

TITLE: CHEMICAL COMPOSITION AND EVALUATION OF THE MODULATORY ACTIVITY OF *Zanthoxylum petiolare* A. St.-Hil. & Tul (RUTACEAE) ESSENTIAL OIL FOR DERMATOPHYTE FUNGI STRAINS

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ABSTRACT:

The *Z. petiolare* plant, popularly known as *limãozinho*, *laranjinha* or *pau-barrão*, belongs to the Rutaceae family, with over 500 species distributed in tropical and subtropical regions around the world. It's encountered in almost all Brazilian regions and can reach up to 14 meters in height. Various studies emphasize the biological, effects, including antifungal action, of *Zanthoxylum* extracts, mainly from essential oils of different parts of the plant. Extraction of the essential oil was performed using Clevenger apparatus, and the chemical composition was determined by Gas Chromatography/Mass Spectrometry (GC-MS). The *Trichophyton rubrum* fungal strains (6205, 6203 and 5908) provided by the Federal University of Pernambuco – UFPE, which were stored at the Microbiology Laboratory of the Vale do Acaraú State University (LABMIC-UVA), were used as microorganisms test. After determination of the Minimum Inhibitory Concentration (MIC) by broth microdilution, and using Ketoconazole as the standard antifungal and *Z. petiolare* leaves essential oil, the synergistic effect was verified. The synergism determination was performed through the Fractional Inhibitory Concentration Index (FICI), which indicates synergic potential when $ICIF \leq 0.5 \mu\text{g/mL}$, indifferent effect when $0.5 \mu\text{g/mL} < ICIF < 3.9 \mu\text{g/mL}$, and an antagonistic effect when $ICIF > 4.0 \mu\text{g/mL}$. The GC-MS analysis detected 20 chemical compounds, of which, Spathulenol (19.85%), Geranial (16.31%), cis-Citral (12.54%) were major compounds, the other were mostly terpenes. These results support the current literature data, with regard to the complex chemical nature of the *Zanthoxylum* genus. The essential oil and Ketoconazole combination showed no synergism in antifungal activity for the strains 6205, 6203 and 5908, which resulted in 0.6, 3 and 1.5 FICI, respectively. Therefore, we assume the synergic effect is indifferent on the interactions between the conventional antifungal and the natural product, for the tested microorganisms model.

Key words: synergism, antifungal effect, phytochemical, bioprospection.