Effects of Dietary Common Vetch (Vicia sativa L.) at Different Levels Supplementation on the Growth Performance and Carcass Characteristics in Bronze Turkeys

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ABSTRACT: This study was conducted to determine the effects of common vetch (V. sativa L.) in different levels (0 %, 10 %, 20 % and 30 %) on live weight, live weight gain, feed consumption, feed efficiency ratio, livability, carcass weight, carcass percentage, abdominal fat and edible yields in Bronze turkeys.

One hundred and eighty turkey poults at one-day old used in the experiment. The experiment was conducted during July-October months through 16 weeks. At the end of 16 weeks-period the live weights of turkeys were not affected by dietary level of vetch. Differences for ilve weight among males, females and sex combinations were not found to be significant at the end of growing period. The live weight gain of turkeys at different periods was not affected by the treatments. The differences among groups were not significant in response to the feed consumption during 0-16 week periods. Feed efficiency ratio and livability were not affected by the different leveis of vetch supplemented. The different vetch levels did not affect carcass weight, carcass percentage, heart and gizzard weights with respect to the slaughtering characteristics. On the other hand, it affected the liver and abdominal fat weights ($P<0.01$ $P<0.05$) Pancreas weight showed significant differences between females and mixed sex combination groups ($P<0.05$).

Overall, it can be tells that the vetch without processing added to the diet at the range of 0 % to 30 % had no negative effects on the growth performances of turkeys.

Key words: Turkeys, common vetch, growth performance, carcass characteristics

Bronz Hindilerde Rasyona Farklı Düzeylerde İlave Edilen Fiğin (Viciasativa L.) Besi Performansı ve Karkas Özellikleri Üzerine Etkisi

ÖZET: Bu araştırma, bronz hindilerde rasyona ilave edilen farklı düzeylerdeki (% 0, % 10, % 20 ve % 30) fiğın (Viola sat/ve L.) canlı ağırlık, canlı ağırlık artışı, yem tüketimi, yemden yararlanma oranı, yaşama gücü, karkas ağırlığı, karkas randımanı, abdominal yağ ve yenilebilir iç organ ağırlıkları üzerine etkilerini saptamak amacıyla yürütülmüştür.

Çalışmada, günlük yaşta 180 adet Bronz hindi palazı kullanılmıştır. Deneme, Temmuz- Ekim döneminde ve 16 hafta süreyle yürütülmüştür. Hindi rasyonlarına farklı düzeyde fiğin katılması hindilerin 16. haftadaki canlı agırlıklarını önemli derecede etkilememiştir. Besi periyodu sonunda erkeklerde, dişilerde ve karışık cinsiyette canlı ağırlık farklılıkları istatistiksel olarak önemli bulunmamıştır. Hindilerin farklı dönemlerdeki canlı ağırlık artışları da farklı düzeydeki fiğ muamelesinden önemli düzeyde etkilenmemiştir. 0-16 haftalık periyot sonundaki kümülatif yem tüketimi bakımından da yine gruplar arasındaki farklılıklar önemli olmamıştır. Yemden yararlanma oranı ve yaşama gücü farklı fiğ düzeylerinden önemli ölçüde etkilenmemiştir. Kesim özellikleri bakımından ise, farklı fiğ düzeylerinin karkas ağırlığı, karkas randımanı, kalp ağırlığı ve taşlık ağırlığı üzerine önemli bir etkisi olmamıştır. Buna karşılık, karaciğer ağırlığı ve abdominal yağ ağırlığı fiğ düzeylerinden önemli derecede etkilenmiştir ($P<0.01$, $P<0.05$). Pankreas ağırlığı ise dişiler arasında ve karışık cinsiyette önemli farklılıklar göstermiştir ($P<0.05$).

Özetle, fiğin herhangi bir muameleye tabi tutulmadan hindi rasyonlarında %O-30 düzeyinde kullanılmasının besı performansı yönünden olumsuz bir etki yapmadığı söylenebilir.

Anahtar Kelimeler: Hindi, adi fiğ, besi performansı, karkas özellikleri

INTRODUCTION

Leguminosea seeds contain 20-45 % crude protein (4, 15, 24). Thus, they are used as alternative protein sources in poultry feeding. However, with the high protein contents leguminosea seeds contain nen-protein antinutritional factors that are nitrogen campounds, saponins, alcoholoicis,
tannins, pectins, proteaz inhibitors and glycosids causing some harmfull effects to the monogastric animals (13,1527,28). Because of some toxic elements inoluded, bean seeds giyen to birds at higher levels than specified levels cause a decrease in live weight and an increase in pancreas weight. Common vetch taking a significant proportion of bean-seed feeds, Vicia sativa L. is most widely produced in the world and Turkey. Annual common vetch production in Turkey was about 129.124 tons according to the statistical data in 2002 (1).

