



Influence of essential oils from *Lippia gracilis* and *L. sidoides* genotypes, their major compounds and nanoemulsions against *Lasiodiplodia theobromae*.

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The aim of this work was to study the antifungal activity of essential oils, major compounds and formulations of *Lippia gracilis* and *L. sidoides* genotypes. The essential oils were extracted by hydrodistillation. Nanoemulsions were produced according to the spontaneous emulsification method of essential oils from the genotypes LGRA-106 (Nano-106) and LGRA-109 (Nano-109) of *L. gracilis*, LSID-102 (Nano-102) and LSID-104 (Nano-104) of *L. sidoides*, and the major compounds thymol (Nano-thymol) and carvacrol (Nano-carvacrol). The nanoemulsions obtained were characterized in terms of macroscopic, zeta potential, particle diameter, polydispersity and pH. The antifungal activity of the essential oils, thymol, carvacrol and nanoemulsions were tested against the fungus *L. theobromae* at concentrations 10.0, 5.0, 1.0, 0.5 and 0.1 mL.L⁻¹. The percentage of inhibition of mycelial growth was calculated, in relation to the control, after 7 days of incubation at 25 ± 3°C, with a photoperiod of 12 hours. The characterization of the nanoemulsions identified Nano-106 and Nano-102 with the smallest particle sizes, 15 nm and 18.83 nm, respectively. The Nano-106 formulation presented as main components thymol (63.43%) and β-caryophyllene (13.53%). In the Nano-109 formulation, the major components were carvacrol (45.63%) and *p*-cymene (12.89%). The major components of Nano-102 were thymol (83.03%) and methyl thymol (9.38%). The Nano-104 formulation presented carvacrol (38.66%) as the major compound. In tests against the fungus *L. theobromae* the essential oil from genotype LSID-104, and the monoterpene carvacrol showed better activity with percentage of inhibition of mycelial growth of 50% and 100%, respectively, at the lowest tested concentration. The nanoemulsion that showed the best biological activity was Nano-carvacrol with percentage of inhibition of mycelial growth of 84.6% at a concentration of 1.0 mL.L⁻¹.

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