

IMPACT OF *CYPERUS ROTUNDUS* CRUSHED SUPPLEMENTATION ON PRODUCTIVE PERFORMANCE OF LAYER CHICKEN


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ABSTRACT: This study was conducted in poultry farm in animal resources department, college of agriculture, Diyala University to determine the effect of adding different levels of *Cyperusrotundus* crushed in productive performance and some characteristic of characteristic of eggs quality of layer hens chicken by use of 208 hens of lohman brown 50 weeks age. The treatments was 0, 0.4, 0.8 and 1.2 g/kg diet (T1, T2, T3 and T4) respectively. The results shows that there was no significant different ($p \leq 0.05$) in hen day production, cumulative eggs, eggs weight, eggs mass, feed conversion compared with control treatments. There were significant different in some eggs quality especially shell thickness, shell weight and Hugh unit.

Key words: *Cyperusrotundus*, Hens, Egg production

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INTRODUCTION

The developments in poultry industry especially in high production strains came with weak healthy immunity system and the highly using of drugs which have a constitutive effects in human health therefore there was a new ideas to replace them with herbals that had Impacts in improving both the immune and digestion Impacts in improving both the immune and digestion, digestive and Inhibition of harmful bacteria (shanoon2011). Cyprus is a medicine herbal and used in stress, nutrition, in treatments of some diseases (mousa2008) it contained of cyperone, β -selinene cyperol and caryophyllene (Jirovetz et al,1994, Kilani et al 2004) and have antioxidants effects because it content ascorbic acid, flavonoids and linoleic acid (Trier et al, 1988) and it have a benefit in thyroxin hormone production (Feide2003) which effects in metabolic of body. The Cyprus have enzymes like lipase and amylase action in digestive and hassan2011 found that adding Cyprus to diet of quail have a significant effects in productive performance. Therefore, the present study was designed to determine the effects of Cyprus on the productive of layer hens lohman.

MATERIALS AND METHODS

The use of 180 hens lohman brown, 50 weeks of age and randomly divided to four treatments 45 hens each and three replicates 15 each the treatments as follow T1 as control group (received standard diet without and additive), T2, T3, and T4 were 4, 8 and 12 g cyprus /kg diet. The hens were housed on floor pens 150×200 cm. The diet used in this experiment as showed in table-1. The data were collected at every two weeks for production characteristic hen day production HD, eggs weight, eggs mass, cumulative eggs production, feed consumption, feed conversion and data for eggs quality characteristic shell thickness and weight, shell relative weight, albumen and yolk height, Hugh unit, yolk and albumen weight, yolk index and color collected at every four weeks. The data collected were design as CRD (complete random design) and analysis by use SPSS and the Duncan's Multiple Range (Duncan 1951) Test was used to test the different between treatments means.

Table-1: Diet composition and Calculated analysis

Ingredient and analysis	(%)	Ingredient and analysis	(%)
Corn	66.40	Salt (NaCl)	0.41
Soybean meal (48% CP)	19.20	Coccidiostat	0.05
Wheat	6.00	D,L-Methionine	0.07
Dicalcium phosphate	1.20	Selenium premix3	0.10
Limestone	6.10	Mold inhibitor	0.05
Mineral premix1	0.05	Lysine HCl	0.05
Vitamin premix2	0.10	Choline chloride	0.12
Total	100.00		
Calculated analysis4			
Crude protein, %	16.03	Methionine + cysteine, %	0.63
AME, kcal/kg	2,918	Calcium, %	2.70
Lysine, %	0.82	Available phosphorus,%	0.42

1-Mineral premix contained the following in milligrams per kilogram Of diet: manganese, 120; zinc, 120; iron, 180; copper, 10; iodine, 2.5; Cobalt, 1.0.
2-Vitamin premix contained the following per kilogram of diet: vitamin A, 13,200 IU; cholecalciferol, 4,000 IU; vitamin E, 66 IU; vitamin B12,