Common vetch seeds contain 25 % crude protein and 2 % oil. Although crude nutritional elements in common vetch as compared to the beans are not differently significant, the digestabıltiy of nutrients in the common vetch is high. It was reported that the common vetch can be used up to 20 % levels in poultry diets (15). It ıs possible to replace soybean meal at a decreasing levels with an increasing of common vetch leveis as a source of protein. Seeds of common vetch in poultry diets are supplemented either directly or after processing.

Ergün et al. (16) reported that adding 5 % common vetch to the diets was the most effective at broiler performance. As raw and processed vetch at 0, 5, and 10 % leveis added to
broiler diets, the hightest live weight was found in 5 % vetch group, while in 10 % processed vetch group the live weight decreases, and the differences in groups were found to be statistically significant ($P<0.05$). Yalçın et al (32) reported that the groups supplemented with 5 %, 10 % and 15 % of common vetch in quail diets as compared to the control group decreased significantly ($P<0.01$) the lhe weight but did not significantly affect feed consumption live weight gain, feed efficiency ratio, and carcass percentage at the 5th week. Özcan and Demir (25) cited that the common vetch added to the ration as a raw and autoclaved at 20% levels used in broiler feeding affected significantly ($P<0.05$) the liver, gizzard, abdominal fat and hot carcass weights but did not significantly affected heart weight, pancreas weight and carcass percentage. The effect of 20 % raw and outoclaved vetch used in broiler diets on feed consumption, fied efficiency ratio, and live weight gain was not statisticaliy significant whereas its effect on liver, gizzard, and abdominal fat weights was found to be statistically significant in treatment groups relative to control groups ($P<0.05$) and on the other hand, heart weights, pancreas weihgts, and carcass persentage were not significantly affected.

This study was aimed to determine the effect of unprocessed common vetch used at 0 %, 10 %, 20 % and 30 % in turkey diets on growth performance and carcass characteristics.

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MATERIALS AND METHODS

The experiment was carried out in a naturallyventilated house having windows during JulyOctober. 180 one-day old bronze turkey chicks were used in the experiment. Daily chicks were kept in growing cage for two weeks and then were subject to attachment of wing numbers according to the experimental plan. They were transferred to the 2 x 2.5 m dimensioned splitting space. Chicks were kept up to 15th week at the same area. Stocking density was calculated as 0.33 m^2 per bird. Wheat straw was spread out as alitter. Fed and Water was provided as adlibitum. Lighting was provided 23 L (light): ID (dark) in the first two week period and then 18L: 6D up to 16th week period.

Turkeys were ted with 28% crude protein (CP) and 2800 kcal/kg metabolisable energy (ME) during the first four weeks, 26 % CP and 2900 ME during 5-8 weeks period, 22 % CP and 3000 ME during 9-12 weeks period, 16 % CP and 3100 ME during the last period (13-18 week). Seeds of common vetch supplemented to the diet were not subjected to any process and directly added to the diet. Granüle form diets contamning four different vetch levels (e.g., 0 %, 10 %, 20 %, and 30 %) were supplemented to animals fram the first day to 16th week. Vetch seeds were not treated but choped and added to diets. Live weights and feed consumptions were measured weekly. Live weights and feed consumption were determined once in a two-week period by weighing. Sub-sample feeding was done. Sexes are recognised with help of physical appearances when birds were 15 weeks old. The determination of live weights based on males, females and males+females combination sexes. In order to the determine the carcass percentages six males and six females per group summed to 48 birds were slaughtered. Edible yield weights were not inoluded to the carcass weights.

The experiment that randomized complete block desing was carried out by four different groups according to experimental desing. Each group was desinged with three replications and 15 pullets added to each replication. Data obtained from the experiment were subjected ta variance anaiyses, and Duncan tests were applied to examine the difterences among groups. Composition of diets used at different period was given in Table 1.

RESULTS

The effects of using vetch at different levels in turkey diets (0 %, 10 %, 20 % and 30 %) on live weights for different periods were given in Table 2 and Figure 1.

The effects of common vetch used at different levels in the diet on live weights of turkeys for males, females and males+females combinatıon were observed to be significant only at 4th week period ($P<0.05$, $P<0.05$ and $P<0.01$, respectively). while the difterences were not statistically significant at the other periods and at the end of 16th week period. Groups received 0 % and 10 % vetch have higher live weights than that of other groups in 0-4 weeks period.

The effects dietary vetch.at different levels on live weight gain, feed consumption, feed efficiency ratio and livability were shown in Table 3.

The effects of using vetch in the diets on live weight gains were not found statistically significant at 0-4, 5-8, 9-12, 13-16 and 0-16 weeks period. Although the group received 10% vetch had the highest live weight gains, the differences was not found significant.

