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Effect of supplementation of growth promoters on the feed intake performance of goat kids

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Abstract
An experiment was carried out to investigate the effect of supplementation of growth promoters on the feed intake performance of goat kids. A sixteen goat kids were selected from the livestock instructional farm, on the basis of nearness to the age and weight. The selected kids were randomly divided in to 4 groups of 4 kids in each treatment. Treatments was control (T1) with Feed as per the standard, Feed as per standards + 3 g Lactobacillus acidophillusper Kg. (T2), Feed as per standards + 3 g Saccharomyces cerevisiae per Kg. (T3), and Feed as per standards + mixture of 1.5g Lactobacillus acidophilus + 1.5g Saccharomyces cerevisiae per Kg. (T4). Feed intake and dry matter intake is correlated to the performance of the goat kids.

Keywords: Feed intake, dry matter intake, promoters, goat kid

1. Introduction
The insufficient feeds and fodder to meet the nutritional requirements of the existing animal population is one of the most critical problems of animal production and management. Ruminant nutritionists and microbiologists from many years have been interested in manipulating the microbial ecosystem of the rumen to improve feed utilization and productive efficiency by ruminants. Goat is the most important animal which occupies a significant niche in the rural economy of India because their inherent qualities of early maturity, ability to thrive even under harsh environment, low capital investment etc. The small ruminant like goat acts as an insurance against crop failure and provides alternative source of livelihood to the farmers all the year round (Selvam and Safiullah, 2002) [8]. Goat milk is a very good source of calcium and amino acid tryptophan. It is also a good source of protein, phosphorus, riboflavin (vitamin B2) and potassium. Perhaps the greatest benefit of goat milk however is that some people who cannot tolerate cow milk are able to drink goat milk without any problem.
Ruminants rely on a symbiosis between the host and the rumen microbes with the microorganisms which supply proteins, vitamins and short-chain organic acids for the animal host. The energy absorbed glucose formed in the liver and the protein digested in the abomasum are mainly derived from microbial origins. In a normal of functioning all ruminants, in fact as much as 90% of the protein that reaches the small intestine and up to 50% of the host energy requirement is provided by the microbial cells of the reticulo-rumen (Russell, 2002) [6]. The microbial communities are responsible for digestion and fermentation of plant polymers, which is of particular importance in mature herbivorous animals (Uyeno *et al*. 2015) [9]. The total livestock population is 535.78 million in the country showing an increase of 4.6% over the livestock census 2012. The total bovine population (cattle, buffalo, mithun and yak) is 302.79 in 2019 which shows an increase of 1 per cent over the previous census. The goat population in the country in 2019 is 148.88 million showing an increase of 10.1% over the previous census. About 27.8% of the total livestock is contributed by goats, 35.95% cattle, Buffaloes 20.45% and sheep 13.87% and pig 1.69%. As compare to previous census the percentage share of sheep and goat population has increased whereas the percentage share of cattle, buffalo's pigs as marginally declined. The Maharashtra population of goat 2019 is 10.60 million. In 20 the livestock census 35.94% cattle, 27.80% goat, 20.45% buffaloes, 13.87% sheep, 1.69 pigs as compare to previous census the percentage share of sheep and goat population has increased whereas the percentage share of cattle, buffaloes and pigs has marginally declined.

2. Materials and methods

2.1 Selection of animals

Sixteen Osmanabadi goat kid ranges from 6.5 to 9 Kg body weight were selected from herd. These kids were randomly divided into four groups, each of four animals on the basis of nearness to body weight and age. The randomly divided group was subjected to four different feeding treatments and the allocation of kids to different treatment. The differences between the groups with regards to body weight were non-significant. Treatments was control (T1) with Feed as per the standard, Feed as per standards + 3 g Lactobacillus acidophilus per Kg.(T2), Feed as per standards + 3 g Saccharomyces cerevisiae per Kg.(T3), and Feed as per standards + mixture of 1.5g Lactobacillus acidophillus+ 1.5g Saccharomyces cerevisiae per Kg.(T4). The experimental animals were housed in well-ventilated stall.

