

Responses of Lambs to the Dietary Inclusion of *Trigonella Feonum Graceum L.*

Ahmet Sahin, Mahmut Keskin and Osman Bicer
Mustafa Kemal University, Faculty of Agriculture,
Department of Animal Science, Antakya, Turkey

Abstract: The present study was designed to investigate whether there was any effect of *Trigonella feonum graceum L.* (TFG) on appetite and growth of Awassi lambs or not. Thirtysix, 3-month-old male lambs were used for 84-d. The main effect was the doses of TFG inclusions (0, 2, 4 and 8 %) in lamb diet. Each treatment consisted of 9 lambs as a group. Lamb diet having 2467 Kcal ME and 161g kg⁻¹ made from barley, cotton seed meal, wheat bran and alfalfa straw. TFG inclusions (0, 2, 4 and 8 %) did not affect either daily food intake (1423.6, 1518.9, 1615.6 and 1586.9 g, respectively) or daily live weight gain (238.0, 245.1, 221.3 and 233.7 g, respectively) ($P>0.05$). The results showed that *Trigonella feonum graceum L.* did not affect the appetite and growth of Awassi lambs.

Key words: Lamb, appetite, *Trigonella feonum graceum L.*

Introduction

In conventional lamb feeding, food additive usage has limited in Turkey (Akgunduz et al,1993; Demirsoy and Akcapinar,1997; Celik and Alarslan, 1998; Yurtman et al.,1999). Mainly focused on the changes in the ratio of hay: concentrate feed in diet, lamb diet has been formulated (in fattening). In addition to this, Ak et al. (1995) used monensin as a food additive in lambs. However, there is a general public opinion in developing countries not to use synthetic chemicals in feeding procedure of animals. There has been an important trend in the usage of natural feed ingredients in these countries. Also, there have been limitations in usage of antibiotic in animal feeds as result of present concern about chemical residuals in human foods (Gill, 1999). To consider healthy next generations, animal nutritionist must improve new feeding models for residual free animal products. There is a need to study the alternative food additives against synthetic chemicals. *Trigonella feonum graceum L.* is one of herbals affecting appetite. Its effective substance is trigonella (Kamel, 2000). Also, it has antimicrobial and hypolipidemic effect on organism (Calik and Bayrak, 1997). Therefore, the present study was aimed to test whether *Trigonella feonum graceum L.* has impact on appetite and growth in Awassi lambs.

Materials and Methods

This study was carried out with thirtysix, 3-month-old fat tailed male Awassi lambs at Research and Training Farm of Mustafa Kemal University, Agriculture Faculty in Antakya Province of Turkey.

Antakya is located between 36o North latitude and 36o East longitude in the Eastern Mediterranean region where climatic conditions are hot and dry in summer, and warm and rainy in winter.

Lambs were accustomed to experimental unit and fed a diet (Table 1) containing 2467 Kcal ME and 161 g CP kg⁻¹ for 2 weeks. At the beginning of study, lambs were randomly (9 lambs per group) distributed into four groups (inclusion of 0, 2, 4 and 8 % of TFG). The experimental units with the size of 5x5 m were in semi-open sheds. Each experimental unit contained one feeder 40 kg food capacity with 50 lt watering equipment.

Table 1: Composition of the lamb diet given to Awassi lambs

Ingredients	%
Barley (890 g DM, 2937 Kcal ME, 110.4 g CP and 49 g CF kg ⁻¹)	48
Wheat bran (900 g DM, 1125 Kcal ME, 31.5 CP and 375 CF kg ⁻¹)	18
Cotton seed meal (900 g DM, 2025 Kcal ME, 319.5g CP and 129.6 g CF Kg ⁻¹)	22
Alfalfa straw (850 g DM, 1530 Kcal ME, 150g CP and 290g CF kg ⁻¹)	10
Vitamin & mineral mixture (obtained from a commercial source)	2
Calculated composition per kg fresh diet	
ME (Kcal)	2467
Dry matter (DM), g	887
Crude protein (CP), g	161
Crude fibre (CF), g	95

To prepare experimental diet, barley (pressed), wheat bran, cotton-seed meal and alfalfa straw were used as feed ingredients. Control animals fed a diet having 161 g crude protein and 2467 Kcal ME kg⁻¹ (Table 1) *ad lib* while treatment groups were fed on TFG included diet (2, 4 and 8 %). The experiment lasted 84 days starting on 3rd of May to 25th July 2001). Lambs were subjected to natural day lighting and ambient temperature ranged from 15 to 30oC and allowed free access to water during this period. The main effect of TFG doses (0, 2, 4 and 8 %) was compared in this experiment. Data concerning growth and food intake were analysed using the "One-Way" ANOVA procedure of SPSS (SPSS, 2001). Food intake, growth and their relative data obtained in this study are presented as means per group with standard error of mean (SEM).

Results

Results regarding food intake and body gain are shown in Table 2. Results illustrate that the TFG inclusions in diet did not affect daily live weight gain and food intake (P>0.05).

