



Antioxidative activities of the essential oils of two *Lippia sidoides* Cham. (Verbenaceae) chemotypes

Luiz G. L. Guimarães, Renata C. Vale, Bruna G. Vicente

Federal University of São João del Rei – São João del Rei/MG, Brazil
lguimaraes@ufsj.edu.br

Keywords: *Lippia sidoides*, essential oil, carvacrol, thymol.

The medicinal plant *Lippia sidoides*, known as “alecrim-pimenta” in Northeastern Brazil, belongs to the botanical family Verbenaceae. This plant has great commercial potential due to its diverse applications, such as its use in the production of antiseptics, making it very important to the fields of pharmacy, medicine, dentistry, and public health. In traditional medicine, *L. sidoides* has been used to treat acne, infected scabies, skin mycosis, dandruff, bad odor on feet and armpits, sores, and mouth and throat inflammations (1). These activities are accredited to its essential oil which is rich in thymol, compound that has proven microbiological activities. Despite being considered native from the Brazilian Caatinga, *L. sidoides* has been found in the south of Minas Gerais state. In this region, the essential oil of *L. sidoides* is mostly composed by carvacrol which is an isomer of thymol and has shown biological activities as well. In this context, the aim of this study was to characterize and evaluate the antioxidative activity of the essential oils of *L. sidoides* plants from the state of Ceará (Caatinga) and from the state of Minas Gerais, cultivated in the same place. Leave samples of the two chemotypes of *L. sidoides* cultivated in Itumirim-MG under the same conditions were collected in April 2015. A voucher specimen was deposited in the herbarium of the Federal University of Lavras (registry: ESAL 01943). Fresh leaves were subjected to hydrodistillation separately in a Clevenger-type apparatus for 2 h each. The oils were analyzed by GC/FID (quantitative analyses) and GC/MS (qualitative analyses). The percentage composition was obtained by normalization from FID. Oil components were identified by comparison of both mass spectra and linear retention indices with spectral library and literature. The antioxidative activities of the essential oils and their major compounds, namely thymol and carvacrol, were determined through assays that evaluate free radical-scavenging of DPPH (g of essential oil g⁻¹ of DPPH), oxidation of the β -carotene/linoleic acid system (g of essential oil g⁻¹ of trolox) and through ferric reducing antioxidative power (FRAP) assay (μ M of ferrous sulphate g⁻¹ of essential oil) (2). Carvacrol was the major compound (47.7 %) in the essential oil of plants from Minas Gerais while thymol was the major compound (75.9 %) in the essential oil of plants from Ceará. The carvacrol-rich essential oil showed greater antioxidative activities (DPPH method: 202.06 \pm 15.92; β -carotene bleaching assay: 25.23 \pm 1.51; FRAP assay: 3629.1 \pm 60.86) than the thymol-rich essential oil (DPPH method: 269.71 \pm 46.21; β -carotene bleaching assay: 58.51 \pm 2.30; FRAP assay: 5479.86 \pm 165.38). Thymol and carvacrol activities were: 322.58 \pm 14.54 and 288.30 \pm 30.24 at the DPPH assay, 55.10 \pm 0.41 and 26.44 \pm 0.23 at the β -carotene bleaching assay and 10161.09 \pm 173.63 and 9381.57 \pm 224.8 at the FRAP assay, respectively.

1. Lorenzi, H.; Matos F.J.A. Plantas medicinais no Brasil: nativas e exóticas. Instituto Plantarum, São Paulo, 2002, 520.
2. Rufino, M.S.M. et al. Food Chem., 2010, **121**, 996-1002.

Acknowledgements: Fapemig, CNPq, and Rede mineira de química.