

Título: PHYTOCHEMICAL COMPOSITION AND COMPARATIVE EVALUATION OF THE ESSENTIAL OILS FROM THREE BRAZILIAN CHEMOTYPES OF *Lippia alba* (MILL.) N.E. BROWN AGAINST HUMAN PATHOGENS

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Resumo:

Lippia alba (Miller) N.E. Brown (Verbenaceae) is an aromatic plant known in Brazil as “Erva-cidreira-do-campo” and has a great importance in Brazilian folk medicine. Ethnopharmacological researchers have revealed that *L. alba* leaves are used as infusions to treat hypertension, colds, coughs, bronchitis, digestive disorders, nausea, and as an expectorant. The genetic variability of *L. alba* species results in large variations in the composition of metabolites present in its EOs, and the extensive biological activity is due to the diversity of these constituents. The present study evaluated the antimicrobial potential of 6 different chemotypes of essential oils (EOs) of *L. alba*, it was analyzing the inhibition of the activity of these oils against pathogenic microorganisms and his virulence factors, like enzymatic activity. The phytochemical analysis by the GC-MS technique concluded that the six samples could be grouped into three chemotypes: citral, linalool and limonene-carvone. During the antimicrobial studies with *L. alba* essential oils, were made tests against bacteria, yeasts and filamentous fungi. The results of antimicrobial activity showed that the EOs were more active against yeasts. The minimum inhibitory concentration tests showed MIC of 312µg/mL against *C. albicans* (ATCC10231) and 156µg/mL to *C. neoformans*. In the checkerboard technique, the concomitant use of EOs with Amphotericin B resulted in a significant reduction in the MIC of both compounds. The cytotoxicity tests showed that EOs were not toxic at a concentration of 125 µg/ml. To determining a possible target of antifungal activity, it was performed assays of proteolytic activity inhibition. The results showed that *L. alba* EOs presented proteolytic activity inhibitions to *C. albicans* and *C. neoformans* secreted proteases, mainly serine and aspartic classes. The results show a great antifungal activity of *L.alba* EOs, mainly when associated with commercial antimicrobials, and are effective in inhibiting pathogenic microorganisms in non-toxic concentrations.

Key-words: antimicrobial activity, essential oil, *Lippia alba*, medicinal plants, phytochemistry.

Agências de Fomento: CNPq, FAPERJ, CAPES.