Table 2: Effect of dietary inclusions of TGF on food intake and growth performance of Awassi lambs (P>0.05)

Parameters, per lamb	0% (Control)	2% TFG	4% TFG	8% TFG	SEM
Initial live weight, kg	21.88	23.37	24.24	22.60	1.01
Final live weight, kg	40.73	43.96	42.83	43.12	1.26
Daily food intake, g	1423.6	1518.9	1615.6	1586.9	61.8
Daily gain, g	238.0	245.1	221.3	233.7	7.5
Food conversion ratio (FCR), g feed/g gain	6.52	6.30	7.55	7.03	0.39

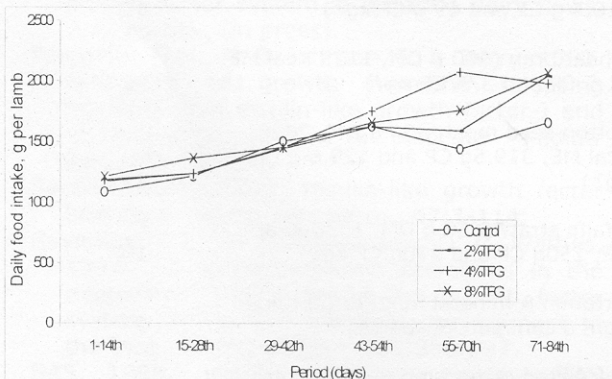


Fig. 1 shows the insignificant difference in food intake (P>0.05) during all experimental periods. The evident increase in food intake during the periods of 55-84 days was found statistically insignificant (P>0.05).

Discussion

TFG includes 5.3 % oil, 24.3 % crude protein (Çalik and Bayrak, 1997) with effective substances affecting appetite and metabolism. In the present experiment, it was assumed that TFG would affect appetite and increase daily gain. However, this was not happened. Perhaps, the higher doses of TFG would be more effective. Besides, the individual responses to TFG doses might be needed to be investigated in future studies so that the effect of TFG doses can be clearer than that of current experiment.

In conclusion, TGF inclusions did not changed appetite in Awassi lambs fed in group without changing their growth, suggesting that individual responses are needed to be investigated rather than group level.

References

Ak, I., Filya, I., Akgunduz,V. ve F.Deligozoglu.(1995). Entansif besi uygulanan merinos erkek kuzularında monensinin besi performansına etkileri. Lalahan Hayvancilik Araştırma Enstitüsü Dergisi, 35:30-46.

Akgündüz, V., Ak,I., Deligozoglu,F., Karabulut,A. ve I.Filya. (1993). Entansif besiyeye alınan merinos erkek kuzularda deölipik protein kaynaklarının besi performansý ve karkas özelliklerine etkisi. Lalahan Hayvancilik Arastirma Enstitüsü Dergisi, 33: 28-48.

Calik, E. and A. Bayrak, 1997. Buyotu (Trigonella feonum -graceum L.)' nun bazi fiziksel, kimyasal ve mikrobiyolojik özelliklerinin araştırılması. Standard, Mayıs 1997:148-155.

Celik, B ve O. F. Alarslan, 1998.Tek yem arpa rasyonuna protein kaynađı olarak üre katilmasının kuzularda besi performansına etkileri üzerinde bir araştırma. Lalahan Hayvancilik Arastirma Enstitüsü Dergisi, 38:41-48.

Demirsoy, S. Ve H.Akcapinar, 1997. Kuzularda büyümeyi etkileyen çevresel faktörlerin kovaryans analizi ile incelenmesi. Lalahan Hayvancilik Arastirma Enstitüsü Dergisi, 37:37-55.

Gill, C., 1999. Herbs and plant extracts as growth enhancers. Feed international, April 1999: 20-23.

Kamel, C., 2000. A novel look at a classic approach of plant extracts. Feed Mix, Volume 8 Number 3: 16-17.

Ozcan, L., O. Gursoy, O. Torun, E. Pekel, 1993. GAP bölgesinde yetiştirilen ivesilerin süt, döl, ve et verimlerinin ishahında egzotik irklardan yararlanma olanakları.4. Karkas özellikleri. Çukurova Üniversitesi Ziraat Fakültesi Dergisi 8:77-90.

SPSS, 2001. SPSS for Windows. Release 11 Version. SPSS Inc.

Torun, O., O. Gursoy, L. Ozcan and E. Pekel, 1992. Ceylanpinar Tarım İşletmesinde farklı iki rasyonla beslenen ivesi kuzularında besi performanslarının karşılaştırılması. Çukurova Üniversitesi Ziraat Fakültesi Dergisi 7:103-114.

Yurtman, I.Y., S. Soycan, F. Karaagac, L. Coskuntuna, ve M.L Ozduven, 1999. Erken Laktasyon döneminde tekdüze yemlemenin koyunlarda süt verimi ve kuzuların gelişimine etkileri. Akdeniz Üniversitesi Ziraat Fakültesi Dergisi., 12:1-10.