Int.J.Curr.Microbiol.App.Sci (2018) *7*(9): 2032-2035

International Journal of Current Microbiology and Applied Sciences
***ISSN: 2319-7706* Volume 7 Number 09 (2018)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2018.709.246

Effect of Dietary Supplementation of Yeast on Growth, Feed Conversion Efficiency and Cost of Feeding in Surti Goat Kids

S.K. Pradhan*, M. Choubey, V.R. Patel, V.B. Kharadi and V.S. Dabas

Department of Animal Science, N. M. College of Agriculture, Navsari Agricultural University, Navsari-396 450, Gujarat, India

**Corresponding author*

Keywords

Goat, Yeast, Growth, Feed efficiency, Economics

Article Info

Accepted:
12 August 2018
Available Online:
10 September 2018

A B S T R A C T

An experiment was conducted to evaluate the effect of yeast supplementation on growth, feed conversion efficiency and cost of feeding in Surti goat kids. A total of 16 male Surti goat kids of four months old were selected with average body weight of 7.53±0.13 Kg. Animals were randomly divided in to two groups with eight replication per group. Active dried yeast (*S. cerevisiae* CNCM I-1077) was supplemented in one experimental group at the rate of 2 % of DMI, and the second group without any supplementation was control. The feed intake was measured daily for 80 days and body weight was taken on first and eighth day of the experiment. The result shows that there was significant ($P < 0.05$) improvement in body weight gain, feed efficiency and cost economics in supplemented group without affecting the feed intake between the control and supplemented group. Hence it was concluded that supplementation of active dried yeast (*S. cerevisiae* CNCM I-1077) at 2% of dry matter intake would improve the growth, feed conversion efficiency and cost of feeding in surti goat kids.

Introduction

Small ruminant farming is still the major chunk of livelihood among the small and marginal farmers in India. Agricultural by-products and crop residues represents a potential source of dietary nutrients for these animals. These resources are generally deficient in readily available source of energy, protein and other micronutrients. More over the high fiber content of these feed resources restrict the accessibility of ruminal microbes thereby their digestibility (Tan *et al.*, 1995). In recent years, use of probiotics has been used to manipulate the rumen microbial ecosystem to enhance the nutritive value and utilization efficiency of low-quality roughages (Tang *et al.*, 2008). Among the different microbial feed additives, *Saccharomyces cerevisiae* and *Aspergillus oryzae* are more effective in rumen, whereas lactobacilli are effective during pre-ruminant stage (Khuntia and Chaudhary, 2002). Yeast culture supplementation in ruminant diets can increase dry matter intake (DMI), production performance, cellulose degradation, and nutrient digestibility (Lesmeister *et al.*, 2004). In vitro studies have also shown that yeast culture favorably modified the mixed ruminal microorganism fermentation and stimulated

cellulose digestion by pure cultures of predominant ruminal bacteria (Lynch and Martin, 2002; Miller *et al.,* 2002). However, the effects of Yeast culture on animal productivity are strain-dependent. There is a lot of variation in the performance of same animal fed on different species of probiotic, or even the same species but different strain of probiotic (Kamal *et al.,* 2013; Newbold *et al.,* 1996). Therefore, the present study was undertaken to assess the effect of live YC (*Saccharomyces cerevisiae* CNCM I-1077) supplementation on growth performance and nutrient utilization in Surti goat kids.

Materials and Methods

Anima housing treatment and experimental design

The experiment was conducted at livestock Research station, Navsari Agricultural University, Navsari. Sixteen male Surti goat kids of weighing 7.53±0.13 (4-month-old) were selected for this experiment. The animals were housed in individual pens (1m × 2 m). In the first day all kids were dewormed with albendazole (10 mg/kg B.W). The pens were cleaned and disinfected by normal disinfectant before the onset of the experiment. The animals were randomly assigned to one of two different treatments with eight animals per treatment following the completely randomized design. Active dry yeast consists of pure dried yeast cells (*S. cerevisiae* CNCM I-1077) with viability counts ranging from 15-25 billion live yeasts cells or colony forming units (CFU) per gram was procured from Lallemand Animal nutrition, France. Active dried yeast (*S. cerevisiae* CNCM I-1077) was supplemented in one experimental group at the rate of 2 % of DMI, and the second group without any supplementation was control. The animals were fed a concentrate and roughage based diet to fulfill their nutrient requirement as per the recommendation of ICAR (2013) (Table 1). The animals had a free access to clean drinking water. Standard management practices were followed under uniform conditions.