Differences among treatments regarding the feed consumption for 5-8, 9-12, 13-16 and 0-16 weeks period were not statistically significant, while the group supplemented with 30 % vetch consumed less feed than other groups in 0-4 week periods ($P<0.01$) (Figure 2),

The effects of the use of vetch in diet on feed efficiency ratio at 0-4, 5-8, 9-12, 13-16 and 0-16 week periods were found not ta be significant The lowest feed efficiency was determined in a group supplemented with 30 % vetch at 0-16 week period, but the differences among average values were found not ta be significant.

The effects of vetch supplemented at different levels ta diets on carcass weights, carcass percentages, heart weights, liver weights, gizzard weights, pancreas weights and abdominal fat weights were giyen in Table 4.

With regard to the livability, the differences among groups were found ta be statisticaliy not significant at 0-16 weks during.

Table 1. Composition Of Diets Used İn Experiment (%)

Raw Material	0-4 Week				5-8 Week				9-12 Week				13-16 Week			
Vetch	0	10	20	30	0	10	20	30	0	10	20	30	0	10	20	30
Corn	35	32	28	24	40	36	32	28	45	41	38	35	50	45	42	40
Wheat	14.1	10.9	8.8	6.6	11.3	8.7	6.9	4.7	15.9	13.5	10.5	7.2	25	23.8	20.5	16.3
Soybean meal	35.4	31.2	27	22.8	35	31	26.5	22.3	27.1	22.9	18.7	14.6	17.9	13.6	9.5	5.5
Fish meal	10	10	10	10	7	7	7	7	5	5	5	5	0	0	0	0
Oil	1.6	1.8	2.0	2.2	2.8	3.1	3.3	3.5	3	3.3	3.4	3.6	2.8	3.1	3.3	3.4
Lime stone	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
D.C.P	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Vitamin[1]	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Mineral[2]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Methyonine	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3
Lysin	0.1	0.2	0.3	0.4	0.1	0.3	0.4	0.5	0.2	0.4	0.5	0.6	0.4	0.6	0.7	0.8
Antii-cocsidial	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Salt	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Prothein, %	28	28	28	28	26	26	26	26	22	22	22	22	16	16	16	16
Energy,kcal/kg	2801	2802	2805	2804	2900	2900	2905	2905	3001	3003	3002	3004	3101	3104	3105	3104

[1]: Per kg vitamin:6.000.000 I.U. Vit.A, 600.000 I.U. D_3, 8.000 mg E, 2.000 mg K_3, 1.200 mg B_1, 3.200 mg B_2, 10.000 mg Niasin, 6.000 mg Ca-D Pantotenat, 2.000 mg B_6, 8 mg B_{12}, 400 mg Folik asit, 20 mg D-Biotin, 160.000 mg Co-chlorid

[2]: Per kg mineral:80.000 mg Mn, 60.000 mg Fe, 60.000 mg Zn, 5.000 mg Cu, 200 mg Co, 1000 mg I, 150 mg Se, 446.925 mg Caco3

Table 2. Effect Of Vetch Levels On Live Weights Of Bronz Turkeys

Weeks	Sex	Live weights (g) Vetch levels in diets, % 0	10	20	30	P
0	M	47±1.43	48±1.37	48±1.31	47±1.36	
	F	48±1.29	48±1.68	47±1.44	48±1.42	
	M+F	48±1.38	48±1.53	47±1.39	47±1.39	
2	M	190±26.64	180±23.23	190±18.52	190±26.37	
	F	170±19.80	160±23.03	160±22.36	160±25.04	
	M+F	180±24.02	170±24.83	170±24.04	170±28.86	
4	M	550^{a}±59.85	540^{a}±40.02	520^{ab}±65.34	500^{b}±68.25	*
	F	470^{a}±64.61	460^{a}±42.07	440^{ab}±57.88	420^{b}±55.96	*
	M+F	510^{a}±72.99	500^{ab}±56.96	480^{bc}±72.47	450^{c}±70.37	**
6	M	1070±85.70	1080±78.00	1050±114.20	1010±157.80	
	F	870±105.17	880±69.10	870±87.53	830±124.72	
	M+F	970±132.20	970±124.7	940±132.1	900±163.2	
8	M	1780±116.6	1820±116.3	1770±159.0	1760±210.1	
	F	1440±199.8	1420±72.6	1410±140.2	1380±140.0	
	M+F	1600±239.1	1610±224.4	1560±231.8	1540±252.1	
10	M	2640±189.3	2710±195.7	2650±190.1	2570±280.5	
	F	2080±288.2	2060±96.0	2090±245.2	1960±178.8	
	M+F	2330±371.4	2360±358.1	2320±353.9	2210±378.8	
12	M	3640±224.6	3750±264.4	3630±286.2	3500±404.1	
	F	2830±381.9	2760±123.4	2740±253.9	2620±227.7	
	M+F	3200±515.8	3220±542.1	3100±512.3	2990±538.1	
14	M	4460±266.4	4630±371.9	4520±320.3	4390±429.4	
	F	3360±376.4	3350±152.1	3380±315.2	3200±260.0	
	M+F	3860±642.2	3940±701.2	3840±645.1	3690±684.2	
16	M	5340±388.5	5560±479.5	5470±393.8	5360±481.9	
	F	3920±359.5	3950±183.7	4560±837.8	4430±879.2	
	M+F	4570±804.1	4700±887.9	4560±837.8	4430±879.2	

