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Effect of Probiotic Supplementation on Growth Performance of Pre-Ruminant Buffalo Calves

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ABSTRACT

To study the effect of Probiotic (*Saccharomyces cervisiae*) supplementation in pre-ruminant (0-3 months age) buffalo calves, twenty buffalo calves were divided into two groups of ten calves each according to their body weight. One group was the control while the other group was supplemented with bacteria *Saccharomyces cervisiae* -containing Probiotic @ 15g/calf/d in milk for a period of two months under field condition. Fortnightly growth rate of calves revealed that the effect of *Saccharomyces cervisiae* was more effective (P<0.01) during first month of supplementation but could not sustain in the second month. Never the less, probiotic supplementation led to an overall improvement (P<0.05) in the growth rate of buffalo calves. It also helped in preventing occurrence of diarrhea and reduced mortality during early stage of life.

Key Words: *Saccharomyces cervisiae*, Probiotic, Buffalo calves, Growth performance.

INTRODUCTION

Probiotics are defined as live microbial feed supplements that improve the health of livestock, or in other words, organisms or substances that contribute to intestinal microbial balance referred as probiotics (Parker, 1974). The main objectives of application of probiotics in the rearing of young animals are improved survival, inhibition of diarrhea, superior growth and better feed conversion efficiency (Jin *et al* 1996). 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 (Onifade *et al* 1999).

A wide range of microbial feed additives for ruminants has been described, including bacterial cultures and mixtures of bacteria and fungi. Beneficial bacterial concentrates, i.e., probiotics used in feed enhance growth rate and metabolic activities by stimulating digestion and immunity and also to act as prophylactic and therapeutic medium (Fuller, 1992; Rolef, 2000). *Saccharomyces* is one of the major species of beneficial micro-organism in the gut of monogastric animals (Blaut, 2002). The fore-stomach of ruminants in very early life is similar to that of monogastric animals and hence supplementation with *Saccharomyces cervisiae* improves digestibility of nutrients and ultimately growth in pre-ruminant calves. Hence, this study was undertaken with a view to note down effect of probiotic supplementation on growth performance in pre-ruminant buffalo calves.

MATERIALS AND METHODS

The experiment was conducted on growing pre-ruminant (0-3 month's age) buffalo calves. A total of twenty buffalo calves were divided into two groups of ten calves each according to their body weight.

Calves were maintained individually in concrete-floored, well-ventilated pens in a properly managed shed. The body weight of the calves was recorded with standard method using the formula of measuring the heart girth and length at the start of experimental feeding and thereafter regularly at fortnightly intervals. Weighing was done before feeding and watering in the early morning. One group served as the control, while the other was supplemented with probiotics (*Saccharomyces cervisiae*) @ 15 g/animal/d with milk. Milk was

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Table 1. Effect of probiotic supplementation on average body weight gain of buffalo calves.

Group	Birth wt (kg)	1st fortnight (kg)	2nd Fortnight (kg)	ADG at 1 month	3rd Fortnight (kg)	4th Fortnight (kg)	Overall ADG at 2 month (g)
T1 (Control)	30.9	32.8	36.6	187g/d	41.6	45.8	247g/d
T2 (Probiotics)	30.2	33.2	37.9	257 **g/d	42.9	47.1	281*g/d

* (P<0.05) and ** (P<0.01)

fed according to the age of calves. The amount was 1/10th of the body weight from 0-20 days of age, thereafter up to one month of age, it was 1/15 of their body weight, from 1-2 months, it was 1/20th of their body weight, and thereafter till three months of age, it was 1/25th of body weight. Milk feeding was done in the morning at 7.00 a.m. and in the evening at 5.00 p.m. in divided doses, calves had access *adlib* to water for two hours in the morning as well as in the evening. The probiotic supplement was given daily for a period of two months, and the average daily gain (ADG) was calculated.

RESULTS AND DISCUSSION

Effect on body weight gain

The data pertaining to average body weight gain indicated that out of the total period, in the initial one month, body weight gain was significantly (P<0.01) improved in the supplemented group, while the effect was non-significant in the second month leading to a reduced overall (P<0.05) effect on the growth performance of the buffalo calves (Table 1).

Similar finding were reported by Mudgal *et al* (2010). They described that feeding of probiotic to calves up to two months of age did not have significant effect on body weight gain of calves as compared to controlled groups. In contrast to above findings, Malik and Sharma (1998), Pandey and Agrawal (2001), Prahalada *et al* (2001), Magalhaes *et al* (2008) Hossain *et al* (2012) and Gupta *et al* (2015) also reported higher growth rate and feed conversion efficiency in cross bred acalves supplemented with probiotics. Similarly, when Pashupathy *et al* (2002) added *Lactobacillus acidophilus* to the diet of growing mongrel pups, they observed improved growth rate in the early stage of life, while in later stages when there was higher fiber in the diet, reduction in the growth rate was observed, so that ultimately the growth what at the level of the control group.

CONCLUSION

It may be concluded that supplementation with *Saccharomyces cervisiae* is more beneficial in initial stages of calves' life when the fiber level in the diet is low and that the effect was found to be declining with the advancement of age.

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