Using different levels of sorghum in finishing Ghezel×Arkhar-Merino crossbred lambs diets and its effects on animal performance

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Introduction In most of the semi-arid regions of the world such as Iran, animal feed production is difficult and farmers have to use some alternative feedstuffs such as sorghum to reduce feeding costs. In many cases a problem in utilization of these alternative feeds is the presence of anti-nutritional factors such as condensed tannins found in them (Kumar & Vaithiyanathan, 1990). Dietary tannin can restrict intake (Terrill *et al*., 1989) and reduce overall weight gains by livestock (Turner *et al.*, 2005). The aim of the present study was to investigate the effects of replacing dietary barely with different levels of sorghum on lamb performances.

Materials and methods Sixteen *Ghezel×Arkhar-merino* crossbred male lambs with live weights ranging from 34 to 55 kg (46±5.8) were used in the experiment. Experimental animals were kept at Research Farm of Tabriz University. Each pen was including four animals that were randomly assigned to one of the four dietary treatments (Table 1) in a completely randomized design (CRD) assignment. Animals were adapted for 3 weeks before starting main experiment. Each pen was provided with a food trough and a water container, and food was offered two times daily. During the 60-d feeding trial, body weight was recorded on individual animals at the 20 d interval and used to adjust feed intake. Live-weight gain was calculated from 12 h fasted weights taken at the start and end of each weighting. Total tannin was measured by method of Makkar (2000).Experimental treatments didn't balance for the initial weight at the beginning of the study, so we used initial weight of lambs as a covariate. Feed intake and weight gain data were analyzed using the general linear model of the Statistical Analysis Systems (SAS, 1999).

Table 1 Experimental rations compositions

Treatment	A	B	C	D
Alfalfa hay	20	20	20	20
Barley grain	80	20	10	0
Sorghum grain	0	60	70	80
Crude protein (%)	12.27	12.33	12.34	12.35
Total tannin from sorghum (%)	0	0.588	0.686	0.784

Result The results of experiment indicated that there was significant difference in final weight between treatments A and B, but when we used initial weight as covariate, didn't find any significant effect of dietary treatments on dry mater intake, average daily gain and feed conversion ratio (Table 2).

Table 2 Effect of dietary treatments on dry matter intake, weight gain and FCR

Tratment	A	B	C	D
Dry matter intake(kg/day)	3.1±0.2	3.4±0.3	3.3± 0.3	2.8±0.2
Final weight(kg)	58.1 ± 1.4^{a}	62.7 ± 1.1^{b}	59.7 ± 1.1^{ab}	58.4 ± 1.4^{ab}
Total weight gain (kg)	11.1±1.1	15.4±1.3	14.2±1.4	12.5±1
Average daily gain(kg)	0.19±0.02	0.24±0.02	0.22±0.02	0.2±0.02
Feed conversion ratio	13.3±1.9	11.8±1.6	13.4±1.5	14.1±2

Mean values with different superscripts (a and b) within a row differ significantly ($P < 0.05$).

Conclusion The results of present study showed that using of different levels of sorghum in finishing lamb's diets can not affect their performances. May be the low number of experimental units affected the accuracy of the results so it is necessary to use more animals in each treatment.

Reference

Kumar, R. and S. Vaithiyanathan, 1990. Occurrence, nutritional significance and effect on animal productivity of tannins in tree leaves. Animal Feed Science and Technology 30, 21-38

Makkar, H.P.S. 2000. Quantification of Tannins in Tree Foliage. Animal Production and Health Sub-programme, FAO/IAEA Working Document. IAEA, Vienna, Austria.

SAS Institute. 1999. SAS User's Guide. Statistics. Version 8.2 edition. SAS Institute Inc., Cary, NC.

Terrill, T.H., G.B. Douglas, A.G. Foote, R.W. Purchas, G.F. Wilson and T.N. Barry, 1989. Forage preservation method influences on tannin concentration, intake and digestibility of Sericea lespedeza by sheep. Agron Journal. 81, 435-439

Turner, K.E., S. Wildeus, J.R. Collins, 2005. Intake, performance, and blood parameters in young goats offered high forage diets of lespedeza or alfalfa hay. Small Ruminant Research 59, 15–23

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