[a-c]: The values of the same raw having diffedernt supercripts are significantly different.
*: P<0.05, **: P<0.01, M: Male, F: Female, M+F: Male+Female

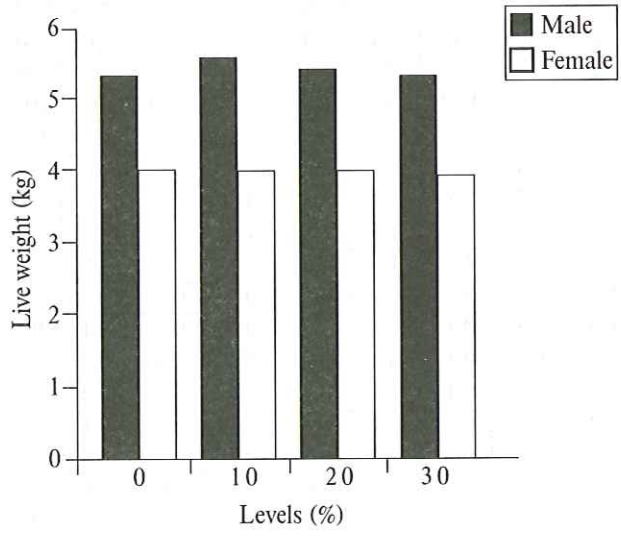

Figure 1. Live Weights İn Male And Female Turkeys At 16th Week

Table 3. Effect Of Different Levels Of Dietary Vetch On Live Weight Gain, Feed Consumption, Feed Efficiency Ratio And Livability

	Vetch levels in diets, %				
Weeks	0	10	20	30	P
	Live weight gain, (g)				
0-4	460±26.3	449±15.8	428±35.3	406±10.9	
5-8	1092±81.6	1110±33.7	1080±57.4	1083±97.3	
9-12	1603±132.0	1611±44.6	1543±16.0	1448±130.1	
13-16	1369±72.3	1481±38.3	1461±60.7	1440±214.0	
0-16	4523±285.2	4650±128.4	4511±110.1	4377±445.8	
	Feed consumption, (g)				
0-4	794[a]±31.5	755[a]±7.5	753[a]±20.0	686[ab]±20.1	**
5-8	2120±260.1	2028±95.5	2050±122.6	1969±165.1	
9-12	3888±355.0	4120±21.6	3904±49.9	3740±293.0	
13-16	5817±287.9	6109±131.6	5884±147.4	6072±171.5	
0-16	12619±920	13012±243	12591±127	12467±430	
	Feed efficiency ratio, (kg:kg)				
0-4	1.73±0.1	1.67±0.1	1.77±0.1	1.70±0.0	
5-8	1.93±0.2	1.83±0.1	1.90±0.2	1.83±0.1	
9-12	2.43±0.1	2.53±0.1	2.50±0.0	2.60±0.1	
13-16	4.23±0.2	2.80±0.0	2.80±0.1	2.85±0.1	
0-16	2.80±0.0	2.80±0.0	2.80±0.1	2.85±0.1	
	Livability (%)				
0-16	97.8±3.9	95.5±3.9	93.3±6.7	91.1±3.8	

[ab]: Differences among the values having different supercripts in same raw are significant.
**: P<0.01.

Carcass weights, carcass percentages, heart weights, and gizzard weights were not affected by the vetch treatments at different levels and the differences among average values of groups were found not to be significant.

Vetch treatment at different leveis supplemented in diet affected significantly liver, pancreas (except males weights) and abdominal fat weights. in response to liver weights, males supplemented with 10 % and 20 % vetch treatment groups and females supplemented with 20 % and 30 % vetch groups showed higher values (P<0.01 and P<0,05, respectively). In general, pancreas weights showed a proportional increase with vetch levels and 20 % and 30 % vetch groups have the highest pancreas weights. Abdominal fat weights in males, females and males+females combination were affected by the vetch supplementation (P<0.05). With respect to the abdominal fat from females and maies+femaies combination, the highest value was observed at 10 % vetch level whiie the lowest level was observed at 30 % vetch level.

