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Full Length Research Paper

Effect of use cumulative levels of sesame (*Sesamum Indicum-L*) meal with phytase enzyme on performance of broiler chicks.

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For investigate the effect of feeding cumulative levels of Sesame meal (SSM) as a replacement for Soybean meal (SBM) with the supplementation of phytase enzyme (Phy) on performance, blood constituents and carcass traits and intestinal morphology of broiler chickens, total 384 one days old broilers chickens (Ross 308) at completely randomized factorial design with 4 treatments of use sesame meal in 2 level of using phytase enzyme with 4 replicates for each of them were used. body weight, body weight gain BW, feed consumption FI, and feed conversion ratio FCR was calculated .at the end of the experiment, estimated slaughter yield were also carried out by randomly using 2 broilers around the average body weight from each treatment group. Selected chickens were deprived from feed for 12 hours, weighed and were slaughtered to complete bleeding, followed by plucking feathers then weighted. Carcass weight, dressing, abdominal fat, and intestine weight were recorded and intestine length was also measured. To evaluate the digestibility of phosphorus (P.DI) 0.3 % Dichromium trioxide Marker Cr_2o_3 was used. Data showed that use of SSM lead to increase feed intake (FI) in broilers (P<0.05). In addition use of phytase increased FI and interaction between SSM×Phy caused higher FI on broilers significantly (P<0.05).use SSM decreased Daily body weight gain (BW) totally but use Phy increased BW and SSM×Phy interaction lead lesser BW on broilers Compared with the control groups (P<0.05).higher consumption of sesame meal were increased FCR and addition Phy supplementation Had no significant effect on reducing FCR. Data from this study that showed the calcium and phosphorus changed with use experimental diets. Amount of Calcium and Phosphorus in blood and Tibia ash were increased were SSM and Phy enzyme were used (P<0.05).Data from Antibody titers against New Castle Vaccine were measured that showed the antibody titers were not significantly higher when broilers fed with higher content of SSM (p<0.05).Evaluation of Phosphorous digestibility that showed when we used SSM without Phy enzyme PDI came down and when we used SSM with Phy enzyme PDI was increased significantly(p<0.05) SSM×Phy interaction could increase PDI non significantly. As result was relevant small intestine mucosa and sub mucosa diameters were significantly increased when we applied T_1,T_2,T_3 diets for them (p<0.05). Musclaris and serosa parts diameter were higher in T_2, T_3 than others. Data from this study showed use of SSM in broilers diets is likely to increase total diameter of small intestine parts (p<0.05).

Key words: Sesame meal, Phytase enzyme, Broilers, Blood parameters, Intestinal morphology.

