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Increasing dietary levels of citral oil on nutrient total tract digestibility, ruminal fermentation, and milk composition in Saanen goats

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Highlights

- Four incrementing doses of high purity citral oil (CO) were evaluated.
- CO consumption by goats linearly decreased neutral detergent fiber digestibility.
- CO showed a quadratic positive effect on rumen propionate concentration.
- CO had neither effect on milk yield nor composition of goats.
- CO had no effects on milk fatty acid profile.

Abstract

This study was undertaken to evaluate the effects of increasing dietary doses of high purity citral oil on nutrient total tract digestibility, ruminal fermentation, blood metabolites, milk yield and composition, and N utilization in dairy goats. Twenty-four Saanen goats [62±1.4 kg of body weight (BW), 75±20 days in milk, and 3.0±0.27 kg/d of milk yield, at the start of experiment], being eight of them rumen-cannulated, were used in a 4×4 Latin square design experiment with 21-d periods in which the first 14 d were allowed to treatment adaptation. Animals were assigned to the following treatments: control, with no citral supply; and dietary addition of 0.08, 0.16 or 0.24 mL of citral oil per kg of BW. Increasing doses of citral oil did not affect dry matter (DM) and nutrient intake, but it linearly decreased neutral detergent fiber total tract digestion in dairy goats. Treatments neither affected ruminal pH nor NH_3-N, but citral oil linearly increased butyrate proportion in ruminal fluid of goats. Citral oil consumption had a positive quadratic effect on

ADF, acid detergent fiber; BW, body weight; CP, crude protein; DM, dry matter; EE, ether extract; EO, essential oil; FA, fatty acid; FCM, fat-corrected milk; iADF, indigestible detergent fiber; N, nitrogen; NDF, neutral detergent fiber; NH_3-N, ammonia nitrogen; td, truly digestible; TDN, total digestible nutrient; VFA, volatile fatty acid.