

Title: ANTIMICROBIAL ACTIVITY OF CITRONELLA ESSENTIAL OIL AGAINST CLINICAL BACTERIAL STRAINS

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Abstract:

Currently, research is being developed in view to prospect new agents with antimicrobial properties, and many of these are present in plants as secondary metabolites. In this context, this study aimed to analyze antimicrobial activity essential oil Citronella (*Cymbopogon nardus*) *in vitro*. The essential oil samples were extracted by hydrodistillation in Clervenger apparatus for 4 hours and stored in amber bottles and packed between 2 to 8 ° C until use. In verifying the antibacterial activity, three strains were used: *Escherichia coli* (clinical strain), *Enterococcus faecalis* (INCQS: 00504) and *Staphylococcus aureus* (INCQS: 00039). These strains have been previously feasible in BHI broth, and then were adjusted to 0.5 McFarland scale saline at 0.85%, to ensure that bacterial quantity is close to $1,5 \times 10^8$ CFU/mL. 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 Sanitary Agency - ANVISA in 2003. At the same time, 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 to results reading. Tests were performed in duplicate and the results were expressed as two halos arithmetic mean. Citronella essential oil showed antibacterial activity against all tested bacteria expressing inhibition zones of 15, 13 and 42mm front *Escherichia coli*, *Enterococcus faecalis* and *Staphylococcus aureus*, respectively. Imipenem (31, 35 and 59 mm) and Chlorhexidine (16, 14, and 25mm), the negative control did not inhibit any microbial growth. Before the tests performed, we observed antimicrobial activity of this oil against pathogenic bacteria, encouraging further studies to elucidate the action mechanisms, toxicological studies and the search for new drugs that may contribute to infections treatment.

Palavras-chaves: essentialoil, antibacterialactivity, Gram-positiveand -negativebacteria.