ABSTRACT

Characteristic Fermentation and Total Gas Production In Vitro with the Use of Combined Clove Oil, Tea by Product, and Hibiscus Leaves

W. Artati., S. Suharti and H. A. Sukria

Feed supplement from plant secondary compound could improve fermentation process in ruminant. Previous study resulted the best combination of tea by product 2 mg/ml + hibiscus leaf 0.3 mg/ml (Supplement 1) that could improve VFA production. The addition of leaf clove oil to the Supplement 1 be expected could enhance fermentation process and increase VFA production. The experiment design used was improve block randomized design with 4 treatments and 5 replications. The substrates for in vitro fermentation were forage and concentrate with a ratio 60:40 (% DM), with the treatments were A1: forage : concentrate (60:40) as control, A2: control + Supplement 1, A3: control + Supplement 1 + 0.02 mg/ml clove oil, A4: control + Supplement 1 + 0.04 mg/ml clove oil. Variables observed were dry matter digestibility (DMD) organic matter digestibility (OMD), total volatile fatty acid (VFA) production and proportional VFA, ammonia (NH₃) concentration, and total gas production. The result showed that the addition of clove oil 0.04 mg/ml decreased dry matter digestibility (DMD) up to 7.87%, organic matter digestibility up to 11.71%. NH₃ concentrations and pH values showed no significant effect (P<0.05) with the addition of clove oil 0.04 mg/ml. The addition of clove oil 0.04 mg/ml increased total VFA (p<0.01) and tend to increase acetate (p<0.1) proportion, but tend to decrease propionate proportion (p<0.1). In conclusion, the addition of clove oil up to 0.04 mg/ml could stimulate rumen fermentation characteristic.

Keywords: tea by product, Hibiscus rosasinensis, clove oil, eugenol, and rumen fermentation