



Full Length Research Article

STUDY THE CORRELATION AND REGRESSION EQUATION FOR SOME ECONOMIC TRAITS ON BROILER ROSS 308 FED ON NUTRITION WITH DIFFERENT LEVELS OF PARSLEY OIL

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ABSTRACT

To study the correlation and regression equations for some economic traits as Body weight, length, keel length, dressing percentage, carcass weight, breast and legs weights on Broiler Ross308 fed on different levels of parsley oil. 200 chicks one day old were reared till 35 days, grouped for four nutrient treatments 50 chick/treatment 2 replicates as (T1 control group without parsley oil, T2 nutrient with 15% parsley oil, T3 nutrient with 30% parsley oil and T4 nutrient with 45% parsley oil). Each of live body weight B.W, body length B.L, keel length K.L were recorded weekly. At 5th week dressing percentage, carcass weight, Breast and legs weight were recorded too. Results indicated that using parsley oil with any level 15%, 30%, 45% with nutrition treatments improve bird performance which appears clearly with the highest correlation and regression values among study traits compared with the control so that gives a good relation and indicator between body weight or measurements that why it could be used to predicate programs with highly final body composition to be used as a phenotypic selection index in order to reduce cost rearing or period with highest economic gain also.

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INTRODUCTION

It seems that, or still the aim goal for any broiler breeder is to get higher weight with shorter rearing period with lower cost and good gain, so to have that, they almost rearing broiler in closed system in order to control nutrition or any other changes such as mining or health, but in spite of that the high cost of nutrition which cost almost 60-70% from whole costs, still the main changes that affect breeder to gather better performance with perfect benefit and absolute usage of nutrient. So many consequence things took places to improve this nutrient not only about size of feeder or number many times of feeding (Johan *et al.*, 2006) and (Carrate *et al.*, 2009), so that is why breeder depend on many other things to be in safe side to reach their goal, such as using chemical additive nutrient material as Hormones or Antibiotics, but the residual of these thing with its indirect effect on human being limited its usage as Kadim *et al.* (2010) said, so away from these chemicals and retiring back to our motherhood nature the (WHO) organization conduce to use the Medicine Herbal Plants (MHP) always

as it or its extraction for human or animals with their safety using to be reflex on good health and good growth also and to become one of the main materials for medical industry (Tamara *et al.*, 2009) that is why the present condition aim is to use these herbal plants or there extractions with poultry mail and stopped as ultimately case using Hormones (WWW.meatpoultrynutrition.org, 2012). So because of that herbal plants and its extract were used with many study researchers on poultry feeding and considered as natural additive feeding to improve broiler performance (Rizzo, 2008) and (Rabia, 2010) or when act as Antioxidant activity (Miyake, 1997) or act with Antibacterial properties as bacterial inhibitors (Cobuc *et al.*, 2003) or as an effective material that rises broiler body compost (Osman *et al.*, 2005) or as natural growth promoter instead of antibiotics (Ali-khosravi *et al.*, 2008) or when used its extract as growth promoters (Barreto *et al.* 2008) or when study as natural oxidative material to activate the free radicals (Suresh *et al.*, 2008) beside its physiological effects to improve nature immunity for birds feeding with it (AL—Mashhadani *et al.*, 2011). Almost all of the (MHP) and especially the perfumery are belongs to the (*Trposelimiom crispum*) which it wildly used for detects in west Mediterranean, Mesopotamia, Egypt and India. Parsley is one of the (MHP) herbal which used fresh or dried

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leaves, roots and seeds beside it is a good source for organic minerals (Ca, Mg), vitamins and compound (chlorocimpond) in parsley oil that works as against carcinogenic (The free encyclopedia 2012). The aim of the present study is to estimate the correlation and regression between body weight, body length, keel length, dressing percentage, carcass weight, breast weight and legs weight at the 2th, 4th and the 5th week of age for broiler Ross 308 feed on nutrition with different levels of parsley oil.

