

## Nutrient Digestibility and Growth Performance of Mehsana Buffalo Calves Fed Probiotics

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### Abstract

Fourteen female Mehsana buffalo calves were divided into two groups of seven animals in each, viz., T<sub>1</sub> group fed basal diet and T<sub>2</sub> group fed basal diet supplemented with probiotics (containing *Saccharomyces cerevisiae*;  $1.5 \times 10^8$  cfu/g and bacteria, *Lactobacillus sporogens*;  $5 \times 10^7$  cfu/g) at the level of 5 g/h/d. The DM intake (kg/d) was significantly higher in probiotics supplemented group. The digestibility of DM, crude protein and NFE were significantly higher in T<sub>1</sub> group compared to T<sub>2</sub> group. The average body weight gain was significantly higher in T<sub>1</sub> group than T<sub>2</sub> group and feed conversion efficiency was lower in T<sub>1</sub> group than T<sub>2</sub> group. The cost of feeding per kg body weight gain was lower in probiotics supplemented group than the control group. Results revealed that supplementation of probiotics significantly influenced digestibility of DM, crude protein and NFE and growth performance of Mehsana buffalo calves.

**Keywords:** Probiotics; Growth performance; Digestibility; Buffalo calves.

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## Introduction

The main objectives of application of probiotics in the rearing of young animals are improved survival, inhibition of diarrhoea, superior growth and better feed conversion efficiency [1]. Dietary use of probiotics is thus preferred to that of antibiotics to enhance nutrient utilization, improve feed efficiency and maintain health status because of their non-harmful effect on consumers [2]. The term "Probiotic" has been defined as a "live microbial feed supplement, which beneficially affects the host animal by improving its intestinal microbial balance[3]. The present study, therefore, was undertaken to assess the effects of probiotics supplementation on nutrient digestibility and growth performance of Mehsana buffalo calves.

## Materials and Methods

Fourteen growing female Mehsana buffalo calves of 8 to 10 month of age were selected for the experiment to observe the effects of probiotics supplementation. They were divided into two equal groups of seven animals in each

group, viz., T<sub>1</sub> group fed basal diet (consisting of concentrate mixture and green fodder at 50:50 ratio) to meet the nutrient requirement as per Kearn's feeding standard (1982) and T<sub>2</sub> group fed basal diet supplemented with probiotics (containing *Saccharomyces cerevisiae*; 1.5 x 10<sup>8</sup> cfu/g and bacteria, *Lactobacillus sporogens*; 5 x 10<sup>7</sup> cfu/g) at the level of 5 g/h/d for period of 90 days. Feed & dry matter intake recorded weekly and body weight changes measured fortnightly. At the end of experimental feeding a digestion trial of seven days duration was conducted to assess nutrient utilization.

## Results and Discussion

The average DM intake (kg/d) was 3.28±0.03 and 3.56±0.13 in T<sub>1</sub> and T<sub>2</sub> groups, respectively, revealing significantly (P < 0.05) higher DM intake in probiotics supplementation group than the control group. However, DM intake (kg/100 kg BW) was without any significant variation between the groups (2.26±0.10 vs. 2.47±0.10). The digestibility of DM (67.72±1.82 vs. 62.25±0.65 %), crude protein (68.23±1.35 vs. 63.23±1.26 %) and NFE (75.90±1.58 vs.

**Table 1: Effect of supplementation of probiotics on apparent digestibility of nutrients and growth performance of growing buffalo calves**

Parameters	Dietary groups		P value
	T <sub>1</sub>	T <sub>2</sub>	
<b>Digestibility (%)</b>			
Dry matter	62.25 <sup>a</sup> ±0.65	67.72 <sup>b</sup> ±1.18	*
Organic matter	66.50±0.82	68.33±1.15	NS
Crude protein	63.23 <sup>a</sup> ±1.26	68.23 <sup>b</sup> ±1.35	*
Ether extract	66.01±1.62	69.19±2.45	NS
Crude fibre	55.45±3.79	57.69±5.77	NS
Nitrogen free extract	70.36 <sup>a</sup> ±0.78	75.90 <sup>b</sup> ±1.58	*
<b>Growth performance (90 d)</b>			
Initial BW (kg)	146.4±5.63	145.7±5.79	NS
Final BW (kg)	189.9±5.83	194.8±6.16	NS
Net BW gain (kg)	43.42±0.68	49.1 <sup>b</sup> ±0.44	*
ADG (g/d)	482.4 <sup>a</sup> ±4.17	545.1 <sup>b</sup> ±4.93	*
Total DMI (kg)	294.9 <sup>a</sup> ±2.49	320.4 <sup>b</sup> ±2.39	*
FCR	6.80 <sup>b</sup> ±0.08	6.53 <sup>a</sup> ±0.07	*

<sup>ab</sup> Means with different superscript in a row differ significantly (\*P < 0.05; NS = non-significant)

T<sub>1</sub>: Control group T<sub>2</sub>: Supplemented probiotics @ 5 g/h/d

BW: body weight; ADG: average daily gain; DMI: dry matter intake; FCR: feed conversion ratio

70.36±0.78 %) were significantly ( $P < 0.05$ ) higher in probiotics supplemented group as compared to that of control group (Table 1). The digestibilities of other nutrients were not affected by supplementation of probiotics. Findings of present study corroborate with authors.[4]. The initial and final body weights were 146.4 and 189.8 kg in T<sub>1</sub> and 145.7 and 194.8 kg in T<sub>2</sub> groups, respectively. The average daily weight gain was significantly ( $P < 0.05$ ) higher in T<sub>1</sub> group (545.1 g/d) compared to that of T<sub>2</sub> group (482.4 g/d). The feed conversion efficiency was better in T<sub>2</sub> group (6.53) as compared to T<sub>1</sub> group (6.80). The cost of feeding per kg body weight gain was lower in probiotics supplemented group (Rs. 43.9 vs. 48.1) than the control group.

### Conclusion

It was concluded that supplementation of probiotics (containing *Saccharomyces cerevisiae*;  $1.5 \times 10^8$  cfu/g and bacteria, *Lactobacillus sporogens*;  $5 \times 10^7$  cfu/g) at the level of 5 g/h/d

in growing female Mehsana buffalo calves improved intake of DM, digestibility of DM, crude protein and NFE, growth performance and feed conversion efficiency.

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