrying different letters under the same column significantly different in between.

N.S. =Non-significant. \*=P<0.05      \*\*=P<0.01

Low level of feed consumption by ducklings may be attributed to the effect of the effect of the essential oils contained in the Laurel leaves (Karaalp and Genc, 2013).

Creatine may be involved in reducing feed consumption since it is a critical precursor in production of muscle energy.

More over creatine is a compound of arginine, glycine and methionine (Amer et al.2018).

Results of the table 5 had illustrated better feed conversion ratio of duckling that supplemented with creatine with laurel leaves in comparison with the non-supplemented birds.

The differences were non-significant between treatments in the first, fifth, sixth and the seventh week of the experiment.

Meanwhile these differences had been significant (P<0.05) in the third and fourth week as well as the total feed conversion ratio.

Supplementation of creatine in the third treatment and the blend of laurel leaves with creatine in the fourth treatment showed highly significant effect (p<0.01) in the second week as compared with the first control treatment and the second treatment.

Table5 :Effect of Supplementing laurel leaves with creatioe on feed conversion in duckings(±SE)

Week	Treatments				P
	T1	T2	T3	T4	
1	0.05± 2.55a	0.05± 2.55 a	0.05± 2.65a	0.00± 2.60 a	N.S.
2	0.10± 3.70a	0.10± 3.70 a	0.15± 3.15 b	0.05± 2.95 b	**
3	0.15± 4.35a	0.15± 4.35ab	0.15± 3.65b	0.15± 3.15b	*

4	0.20± 4.40ab	0.20± 4.40a	0.05± 4.05b	0.10± 4.20b	*
5	0.00± 5.00a	0.00± 5.00 a	0.20± 4.80a	0.25± 4.75 a	N.S.
6	0.00± 4.50a	0.00± 4.50 a	0.00± 5.00a	0.25± 4.75 a	N.S.
7	0.00± 5.00a	0.00± 5.00 a	0.35± 4.65a	0.00± 5.00 a	N.S.
Total	0.00± 4.21a	0.00± 4.21a	0.08± 3.99b	0.05± 3.91b	*

N.S. = Non Significant \* = (P< 0.05) \*\*=(P<0.01)

Amelioration of feed conversion ratio of duckling in treatment of supplementation of laurel leaves with creatine in the third and the fourth treatments may be due to the effect of laurel supplement, since supplemented diet with laurel leaves could change some of the biochemical parameters of duckling performance (*karaalp and Genc, 2013*).

On the other hand creatine had played an important role in improvement of feed conversion ratio of ducklings since creatine is an amino acid that processed from arginine, glycine and methionine; these amino acids are effective in performance of all types of birds (*AL- Shammrei, 2017*).

The hematological characteristics had been indicated to highly significant (P<0.01) transcendancy of packed cell volume (PCV) in duckling fed on supplement of laurel leaves and or the plend of them , it was 41.0,42.10 and 41.50% in the second ,third and fourth treatment respectively where as it was 38% in the first control group (Table5) .

No significant transcendancy of total plasma protein level between treatment, this means that fed supplements did not affect the level of cholesterol in duckling ,these results were 3.70, 4.15,and 4.30 mg/ml in the first, second , third and fourth treatment respectively (table5).

Supplementation of laurel leaves with creatine had induced a highly significant (P<0.01) reduction of plasma cholesterol levels in duckling in the second, third and fourth treatment, these results were 123.10, 123.75and 120.50 mg/100ml in the second, third and fourth treatment where as it was 126.70 mg/100in the first control treatment

Table 6: Effect of supplementation of laurel leaves with creatine on some blood traits in ducklings.

Traits	Treatments				P
	T1	T2	T3	T4	
pcv (%)	0.20± 38.00 b	0.30± 41.10 a	0.95± 42.65 a	0.50± 41.50 a	**
Total plasma protein	0.10± 3.70a	0.15± 4.15a	0.25± 4.05a	0.09± 4.30a	N.S.



mg\ml					
Plasma cholesterol	126.70	123.10	123.75	120.50	**
mg\100ml	0.60±a	0.60±b	0.25±b	0.50±c	

N.S. = Non Significant \* = (P< 0.05) \*\*=(P<0.01)

The significant improvement of some of the hematological traits in the blood plasma of duckling that included packed cell volume, plasma total protein and plasma cholesterol may be attributed to the active components of laurel leaves (Karaalp and Genc, 2013) as well as creatine (AL-Shammari and Fahad 2017).

It was concluded that supplementing bay laurel leaves with creatine had improved the productive performance and some hematological characteristics.

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