INTRODUCTION

The insufficient production of soybean meal (SBM) in Iran has led to permission being granted for an import of this product form other countries such as Brazil, China and Argentina. However today the price is considerably still high due to government policy which also on the other hand has to encourage soybean growers in the country. Search for alternative vegetable protein sources, which are cheap and locally available, has become an urgent subject to poultry nutritionists in Iran. In addition one of the methods for increase in productive of broilers is appending medical plants to poultry diets as nutritional and medical sources (Darrell et al., 1997, Kanekol and Yamasakil, 2002). Sesame (*Sesamum indicum L*) seed is a drought, tolerant crop adapted to many soil types (Agbulu et al., 2010, Al Harthi and El Deek, 2009). Full fat sesame seed and the meal after oil extraction are not only excellent sources of edible nutrients (45 to 50% lipid, 15 to 20% protein, and 10 to 15% carbohydrate and 47.1% to 52.9% crude protein, respectively (Al Harthi and El Deek, 2009, Deyab et al., 2009). The amino acid composition of the protein is similar to that of soybean meal with the exception of lower lysine and higher methionine in sesame .The fiber content of the seed ranges from 2.7 to 6.7% (Ralf and Konietzny 2006).The high amount of calcium (CA) and Phosphorus (P) are also less available due to its high phytic acid content. Some studies that showed phytic acid could be eliminated when the meal was heated under 15 Psi for 4 hours (Kies et al., 2001, Lease, 1966). Phytase enzyme (Phy) utilization as an additive Supplementation in poultry diets has extensive due to public concern surrounding phosphorus pollution, and its ability to increase non phytate phosphorus (NPP) utilization. Phytic acid also reduces the activity of pepsin, trypsin, and α-amylase (Hirose and Inoue, 1991, Kanekol and Yamasakil, 2002, Sing and Krikorian 1982). Phytase enzyme supplementation has been shown to reduce phosphorus and nitrogen excretion and it can use full for increase digestibility an availability of phytate bound some mineral such as phosphorus, calcium, copper and zinc (Gordon and Ronald, 1998, John, 1996). Phytase as an enzyme is capable of breaking down phytates in feeds to release inorganic phosphorus and inositol as well as protein, amino acids, trace minerals and other nutrients chelated with phytase. Thus, phytase can reduce or eliminate the supplementation of inorganic phosphorus in feeds for monogastric animals and improve the utilization efficiency of these nutrients contained in feedstuff. As much as 90 % of the total phosphorus in cereals and oilseeds can be locked up in the form of phytate, which is a virtually indigestible form of phosphorus in plants used in animal feeds (Lease, 1966, Namkung and lesson, 1999, Nelso et al, 1968, Peter and Scott, 2006). The enzyme phytase is a novel and cost effective tool in poultry diets that improves phosphorus utilization from phytin, the storage form of phosphorus in feedstuffs. As phosphorus retention is still far below a hypothetical maximum of 100% considerable room for improvement in phytin-phosphorus release and overall phosphorus retention by poultry and swine still exists (Young et al., 1993, Yi et al., 1996). Many studies that showed SSM could be used instead of SBM at 15-25 % in broilers diet and the higher levels of use SSM caused higher fat deposition and lower protein content of the broilers carcass (Sebastian et al., 1998, Yamashita and Iizuka, Yamauchi et al., 2006). The important of SSM use for broilers seems to become more popular as poultry feed due to its low price Agbulu et al., 2010 and Al Harthi and El Deek, 2009)]. As mentioned above it has become clear that there is a quite bite of benefits of sesame meal as good source of protein and a medical and nutritional resource to be used for poultry. Therefore, the objective of this study is to investigate the effect of feeding cumulative levels of SSM as a replacement for SBM with the supplementation of phytase (Phy) on performance, blood constituents and carcass traits and intestinal morphology of broiler chickens.

MATERIALS AND METHODS

For determine the effect of use cumulative levels of sesame meal with phytase enzyme on performance of broiler chickens a total 384 one day broilers chicks (Ross 308) were used at completely randomized factorial design with 4 treatments of use sesame meal in 2 level of using phytase enzyme with 4 replicates for each of them. The experiment was carried out in 49 days. Each treatments group was fed on a starter diets. Sesame meal purchased from local market and dried and then grounded separately to a fine powder and then mixed with the basal diet (Tables 2) Feed and fresh water were provide ad libitum during this experiment. Sesame meal sample was analyzed in the lab for determine amount of ME, Crude protein, Calcium, Phosphorus and Its Crude fiber with AOAC method (Table 1) (AOAC 1994).

Treatments were Control (contain control group, basal diet with no substation SSM for SBM), T_1 (basal diet with 5% SSM), T_2 (basal diet with 10% added SSM), T_3 (basal diet with 15% added SSM) for 0-21 days (first diet) and Control diet , T_1 (basal diet with 10% SSM), T_2 (basal diet with 15% added SSM), T_3 (basal diet with 20% added SSM) for 21- 42 days (Grower diet) and Control diet , T_1 (basal diet with 15% SSM), T_2 (basal diet with 25% added SSM), T_3 (basal diet with 30% added SSM) for 42-49 days (finisher diet) with or without phytase enzyme E_0 and E_1 (500 FTU/ Kg of Nataphous 5000) that they were balanced according to their requirement as shown in NRC for poultry (NRC (1994).

