Advances in Bioresearch
Adv. Biores., Vol 5 (1) March 2014: 64-66
©2014 Society of Education, India
Print ISSN 0976-4585; Online ISSN 2277-1573
Journal's URL:http://www.soeagra.com/abr.html
CODEN: ABRDC3
ICV 7.20 [Poland]

Advances in Bioresearch

ORIGINAL ARTICLE

Effects of Grain Processing on Performance of Feedlot Moghani lambs

R. Afrasiabzade, O. Esteghamat, M. Jafari
Department of Animal Science, Astara Branch, Islamic Azad University, Astara, Iran

ABSTRACT
To evaluate the effects of various parameters on the performance of fattened lambs, Moghani race, a test on 40 male lambs with an average weight of 27/63 ±0.746 kg of completely randomized design with 4 attendance and 10 replicates on each treatment period was 70 days. In this experiment ration's energy level was 5.2 mega calories per kg of crude protein and 14.7 percent according to NRC-1985 that with food items like hay, wheat straw, corn, soybean meal, barley supplementary mineral materials, vitamin and salt was adjusted. The treatments of experiment were: 1: the feedlot rations containing whole barley grain without processing as a control, 2. ration containing ground barley grain, 3, ration containing wet barley grain, and 4. ration containing grain have been parched. Outcomes shows that daily body weight gain at nourished lambs with processing grain was significantly ($p \leq 0.05$) more than the control treatment (whole barley grain), and among various methods of processing, the process of wet barley grain on daily body weight gain was significantly more than ($p \leq 0.05$).
Key words: *processed barley grain, Moghani lambs, wet barley grain, parched barley grain.*

Received 19/01/2014 Accepted 20/02/2014

How to cite this article:
R. Afrasiabzade, O. Esteghamat, M. Jafari. Effects of Grain Processing on Performance of Feedlot Moghani lambs. Adv. Biores., Vol 5 [1] March 2014: 64-66**.** DOI: 10.15515/abr.0976-4585.5.64-66

INTRODUCTION

After wheat, barley grain is more common cereal especially in cold and temperate regions. That's TDN is lower than corn, niacin is threefold of corn and have no A&D vitamins [1]. Its metabolism energy balance is approximately 13.3 mega joule/ kg for ruminators and like other grains its protein has low quality and deficiency from phase of lysine amino acid [2].

Chemical compositions of different items of barley can be changed under the influence of genetic and environmental factors [3]. This cereal as an energy resource and fast digestion carbohydrates on rumen, because the whole grain is resistance to attack by microbes on rumen. In addition barley grain toward this action is resistant and if whole grain is used in animal nutrition, large amount of that will be eject through feces.

Various methods of processing are using for improve alimentary value exist on grain, especially starch and protein, which also increase digestibility and palatability, but effort destruction of weed seeds and prevent their proliferation through manure.

The purpose of the processing is improving availability to energy and starch on rumen by extreme amount of carbohydrates digestion [4-7].

METHODS AND MATERIALS

To evaluate the effects of various parameters on the performance of fattening barley lambs Moghani race, from the 40 head of males with mean weight of 27.63±0.746 kg in the completely chromatic model with 4 treatments and 10 repetition on each treatment during 70 days (14 days adaptation period and 57 days of main experimental period) were used.

In this experiment energy level of ration was 2.5 mega calories per kg, CP 14.7%, Calcium 0.51, P 0.24 % according to NRC-1985respectively, that adjusted with larder items like alfalfa (34.5 %) wheat straw (4%) soybean meal (3.75%) corn (19%), barley (38%), mineral and vitamin supplements (0.5 %), and salt 0.25%. chemical analyzes of these items used in experiment were based on NRC-1985.

Treatments were containing, 1: fattening ration containing whole grain barley without processing, as seen.
2: ration of ground grain (hammer mill and sieve 2mm)
3: ration of wet barley grain (72 hours in tap water)
4: ration containing ground barley grain (10 minutes on 120 ^{o}c)
Feeding lambs have been done with completely mixed ration in two stages of pre-experiment (adaptation period) during 14 days and main stage during 56 days and pending experiment lambs were fattening three times, in morning, noon and afternoon, then remained and desultory food of each feed, before the next day's meal was collected and weighted (table 1). During the test, lambs were given free water. Characteristics of feedlot such as feed intake and increased weight was measured biweekly. It should be noted that during the adaptation period hygienic actions such as vaccines injection Enterotoxaemia and doping anti-parasitic were given. Date received from the test were analyzed (40samples contain 4 treatments and 10 replicates per treatment), in the frame of completely randomized plan and based on statistical model.
Also independent comparison has been done between not treated barley (control) and treated barley.
$Yij=\mu+Ti+\varepsilon ij$
Yij = each of experiment observations
μ: population mean
Ti: effect of experimental groups
ε ij: error of testing
The data were processed using MSTATC software and averages comparison with Duncan's multiple range test at the 5 % level of possibility.