Animal studies

Feed intake was recorded daily throughout the 80-days of experimental period and the body weight of the animals was recorded at the beginning and the end of the experimental period.

Statistical analysis

Data were subjected to analysis of variance according to Steel and Torrie (1960). The comparison among means was analyzed by the least significant difference using LSD procedure of the Statisticx® (Analytical Software, 2000).

Results and Discussion

The result of supplementation of Saccharomyces cerevisiae CNCM I-1077) on growth, feed conversion efficiency and cost of feeding in Surti goat kids is given in table 2. The average body weight gain of kids was significantly (P <0.05) higher in the supplemental group in comparison to the control group. There are series of study in goats (Özsoy *et al.,* 2013; Kamal *et al.,* 2013) and in lambs (Haddad and Goussous, 2005), which reported that live yeast supplementation increased live weight gain. However Titti *et al.,* (2008), reported that yeast culture supplementation has no effect on feed intake and growth but reported an increased digestibility of nutrients. In the present study the supplementation of yeast did not affect the feed intake which is in agreement with Titti *et al.,* (2008), however the increased digestibility of nutrients may be the reason for increased average body weight in the yeast supplemented group.

Table.1 Proximate analysis of the feed offered on dry matter base

Proximate	Concentrate	Green fodder	Dry fodder
Organic Matter %	94.2	89.85	86.78
Crude Protein (N*6.25) %	17.84	7.14	7.58
Ether Extract %	2.92	3.32	1.67
Total Carbohydrate %	73.44	79.39	77.53
Neutral Detergent Fiber %	23.24	49.13	54.88
Acid Detergent Fiber %	14.85	31.46	37.56
Hemi-cellulose %	8.39	17.67	17.32
Ash %	5.8	10.15	13.22

Table.2 Effect of yeast (*Saccharomyces cerevisiae* CNCM I-1077) supplementation on growth, feed conversion efficiency and cost of feeding in Surti goat kids

Sr. No.	Parameters	Control	Supplemented group	*p value*
1	Initial Body weight (Kg)	7.49 ±0.11	7.57 ±0.15	0.634
2	Final Body Weight	11.77^{a} ±0.15	12.43^{b} ±0.13	0.004
3	Growth rate(g/d)	52.43^{a} ±2.70	61.73^{b} ±2.67	0.028
4	DMI (g/d)	474.50 ±7.92	476.98 ±8.55	0.814
5	Feed/Gain ratio	9.25^{b} ±0.345	7.78^{a} ±0.453	0.022
6	DMI/ $W^{0.75}$	75.04^{b} ±0.94	71.67^{a} ± 1.17	0.042
7	Feed Cost/kg Gain (Rs)	82.79^{b} ±3.28	69.40^{a} ±2.98	0.009

Means bearing different uppercase superscript letters in row differ significantly (P<0.05).

Table.3 Effect of yeast (*Saccharomyces cerevisiae* CNCM I-1077) supplementation on benefit cost ratio in Surti goat kids

Treatment	Number	final B.W	Gain in B.W	Total operational cost Rs.	Gross income	Net income	BC ratio
Control	8	11.77	4.28	354.34	963.00	608.66	1.71
Yeast supplemented	8	12.43	4.86	337.284	1093.50	756.22	2.24

Feed cost – Rs. 16/kg; Dry and green fodder- Rs. 5/kg; Dressing percentage- 50 %; Chevon market rate- Rs. 450/kg; B.W: Body Weight; BC ration: Benefit Cost ratio;

The significant (P <0.05) increase in average daily gain without any affecting the daily feed intake resulted in an significant improvement in feed efficiency and cost benefit ratio in surti goat kid supplemented with yeast. The similar finding was also reported by Kamal *et al.*, (2013) (Table 3).