Body weight, body weight gain, feed consumption, and feed conversion ratio was weekly calculated. At the end of the experiment, estimated slaughter yield were also carried out by randomly using two broilers around the average body weight from each treatment group. Selected chickens were deprived from feed for 12 hours,

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Abbreviations: FI, Feed intake; BW, Body weight; FCR, Feed conversion ratio; Phy, Phytase enzyme P.DI, Phosphorous digestibility; SBM, Soybean meal ;SSM ,Sesame seed meal.

Table 1. Chemical Composition and proximate analysis of the tested diets.

Compounds	ME (Kcal/Kgr)	CP (%)	Met+Cys (%)	Lys (%)	Ca (%)	A.P (%)
Sesame meal	2210	41	1.94	0.90	0.91	0.52
Soybean meal	2230	42	1.28	2.69	0.29	0.27
Corn grain	3350	8.33	0.36	0.26	0.02	0.08
DCP	--	--	--	--	22	16
Vegetable Oil	9400	--	--	--	--	--

Table 2.1. Calculated composition and nutrients contents of experimental diets (0-21) days

Ingredients %	Control	T_1 (5% SSM)	T_2(10% SSM)	T_3(15 % SSM)
Corn grain	54.71	55.48	55.23	55.20
Soybean meal	39.02	33.77	28.95	24.15
Sesame meal	0	5	10	15
Vegetable Oil	2.1	1.8	2	2
DCP	1.68	1.56	1.49	1.41
Oyster shells	1.5	1.45	1.42	1.36
Methionine D-L	0.14	0.09	0.06	0.03
Nacl	0.25	0.25	0.25	0.25
Vitamin Premix*	0.30	0.30	0.30	0.30
Mineral premix*	0.30	0.30	0.30	0.30
Calculated nutrient content				
ME(Kcal/Kgr)	2900	2900	2900	2900
CP (%)	20.84	20.84	20.84	20.84
Ca (%)	0.90	0.90	0.90	0.90
Available Phosphorus (%)	0.41	0.41	0.41	0.41
Lysine (%)	1.17	1.17	1.17	1.17
Methionine+Cystine (%)	0.81	0.81	0.81	0.81

Supplied Per Kilogram Of Feed: 7.500 IU of vitamin A, 2000IU vitamin D3, 30 Mg vitamin E,1.5 µg vitamin B12,2Mg B6,5Mg Vitamin K,5 Mg vitamin B2,1 Mg vitamin B1,40 Mg nicotinic acide,160µg vitamin Biothine,12 Mg Calcium,pantothenate,1Mg,Folicacide 20 Mg Fe,71 Mg Mn,100µg Se,37Mg Zn,6 Mg Cu,1.14 Mg I,400 µg Cu.

weighed and were slaughtered to complete bleeding (totally 64 bird), followed by plucking feathers then weighted. Carcass weight, dressing, abdominal fat, and intestine weight were recorded and intestine length was also measured**.** Blood samples from each bird were collected for determine their triglyceride, calcium and phosphorus in blood samples and tibia ashes were measured (Gordon and Ronald, 1998). Some blood samples were analyzed for their antibody titers against New Castle Vaccine by Haemagglutination inhibition test (HI).Finally samples from small intestine tissue to determination intestinal morphology were collected. To measurement the digestibility of phosphorus 0.3 % Dichromium trioxide Cr_2o_3 Marker (Merk Germany) was used, and then digesta content from Meckel's diverticulum due to ileum terminal was Sampled and PDI calculated from fallowing formula (Fenton and Fenton, 1979):

Phosphorus Digestibility %: (Phosphorus $_{diet}$ / Phosphorus $_{fecal}$ × Cr_2o_3 $_{diet}$ / $Cr_2o_{5\ fecal}$ - 100) × 100

In the last data were collected and analyzed by using the General, Linear model procedure of SAS different means Duncan's multiple ranges test was used to detect the differences at level ($p<0.05$) (SAS Institute (1992).