MATERIALS AND METHODS

This study was conducted at the Poultry Farms Animal Resources Department, University of Baghdad, College of Agriculture, from Dec 19th 2011 to Jan 20, 2012 to evaluate supplementing different levels of parsley oil on broiler performance and body scales. A total of 200 Ross 308 day-old broiler chicks were assigned randomly for four dietary treatments from 1-35 days of age, with two replicate pens (25 birds / pen). The experimental diets formulated to isocaloric and isonitrogenic according to NRC (1994). The starter diet was 22,67 % crude protein and 2936,3 (Kcal/Kg) while the grower diet was 19% crude protein and 3156 (Kcal/Kg). The experimental diets with parsley oil were, control (T1) 0% without parsley oil. (T2) 15% parsley oil, (T3) 30% and (T4) 45% parsley oil respectively. Feed and water were provided *ad libitum* through out all the experimental period. Birds were vaccinated against New Castel and Gumboro diseases according to their age. Performance criteria includes weekly body weight B.W, body length B. L, and keel length keel length were measured during the experimental period. At the end of the study the 5th week, 4 bird / treatment were selected from each replicate and dressing percentage, carcass weight, breast and legs weight were recorded too. Data were subjected to analysis of variance (SAS, 2001) and significant treatment means were separated by Duncan's multiple range test (1955).

RESULTS AND DISCUSSION

Table 1 shows that no significant differences between treatments unit for B.W, B.L and Keel length at 2nd week of age at any percent of parsley oil. Diet with 15% parsley (T2) was significantly higher ($p < 0,05$) for BW at 4th week compared with T3, T4 treatments by 1741gm, and lowest significantly 1442.5 for control, there are no significant ($p < 0,05$) differences in body and keel length for the same age. At 5th week BL was differ significantly between treatments the higher 58.4cm for T2 and 51.3cm as the lowest value for T1. BW, and BL was significantly decreased on T1 the control treatments, reasons for these differ value between treatments could due to using parsley oil and its good effect on increasing body weight with feed efficiency beside its good effect as antibacterial with good health and body condition effect on the digestive system size (Hernandes, *et al.*, 2004). Table 2 shows means of carcass weight and breast and legs weight with differ level of parsley oil at 5th week of age, There were no significant differences between treatments, that 1537.5, 1630.8, 1585 and 1625 gm for carcass weight and 551.2, 610, 558.7 and 587 gm breast weight,

and 402.5, 440, 413, 3 and 442 gm for legs weight for all feed treatments respectively, In spite of there are no significant difference between all treatments but we can see that the mean value for T2, T3, T4 were higher as compared to control that could be due to using parsley oil as growth promoter (Ragab *et al.*, 2010) and (Hashemi and Davoodi, 2011). A positive and higher correlation ($P < 0.05$) ranged 0.56 -0.91 as a whole between BW on 5th, 4th, 3th weeks of age as in Table 3, beside decreased as age distend increased. A little difference between correlation value as treatments differ, there is a clearly indicator for treatments effect on correlation value. T4 was the highest 0.91 at 2th *4th weeks. While 0.83 for BW for T2 at 2th *5th weeks. As (Narinc *et al.*, 2010) said there is a higher phenotypic correlation between BW *age at 2nd, 4th weeks in Broiler or Quail. Also there were higher significant ($p < 0.05$) correlation between BW *Keel length as treatment differ as age ranged between 0.5 -0.89 value, T4 was 0.79 the highest compared with T1 at 2nd, 4th weeks for BW* keel length, While T3 at age 5th week was 0.89 compared with T1 also, that could be due to parsley effect (Rabia, 2010) and to the higher positive correlation between studied traits (Mendes and Akkartal, 2007) and (Yahya *et al.*, 2012).

The phenotypic correlation between BW *BL at 2nd, 4th, and 5th weeks. Table 3 shows they were all significant ($P < 0.05$) and positive, the highest correlation T3 at 5th week compared with T2, T4 and T1 the control respectively, That could be due to the parsley oil and its good effect on T3 with 30% parsley which improve feed intake and feed consumption beside average live weight, body weight as all and how influence body length, keel length also (Cobuk *et al.*, 2003). 5th week T3 with 30% parsley was the highest one with highly positive significant ($P > 0.05$) correlation between BW * different age and carcass weight, dressing percentage, breast and legs weight too as Table 4 shows. That could be accepted as (Ragab *et al.*, 2010) and (Stringhini *et al.*, 2003) who illustrated that there wear a high and positive correlation between body weight and dressing percentage on broiler 308, or It could be due to the hybrid Ross 308 with its genetic effect on growth and body weight / time (Mendes and Akkartal 2007). Parsley with 30% on T3 shows higher linear positive correlation for keel length * other body scale but the Lowest correlation value was between BL at two week * breast and legs weight Table 4.