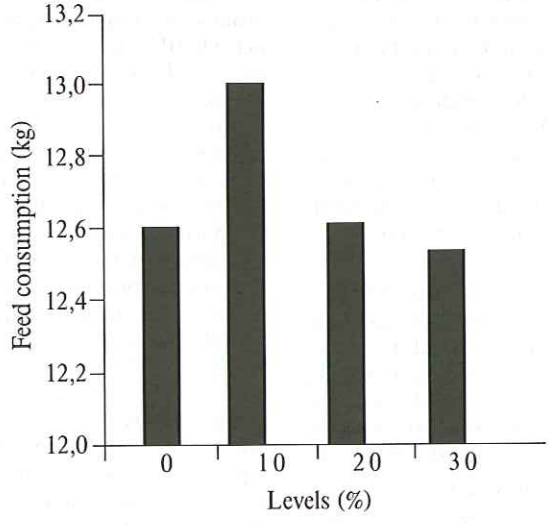

Figure 2. Feed Consumptions Of Treatment Groups At 0-16 Weeks

Table 4. Effect On Carcass Weight, Carcass Percentage, Heart Weight, Liver Weight, Gizzard Weight, Pancreas Weight And Abdominal Fat Weight Of The Vetch Supplemented At Different Levels To Turkey

		Vetch levels in diets, %				
Traits	Sex	0	10	20	30	P
Carcass weight, g	M	3884±171.2	4272±171.2	4024±240.9	4286±295.9	
	F	2553±255.1	2789±150.6	2930±388.6	2666±341.2	
	M+F	3220±725.1	3530±833.2	3480±649.2	3480±899.3	
Carcass percentage, %	M	71.7±0.9	72.4±0.9	72.2±0.3	73.8±3.5	
	F	70.4±0.8	70.7±1.8	70.7±2.3	70.0±1.4	
	M+F	71.0±1.1	71.2±1.9	71.5±1.7	71.9±3.2	
Heart weight, g	M	23.6±2.3	26.5±2.9	24.8±1.8	28.1±4.8	
	F	15.9±1.1	17.3±2.6	18.1±2.6	17.8±2.4	
	M+F	19.7±4.4	21.9±5.5	21.4±4.1	22.9±6.5	
Liver weight, g	M	76.2^{b}±7.4	101.7^{a}±12.8	104.6^{a}±16.6	90.3^{ab}±8.9	**
	F	54.4^{b}±4.7	61.6^{ab}±6.0	71.9^{a}±9.3	74.0^{a}±19.1	*
	M+F	65.3^{b}±12.8	81.7^{a}±23.0	88.3^{a}±21.4	82.2^{a}±16.6	*
Gizzard weight, g	M	96.3±9.3	88.9±13.6	102.0±14.7	105.0±10.9	
	F	67.0±6.4	73.5±4.5	74.1±4.9	74.2±8.1	
	M+F	81.6±17.1	81.2±12.5	88.0±17.9	89.6±18.5	
Pancreas weight, g	M	9.4±1.6	11.2±0.9	11.4±2.2	12.0±1.8	
	F	7.3^{b}±1.1	8.6^{a}±1.1	9.5^{a}±0.9	8.8^{a}±1.0	*
	M+F	8.3^{b}±1.7	9.9^{ab}±1.7	10.5^{a}±1.9	10.4^{a}±2.2	*
Abdominal fat weight, g	M	33.2^{b}±20.7	37.1^{a}±11.6	21.9^{ab}±14.5	13.8^{b}±9.1	*
	F	21.3^{b}±6.8	40.4^{a}±6.5	33.9^{ab}±13.1	22.6^{b}±13.8	*
	M+F	27.3^{ab}±19.3	38.7^{a}±13.4	27.9^{ab}±14.6	18.2^{b}±12.0	*

^{ab}: Differences among the values having different supercripts in same raw are significant.
*: P<0.05, **: P<0.01
M: Male, F: Female, M+F: Male+Female

DISCUSSION

Live weights of turkeys (male, female and male+female sexs) fed diets contained different levels of vetch were statisticaliy significant only at 4th week during growing period (P<0.01). But among groups live weights were not found ta be statistically significant at the end of week. Live weights have been decreased and opposed ta the increase of levels vetch in diets. in general, higher values of live weights were obtained in 10 % vetch treatment at the end of experiment. Farran et al. (19) added 0 %, 7.5 %, 15 % and 22.5 % of common vetch as raw and processing into layer diets in their study and reported that 22.5 % of common vetch used causes a decrease in the live weights. Djeddi and Yalçın (14) cited that common vetch used 20 % in quail diets decreased the live weights. Yalçın et al. (32) reported that diet supplemented with 5 %, 10 % and 20 % of common vetch levels in quail significantly decreased the live weights at 5> week. Harper ve Arscott (21) reported that 0-4 old weeks turkey pullets in diet supplemented with 0 %, 10 % and 30 % of common vetch levels decreased live weights.