The experimental animals were examined for their health before the start of the experiment. The other management practices were followed as and when needed like disinfections of shed with Malathion (1%) before start of experiment. Ticks were controlled by spraying 0.5 % Malathion on animal body. Daily cleaning of shed and washing with water thrice in a week were carried out. Thus maximum care was taken to maintain the cleanliness in the shed. A sufficient quantity of clean drinking water was provided twice a day to all the experimental animals. Animals were fed during trial as per their feeding treatment requirements. All the kids were fed their respective treatment diet for a period of week in order to accustom them for new feed. The quantity of DM requirements was calculated on the basis of thumb rules compared with actual requirements as per feeding standards given by Jagdish Prasad and Neeraj (2008) and Banerjee (2008) on the basis of body weight to assess whether the computed quantity as per thumb rule was able to fulfill the maintenance and production requirements. Treatments with required feed were offered to all kids in the morning at 9:00 hrs. and left over was measured at around 10:00 hrs. A measured quantity of tur straw dry roughages as per treatment was given to kids, of which left over was measured at 15:00 hrs. Again a known quantity of dry roughage was given and it's left over was measured next morning in order to know the total intake of dry roughage. The commercially available probiotic of Natural Company was used for present investigation studies. The computed amount of concentrate was divided in two equal parts and offered to goat kids at the time of at morning and evening. The rate of feeding dry and green roughages along with concentrates/day/kid were recorded.

3. Result and discussions

The supply of different nutrients to animal body is depends on the intake of different feeds which in turn reflects on the performance of animals. In this regards the intake of different feeds consisting of tur straw, berseem green and concentrates under different treatments were recorded in order to know the response of kids to different treatments. The goat kids were given the ration consisting of tur straw, green berseem and concentrate mixture according to thumb rule. In livestock-biological variation, species, stage of growth of animal, palatability, feed material energy, content of feed and individual variation etc. are known to influence DMI (Jang and Mujumdar 1962).

The average feed intake in goat kids (kg/day/kid) differed significantly under the experimental period. In initial week, the feed intake was 0.450, 0.484, 0.493 and 0.548 (kg/day/kid) in treatments T1, T2, T3 and T4 respectively. The feed intake from first week of the trial was recorded as 0.468, 0.495, 0.507 and 0.542 (kg/day/kid) under given treatments T1, T2, T3 and T4 respectively. At the end of the experiment, better feed utilization (kg/day/kid) i.e. 0.663 noticed in T4 followed by (T3) 0.611, (T2) 0.595, and (T1) 0.556 respectively. Feed intake shown slightly better utilization in treatment (T4) because of increased weight that increased demand of feed enriched by promoters which helped to stimulate celluloytic micro flora and enhance microbial activity in the rumen of young kids tend to gain weight. Treatment (T4) i.e. feed as per the standard+mixture of 1.5g Lactobacillus acidophilus+1.5g Saccharomyces cerevisiae per kg were found significant. As compare to control group i.e. (T1) Feed as per standard (without promoters) had shown comparatively less utilization of feed intake in 1st to 12th weeks. The feed intake of treatment T1 was poor than other promoters supplemented groups.

4. Conclusions

Promoters supplemented group found better feed intake than control group. The feed intake after 10th weeks was increased in all treatment groups. As the experiment expands, the feed intake capacity of goat kid has been also increases, shows the positive results on feed intake. Thus the trend shows that supplementation of Saccharomyces cerevisiae and Lactobacillus acidophilus not only sufficient for fulfilling their appetite but also advantageous to encourage the intake of dry roughages by kids. It may be concluded that feed provided with promoters supplemented group showed better utilization of feed due to microbes. As it was known that in normal functioning of rumen, as much 90 per cent of protein that reaches to small intestine and 50 per cent of energy required is provide by microbial cell of reticolo rumen (Rusell 2002). These micro-organisms are involved in digestion and fermentation of plant polymers which have particular importance in mature herbivores animal. Brich *et al*. (1994) also found that feeder lambs given probiotics were more feed efficient than control. On the other hand (Mamta and Pratishtra Sharma 2008) [11] observed that there was no observable difference on feed consumption in both groups i.e. without probiotic and with probiotic.

Fallon and Hart (1987) attributed the improvement occurred in animal performance of lambs raised on rations supplemented with feeds which increases the palatability of supplemented feeds leading to an increase in animals feed intake. Growth promoter's supplementation has been observed to increase feed intake. Ghani Abd-El (2004) reported that control group (T1) was fed a concentrate mixture and roughage (alfalfa and wheat straw), while the second (T2) and third (T3) groups were fed the same diet supplemented with 3 or 6g of YC, respectively. In the digestibility trials, results revealed that bucks fed YC had higher feed intake than the control group. Seo *et al*. (2010) stated that the probiotics attach into intestinal mucosa helped to prevent adhesion of potential pathogens, leading to improve nutrients digestion that may enhance dry matter intake.

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