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Innovative Product Made with Essential Oil of Orange (*Citrus sinensis*) Controls Larvae of the Cattle Tick on Pasture

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Abstract

Infestations caused by the tick *Rhipicephalus microplus* cause great damage to livestock around the world. Essential oils are an alternative to cattle tick control. It is estimated that 95% of ticks are in the form of larvae on pasture, which are waiting for the host to climb and to fix. There is still no product on the market, whether natural or chemical, developed to combat tick larvae on pasture. Therefore, the objective of this work was to evaluate the efficacy of an innovative formulation, which uses orange essential oil in its formulation and inert vehicles, for the control of R. microplus larvae that infest the pastures. Brachiaria *brizantha* grass beds (cv. Marandu) were measured and demarcated (1 m^2) to perform the test in shaded areas. In one treatment the formulation with orange oil was used and in the other water and soybean oil (control). About 300 larvae of R. microplus, about 21 days old, were placed in the base of 10 leaf blades of the grass, and after reaching the top, 300 ml of the product was applied with the aid of a costal pump until all leaves were very wet. After 72 hours of application, the tips of leaves containing larvae were cut, stored in Falcon tubes, and had live and dead larvae counted under magnifying glass, in order to obtain the percentage of mortality. The grass was also evaluated after application of the product for approximately 21 days to verify the occurrence of wilted, yellow or dead leaf blades. The results obtained in the test were 90.68 \pm 6.22 mortality of larvae of the tick for the grass treated with the natural product, differing from the control group (p < 0.05), which presented 0% of dead larvae. No morphological changes were observed in the grass. It is concluded that the natural product was effective to combat R. microplus larvae in the pasture. It is an innovative product that will contribute to the control of this livestock plague.

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