Çetin and Aksoy (10), added 0 %, 10 %, 20 % and 30 % of Lathyrus sativus seeds into layer diets at during 0-40 weeks and reported that 30 % of Lthyrus sativus used caused a decrease in the live weights. Many researches were reported that fed leguminoseae in poultry live weights were negative affected. This was due to a restricted features inherented in the toxic factors in leguminoseae (3, 5, 7, 8, 9, 12, 16, 18, 20, 22, 23, 26, 29, 30, 31).

Different levels of the vetch suppiemented to diets did not significantly affect the live weight gains of turkeys at 0-16 week periods. Although, the group fed with 10 % vetch level had a high live weight gam than that of other groups during 0-16 week period, the less observations regarded as numbers were obtained in diets supplemented with 30 % vecth level. Özcan and Demir (25) reported that in broiler diets supplemented with 20 % row and autoclaved common vetch level with respect to the control group the live weight gains at 8-42 day olds were not significantly affected. The similar results were reported with respect to the live weight gains (11,32). The negative effects of observations in live weight gains were similar to the live weight.

With regard to the feed consumption, the differences among groups were found to be statistically significant only at 0-4 week periods (P<0.01). But thes differences were eradicated at later periods. Ergün et al. (17) reported that the common vetch supplemented into diets at 5-10 % levels resulted in a decrease in layer chickens feed consumption. Farran et al. (19) found that raw and processed common vetch used 22.5 % in layer chickens diets decreased the feed consumption. Castanon and Perez-Lanzac (6) reported that when an addition of the common vetch to layer chicken diets at 15 %, 30 % and 45 % was under consideration, the level of the common vetch increases while the feed consumption reduces significantly. Djeddi and Yalçın (14) reported that the use of the common vetch in diets at 10 %, 15 % and 20 % in quail diets did not affect the feed consumption. Özcan and Demir (25) cited that the common vetch used as both row and autoclaved at 20 % levels in diets experiment groups with respect to the control group did not significantly affect the feed consumption of chickens. Chowdhury (7) reported that the laying hens were tolerated the lathyrus sativus seeds than. chicks at the old periods. Demirkuş et al. (12) cited that the lathyrus sativus seeds suplemented into broiler diets at 30 %, 40 % and 50 % leveis, the highest feed consumptions

were obtained in diets containing lathyrus sativus groups and animals shows more desire to consume the lathyrus sativus seeds. Thus, the difference observed at 4 week with respect to the feed consumption was eradicated at later weeks.

In terms of feed efficiency ratios, the control and experiment groups were not affected significantly by the vetch levels at 0-16 weeks. The similar values were obtained from alI groups. Ergün et al. (17) reported that the use of common vetch without processing at 5-10 % levels in layer chickens results in an increase in feed efficiency Castanon and Perez-Lanzac (6) reported that the use of the common vetch at a higher level in layer diets made a negatıve effect on the feed efficiency ratio. Farran et al. (19) reported that the raw common vetch supplemented into laying hens dıets at 22.5 % had a positive effect on feed efficiency. Djeddi and Yalçın (14) reported that the common vetch suppiemented into diets at 10 %, 15 % and 20 % did not significantly affect the feed efficiency ratio in quails. Demirkuş et al. (12) cited that the lathyrus sativus seeds suplemented into broiler diets 30 %, 40 % and 50 % evels, feed efficiency ratio was decreased perhaps due to antinutritional factors.

The diets suplemented at different levels of the vetch did not significantly affect the livabilıty of turkeys and the mortality was found to be similar in alI groups. Ergün et al. (16) reported that the diets containing vetch at 5 % level did not have a negative effect on the health of broiler chickens. Ergün et al. (17) reported that the addition of vetch 10 % level to the diet did not affect negatively the health of laying hens, Harper and Arscott (21) reported that the use of vetch atlO %, and 30 % supplemented to turkey's 0-4 weeks pullet diets did not negatively affect the livability.

With respect to carcass charecteristics including carcass weights, carcass percentages, liver and gizzard weights of turkeys, differences at different levels of common vetch were not statisticaliy significant in males, females and mixed sex turkeys. However, with respect to charecteristics mentioned, when groups and sexes were investigated one by one, an increase in carcass weight, carcass percentage, heart and gizzard weights was observed at a increasing rate in treatment groups relative to control groups as paraileled to an increase levels of vetch in diets. Özcan and Demir (25), cited that in broiler fed by common vetch at 0 % and 20 % levels carcass weights with respect to the control group were significantly very low ($P<0.05$), while carcass percentage was insignificant. Yalçın et al. (32> reported that male quails fed by vetch at 5 %, 10 % and 15 % the carcass weights and carcass percentage were not affected significantly, whereas as the common vetch leveis increase carcass weights decrease ($P<0.05$) and carcass percentage was not affected significantly.

Liver, pancreas and abdominal fat weights were found to be statistically significant in accordance with different vetch levels and sexes (males, femals and mixed sexes) ($P<0,05$). Liver weights were found to be statistically significant in treatment groups than in control group ($P<0.05$) and found to be statistically significant higher in male groups than that in female groups ($P<001$). In terms of liver weights the similar results were reported (14, 15). it can be said that liver can increase with an ıncrease in fat through the consumption of leguminoseae in poultry.

