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ANTIFUNGAL ACTIVITY OF 7-HYDROXYCALAMENENE-RICH ESSENTIAL OIL NANOEMULSION

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RESUMO
Nanoemulsions, unlinke microemulsions, are metastable submicron oil-in-water dispersions with droplet diameter in the range of 10-100 nm. Potential advantages of nanoemulsions over conventional emulsions like high physical stability, can be sterilised by filtration, high bioavailability and low turbidity make them attractive systems for application in food, cosmetics and pharmaceutical industry. Nanoemulsions serve as delivery agents for lipophilic bioactive compounds such as drug in the pharmaceutical industry and, for flavors and antimicrobial agents in the food industry, for solubilizing water-insoluble pesticides in agrochemical industry and as vehicle for skincare and personal products in cosmetics. The leaves from *Croton cajucara* Benth. (family Euphorbiaceae), a shrub from the Amazon, have been locally used in folk medicine to treat diabetes, malaria, gastrointestinal and liver disorders. A chemotype of this species was found with an essential oil rich in 7-hydroxycalamenene. 7-hydroxycalamenene is a hydroxylated sesquiterpene of molecular weight 218 g/mol found in *Heritiera ornithocephala*, *Eremophila drummondii*, *Heteroscyphus planus*, *Tilia europea*, *Morus alba*, *Ulmus thomasii* and other elm species, and methanolic and dichloromethanic extracts of *Bazzania trilobata*. This substance is reported to have antifungal activity against *Botrytis cinerea*, *Cladosporium cucumerinum*, *Phythophthora infestans*, *Pyricularia oryzae* and *Septoria tritici*. The aim of this study was to evaluate the inhibitory activity of 7-hydroxycalamenene-rich essential oil nanoemulsion against filamentous fungi and yeasts. Minimum inhibitory concentration (MIC) was evaluated in triplicate according standard methods from Clinical and Laboratory Standards Institute (CLSI) M27-A2 and M38-A2. All species tested were sensitive to nanoemulsion at concentrations ranging from 12.21 μg/mL for *Absidia cylindospora*, *Mucor ramosissimus* and *Syncephalastrum racemosum*, to 6578.95 μg/mL for *Candida dubliniensis*, *C. famata*, *C. tropicalis* and *C. glabrata*. These results suggest a possible antifungal potential of 7-hydroxycalamenene-rich essential oil nanoemulsion formulation against tested fungi, although further tests are necessary.

APOIO
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