Antimicrobial and Antiparasitic in Vivo Activity of Syzygium Aromaticum Extract clove in Weaned Guinea Pigs

Luis Jesus Linares Otoya¹, Junior Nina Vega², Maria Virginia Linares Otoya³, Gilmar Mendoza⁴, Melissa Bocanegra³, Ronald Cristian Chambe³, Antony Lazaro Avalos³

¹University of Bonn, Agricultural Science and Resources Management in Tropics and Subtropics (ARTS), Germany
²University of Cordoba, Ecological Livestock, Spain
³Institute of Ecological, Agricultural and Urban Innovation UKU PACHA, Peru
⁴National University of Trujillo, Faculty of Agricultural Science, Peru

Abstract

In this study, antimicrobial and antiparasitic activity of the Syzygium aromaticum k-love extract was assessed in weaned guinea pigs. The experiment was conducted in a experimental farm in the district of Trujillo, Peru. Thirty animals were used in a randomised design with 3 treatments (T0: Application of 0.03 ml of saline; T1: oral dosage of 25 mg Sulfadimidine + trimethoprim kg BW⁻¹; T2: Dosing with 0.5 ml of Syzygium aromaticum extract). For counting of oocysts of Eimeria caviae and Enterobacteriaceae, fecal material and rectal swabs were collected before and 7 days after application. Statistical analysis included analysis of variance and Duncan test (α = 0.05). T1 reduced fecal Enterobacteriaceae from 6.0 ± 1.73 × 10⁶ CFU g⁻¹ to 0.63 ± 0.37 × 10⁶ CFU g⁻¹ of fecal material, whereas T2 from 5.0 ± 1.52 × 10⁶ CFU g⁻¹ to 0.54 ± 0.44 × 10⁶ CFU g⁻¹ fecal material, a highly significant difference compared with T0 (p < 0.01). T1 had the highest reduction of Eimeria caviae in fecal material, decreasing from 90035.9 ± 36627.3 to 1462.4 ± 872.44 oocysts g⁻¹ fecal material (98.38 %). More than T2 that reduced from 85896.6 ± 55531.5 to 5755.5 ± 3727.9 oocysts g⁻¹ fecal material (93.30 %, p < 0.05). Both significantly reduced the excretion of Eimeria caviae compared to T0 (p < 0.01). The cost per dose was lower in T2 (S 0.04) compared to T1 (S 0.08). The cost of reducing 10,000 Eimeria caviae oocysts was lower in T2 than in T1 (S 0.005 and S 0.009). To present the clove extract orally is a cost-effective alternative for controlling enteric diseases and Eimeria caviae in guinea pigs.

Keywords: Antimicrobial, antiparasitic, guinea pigs, Syzygium aromaticum

Contact Address: Luis Jesus Linares Otoya, University of Bonn, Agricultural Science and Resources Management in Tropics and Subtropics (ARTS), Bonn, Germany, e-mail: luis.lioto@hotmail.com