ANALYSIS OF THE ESSENTIAL OIL EXTRACTED FROM THE LEAVES OF *JUSTICIA PECTORALIS* JACQ. (ACANTHACEAE) WITH POTENTIAL FOR PHYTOTHERAPEUTIC PRESCRIPTION

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ABSTRACT

Introduction: Essential oils are volatile, strongly aromatic liquids extracted from plants. The Acanthaceae family has medicinal value due to its high capacity for essential oil extraction. The importance of these oils is primarily related to their economic value, along with their already proven therapeutic properties. **Objective:** To analyze the phytotherapeutic potential of the essential oil extracted from the leaves of *Justicia pectoralis* Jacq. **Methodology:** Essential oils were extracted from the leaves of *Justicia pectoralis* using hydrodistillation with a modified Clevenger-type apparatus. The chemical composition was analyzed by gas chromatography coupled with mass spectrometry (GC/MS). **Results:** Chromatographic analysis identified 49 components of the plant, with 9 main constituents. The most prevalent were monoterpenes (12.5%) and sesquiterpenes (82.5%). The compound (E)-caryophyllene, present in significant amounts, demonstrated promising pharmacological activities, such as anti-inflammatory and antimicrobial effects. **Conclusion:** The analysis of essential oils of *J. pectoralis* revealed a characteristic terpenoid profile, with a predominance of sesquiterpenes. Further genotoxic and cytotoxic evaluations are still necessary. Therefore, the oil can be explored for therapeutic and commercial use.

Keywords: Essential oil; *Justicia pectoralis*; Phytotherapy.

INTRODUCTION

The term essential oil refers to volatile, aromatic oily liquids extracted from plants, composed mainly of monoterpenes (C10), sesquiterpenes (C15), some diterpenes (C20), and other low-molecular-weight aliphatic compounds. The biosynthesis of these compounds occurs through specific metabolic pathways, generally derived from mevalonic acid. Terpenes are formed by the condensation of isoprene units and are present in specialized secretory structures of plants, such as glandular hairs and parenchyma cells. They accumulate in various parts of plants, such as flowers, leaves, and fruits (SIMÕES; SPITZER, 2010; DORMAN; DEANS, 2000; ARAÚJO et al., 2001).

METHODOLOGY

Essential oils were extracted from the leaves of *Justicia pectoralis* using hydrodistillation with a modified Clevenger-type apparatus. The yield was calculated as the percentage of volume obtained relative to the initial weight of the botanical material. The chemical composition was analyzed by gas chromatography coupled with mass spectrometry (GC/MS), identifying 49 components, 5 of which remained unidentified. The reagents used included anhydrous sodium sulfate, hexane, dichloromethane, ethyl acetate, hydrochloric acid, chloroform, methanol, and ethanol.

RESULTS

The yield of the essential oil varied according to the developmental stage of the plant and the collection conditions. Gas chromatography identified 49 components, with 9 being the main ones. The predominant compounds were monoterpenes (12.5%) and sesquiterpenes (82.5%). Comparison with the literature showed that the yield of *J. pectoralis* essential oils was lower than that reported for other species and collection sites, which may be attributed to factors such as the time of year and plant developmental stage. The compound (E)-caryophyllene, present in significant quantities, demonstrated promising pharmacological activities, such as anti-inflammatory and antimicrobial effects.

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CONCLUSION

The findings indicate that the chemical composition analysis of *J. pectoralis* essential oils revealed a characteristic terpenoid profile, with a predominance of sesquiterpenes. The results highlight the pharmacological and economic potential of the identified compounds, although further biological studies are required to evaluate their pharmacological, genotoxic, and cytotoxic activities. The essential oil of *J.*

pectoralis can be explored as a source of bioactive compounds, representing a valuable resource for therapeutic and commercial applications.

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