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

St. John's wort, scientifically known as *Hypericum ramosissimum*, is a spreading herb that thrives in open areas in various temperate regions of the world. Current research highlights the effectiveness of St. John's wort in the treatment of a range of diseases, including cancer, inflammatory diseases, bacterial and viral infections, as well as its role as an antioxidant and neuroprotectant. The plant produces numerous biologically active compounds, the most pronounced medical activity of which is manifested by hypericin (naphthodianthrone) and hyperforin (lipophilic phloroglucinol). Other compounds such as the flavonoids rutin, quercetin, and kaempferol also contribute to its medicinal properties. Extraction and identification of plant material play a key role in drug development and quality control. In addition, a detailed study of plants helps to understand the toxic effects on human health and the environment.

The purpose of this study is to analyze the active ingredients of St. John's wort. Samples of dry St. John's wort were purchased from the pharmacy "GINTARINĖ VAISTINĖ", manufactured by ACORUS BALANCE. The maceration method was used to obtain St. John's wort extract. 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. The study was carried out using a Shimadzu qp2020 nx GC-MS system with a SH-Rxi-5ms column (30 m * 0.25 mm * 0.25 µm).

As a result of GC-MS analysis of St. John's wort extraction, 9 compounds were identified that exhibit different phytochemical activities. Among the substances identified are various terpenoids such as Hermacrene D, α -Himahalene, α -Caryophyllene, (Z)-B-Farnesene, γ -Muurolene, 7-Cadiene and ω -Cadiene, as well as more complex compounds such as caryophyllene oxide and veridiflorol molar

Extraction is a key method for research and application of biologically active substances. In our study, we used the maceration method to extract the components with St. John's wort. We chose maceration because of its high efficiency in this context. This method allows efficient extraction of valuable substances, making it the optimal choice for our research purposes.

Therefore, St. John's wort and its extract continue to attract attention in the field of medical research, providing prospects for the development of effective herbal preparations that promote health and combat various diseases.

REFERENCES:

4. Klemow K., Bartlow A., Crawford J. (2011). Medical Attributes of St. John's Wort (*Hypericum perforatum*) In: Benzie IFF, Wachtel-Galor S, editors. *Herbal Medicine: Biomolecular and Clinical Aspects*, 11.
5. Joanne B., John T., Basil D. (2019). St John's wort (*Hypericum perforatum* L.): botanical, chemical, pharmacological, and clinical advances. *Journal of Pharmacy and Pharmacology*, 71:1–3.
6. Mennini T., Gobbi M. (2004). The antidepressant mechanism of *Hypericum perforatum*. *Life Sciences*, 75(9), 1021–1027.