Pancreas weight was statistically significantly observed to be high in female groups suplemented with vetch than that of control group ($P<0.05$). Çetin and Bolat (9) reported that pancrease weight Was siginificantly increased relative ta the control group when Lathyrus sativus supplemented et 0 %, 5 %, 10 %, 15 %, 20 % and 25 % leveis into broiler diets. Demirkuş et al. (12) cited that pancrease weight ırıcreased with an increase in Lathyrus sativus used in broiler diets. The sirnilar results were reported in some researches (2, 5, 29, 30). Goatcher and Mcginnis (20) reported that pancrease weight increased when raw and dry vicia beans, which meet 67 % of proteins of diets, ate by tree weeks old male and female broilers chickens. it was supposed that toxic content of Ieguminoseae has negatively affected pancreas weight.

Different vetch levels in the diet affected significantly the abdominal fat weight of turkeys as well. The highest value of abdominal fat weight was obtained from group with 10 % ($P<0.05$). Demirkuş et al. (12) cited that abdominal fat weight decreased with an increase in Lathyrus sativus used in broiler diets relative to the control group. The significant differences among sexes were observed with respect to abdaminal fat weights ($P<0.05$). The findings are in line with the results obtained by Yalçın et al. (9) and Demir et al. (13). Female turkeys were highly and significantly gat fat than male turkeys. in general, as poultry ted was considered, females were getting fat more than males at the same period.

It can be shown that the obvious increses of liver, pancreas, and abdomianl weights indicate significantly a high rate increase fat in internal organs. One of the distinct features of Ieguminoseae seed feed is both rich in protein and energy.

As a result, it was found that the vetch without processing added to the diet at the range of 0 % to 30 % had na negative effects on the growth performances and carcass characteristics of turkeys. For this reason, it can be suggested that the vetch chipped could be added ta the turkey diets up to 30 % levels.

REFERENCES

1. Anonymous, *2002. Türkiye istatistik yıllığı. T. C. Devlet İstatistik Enstitüsü. Ankara.*

2. Blair, R. and W. Bolton, *1968. Growth of broilers on diets containing field beans (U faba)J. Agric. Sci. Comb. 71:355-358*

3. Blaır, R., Wilson, B. J. and Bolton,W., *1970. Growth of broilers giyen diets containing field beans during perıod the 0-4 week. Brit. Poult. Sci.,11: 387-398*

4. Boulter, D. and Derbyshire, E., *1976. The general propertles, classification and distribution of plant proteins. in plant prateins. (Ed. G. Norton), Butterworths. London, 3-24.*

5. Campbel, L.D. and R.R. Marqardt, *1977. Performance of broiler chicks feod diets of aıying energy density and containing varied levels of raw or heat-treated faba beans. Poultry Sci., 56:442-448*

6. Castanon, J. 1. and Perez-Lanzac, J., *1990. Substitution of fixed amounts of soybean meal for field beans (V. faba), sweet lupins (L. albus), cull peas (P. sativum) and vetchs (V sativa) in diets for high performance laying Leghorn hens. Brit. Poult. Sci., 31:173-1 80.*

7. Chowdhury, S.D., *1988. Lathyrizn7 in poultry. World's Poult. Sci., 44: 7-16*

8. Chowdhury, S.D., *1990, Effects of low and high dietary levels of BAPN on the performance of laying chickens. J. Sci. Fd. Agric., 52:3 1 5-329*

9. Çetin, M. ve Bolat, D. *1992. Etlik piliç rasyonlarında soya fasulyesi küspesi yerine protein kaynağı olarak değişik oranlarda adi mürdümük (Lathyrus sativus) kullanılmasının besi performansı uzerine etkisi. Y.Y.Ü. Fen Bil. Enst. (Y. Lisans tezi), VAN.*

10. Çetin, M. ve Aksoy, A. *1999 Adi mürdümük tohumunun (Lathyrus sativus L.) yumurta tipi civciv, piliç ve tavuk rasyonlarında protein ve enerfi kaynağı olarak kullanılmasının canlı ağırlık artışı,*

yem den yararlanma, yumurta verimi ve yumurta kaitesine etkisi. VIV Poultry Yutav'99 Uluslararası Tavukçuluk Kont., 396-407, İstanbul.