RESULTS AND DISCUSSION

Table 2 showed that there was no signifying effects to cypurs treatments on HD production in all experiment period and in general mean and table 3 results refer no different were found in feed consumption for all Cyprus treatments compared with control group and even in general mean. Table 4 showed eggs weight and there was no different between all treatments for this subject , all this results are reflex on results of tables 5, 6, 7, for cumulative eggs production, egg mass, feed conversation and we found that there were no signifying effects to cypurs treatments compared to control for all treatments period and in general mean. The effects of Cyprus on eggs quality showed in table 8 which refer to there was no signifying effects to cypurs treatments on egg shell in thickness, weight and shell weight in first period but in second period the effects was a significant ($p \leq 0.01$) in this characteristics, T3 give significant($p \leq 0.01$) in this characteristics , T3 give a highest value in egg thickness respective by T4 (0.39, 0.38 mm) and T2 was not different significant from control,T4 sign a significant effect in shell weight(7.76g) compared with T3,T2 and T1 (7.20 , 7.17 ,6.48g), the same think in shell weight percentage,T4 different significant from control group it recorded 11.26% compared to 9.55% for control.

Table 2. Effect of Cyperus powder supplementation on HD egg production of laying hens

Period	Treatments (Means \pm SE)				Significant level
	T1	T2	T3	T4	
1	84.6 \pm 5.1	86.5 \pm 3.7	83.7 \pm 5.1	85.6 \pm 4.2	N.S.
2	82.7 \pm 6.1	84.2 \pm 5.3	83.1 \pm 3.6	85.4 \pm 5.8	N.S.
3	81.5 \pm 3.8	83.3 \pm 4.4	82.4 \pm 5.7	84.6 \pm 6.2	N.S.
4	80.7 \pm 4.3	82.5 \pm 6.6	82.2 \pm 3.7	83.8 \pm 3.6	N.S.
Average	82.4 \pm 3.1	84.1 \pm 3.0	82.9 \pm 2.5	84.9 \pm 4.3	N.S.

A, 13,200 IU; cholecalciferol, 4,000 IU; vitamin E, 66 IU; vitamin B12, 3-4.6 ug; riboflavin, 13.2 mg; niacin, 110 mg; pantothenic acid, 22 mg; vitamin K, 4 mg; folic acid, 2.2 mg; thiamine, 4 mg; pyridoxine, 8 mg; And biotin, 252 ug. 3Selenium premix contained sodium selenite (Na₂SeO₃), providing0.3 mg/kg.
4- Data expressed on a percentage of dry matter basis. Formulations Confirmed by proximate analyses

The general means of treatments showed the same effects to cypurs treatments and that maybe caused by effective composition to Cypurs like flavonoids and Isoflavone which have steroid hormones like effect (Harborn et al 1975) and glycosides (Raut et al 2008, Xu et al 2006) which helpful for sex hormones production especially Estrogen which work to modify storage calcium in bones to blood to carry it to uterus to made shell of egg (Al- faead & Najee, 1989). From table 9 we see there was no significant different in yolk weight, index and color in all experiment period. In table10 wesee there was no significant different in albumen weight and high when Hugh unit showed significant different for all Cypurs treatments compared with control group in all experiment period and in general mean and we see T4 have the highest value in period1and2 and(91.1, 89.6) follow by T2 and T3 and T1 give a lowest value (86.7,85.7) , in general mean came T4,T3and T2 have significant different compare with T1(control) it recorded (90.4,88.9,89.6and 85.7) and may be that caused by raising of myosin protein which give a gelatin shape for albumen (Al- faead& Najee, 1989).

Table 3. Effect of Cyperus powder supplementation on feed consumption of laying hens (g/hen/day)

Period	Treatments (Means \pm SE)				Significant level
	T1	T2	T3	T4	
1	117 \pm 1.4	115 \pm 1.7	118 \pm 0.6	117 \pm 2.8	N.S.
2	119 \pm 0.4	118 \pm 0.8	116 \pm 4.6	116 \pm 3.1	N.S.
3	118 \pm 1.8	120 \pm 0.0	117 \pm 1.2	116 \pm 2.4	N.S.
4	120 \pm 0.0	117 \pm 2.2	118 \pm 0.6	117 \pm 2.7	N.S.
Average	119 \pm 0.3	118 \pm 0.8	117 \pm 2.3	117 \pm 2.4	N.S.

