EXTRACTION OF BIOLOGICALLY ACTIVE COMPOUNDS FROM ST. JOHN'S WORT

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St. John's wort (SJW), scientifically known as *Hypericum ramosissimum*, is a sprawling, leafy herb that thrives in open areas across various temperate regions globally.

Contemporary research underscores the herb's efficacy in treating a spectrum of diseases, encompassing cancer, inflammatory disorders, bacterial and viral infections, as well as its role as an antioxidant and neuroprotective agent. The herb produces numerous biologically active compounds, the most pronounced medicinal activity being shown by hypericin (naphthodianthrone) and hyperforin (lipophilic phloroglucinol). Other compounds, like the flavonoids rutin, quercetin, and kaempferol, also contribute to its medicinal properties. Extraction and identification of plant materials play a key role in drug development and quality control. In addition, detailed study of plants helps in understanding the toxic effects on human health and the environment.

The research aims to dissect the active components of *Hypericum ramosissimum*, providing a detailed chemical profile and exploring the implications for medical use. By analyzing these compounds, the study seeks to illuminate the plant's pharmacological potential and its possible impacts on human health and environmental safety. Samples of dry *Hypericum ramosissimum* were purchased from the pharmacy ©Gintarinė Vaistinė, manufactured by Acorus Balance. To obtain an extract from St. John's wort, the maceration method was used. 10 g of crushed dry sample was mixed with 250 ml of warm water, then heated to 35 °C and periodically stirred for an hour. After the extraction was completed, the sample was filtered and prepared for chromatographic analysis. After the extraction was completed, the sample was filtered and prepared for chromatographic analysis. This study was carried out using a Shimadzu GCMS-QP2020NX system equipped with an SH-Rxi-5ms column (30 m × 0.25 mm × 0.25 μm).

The GC-MS analysis, leveraging advanced analytical libraries (NIST 2005 v.2.0 and Wiley Access Pak v.7), identified nine distinct compounds displaying varied phytochemical activities. These included several terpenoids – Germacrene D, Himachalene, Caryophyllene, Farnesene, Muurolene, Cadinene – and more complex molecules such as Caryophyllene oxide and Veridiflorol molar. The diversity and complexity of these compounds underscore the plant's rich pharmacological profile and its potential for comprehensive medicinal applications.

The identification of these compounds enhances the current understanding of *Hypericum ramosissimum's* chemical makeup and its broad-spectrum medicinal efficacy. This study underscores the necessity for further investigation into the therapeutic uses of *Hypericum ramosissimum* extracts, highlighting the critical role of natural products in the ongoing search for new pharmaceuticals. The findings suggest a promising avenue for the development of novel drugs, rooted in the comprehensive utilization of *Hypericum ramosissimum's* phytochemical diversity.

This extended analysis of *Hypericum ramosissimum* not only contributes to the existing body of knowledge on its chemical composition but also opens new pathways for the exploration of its therapeutic potentials. As the demand for natural and effective treatments continues to grow, studies like this underscore the invaluable contributions of traditional herbs to modern medicine, advocating for a deeper, science-driven exploration into their untapped potential.