The statically model was:

$X_{ijk} = \mu + \acute{\alpha}_i + ß_j + (\acute{\alpha} + ß)_{ij} + e_{ijk}$ $_{i\ =\ 1,2,3,4\ .\ j\ =\ 1,\ 2}$
X_{ijk} = Average Effect Observed
µ = Total Average
$\acute{\alpha}_I$ = Effect of Substitution SSM for SBM
$ß_j$ = Effect of Phytase Enzyme
$(\acute{\alpha} + ß)_{ij}$ = Interactions (SSM × Phy)
e_{ijk} = Effect of Errors

Table 2.2. Calculated composition and nutrients contents of experimental diets (21-42) days

Ingredients %	Control	T_1 (10% SSM)	T_2(15% SSM)	T_3(20 % SSM)
Corn grain	60.98	62.32	62.30	61.21
Soybean meal	32.81	22.42	17.60	13.23
Sesame meal	0	10	15	20
Vegetable Oil	2.4	1.9	1.95	2.35
DCP	1.25	1.02	0.96	0.89
Oyster shells	1.67	1.50	1.40	1.47
Methionine D-L	0.04	0	0	0
Nacl	0.25	0.25	0.25	0.25
Vitamin Premix*	0.30	0.30	0.30	0.30
Mineral premix*	0.30	0.30	0.30	0.30
Calculated nutrient content				
ME(Kcal/Kgr)	3000	3000	3000	3000
CP (%)	18.75	18.75	18.75	18.75
Ca (%)	0.84	0.84	0.84	0.84
Available Phosphorus (%)	0.33	0.33	0.33	0.33
Lysine (%)	1.03	1.03	1.03	1.03
Methionine+Cystine (%)	0.67	0.67	0.67	0.67

Supplied Per Kilogram Of Feed: 7.500 IU of vitamin A, 2000IU vitamin D3, 30 Mg vitamin E,1.5 µg vitamin B12,2Mg B6,5Mg Vitamin K,5 Mg vitamin B2,1 Mg vitamin B1,40 Mg nicotinic acide,160µg vitamin Biothine,12 Mg Calcium,pantothenate,1Mg,Folicacide 20 Mg Fe,71 Mg Mn,100µg Se,37Mg Zn,6 Mg Cu,1.14 Mg I,400 µg Cu.

Table 2.3. Calculated composition and nutrients contents of experimental diets (42-49) days

Ingredients %	Control	T_1 (15% SSM)	T_2(20% SSM)	T_3(25 % SSM)
Corn grain	64.27	64.50	64.40	64.40
Soybean meal	29.02	14.26	9.40	4.50
Sesame meal	0	15	20	25
Vegetable Oil	3.2	3.15	3.20	3.20
DCP	1.06	0.77	0.68	0.65
Oyster shells	1.60	1.47	1.43	1.40
Methionine D-L	0	0	0	0
Nacl	0.25	0.25	0.25	0.25
Vitamin Premix*	0.30	0.30	0.30	0.30
Mineral premix*	0.30	0.30	0.30	0.30
Calculated nutrient content				
ME(Kcal/Kgr)	3100	3100	3100	3100
CP (%)	17.43	17.43	17.43	17.43
Ca (%)	0.77	0.77	0.77	0.77
Available Phosphorus (%)	0.29	0.29	0.29	0.29
Lysine (%)	0.94	0.94	0.94	0.94
Methionine+Cystine (%)	0.58	0.58	0.58	0.58

Supplied Per Kilogram Of Feed: 7.500 IU of vitamin A, 2000IU vitamin D3, 30 Mg vitamin E,1.5 µg vitamin B12,2Mg B6,5Mg Vitamin K,5 Mg vitamin B2,1 Mg vitamin B1,40 Mg nicotinic acide,160µg vitamin Biothine,12 Mg Calcium,pantothenate,1Mg,Folicacide 20 Mg Fe,71 Mg Mn,100µg Se,37Mg Zn,6 Mg Cu,1.14 Mg I,400 µg Cu.

