Antioxidant and antifungal activity of essential oil of *Lippia gracilis* Schauer

Jessica Feitoza, Odair dos Santos Monteiro, Ana Patrícia P Farias, Joaquim Antonio M. de Castro, Natale Cristine C. Carvalho, Ildenice N. Monteiro, Raynnaria C. dos Santos, Anderson V. da Costa, Denise Fernandes Coutinho Moraes

Universidade Federal do Maranhão- São Luís, Brazil
jessicabion@hotmail.com

Keywords: *Lippia gracilis*, essential oil, thymol, antioxidant, antifungal.

The essential oils are found in various parts of plants and are composed of volatile substances responsible for flavor and aroma characteristic of the plants. Besides their use as flavoring material, the essential oils stand out as raw material to pharmaceutical and agricultural industries due to their several biological properties. *Lippia gracilis* Schauer is an aromatic plant, belonged to Verbenaceae family and widespread in northeastern Brazil. The essential oil from its leaves is rich in monoterpene compounds highlighting thymol, which has been evaluated for its pharmacological activities. This work aims to analysis the chemical composition of the essential oil from *L. gracilis* leaves and evaluate its antioxidant and antifungal activities. The species was collected in Chapada das Mesas National Park, in the Municipality of Carolina-MA, Brazil in January 2013. The essential oil was extracted by hydrodistillation in a Clevenger-type apparatus. The identification of the compounds were performed by GC/MS and GC/FID, using a FOCUS equipment (Thermoelectron). The chromatography conditions were the same in both analyses, using a DB-5 capillary column (30m X 0.25 mm X 0.25 mm); nitrogen as carrier gas (1 ml min^{-1});injection splitless (split flow 20:1); injector and detector temperatures of 250 °C and heating column program from 60 to 240 ºC. The fungicidal activity was evaluated by *in vitro* technique against endophytic fungus *Corynespora cassicola*, using the PDA medium at 1, 1.5 and 2.0 µl mL^{-1} concentrations. The antioxidant activity was analyzed using DPPH radical scavenging assay and the result was expressed as milligrams of trolox equivalent (TE) per gram of oil (mg TE g^{-1} oil). The yield of essential oil was 8.0 % (w/w), in relation to the weight of dry leaves. Twenty-three components were identified corresponding to 99.5 % of the oil. Among them, thymol (77.0 %) was the major constituent, followed by *p*-cymene (10.7 %),*γ*-terpinene (8.0 %), and carvacrol (4.5 %). The oil showed a significant antifungal activity, inhibiting the fungus growth at all concentrations tested with an average inhibition of 64 %. The antioxidant assay revealed that the essential oil has 1,616.49 ± 20.32 mg of trolox equivalent per gram of oil, exhibiting a scavenging capacity on DPPH radical about 161 % higher than this synthetic antioxidant. Hence, these results show the potential of *L. gracilis* essential oil to be used on the development of antioxidant and antifungal formulations.

Acknowledgements: UFMA, CAPES, Bionorte.

ISBN: 978-85-66836-11-0