

TITLE: CHEMICAL COMPOSITION AND ANTIBACTERIAL PROPERTIES OF ESSENTIAL OILS OF FRESH AND DRIED LEAVES OF *Schinus molle* L. (ANACARDIACEAE)

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ABSTRACT:

Indiscriminate use of modern antibiotics and consequently increases of pathogens resistance against antibiotics have led to a demand for new agents and components with broad spectrum activities. Essential oils have drawn attention for their antimicrobial properties. In traditional medicine, *Schinus molle* been used in treating a variety of wounds and infections due to its antibacterial and antiseptic properties. The objective of the present study was to identify the chemical composition and to evaluate the antibacterial activity of the essential oils of fresh and dry leaves of *S. molle*. For extraction by hydrodistillation, a Clevenger apparatus was used for 4 hours and the composition analyzes were performed by GC-MS. The antibacterial activity was determined by means of the minimum inhibitory concentration (MIC) using the broth microdilution method. Serial dilutions of the oils were performed with initial concentration of 72 to 0.562 mg.mL⁻¹. The analyzes were performed in triplicates. *Escherichia coli* (CCD - E009), *Staphylococcus aureus* (CCD - E007), *Enterococcus faecalis* (CCD - E006) and *Bacillus cereus* (isolated) were used as bacterial strains. The chemical composition of the oils obtained from different samples (fresh and dry leaves) showed differences in the qualitative and quantitative content of the compounds. In the oil of fresh leaves the monoterpenes sabineno (14%), mirceno (16%), and sesquiterpene cadinol (20%) were identified as main components. In the oil obtained from dried leaves, there was a decrease in the content of the compounds sabinene (6%), myrcene (5%), and was increased concentrations of sesquiterpene cadinol (39%). Regarding the antibacterial analyzes, were obtained values of MIC with great differences, among the samples with different terpenic profiles. The sample of oil that showed the best activity was the fresh leaves, that presented MIC values of 0.562 mg.mL⁻¹ against *S. aureus*, 2.25 mg.mL⁻¹ for *E. coli* and *E. faecalis*, and 4.5 mg.mL⁻¹ for *B. cereus*. The action of dry leaf oil had only a weak inhibitory activity against *E. faecalis* (72 mg.mL⁻¹). According to the results obtained, we can confirm that the drying process affects the composition of the essential oil of *S. molle*. During this process a great loss of the lower molecular weight terpenes occurs. Consequently, a drastic decrease in the oil activity occurs, demonstrating that these hydrocarbons monoterpenes probably contribute to the oil's bioactivity.

Keywords: Terpenic compounds, essential oil, antibacterial, therapeutic.

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