Table 3. The effect of use SSM ×Phy on broilers performance (0-49) days

Treatments	FI(Kg)	BW(Kg)	FCR (%)
SSM			
Control	90.7[c]	47.9[a]	1.89[c]
T_1	94.0[b]	48.3[a]	1.93[c]
T_2	95.8[a]	43.2[b]	2.20[b]
T_3	95.9[a]	41.3[c]	2.30[a]
MSE	0.44	0.56	0.022
Phytase Enzyme (500FTU /Kg)			
E_0	94.1[a]	45.0[a]	2.09[a]
E_1	94.2[a]	45.4[a]	2.08[a]
MSE	0.31	0.40	0.015
(SSM ×Phy) Interaction			
Control× E_0	90.3[c]	47.1[a]	1.91[c]
Control × E_1	90.1[c]	48.6[a]	1.87[c]
T_1× E_0	93.4[b]	48.1[a]	1.93[c]
T_1× E_1	94.6[ab]	48.6[a]	1.93[c]
T_2× E_0	96[a]	43.5[b]	2.20[b]
T_2× E_1	95.7[a]	43[b]	2.20[b]
T_3× E_0	96.5[a]	41.2[b]	2.33[a]
T_3× E_1	95.5[a]	41.4[b]	2.30[a]
MSE	0.73	0.80	0.031

*Means within row with no common on letter are significantly different (p<0.05)

RESULT AND DISCUSSION

Data of feed intake, broiler weight and FCR are in (Table 3). Data showed significant difference about Feed intake in trial groups. Chicks were fed with T_3 diet was higher FI among others groups. (SSM ×Phy) Interaction lead to higher feed intake on T_3. Addition Phy enzyme didn't significant effect on FI.Bw Gain in control groups was higher than others significantly (p<0.05). In fact, consumption of SSM increased FCR and addition of Phytase couldn't any benefit effect for FCR. Some researchers that showed live body weight and body weight gain of 6-week old broiler chicks fed the control diet were significantly (P ≤ 0.05) higher than those of all other dietary treatments. However, body weights and body weight gains of broilers fed diets containing 50% of either SSM or soybean meal SBM were significantly lower than those of the control diet (Yamashita and Iizuka, 1995, Yamashita and Nohara, 1992). Phytase levels lower than 500 FTU/kg had no impact feed intake and feed conversion efficiency (Alharti et al., 2009). Showed that although all diets utilized in their studies were formulated to be Isocaloric. There was a very huge variation in all performance criteria. This might be due to multiple reasons: 1- SSM dietary levels used were very high and caused a poor performance as a result of higher dietary SSM in conjunction with the poor amino acids quality in SSM and 2- There might be a variation in the determined TME values of SSM. The higher TME value for the sesame seed cake diets (15.2 MJ kg-‘) as compared to the SBM diets (14.8 MJ kg-‘) may have contributed to the improved performance observed for the SSM fed broilers. However, these reported data utilized lower dietary SSM levels than dietary SSM levels used in our trial. Phytase supplementation of Corn and Soybean meal based diets has been reported to improve BWG and FCR. The differences in the rate of feed intake as shown in the various treatments indicate that it was influenced by the amount of SSM present in the diet. On Yamauchi et all researches feed intake tended to increase with increasing dietary SSM level, it was not significant different among the 0, 10, 20, and 30% dietary SM groups Compared with the 0% dietary SSM group, they noticed The lack of improved growth performance, even in the high protein diets, might be related to the composition of the SM. Sesamin, a lignanin sesame seed oil, does not affect BW gain or feed intake at the 0.5% dietary diet level (Yamashita and Iizuka, 1995)). Hossain and Jauncey (1989) suggested that the high phytic acid content of SM is a possible reason for its lower apparent protein digestibility. These reports indicate that lack of improved growth performance, even after feedings of the high protein diets in this study, could be caused by low protein digestibility due to the phytic acid in the SSM. The requirement of available P for broilers beyond 6 weeks of age is lower for growth performance than tibia ash (Gordon and Ronald, 1998). Yamauchi et al, (2006) that showed increase of use SSM lead to increase amount of feed in broilers but this increase is not significant (Yamashita and Iizuka, 1995, Yamauchi et al., 2006). Mehmet et al, (2005) that showed addition of Phytase enzyme can be useful on Increase in body weight. Similar

