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## Alternatives for inhibition of methanogenesis and enhance fermentation of feeds in the rumen

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The aim of the present study was to investigate methanogenesis and fermentation pattern on wheat straw based diet with extracts of *Albizialebbeck* leaves and supplementation of corresponding levels of leaves on rumen fermentation profile in buffaloes. Extracts (100 ml) were prepared using three solvents, methanol, petroleum ether and water, with 10 g powdered sample; and stored at 4 C for subsequent use. The extracts were tested at three levels (0, 0.25 and 0.50 ml). A mixture (200 ± 5 mg) of wheat straw and concentrate mixture (1:1) was used as substrate and incubated with 30 ml buffered rumen fluid in 100 ml calibrated glass syringes at 39 C for 24 h following standard IVGP protocol. The total gas and methane production was reduced ( $p < 0.05$ ) with the inclusion of extracts, irrespective of solvent. However, the reduction in ruminal methane production was more pronounced with the methanol and aqueous extracts of *Albizialebbeck* leaves. Feed degradability was reduced ( $p < 0.05$ ) with petroleum ether extract, however, aqueous extract did not exert any negative effect. Microbial protein synthesis, partitioning factor and propionate production was improved ( $p < 0.05$ ) with the inclusion of methanol and aqueous extracts. Further, an experiment on in vivo rumen fermentation profile was conducted on three fistulated Murrah buffalo steers supplemented with fresh Albizia leaves at three levels (0, 300g, and 600g per day) in 3x3 Latin Square Design. Supplementation (300g/animal/d) of Albizia leaves to fistulated buffaloes resulted in increase ( $p < 0.05$ ) in total volatile fatty acids and propionate production; however, higher level (600g/animal/day) of supplementation exerted negative effects on rumen fermentation. Increase in total-N as well as ammonia-N concentration was also observed due to ALB-1 supplementation. It may be concluded that *Albizialebbeck* leaves (300g/animal/day) have a potential to modulate rumen fermentation towards reduced methanogenesis and enhanced volatile fatty acids production.

### Biography

Gebrehiwot Tadesse has completed his PhD at the age of 29 years from the University of Leipzig and postdoctoral studies from the Central Institute for Research on Buffaloes, Nutrition Division, CIRB, India and the University of Veterinary Medicine, Hannover, Germany. He is the Postgraduate Program coordinator at the college of Veterinary Medicine, Mekelle University, Ethiopia. He has published more than 26 papers in reputable journals and has been serving as an editorial board member of peer reviewed Journal.

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