

IN VITRO ANTIMICROBIAL ACTIVITY OF ESSENTIAL OILS FOR APPLICATION IN BOVINE MASTITIS CONTROL

ATIVIDADE ANTIMICROBIANA *IN VITRO* DE ÓLEOS ESSENCIAIS VISANDO À APLICAÇÃO NO CONTROLE DA MASTITE BOVINA

Ida Rúbia Machado Moulin^{*1}; Isabella da Costa Teixeira²; Ueldiane Quintiliano Lins²; Aparecida de Fátima Madella-Oliveira²; Tercio da Silva de Souza²

¹Universidade Estadual do Norte Fluminense, UENF, Campos dos Goytacazes, RJ, Brazil;

²Instituto Federal do Espírito Santo, Campus Alegre, Alegre, ES, Brazil.

*Corresponding author: idarubiammoulin@gmail.com

Abstract

Bovine mastitis is a complex and multifactorial disease that affects dairy herds, leading to severe economic losses to producers. Given this scenario, there is a need to find alternative methods that are effective and safe for animal and human health. The use of natural compounds derived from plants is an alternative for the treatment of mastitis in dairy cows. We evaluated the *in vitro* antimicrobial activity of the essential oils (EO) of cinnamon (*Cinnamomum sp.*), melaleuca (*Melaleuca alternifolia*) and oregano (*Origanum vulgare*) against *Staphylococcus aureus* (ATCC 25923), aiming at future application for the control of bovine mastitis. The tests were performed in triplicate for the fixed concentration of 5 mg (50000µg disc⁻¹) of EO. The evaluation was done by the disk diffusion method, in which trypticase soy broth (TSB) medium was inoculated with the microorganism *S. aureus* at 10⁸ UFC mL⁻¹ by pouring the medium into sterile Petri dishes with 140 mm diameter. After inoculation, sterile filter paper discs with 6 mm diameter impregnated with 5 mg of each EO were placed on the medium. After 24 h incubation at 37±1 °C, the inhibition halos around the discs were measured. In the statistical analysis, a completely randomized design was used, in a 2 x 3, factorial scheme consisting of tea tree and eucalyptus essential oils on *S. aureus* strains, with 3 repetitions. The final results, determined by the arithmetic mean of the inhibition halos (mm), were submitted to analysis of variance (p<0.01) and the SNK test (p<0.05), using PROC GLM. The effect of the 5 mg concentration of oregano EO showed higher sensitivity against melaleuca EO (10.54 mm) and cinnamon EO (14.01 mm), presenting a halo of 19.09 mm. The results demonstrated that oregano essential oil has potential antibacterial activities and showed satisfactory results at a small concentration. Thus, oregano OE showed excellent action against bacterial growth. However, there is a need for further studies to evaluate its potential against standard strains such as ATCC 25923.

Keywords

Alternative control, phytotherapy, dairy herds.