Table 4. The effect of use SSM × Phy on Phosphorous digestibility, Bed Moisture and HI test

Treatments	P.DI (%)	B.M (%)	HI (log^2)
SSM			
Control	51.9^{a}	20.9^{d}	4.51^{a}
T_1	51.4^{a}	22.8^{c}	4.50^{a}
T_2	49.5^{b}	24.9^{b}	4.50^{a}
T_3	48.1^{c}	27.1^{a}	4.50^{a}
MSE	0.25	0.14	0.043
Phytase Enzyme (500FTU /Kg)			
E_0	49.8^{b}	24.30^{a}	4.53^{a}
E_1	50.6^{a}	23.64^{b}	4.53^{a}
MSE	0.177	0.10	0.031
(SSM ×Phy) Interaction			
Control× E_0	51^{bc}	21.5^{e}	4.53^{a}
Control × E_1	52.3^{a}	20.4^{f}	4.49^{a}
T_1× E_0	50.7^{c}	23^{d}	4.53^{a}
T_1× E_1	52.1^{a}	22.6^{d}	4.57^{a}
T_2× E_0	49.4^{d}	25.3^{b}	4.51^{a}
T_2× E_1	49.5^{d}	24.6^{c}	4.49^{a}
T_3× E_0	48.1^{e}	27.3^{a}	4.53^{a}
T_3× E_1	48.2^{e}	26.9^{a}	4.48^{a}
MSE	0.35	0.20	0.062

*Means within row with no common on letter are significantly different ($p<0.05$)

Table 5. The effect of use SSM × Phy on Calcium and Phosphorous (Blood and Tibia ash).

Treatments	**Ca** Blood	**P** Blood	**Ca** Tibia	**P** Tibia
SSM	Mg/dl	Mg/dl	%	%
Control	10.2^{a}	6.57^{d*}	30.5^{a}	11.40^{b}
T_1	10.3^{a}	7.01^{c}	30.4^{a}	12.35^{a}
T_2	10.3^{a}	7.24^{b}	30.1^{b}	12.51^{a}
T_3	10.3^{a}	7.40^{a}	29.7^{c}	12.50^{a}
MSE	0.06	0.02	0.061	0.06
Phytase Enzyme (500FTU /Kg)				
E_0	10^{a}	6.98^{b}	29.7^{b}	12.05^{b}
E_1	10.4^{a}	7.13^{a}	31.2^{a}	12.25^{a}
MSE	0.04	0.016	0.043	0.042
(SSM ×Phy) Interaction				
Control× E_0	10^{c}	6.40^{g}	30.6^{b}	11.11^{c}
Control × E_1	10.2^{a}	6.75^{f}	31.3^{a}	11.70^{b}
T_1× E_0	10.2^{a}	6.95^{e}	30.2^{c}	12.29^{a}
T_1× E_1	10.4^{a}	7.06^{d}	31.1^{a}	12.41^{a}
T_2× E_0	10.2^{a}	7.18^{c}	30^{c}	12.50^{a}
T_2× E_1	10.3^{a}	7.30^{b}	31.1^{a}	12.43^{a}
T_3× E_0	10^{c}	7.40^{a}	30^{c}	12.23^{a}
T_3× E_1	10.3^{a}	7.41^{a}	30.4^{b}	12.40^{a}
MSE	0.08	0.033	0.086	0.084

*Means within row with no common on letter are significantly different ($p<0.05$)

findings were reported by previous research who reported (Sebastian et al., 1998, Young, 1993, and Zhaoguo et al, 2002) that phytase supplementation to broiler diets caused numerical improvement in feed efficiency of broilers fed a P-deficient diets fed without phytase. Data from (Table 4) showed bed moisture was