Table 1- components and chemical composition of the experimental rations (percent on dry matter)

Elements of ration	percent
Hay	34.5
Wheat straw	4
Soybean meal	6.65
Barley	38
Supplements of vitamins and materials	0.5
Salt	0.25
The chemical composition	Metabolism energy (mega calories per kg)
CP	14.7%
Ca	51%
P	0.24%

RESULTS AND DISCUSSION

Table2. Average feedlot characteristics on fed lambs with rations contain different methods of processing barley grain.

Attribute	Whole barley grain (control)	Wet ground grain	Wet barley grain	parched seed of barley
Used dry matter (kg per day)	1.32	1.35	1.38	1.33
Average daily weight gain (g)	211.33 C	221.42 B	251.18 A	213.09 C

-Treatments (rations with different methods of processing barley grain)
* Letters indicates a significant difference on possibility level 5%.

Experimental results showed that average daily weight gain in lambs fed on wet barley significantly was more than the other treatments ($p \leq 0/05$) Well as independent comparison between not treated barley (control) with treated one showed that average of different processing barley grain methods on daily weight gain of fattened lambs have significant difference in comparison with not treated barley ($p \leq 0/05$).
Improving daily weight gain and dry matter intake under the effect of using different methods of processing barley are in line with obtained results from other researchers. It means about different available physical process of heating and cooling, more performance is connected to soaking the barley grain. The highest yield is about reduce resistant of starch to digestive responses so that with rupture cross linking proteins changed to amyloid and more easily are available for microorganisms and secretory enzymes sources are microbial and bestial [8-10].

Productivity and use of cereal starches may be influenced by processing. This action changes the location of starch digestion from gut to rumen and ultimately increase digestibility ratio in both cecum and large intestine, reducing zymotic losses and also decreased the particles size [9] .Given that the barley grain is one of major cereals for energy production in ration of feedlot cattle but because of having high yarn it has low digestibility toward other cereals. So processing barley grain can be one of main ways to change the value of that food particularly starch and protein. Based on available data received from this experiment, among available methods , soaking method(with tap water for 72 h) , had better performance on Average daily weight gain in fattening lambs in comparison with other methods (grinding and parching). So all cattlemen can use this method for improve nutrition value without any lateral cost.

REFERENCES

1. Tabatabai.A (1972), purebred dairy cattle, published by publishing Centre sphere, p. 40th
2. Sufi Siavash. R., And H. JanMohammadi. (1983). Animal Nutrition (Translation) ,(Second Edition). Amidi Publications., P. 580, Tabriz, Iran.
3. Saastamoinen, M., Plaami, S., Kumpalainen, J., Rantanen, O. (1991). Concentration of water soluble and insoluble β-glucan and phytic acid in 6-row and 2-row barly varieties. Cereal Res. Commun. 19: 391-397.
4. Koenig, K. M., K. A.,. Beauchemin, and L. M. Rode. (2003). Effect of grain processing and silage on microbial protein synthesis and nutrient digestibility in beef cattle fed barley-based diets. J. Anim Sci. 81: 1057-1067.
5. Beauchemin, K.A., McAllister, T.A., Dong Y., Farr B.I. and Cheng K.J. (1993). Effects of mastication on digestion whole grain cereal by cattle. J. Anim Sci .72:236–246.
6. Beauchemin, KA., Farr B.I., Rode LM., and Schaalje G.B. (1994). Effects of alfalfa silage chop length and supplementary long hay on chewing and milk production of dairy cows. J. Dairy Sci. 77:1326–1339.
7. Jeroch, H., Danicke, S. (1995). Barley in poultry feeding.(a review) . World's Poult Sci. J. 51: 271-291
8. Theurer,C.B.1986.Grain processing effects on starch utilization by ruminants. J.Anim Sci. 63:1649-1662
9. Theurer, C.B., J.T. Huber, and R.C. Wanderlay. (1999). invited review،summury of steam flaking corn and sorghum grains for lactating dairy cows. dairy sci.72:1950-1959
10. Vansoest, P.J., (1994).nutritional ecology of the ruminant. 2ed. Cornell Univ. press ,USA.