Table 5 show The regression value for BW_(Y) at 5th, 4th and 2nd week as nutrient treatments differ with BW_(X), keel length and BL at 2nd, 4th, and 5th week of age, they were all positive and increased as age and body weight increased (Osman *et al.*, 2004). In spite of there is a positive significant regression for Body scales with carcass weight Breast and legs weight as parsley level treatment differ T6, but the different value of this regression could due to level parsley differ as growth improve (Barreto *et al.*, 2008) or because of the good genetic compensation for this Breed Roos 308 (Narinc *et al.*, 2010) or because of the entire body weight of this Breed (Monica *et al.*, 2011). In conclusion using any level of parsley oil improve body broiler performance that makes it easy to found many correlation equation for body scales or weights to predict live body weight with high compensation to be used for selection and for genetic improvement programs to reduced costs with good economic rearing period too.

Table 1. Mean \pm SC for some Body measurement as nutrition treatment differ

5 th week			4 th week			2 nd week			Age
Keel.L cm	B.L cm	B.W gm	Keel.L cm	B.L cm	B.W gm	Keel.l Cm	B.L cm	B.W gm	Parsley oil %
15.5 \pm 0.3 A	51.3 \pm 0.9 C	2250 \pm 47.6 A	13.7 \pm 0.1 A	44.4 \pm 0.3 A	1442.5 \pm 35.4 B	8.0 \pm 0.8 A	32.90 0.3 \pm A	383.0 \pm 11.2 \pm A	%0
17 \pm 0.4 A	58.4 \pm 0.5 A	2273 \pm 33.6 A	14 \pm 0.3 A	46 \pm 0.9 A	1741 \pm 46 A	8.4 \pm 0.1 A	32.3 \pm 0.3 A	425.3 \pm 5.1 A	%15
17.5 \pm 0.2 A	56.0 \pm 0.4 AB	2238 \pm 42.2 A	12.9 \pm 0.1 A	46.9 \pm 0.7 A	1506 \pm 25.4 AB	8.2 \pm 0.1 A	30.8 \pm 0.1 A	406 \pm 7.3 A	%30
16.1 \pm 0.2 A	53.6 \pm 0.6 BC	2251 \pm 69.5 A	13.70 \pm 0.1 A	46.6 \pm 0.2 A	1623 \pm 19.2 AB	8.20 \pm 0.1 A	33.2 \pm 0.2 A	392.8 \pm 13.3 A	%45

A, B, C. Means in the same raw with different superscripts are significantly ($P < 0.05$) differ.

Table 2. Mean \pm SC for carcass, breast, legs weight as nutrition treatment differ at 5th week age

Treats			Parsley oil mg/kg diet
Legs weight gm	Breast weight gm	Carcass weight gm	
402.5 \pm 9.6	551.2 \pm 15.8	1537.50 \pm 35.2	%0
440 \pm 9.3	610 \pm 14	1630.8 \pm 26	%15
413.3 \pm 6.6	558.7 \pm 14.9	1585 \pm 15.5	%30
422 \pm 16.7	587 \pm 23	1625 \pm 57.5	%45

No significant different ($P < 0.05$)

Table 3. Correlation between B.W with different age vs. Body scale

2 nd week B.W				4 th week B.W				5 th week B.W				Treat X Treat Y
Nutrition treatment				Nutrition treatment				Nutrition treatment				
%45	%30	%15	%0	%45	%30	%15	%0	%45	%30	%15	%0	
---	---	---	---	0.91	0.71	0.73	0.70	0.75	0.72	0.83	0.64	2 nd week B.W
---	---	---	---	---	---	---	---	0.64	0.64	0.62	0.56	4 th week B.W
---	---	---	---	---	---	---	---	---	---	---	---	5 th week B.W
0.72	0.71	0.68	0.60	0.74	0.70	0.62	0.51	0.63	0.61	0.59	0.50	2 nd week Keel.L
---	---	---	---	0.79	0.69	0.69	0.73	0.63	0.69	0.64	0.65	4 th week Keel.L
---	---	---	---	---	---	---	---	0.84	0.89	0.86	0.72	5 th week Keel.L
0.58	0.49	0.62	0.61	0.69	0.51	0.69	0.68	0.71	0.74	0.63	0.59	2 nd week B.L
---	---	---	---	0.71	0.68	0.70	0.69	0.69	0.72	0.64	0.69	4 th week B.L
---	---	---	---	---	---	---	---	0.73	0.79	0.75	0.71	5 th week B.L

Table 4. The correlation between B.W measurement with dressing % and carcass, Breast. legs weight on difference age and nutrition

