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In vitro activity of 13 essential oils on the cattle tick *Rhipicephalus (Boophilus) microplus* and on the sheep nematode *Haemonchus contortus* in Brazil

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Herbal extracts have been investigated as an alternative for parasite control, aiming to slow development of resistance and obtain low-cost biodegradable parasiticides. The goal of this study was to evaluate the activity of 13 essential oils from Brazil on *Rhipicephalus (Boophilus) microplus* and *Haemonchus*

contortus: *Croton cajucara*, *C. sacaquinha*, *Curcuma longa*, *Lippia alba*, *L. gracilis*, *L. origanoides*, *L. sidoides*, *Mentha arvensis*, *M. piperita*, *Piper aduncum*, *Spilanthes acmella* and *Zingiber officinale*. The effects on ticks were investigated by the Immersion Test with Engorged Females [1] (ITEF) and by modified Larval Packet Test [2] (LPT). On *H. contortus* (Embrapa 2010 isolate) the Egg Hatch Test [3] (EHT) and the Larval Development Test [4] (LDT) were carried out. The control groups were distilled water, Tween 80 (2%) and DMSO (1%). The results were analyzed by Probit, SAS. In the ITEF it was obtained the LC₅₀ of *C. longa* (10.24 mg/mL), *L. alba* (10.78 mg/mL), *S. acmella* (15.41 mg/mL), *M. arvensis* (22.31 mg/mL), *L. sidoides* (27.67 mg/mL) and *C. sacaquinha* (29.88 mg/mL). In the LPT, the most effective oils were *C. longa*, *L. gracilis*, *L. origanoides*, *L. alba* and *Z. officinale* with LC₅₀ and LC₉₀, respectively: 0.54 and 1.80 mg/mL, 3.21 and 7.03 mg/mL, 3.10 and 8.44 mg/mL, 5.85 and 11.14 mg/mL, 7.75 and 13.62 mg/mL. In the EHT were obtained good results against *M. arvensis* (0.10 and 0.27 mg/mL), *Z. officinale* (0.11 and 0.40 mg/mL), *L. sidoides* (0.15 and 0.34 mg/mL), *L. alba* (0.24 and 0.59 mg/mL), *L. origanoides* (0.25 and 0.70 mg/mL), *C. longa* (0.36 and 2.49 mg/mL) and *L. gracilis* (0.42 and 1.27 mg/mL). In the LDT, just *Z. officinale* and *C. longa* oils were tested (LC₅₀ and LC₉₀: 0.01 and 0.07 mg/mL, 0.10 and 0.17 mg/mL, respectively). The results showed significant efficacy. Further research will be focused to the isolation and elucidation of the bioactive compounds.



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Keywords: Rhipicephalus (Boophilus) microplus, Haemonchus contortus, essential oils

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