

Title: ANTIBACTERIAL EFFECT OF ESSENTIAL OIL FROM *Eucalyptus citriodora* AGAINST BACTERIA OF CLINICAL INTEREST

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Abstract:

Essential oils are volatile and lipophilic compounds produced by plants for their survival. Its chemical composition is due to the production of secondary metabolites synthesized by specialized secretory structures. Among the secondary metabolites produced by *Eucalyptus citriodora*, it highlights the triterpenes, flavonoids, phenols and tannins. The present study aimed to evaluate the antimicrobial activity of essential oil extracted from *E. citriodora* leaves front *Staphylococcus aureus*, *Escherichia coli* and *Enterococcus faecalis* by AST technique (Antimicrobial Sensitivity Test). *E. citriodora* essential oils Samples were extracted by hydrodistillation in Clervenger apparatus for 4h. Then, stored in amber bottles and chilled to 8 ° C. For the experiment were used *S. aureus* (INCQS: 00039), *E. coli* (clinical strain) and *E. faecalis* (INCQS: 00504). These strains have been previously feasible in BHI broth, and then were adjusted to 0.5 McFarland. The procedure to perform the essential oil sensitivity test was performed according to M2-A8 standard standardized by the Current Clinical and Laboratory Standards Institute - CLSI, translated and distributed in Brazil by the National Surveillance Agency Sanitary - ANVISA in 2003. At the same time, the discs were prepared by impregnating up 20µL of essential oil in Laborclin paper discs 5 mm in diameter. These were then applied to the seeded plates, followed by the positive controls (Imipenem and Chlorhexidine) and negative control (water), to then be incubated at 37°C, where they remained for 24 hours for results reading. Tests were performed in duplicate. The *E. citriodora* leaves essential oil obtained antimicrobial activity against all tested bacteria. The average formed halos were 41mm for *S. aureus*; 11mm to 11mm for *E. coli* and *E. faecalis*. Imipenem presented 59mm halo medium for *S. aureus*, 32mmfor *E. coli* and 35mm for *E. faecalis*. Chlorhexidine had an average halo 25mm against *S. aureus*; 16,5mm for *E. coli* and 14mm for *E. faecalis*. Negative control showed no inhibition zone. Based on the results, it was observed that *E. citriodora* essential oil has antibacterial activity may represent an alternative therapy for infectious diseases. Therefore, it is important to conduct new tests to better understand the mechanisms of antimicrobial activity, as well as verify the most appropriate dose to obtain the antimicrobial effect in drug development perspective.

Keywords: Antimicrobial activity, Essential oil, Bacteria