



Probiotic Administration Coupled with Improved Gut Microbiota Diversity and Reduced Diarrheal Incidence in Young Goats

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Abstract

The possible health effects of probiotic therapies in young animals are drawing more attention. 15 weaned goat babies (2–3 months old; 10–15 kg body weight) participated in this study; 10 of them were healthy and 5 had diarrhea. The children were split into three groups: Probiotic-Treated Healthy (T), Diarrheic + Probiotic-Treated (D), and Healthy Control (H, no treatment). Every child was fed a controlled diet consisting of 60% maize, 15% pea skin, 15% silage, 5% hay, and 1% vitamin-mineral supplements while being kept in conventional environmental circumstances. For five days in a row, probiotic bacteria *Enterococcus faecium* and *Bacteroides fragilis* were given orally by gavage at a concentration of (1×10⁹) CFU/mL. The bacterial 16S rRNA gene was sequenced from fecal samples in order to determine the microbial composition. The species richness and diversity of the healthy groups were significantly higher than those of the diarrheal group (p < 0.01). *Bacillota*, *Bacteroidetes*, and *Pseudomonadota* were the most common phyla found. In healthy treated children, there was a drop in *Prevotellaceae* UG_001 and *Proteus* and an increase in *Xylanibacter*, UCG-055, *Bacteroides*, and *Escherichia-Shigella*. The results show notable differences in gut microbiota between children who are healthy and those who have diarrhea, indicating that changes in the composition of the gut microbiota may help prevent and treat diarrhea.

Keywords: Goat kids; Probiotics; Gut microbiota; Diarrhea; *Enterococcus faecium*; *Bacteroides fragilis*.

