Dietary tribromoethanol supplementation reduces enteric methane emissions in beef cattle

Robin Malik[1], John-Fredy Ramirez-Agudelo[1] and Ermias Kebreab[1]*

[1]Department of Animal Science, University of California, Davis, CA 95616

Corresponding author: ekebreab@ucdavis.edu

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***Abstract*:**

The livestock industry is a significant contributor to global greenhouse gas emissions, with enteric methane (CH_4) from ruminants representing a major source. Feed additives that suppress methanogenesis offer a promising mitigation strategy if animal performance is maintained. This study evaluated the effects of 2,2,2-tribromoethanol (TBE) on enteric CH_4 emissions, dry matter intake (DMI), and average daily gain (ADG) in beef steers. Twenty-four Angus steers (477 ± 27 kg initial bodyweight) were assigned to one of three dietary treatments: control (0 mg TBE/kg DMI), low (15 mg TBE/kg DMI), or high (30 mg TBE/kg DMI), using a replicated 3 × 3 Latin square design with three 28-d periods. TBE was incorporated into a total mixed ration formulated to meet nutrient requirements. Enteric gas emissions were measured using a GreenFeed system during the final week of each period, while DMI and BW were recorded throughout. Supplementation with TBE significantly reduced ($P < 0.05$) CH_4 production by 15.6% and 32.2% for the low and high treatments, respectively. Methane yield and intensity were also reduced by up to 28.0% and 33.4%. No differences were observed in DMI or ADG among treatments ($P > 0.05$). These results indicate that TBE effectively reduces enteric CH_4 emissions without negatively affecting feed intake or growth performance in beef steers.

Contact Information for Presenting Author *drrmalik@ucdavis.edu*