Legs weight				Breast weight				Carcass weight				Dreasing %				Treat X Treat Y
Nutrition treatment				Nutrition treatment				Nutrition treatment				Nutrition treatment				
%45	%30	%15	%0	%45	%30	%15	%0	%45	%30	%15	%0	%45	%30	%15	%0	
0.60	0.61	0.56	0.65	0.62	0.63	0.69	0.68	0.84	0.80	0.79	0.81	0.78	0.91	0.77	0.76	2 nd week B.W
0.81	0.95	0.82	0.80	0.80	0.89	0.81	0.79	0.91	0.93	0.89	0.91	0.91	0.95	0.92	0.89	4 th week B.W
0.82	0.83	0.79	0.81	0.79	0.82	0.81	0.80	0.95	0.96	0.94	0.95	0.92	0.91	0.93	0.93	5 th week B.W
0.69	0.79	0.72	0.56	0.49	0.59	0.52	0.48	0.72	0.75	0.69	0.70	0.70	0.72	0.76	0.73	2 nd week keel.L
0.61	0.63	0.59	0.50	0.60	0.65	0.58	0.55	0.69	0.74	0.72	0.68	0.65	0.69	0.68	0.70	4 th week keel.L
0.69	0.75	0.71	0.66	0.71	0.72	0.63	0.67	0.70	0.73	0.77	0.71	0.51	0.72	0.65	0.68	5 th week keel.L
0.10	0.11	0.10	0.14	0.20	0.10	0.11	0.15	0.15	0.29	0.17	0.16	0.28	0.31	0.25	0.19	2 nd week B.L
0.26	0.27	0.21	0.23	0.24	0.31	0.25	0.21	0.19	0.27	0.21	0.18	0.27	0.34	0.27	0.22	4 th week B.L
0.31	0.30	0.35	0.32	0.27	0.33	0.24	0.26	0.20	0.25	0.17	0.18	0.31	0.35	0.26	0.20	5 th week B.L

Table 5. Regression of body measurement on body weight as nutrition parsley oil% differ

2 nd week B.W				4 th week B.W				5 th week B.W				Treat X Treat Y
Parsley oil %				Parsley oil %				Parsley oil%				
%45	%30	%15	%0	%45	%30	%15	%0	%45	%30	%15	%0	
---	---	---	---	1.3	2.4	5.3	2.2	3.9	4.1	4.6	2.7	2 nd week B.W
---	---	---	---	---	---	---	---	2.3	1.0	0.45	0.8	4 th week B.W
---	---	---	---	---	---	---	---	---	---	---	---	5 th week B.W
100.9	48.8	65.3	78.0	149.0	168.1	317.1	210.6	459.7	243.9	318.3	274.7	2 nd week Keel.L
---	---	---	---	118.8	133.7	123.4	288.6	343.6	307.1	380.7	344.5	4 th week Keel.L
---	---	---	---	---	---	---	---	276.0	205.8	68.9	112.7	5 th week Keel.L
40.6	26.5	15.1	23.2	80.1	96.3	130.9	76.8	138.5	79.3	87.5	89.3	2 nd week B.L
---	---	---	---	83.3	27.3	37.2	77.9	150.9	46.2	25.6	104.2	4 th week B.L
---	---	---	---	---	---	---	---	87.9	84.7	59.2	39.2	5 th week B.L

Table 6. Regression (b) for body measurement on carcass, breast ,legs weight for Ross broiler 308 as nutritional treatment and age differ

Legs weight				Breast weight				Carcass weight				Treat X Treat Y
Nutrition treatment				Nutrition treatment				Nutrition treatment				
%45	%30	%15	%0	%45	%30	%15	%0	%45	%30	%15	%0	
0.74	1.19	8.69	0.55	1.06	1.69	1.42	0.95	3.60	2.54	3.43	2.14	2 nd week B.W
0.19	0.24	0.21	0.21	0.98	0.52	0.31	0.35	2.70	0.71	0.64	0.90	4 th week B.W
0.19	0.12	0.21	0.16	0.26	0.28	0.33	0.26	0.78	0.42	0.72	0.70	5 th week B.W
120.8	48.9	107.4	62.0	118.1	83.0	116.1	88.0	434.4	138.0	234.1	286.2	2 nd week Keel .L
31.3	51.4	22.8	43.8	69.9	101.9	31.4	97.3	255.3	152.0	68.9	268.3	4 th week Keel .L
54.4	26.8	15.7	20.8	77.1	58.6	23.9	35.0	190.1	77.9	87.8	42.7	5 th week Keel .L
9.8	5.3	3.2	4.2	11.7	11.0	6.3	7.5	50.7	21.01	26.9	18.03	2 nd week B.L
26.9	2.6	2.3	7.0	34.2	7.0	4.1	9.1	74.9	8.0	6.5	20.29	4 th week B.L
31.0	6.5	7.4	3.5	10.7	12.4	7.6	4.7	19.9	12.3	15.4	7.20	5 th week B.L

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