Table 6. The effect of use SSM × Phy on percentage some part of chickens' body

Treatments	Carcass	Liver	Abdominal fat
SSM	%	%	%
Control	71^{a*}	1.91^{d}	1.99^{a}
T_1	69^{a}	2.13^{c}	1.60^{b}
T_2	67^{c}	2.27^{b}	1.50^{b}
T_3	65^{d}	2.36^{a}	1.34^{b}
MSE	0.002	0.02	0.12
Phytase Enzyme (500FTU/Kg)			
E_0	68^{a}	2.14^{a}	1.62^{a}
E_1	68^{a}	2.19^{a}	1.59^{a}
MSE	0.001	0.016	0.84
(SSM ×Phy) Interaction			
Control× E_0	71.5^{a}	1.88^{e}	1.97^{ab}
Control × E_1	71^{b}	1.93^{e}	2.01^{a}
T_1× E_0	70^{c}	2.11^{d}	1.60^{bc}
T_1× E_1	69.5^{d}	2.15^{d}	1.60^{abc}
T_2× E_0	67.8^{e}	2.23^{c}	1.54^{c}
T_2× E_1	67.5^{f}	2.31^{b}	1.46^{c}
T_3× E_0	65.3^{h}	2.34^{ab}	1.38^{c}
T_3× E_1	65.5^{g}	2.39^{a}	1.30^{c}
MSE	0.003	0.033	0.17

*Means within row with no common on letter are significantly different (p<0.05)

increasing none significantly when increasing addition of SSM on broilers diets. This is may be due to the amount of protein in SSM that it needs more water is excreted from the body. In addition amount of water in SSM is high and this could increase litter moisture (Darrell, et al., 1997). Antibody titers against New Castle Vaccine were measured and data from this test showed that antibody titers were not significantly differences when broilers fed with higher content of SSM .Data from Phosphorus digestibility that showed use Phytase enzyme can increase phosphorus digestibility significantly and PDI was higher on control groups. These results can be explained by that phytase enzyme had a positive influence on gastrointestinal tract digestive enzymes that leads to the increase in p digestibility observed in birds fed with SSM diets (Rutherfurd and Moughan, 2002). Using enzyme lead to increase phosphorus digestibility in T_1 but on T_2 and T_3 Was Unable to perform useful, this may be due to the low FTU of enzyme that we used.

The findings of the present study on serum components (Table 5) indicated that there were significant influenced for serum calcium, and inorganic phosphorus by the dietary treatments. The Ca and P in blood and tibia ash were higher when broilers used SSM and phytase enzyme together. Addition of phytase changed amount of Ca and P in blood and tibia ash significantly ($p<0.05$).bird fed diet without SSM had the lowest Ca and P in their blood. Phytase supplementation had a significant effect on amount of tibia Ca and P level while it had no effect on Ca level in broiler bloods. SSM has extended amount of phosphorus bounded by phytate (Dan, 2005 and Deyab et al., 2009). The percentage of broilers tibia crude ash was significantly increased by the addition of dietary phytase. This agrees with the previous studies dealing with broilers. Phytase supplementation to diets increased the content of Ca and P in the tibia compared to diets containing low P. This is a good indication of increased availability of P from phytase mineral complex by the action of phytase (Sebastian et al., 1998, Young et al., 1993, Yi et al., 1996).

Phytate is the form in which large portion of phosphorus is present in plant feed ingredients. This makes it difficult for non ruminants to gain their requirements out of being fed with these ingredients (Nelson et al., 1968 and Zhaoguo et al., 2002). Phytase can help in improving the availability of phytate bound phosphorus and reducing phosphorus levels in excreta from intensive livestock operations (Al Harthi and El Deek, 2009and Kies et al., 2001).

