RESUMO SIMPLES - ECTOPARASITOS: SISTEMÁTICA, EPIDEMIOLOGIA E CONTROLE

CORN OIL-BASED FORMULATIONS IMPROVE THE EFFICACY OF CORDYCEPS JAVANICA AGAINST RHIPICEPHALUS MICROPLUS LARVAE

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Rhipicephalus microplus remains one of the most damaging ectoparasites affecting cattle production worldwide, and the growing resistance to multiple classes of acaricides highlights the need for sustainable alternatives. Entomopathogenic fungi have emerged as promising biological control agents, particularly when formulated with oils that enhance their performance. This study evaluated the compatibility and efficacy of corn oil–based formulations of Cordyceps javanica against R. microplus larvae under controlled laboratory

conditions. Thirteen treatments were assessed: two controls (1% Tween 80; 0.01% silicone oil + 1% Tween 80), three corn oil emulsions (1%, 3%, and 5%), two unformulated fungal suspensions (10^7 and 10^8 conidia/mL in 1% Tween 80), and six fungus–oil combinations consisting of each fungal concentration formulated with 1%, 3%, or 5% corn oil. Approximately 1000 larvae per replicate were immersed in 1 mL of each treatment for 3 minutes and incubated at 25 ± 1 °C and ≥80% RH. Mortality was recorded 5, 10, and 15 days after the treatment. All treatments were performed in triplicate, and the entire experiment was repeated three times. Control groups showed minimal mortality (<1.2%) throughout the evaluation period. Corn oil alone caused limited mortality (≤20.1%), increasing proportionally with concentration. Unformulated C. javanica suspensions also resulted in low tick mortality, ranging from 6.2% to 18.8% depending on the conidial concentration and evaluation day. In contrast, the fungus formulated with corn oil exhibited markedly enhanced virulence. Mortality in the fungus–oil treatments ranged from 64.1% on day 5 to 100% on day 15, with all formulated treatments significantly outperforming both oil-only groups and unformulated fungal suspensions. A clear synergistic interaction between the corn oil carrier and fungal conidia was detected across all combinations. These results demonstrate the potential of vegetable oil carriers to improve fungal performance while offering an environmentally compatible alternative for the biological control of cattle ticks.

Palavras-chave: biological control; entomopathogenic fungi; rhipicephalus microplus; vegetable oil; formulation.