



STUDY OF THE CHEMICAL COMPOSITION AND ANTIFUNGAL ACTIVITY OF *Schinus lentiscifolius* ESSENTIAL OIL

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Purpose of study: Essential oils and their constituents present numerous reports of bioactivity, as antimicrobial, antioxidant, anti-inflammatory and biocide [1,2]. The antimicrobial activity is one of the most reported biological activity for these secondary metabolites. The importance of novel substances with antifungal effect is related mainly with increasing number of resistant microorganisms and high levels of toxicity of the drugs available. Therefore, the aim of this study was to analyze the chemical composition of *Schinus lentiscifolius* essential oil and to evaluate their antifungal activity against fungi of clinical interest.

Methods: Leaves of *S. lentiscifolius* were harvested in Jaquirana-RS and the oil was obtained by hydrodistillation in Clevenger apparatus with subsequent identification of the chemical composition by gas chromatography coupled to mass spectrometry (GC-MS) [3]. For the antifungal activity, Minimum Inhibitory Concentration (MIC) against filamentous fungi and yeast was determined through the broth microdilution method standardized by CLSI (M38-A and M27-A3) [4,5].

Results: For chemical analysis, 36 compounds (99.4%) were identified in the oil. The oil was characterized by the predominance of oxygenated sesquiterpenes (52%) and sesquiterpene hydrocarbons (32.7%). γ -eudesmol (12.8%), elemol (10.5%), β -eudesmol (10.2%) and β -caryophyllene (9.9%) were the main compounds identified in the sesquiterpenic fraction. However, among the monoterpenes, only α -pinene exhibited significant quantities (8.2%). For the antifungal activity, the oil showed no activity against *Candida* species in the concentration tested (500 μ g/mL), but presented effect against filamentous fungi, mainly against *Trichophyton rubrum*, *Microsporum canis* and *M. gypseum*, with MICs around 125 and 250 μ g/mL. For *T. mentagrophytes* the MICs value were around 500 μ g/mL.

Conclusions: These results demonstrated antifungal activity from *S. lentiscifolius* essential oil selective against dermatophytes. This activity is generally associated with the presence of oxygen molecules able to modify the membranes of the microorganisms or inhibit enzymes. Moreover, the results contribute to knowledge about this species.

References:

- [1] Bajpai, V.K., Al-Reza S.M., Choi, U.K., Lee, J.H. and Kanh, S.C. 2009. Chemical composition, antibacterial and antioxidant activities of leaf essential oil and extracts of *Metasequoia glyptostroboides* Miki ex Hu. Food Chem. Toxicol. 47: 1876-1883.
- [2] Köse, E.O., Deniz, I.G., Sarikurkçü, C., Aktas, Ö., Yavuz, M. 2010. Chemical composition, antimicrobial and antioxidant activities of the essential oils of *Sideritis erythrantha* Boiss. and Helder. (var. *erythrantha* and var. *cedretorum* P. H. Davis) endemic in Turkey. Food Chem. Toxicol. 48: 2960-2965.
- [3] Adams, R.P. 2009. Identification of Essential Oil Components by Gas Chromatography/Mass Spectrometry. Allured, IL.
- [4] CLSI. 2008. Reference method for broth dilution antifungal susceptibility testing of filamentous fungi: approved standard, M38-A2. Clinical and Laboratory Standards Institute, Wayne, PA.
- [5] CLSI. 2008. Reference method for broth dilution antifungal susceptibility testing of yeasts: approved standard, M27-A3 Clinical and Laboratory Standards Institute, Wayne, PA.