Supplementation of yeast (*Saccharomyces cerevisiae* CNCM I-1077) @ 2% of DMI to Surti goat kids of 4-6 month age shows significant improvement in growth rate and feed conversion efficiency without affecting dry matter intake.

Age shows significant improvement in growth rate and feed conversion efficiency without affecting dry matter intake.

Acknowledgement

The author is very much thankful to Lallemand Animal Nutrition, France for providing the dried yeast culture and principal N M College of Agriculture for providing financial support for the completion of this research programme.

References

Haddad, G., Goussous, S.N. (2005): Effect of yeast culture supplementation on nutrient intake, digestibility and growth performance of Awassi lambs. Animal Feed Science and Technology, Volume 118. pp. 343-348.

Jinturkar, A.S., Gijar, B.V., Chauhan, D.S., Patil, R.A. 2009. Effect of feeding probiotics on the growth performance and feed conversion efficiency in Goat. Indian Journal of Animal Research, Volume 43. Number 1.pp. 49-52.

Kamal, R., Dutta, T., Singha, M., Kamrab, D.N., Patel, M., Choudharyb, L.C., Agarwalb, N., Kumarc, S., Islama, M. (2013): Effect of live *Saccharomyces cerevisiae* (NCDC-49) supplementation on growth performance and rumen fermentation pattern in local goat. Journal of Applied Animal Research, Volume 41. Number 3. pp. 285-288.

Khuntia A, Chaudhary LC. 2002. Performance of male crossbred calves as influenced by substitution of grain by wheat bran and the addition of lactic acid bacteria to diet. Asian-Aust J Anim Sci. 15(2):188-194.

Lesmeister, K. E., A. J. Heinrichs, and M. T. Gabler. 2004. Effects of supplemental yeast (*Saccharomyces cerevisiae*) culture on rumen development, growth characteristics, and blood parameters in neonatal dairy calves. J. Dairy Sci. 87:1832–1839.

Lynch, H. A., and S. A. Martin. 2002. Effects of *Saccharomyces cerevisiae* culture and *Saccharomyces cerevisiae* live cells on in vitro mixed ruminal microorganism fermentation. J. Dairy Sci. 85:2603–2608.

Miller-Webster, T., W.H. Hoover, M. Holt and J.E. Nocek. 2002. Influence of yeast culture on ruminal microbial metabolism in continuous culture. J. Dairy Sci., 85: 2009-2014

Newbold, C.J., McIntosh, F.M. and. Wallace, R.J. 1996. Mode of action of the yeast, Saccharomyces cerevisiae, as afeed addative for ruminants. Br. J. Nutr. 76:249-261.

Özsoy, B., Yalçin, S., Erdoğan, Z., Cantekin, Z., Aksu, T. (2013): Effects of dietary live yeast culture on fattening performance on some blood and rumen fluid parameters in goats. Revue de Médecine Vétérinaire, Volume 164. Number 5. pp. 263-271.

Tan, Z. L., Chen, H. P., He, L. H., Fang, R. J., and Xing, T. X. 1995. Variation in the nutritional characteristics of wheat straw. Anim. Feed Sci. Technol. 53:337–344.

Tang S. X, G. O. Tayo, Z. L. Tan, Z. H. Sun, L. X. Shen, C. S. Zhou, W. J. Xiao, G. P. Ren, X. F. Han, and S. B. Shen. 2008. Effects of yeast culture and fibrolytic enzyme supplementation on in vitro fermentation characteristics of low-quality cereal straws. J. Anim. Sci. 2008. 86:1164–1172

Titti, H.H., Dmour, R.O., Abdullah, A.Y. (2008): Growth performance and carcass characteristics of awassi lambs and shami goat kids fed yeast culture in their finishing diet. Animal Feed Science and Technology, Volume 142. pp. 33-43.

How to cite this article:

Pradhan, S.K., M. Choubey, V.R. Patel, V.B. Kharadi and Dabas, V.S. 2018. Effect of Dietary Supplementation of Yeast on Growth, Feed Conversion Efficiency and Cost of Feeding in Surti Goat Kids. *Int.J.Curr.Microbiol.App.Sci.* 7(09): 2032-2035.
doi: https://doi.org/10.20546/ijcmas.2018.709.246