Effect of use SSM and Phytase enzyme on some part of broilers bodies were investigated. We showed that carcass yield decreased by using SSM and Phytase supplementation had no effect on percentages of all cuts. This result agrees with previous findings of (Al Harthi and El Deek, 2009, Darrell et al., 1997, Gordon and Ronald, 1998 and Sebastian et al., 1998) that showed that

Table 7. The effect of use SSM × Phy Small Intestinal Morphology

Treatments	Mucosa , Sub Mucosa	Musclaris	Serosa	Total
SSM	(micron)	(micron)	(micron)	(micron)
Control	111.8^{c*}	12.1^{a}	7^{c}	130.9^{c}
T_1	112.8^{cb}	12.1^{a}	7.1^{cb}	132^{c}
T_2	115.5^{b}	12.2^{a}	7.3^{ab}	135^{b}
T_3	120.3^{a}	12.05^{a}	7.4^{a}	139.8^{a}
MSE	0.97	0.034	0.08	0.78
Phytase Enzyme (500FTU/Kg)				
E_0	115.4^{a}	12.16^{a}	7.3^{a}	134.8^{a}
E_1(	114.8^{a}	12.07^{a}	7.1^{a}	133.9^{a}
MSE	0.68	0.024	0.055	0.55
(SSM ×Phy) Interaction				
Control× E_0	112.2^{bc}	12.2^{a}	7.5^{a}	131.9^{c}
Control × E_1	111.9^{bc}	12^{a}	6.95^{d}	130.7^{c}
T_1× E_0	112.9^{bc}	12.1^{a}	7.2^{bc}	132.2^{c}
T_1× E_1	112.6^{bc}	12.11^{a}	7^{cd}	131.7^{c}
T_2× E_0	115.5^{b}	12.22^{a}	7.4^{ab}	135.1^{b}
T_2× E_1	115.5^{b}	12.20^{a}	7.2^{bc}	134.9^{b}
T_3× E_0	121^{a}	12.11^{a}	7.5^{a}	140.6^{a}
T_3× E_1	119.6^{a}	12^{a}	7.3^{ab}	138.9^{a}
MSE	1.37	0.049	0.11	1.11

*Means within row with no common on letter are significantly different (p<0.05)

phytase supplementation significantly increased percentages of most of carcass merits compared to P-deficient diets. By substitution SSM and Phytase percentage the liver weight percentage was increased significantly. The percentage of abdominal fat was decreased when we used SSM and Phytase enzyme the percentage of abdominal fat was at lowest when SSM consumption was at higher content.

As result was relevant (Table 7) small intestine mucosa and sub mucosa diameters were significantly increased when we applied T_1,T_2,T_3 diets for them ($p<0.05$). Musclaris and serosa parts diameter were higher in T_3 than others. Data from this study showed use of Sesame meal in broilers diets cause increase total diameter of small intestine parts ($p<0.05$). In (Yamauchi et al., 2006, Yamashita and Iizuka, 1995). Research Epithelial cells proliferations were reduced by reduction in energy and nutrient [44] intakes, and fat exerted a strong stimulatory effect for intestinal mucosal regeneration. Most values of the intestinal villus height, epithelial cell area, and crypt cell mitosis numbers were not different among groups for each intestinal Segment. Flat epithelial cells were on the intestinal villus apical surface in the group fed 0% dietary SSM. Considerations for current growth performance and histological intestinal alterations suggest that the SSM would have no detrimental effect on the growth performance with up to 20% dietary SM nor on the intestinal villi with up to 30% dietary SSM, but hypertrophy was observed in the epithelial cells of bird fed up to 20% dietary SSM (Yamauchi et al., 2006, Yamashita and Iizuka, 1995).

CONCLUSION

We could be explained by the facts that sesame meal can benefit acts on performance for broilers chicks**.** This improvement may be due to the biological functions of Sesame meal to improve growth or that may be due to its role as stimulant, carminative, enhanced digestibility, anti-microbial properties and it can be used as a good source of protein in substitution for soybean meal in broiler diets. Results of this study are in agreement with previous findings reported by Kaneko et al [18] and Yamauchi et al [43, 44]. Results of this study indicate that SSM can be use at 25% level to replace with SBM in the diet of broilers without adverse effects on the productive performance, blood parameters, carcass components of the birds. Using SSM amounts above 25% in broiler diets can be harmful. Because it has extended amount of phytate who can bound protein and minerals and make them unavailable for broilers. To solve this problem we recommend higher unit of enzyme for more availability of nutrients .Further tests are needed to explore and more detail explanation.

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