11. Demir, E., Karaalp, M., Özcan, M. A., *1998. /şlenmemiş ve otoklavlanmış fiğin etlik p111 çlere etkileri. Il. Ulusal Zoatekni Bilim Kongresi, Bursa.*

12. Demirkuş, T. , Çetin, M., Eratak, S., Aydın, A. *1999 Etlik piliç rasyonlarında adi mürdümüğün kullanılma imkanları. GAP 1. Tarım Kong., Cilt: 2, 1097-1106, Şanlıurfa.*

13. Dixon, R. M. and Hosking, B. J., *1992 Nutrition value of gram legumes for ruminants Nutr. Res Rey., 5:19-43.*

14. Djeddi, A. N. and Yalçın, S., *1999. Bıldırcın rasyonlarına katılan fiğin yumurta verimi ve kalitesi ile bazı kan parametrelerine etkisi. VIV Pouitry Yutav'99. Uluslararası Tavukçuluk Konf., 594-601.*

15. Ergül, M., *1988. Yemler bilgisi ve teknolojisi EU. Ziraat Fak. Yayınları, İzmir.*

16. Ergün, A., Çolpan, İ., Kutsal, O., Yalçın, S., *1986. Etlik melez piliç karma yemlerinde fiğ proteininden yararlanma olanaklarının araştırılması. Doğa Tr. Vet. ve Hayv. Derg 10: 144-1 52.*

17. Ergün, A., Yalçın, S., Çolpan, İ., Dikicioğlu, T., Yıldız, S., *1987. Fiğin yumurta tavuğu rasyonlarında değerlendirilmesi. A. Ü. Vet. Fak. Derg., 34: 449-466.*

18. Ergün, A. Yalçın, S., Çolpan, İ., Yıldız, S., Önol, A.G. *1991. Burçağın yumurta tavuğu rasyonlarında kullanılma olanaklarının ara ştırılması. Tr. J. of Vet. and Anim. Sci. 15 .148-163, Ankara.*

19. Farran, M. T., Uwayjan, M. G., Miski, A. M. A., Sleimen, F.T., Adada, F.A. Ashkarian, V. M., *1995. Effect of feeding raw and treated common vetch seed (V sativa) on the performance and egg quality parameters of laying hens. Poultry Sci., 74:1630-1635.*

20. Goatcher, W.D. and Mcginnis, J. *1972.Effect of autoclaving field beans (Phaseolus vulgaris) and of supp!ementing diets containing beans with amino acits or antibiotics on performance of young chicks. Poultry Sci., 5:1976-1 983.*

21. Harper, J. A. and Arscott, G. H., *1962, Toxicity of common and hairy vetch seed for poults and chicks. Poultry Sci., 41: 1968-74.*

22. Leeson, 5., Atteh, J.O., Summers, J.D. *1989. Soybean in diets for pullets and laying hens. Nutr. Rep. in. 42(2):425-430.*

23. Low, R. K-C., Rotter, R.G. Marquardt, R. R., Campbell, G.C. *1990. Use of lathyrus sativus (Var seminis albi) as a foodstuff for poul. Brit. Poult. SoL, 31 :615-625.*

24. Mosse, J. and Pernollet, J. C., *1983. Storage proteins of legume seeds. in chemistry and biochemistry of legumes. (Ed. S.K. Arora), New Delhi. London, 111-194.*

25. Özcan, M. A. ve Demir, E., *2000. Enzim katkılı çiğ ve otoklavlanmış fiğ'in (V. Panonica crantz) etlik piliçlerdeki etkileri. Tavukçuluk Araştırma Dergisi, 2: 36-40.*

26. Rotter, R.G., Marquardt, R.R., Low, R.K.C., Briggs, C.J. *1990. Influence of autoclaving on the etfecıs of /athyrus sativus fed to chicks. Can. Anim. Sol., 70: 739-741.*

27. Roy, D. N., *1981. Toxic amino acids and proteins from lathyrus plants and ot her leguminous spec/es. Nutr. Abst. Rey., 51:* 69 1-704.

28. Somogyi, J.C., *1978. Natural toxic subtances in food. World. Rey. Nutr. Diet., 29: 42-59.*

29. Wilson, B.J. and J.M. Mcnab, *1972. The effecf of autoklaving and methionine supplementation on the growth of chicks giyen diets containing field beans (Vicia faba 1.). Brit. Poult. Sci, 13:67-73.*

30. Wilson, B.J., J.M. Mcnab., H.Bently, *1972. The effect on chick growth a tripsin inhibitor isolate from the field bean (Vicia faba) Brit. Poultry Sci., 13: 521-528.*

31. Yalçın, S., Ergün, A., Çolpan, İ., Küçükersan, K., Dikicioğlu, T. *1991. Yumurta tavuğu rasyonlarında mercimek artığının kullanılma olanaklarının araştırılması. Tr. Jour of Vet. and Anim. Sci., 15:177-192.*

32. Yalçın, S., Şehu, A., Kaya, İ., *1998. Bıldırcin rasyonlarına katılan Adi fiğin (V. sat/ya L.) büyüme, karkas randımanı ve bazı kan parametreleri üzerine etkisi. Tr. J. of Vet and Anim. Sci. 22: 37-42.*