

Effect of Feeding Dietary Treated Wheat Straw with Whey and Urea on Fattening Lambs Performance

¹O. Dayani, ¹R. Tahmasbi and ²M.R. Sabetpay

¹Research Centre of Animal and Poultry Feeding, College of Agriculture,
Department of Animal Science, Shahid Bahonar University of Kerman, Kerman, Iran

²Iran Research Centre, Jahad Keshavarzi Centre of Kerman, Kerman, Iran

Abstract: The present study was conducted to evaluate the effect of feeding treated wheat straw with whey and urea on fattening lambs performance. About 4.5 kg urea and 1.5 kg salt were dissolved in 40 L water and mixed with 30 L of whey and final solution spreaded with over 100 kg chopped wheat straw. Thirty two male lambs were randomly divided into four feeding groups. Each treatment consisted 8 male lambs during 85 days experimental period to compare performance with diets based on barley supplemented with 30% wheat straw. Treatment 1 (control) were fed 30% Untreated Wheat Straw (UWS), treatment 2) 20% UWS+10% Treated Wheat Straw (TWS), treatment 3) 10% UWS+20% TWS, treatment 4) 30% TWS. The animals were slaughtered after 85 days of feeding and carcass and some meat quality parameters were measured. Average final weights of lambs did not differ significantly between experimental groups. However, average live daily and weight gain were significantly ($p < 0.03$ and $p < 0.001$, respectively) higher in lambs fed treatments 2 and 3. Feed conversion ratio was lowest in lambs fed 20% TWS (8.34) and 10% TWS followed by those fed control diet (10.95) which in turn were superior to those fed the 30% TWS diet ($p < 0.03$). No differences were observed for live weight gain between parameters and carcass weights were similar for the diets. Dissection of different anatomical parts showed a higher percentage of lean meat, carcass fat and internal fat in animals fed treated samples compared to control ones. The results of this experiment indicate that treated wheat straw silage can replace as part of untreated wheat straw. The lambs, indeed maintained similar growth rates compared to those given the control (traditional) diet and the feeding cost per kg of body weight gain was lower in the experimental diet. Carcass and meat quality were not affected by treatments and thus, the diet containing treated wheat straw could not represent an economic advantage for procedures. At the end of the trial, the findings were not statistically important ($p < 0.05$). In conclusion supplementation of treated wheat straw with a barley based concentrate support had not positive effect on fattening lambs performance before and after slaughtering.

Key words: Sheep, wheat straw, treated wheat straw, carcass traits, performance, fattening lambs

INTRODUCTION

The feeds that are available to ruminants in developing countries are fibrous and relatively high in ligno-cellulose. These kinds of feeds are usually low digestible and often have deficiencies in critical nutrients such as protein, non-protein nitrogen and minerals. Continuous attempts have been made to improve the feeding value of low quality roughage through physiological, biological and chemical process (Chabaca *et al.*, 2000; Selim *et al.*, 2004).

There is a large excess of crop residues mainly wheat straw. The use of straw for cattle, sheep, goat fattening has been limited by the low intake and consequent requirement for costly supplement straw is the most

abundant of all agricultural residues and has a great potential as a feedstuff for ruminants in most semi-arid and sub tropical regions.

Considering the factors limiting the efficiency of fibrous material, it is clear that if domesticated animals fed mainly by these kinds of diets, their production efficiency will be low. Therefore, processing of these by-products and reducing limiting factors will be essential. On the other hand, any progress in animal production efficiency (using fibrous by-products) depends on increasing the digestibility of diet. This can be achieved by limiting factors or reducing their effects.

Ammoniation of crop residues through urea treatment is considered the most viable chemical method to improve feeding value of crop residues for ruminants

CONCLUSION

The results of this experiment indicate that supplementation of Treated Wheat Straw (TWS) with barley based concentrate had some beneficial effect on the traits studied, although the differences in many cases failed to reach statistical significance. However, average feed conversion was significantly ($p < 0.03$) lower in animals fed treatment 3. Urea treated wheat straw ensiled with whey and urea can be included up to 20% DM of growing sheep ration without any negative effect on productivity. It is of worth mentioning that this inclusion can reduce the concentrate requirements by growing sheep thus provide an opportunity for cost effective animal protein production.

Further research is necessary to study the fermentation kinetics during ensiling and chemical changes in fiber content that occurred in wheat straw ensiled with urea and whey which has fermentable sugar sources having acidic pH.

IMPLICATIONS

Supplementing the diets of lambs with treated wheat straw to increase its nutritive value may seem at first to be an expensive proposal however, when one considers the better feed conversion and the shorter period on feed, treating wheat straw with urea and whey may prove to be beneficial.

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