

Molecular characterization and diversity of tannin tolerant ruminal bacteria of Indian goat

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Grazing goats are the backbone of most of the world's marginal land enterprises. They are capable of utilizing effectively a vast variety of plant species and vegetation types. Most of these plants contain antinutritional factors like tannin which causes inhibitory effect on ruminal microflora involved in fermentation of feed. Tannin tolerant bacterial species are able to utilize feed more effectively. The present study was focussed on identification and molecular characterization of tannin tolerant cultured ruminal bacteria from goat rumen based on sequence comparison of 16S rRNA gene of rumen bacteria and their phylogenetic analysis. Rumen liquor of goats fed with tannin rich diet was cultured in specific media and by using molecular biology techniques of PCR, DGGE, Cloning and Sequencing, the bacterial species were identified. The data was analysed by using bioinformatics tools like MEGABLAST, Taxonomic

Classifier at RDP and MEGA4. *Leuconostoc citreum*, *Citrobacter sp.*, *Escherichia sp.*, *Enterococcus faecalis*, *Staphylococcus sp.* and *Enterococcaceae bacterium* were found to be high tannin tolerant. *Bacillus sp.*, *Sphingomonas sp.*, *Mycoplasma capricolum*, *uminobacter amylophilus* showed moderate level of tolerance and *Treponema sp.*, *Zhihengliuella sp.*, *Bacteroidales* bacteria showed less tolerance to tannin. Inoculation of tannin tolerant bacteria into the rumen of unadapted goats could help in improving feed digestibility and live weight gain in the animals. Tannin tolerance is mostly by virtue of tannase enzyme production by bacteria. Tannase is industrially important enzyme which has application in beverage, pharmaceutical and paper industry. Tannin tolerant bacterial species can be used for production of tannase enzyme.

Biography

Tejaswini Sathe has completed her B.V.Sc. & A. H. degree from Bombay Veterinary College, Parel, Mumbai and M.V.Sc. (Animal Biotechnology) at the age of 25 years from Anand Agricultural University, Anand, Gujarat. She has done her thesis research on "Diversity and Phylogenetic relationship of tannin tolerant ruminal bacteria of goat".