Table 4. Effect of Cyperus powder supplementation on egg weight of laying hens (g /egg)

Period	Treatments (Means \pm SE)				Significant level
	T1	T2	T3	T4	
1	66.2 \pm 1.7	67.4 \pm 0.8	65.0 \pm 2.6	67.5 \pm 1.4	N.S.
2	66.0 \pm 1.2	66.8 \pm 2.1	67.2 \pm 0.7	65.9 \pm 1.8	N.S.
3	66.5 \pm 2.2	67.7 \pm 0.6	68.2 \pm 1.5	67.8 \pm 1.5	N.S.
4	67.1 \pm 0.9	67.5 \pm 2.4	68.3 \pm 1.6	68.0 \pm 2.0	N.S.
Average	66.5 \pm 1.6	67.4 \pm 1.3	67.2 \pm 1.8	67.6 \pm 1.4	N.S.

Table 5. Effect of Cyperus powder supplementation on complete egg production of laying hen (egg/hen/14days)

Period	Treatments (Means \pm SE)				Significant level
	T1	T2	T3	T4	
1	11.8 \pm 0.4	12.1 \pm 0.8	11.7 \pm 0.7	12.0 \pm 1.2	N.S.
2	11.6 \pm 0.7	11.8 \pm 1.1	11.6 \pm 0.4	12.0 \pm 0.5	N.S.
3	11.4 \pm 0.6	11.7 \pm 1.3	11.5 \pm 1.2	11.8 \pm 0.7	N.S.
4	11.3 \pm 1.0	11.6 \pm 1.3	11.5 \pm 1.1	11.7 \pm 0.8	N.S.
Average	11.5 \pm 1.1	11.8 \pm 0.7	11.6 \pm 0.5	11.9 \pm 0.9	N.S.

*T1 control without any additive

*T2, T3and T4 feed with cyperus 0.4, 0.8and 1.2 gm/kg diet

*The different letter a,b,c refer to significant different

Table 6. Effect of Cyperus powder supplementation on daily egg mass (g eggs/hen/day)

Period	Treatments (Means ± SE)				Significant level
	T1	T2	T3	T4	
1	56.0 ± 0.7	58.31 ± 1.7	54.4 ± 2.1	57.8 ± 1.2	N.S.
2	54.6 ± 1.8	56.2 ± 1.5	55.8 ± 1.4	56.5 ± 2.6	N.S.
3	54.2 ± 2.7	56.5 ± 1.1	56.1 ± 1.3	57.4 ± 0.9	N.S.
4	54.1 ± 1.1	55.6 ± 2.5	55.2 ± 1.8	56.6 ± 1.5	N.S.
Average	54.7 ± 1.7	56.6 ± 0.8	55.4 ± 0.7	57.1 ± 2.6	N.S.

Table 7. Effect of Cyperus powder supplementation on feed conversion efficiency (g feed/ g egg)

Period	Treatments (Means ± SE)				Significant level
	T1	T2	T3	T4	
1	2.09 ± 0.17	1.97 ± 0.22	2.17 ± 0.32	2.02 ± 0.21	N.S.
2	2.18 ± 0.13	2.10 ± 0.15	2.08 ± 0.11	2.05 ± 0.16	N.S.
3	2.17 ± 0.25	2.13 ± 0.11	2.09 ± 0.23	2.02 ± 0.31	N.S.
4	2.22 ± 0.16	2.10 ± 0.28	2.14 ± 0.16	2.07 ± 0.14	N.S.
Average	2.17 ± 0.19	2.08 ± 0.21	2.12 ± 0.17	2.04 ± 0.24	N.S.

*T1 control without any additive

*T2, T3 and T4 feed with cyperus 0.4, 0.8 and 1.2 gm/kg diet

* The different letter a,b,c refer to significant different

Table 8. Effect of Cyperus powder supplementation on Characteristic of egg shell Quality of laying hens

Characteristic	Treatments (Means ± SE)				Significant level
	T1	T2	T3	T4	
The first period (age 50 – 53 week)					
Shell thickness (mm)	0.36 ± 0.02	0.37 ± 0.01	0.38 ± 0.01	0.38 ± 0.01	N.S.
Shell weight (g)	6.24 ± 0.37	6.69 ± 0.22	6.58 ± 0.50	6.74 ± 0.18	N.S.
Shell relative weight (%)	9.45 ± 0.12	10.01 ± 0.58	9.79 ± 0.23	10.18 ± 0.27	N.S.
The second period (age 54 – 57 week)					
Shell thickness (mm)	0.35 ± 0.03 ^{b**}	0.36 ± 0.02 ^b	0.39 ± 0.01 ^a	0.38 ± 0.02 ^a	0.01
Shell weight (g)	6.48 ± 0.19 ^b	7.17 ± 0.23 ^{ab}	7.20 ± 0.17 ^{ab}	7.76 ± 0.08 ^a	0.05
Shell relative weight (%)	9.65 ± 0.31 ^b	10.62 ± 0.19 ^{ab}	10.54 ± 0.21 ^{ab}	11.26 ± 0.2 ^a	0.05
General average					
Shell thickness (mm)	0.36 ± 0.01 ^b	0.37 ± 0.00 ^{ab}	0.39 ± 0.01 ^a	0.38 ± 0.02 ^{ab}	0.05
Shell weight (g)	6.36 ± 0.12 ^b	6.39 ± 0.09 ^{ab}	6.89 ± 0.14 ^{ab}	7.25 ± 0.17 ^a	0.05
Shell relative weight (%)	9.55 ± 0.11 ^b	10.32 ± 0.18 ^{ab}	10.17 ± 0.30 ^{ab}	10.72 ± 0.13 ^a	0.05

* T1 control without any additive

*T2, T3 and T4 feed with cyperus 0.4, 0.8 and 1.2 gm/kg diet

* The different letter a,b,c refer to significant different

* T1 control without and additive

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* T1 control without any additive

*T2, T3 and T4 feed with cyperus 0.4, 0.8 and 1.2 gm/kg diet

* The different letter a,b,c refer to significant different

Table 10. Effect of Cyperus powder supplementation on Characteristic of egg albumin quality of laying hens

Characteristic	Treatments (Means ± SE)				Significant level
	T1	T2	T3	T4	
The first period (age 50 – 53 week)					
Albumin weight (g)	39.6 ± 0.7	39.7 ± 1.2	40.8 ± 2.2	40.2 ± 0.8	N.S.
Albumin high (mm)	7.8 ± 0.19	8.57 ± 0.24	8.50 ± 0.41	8.60 ± 0.21	N.S.
Haugh unit	86.7 ± 1.2 ^{b**}	90.8 ± 2.3 ^a	90.3 ± 1.6 ^a	91.1 ± 1.4 ^a	0.01
The second period d (age 54 – 57 week)					
Albumin weight (g)	8.39 ± 1.5	39.6 ± 2.3	41.5 ± 2.6	41.5 ± 2.1	N.S.
Albumin high (mm)	7.52 ± 0.39	8.16 ± 0.33	7.99 ± 0.25	8.43 ± 0.27	N.S.
Haugh unit	84.7 ± 1.6 ^b	88.4 ± 2.8 ^a	87.2 ± 2.3 ^a	89.6 ± 1.3 ^a	0.01
General average					
Albumin weight (g)	39.7 ± 1.4	39.7 ± 2.1	41.2 ± 1.8	40.9 ± 1.6	N.S.
Albumin high (mm)	7.66 ± 0.34	8.37 ± 2.80	8.23 ± 0.35	8.52 ± 0.26	N.S.
Haugh unit	85.7 ± 0.8 ^b	89.6 ± 1.6 ^a	88.9 ± 1.9 ^a	90.4 ± 1.0 ^a	0.01

* T1 control without any additive

*T2, T3and T4 feed with cyperus 0.4, 0.8and 1.2 gm/kg diet

* The different letter a,b,c refer to significant different

* T1 control without any additive

*T2, T3and T4 feed with cyperus 0.4, 0.8and 1.2 gm/kg diet

* The different letter a,b,c refer to significant different

* T1 control without any additive

*T2, T3and T4 feed with cyperus 0.4, 0.8and 1.2 gm/kg diet

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ISSN : 0976-4550

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