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ABSTRACT BOOK



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Dynamics of the total phenolic compounds content in white horehound (*Marrubium vulgare* L.)

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Background: *Marrubium vulgare* L. is a perennial herbaceous plant of the Lamiaceae family, native to Europe, North Africa, and Southwest and Central Asia. The plant is widely cultivated in European countries due to its rapid adaptation to the environment. It has been used in traditional medicine for various purposes. It has been proved to possess several properties such as antibacterial, antioxidant, antidiabetic, anti-inflammatory, anti-hypertensive, vasorelaxant, hypoglycemic, cytotoxicity and anti-cancer activities [1]. Such significant variation may reflect differences in climate, atmospheric pressure, humidity and edaphic factors, which together shape phenolic accumulation as plants adapt to local bioecological conditions [2].

Aims: To evaluate changes in phenolic compound content of *Marrubium vulgare* L. across different harvesting years and countries using a spectrophotometric method.

Methods: The flowering aerial parts were collected during the flowering stage in Ukraine (2020-2024) and Lithuania (2025) in July. The total phenolic content was determined using Folin-Ciocalteu assay, the absorbance of the solution was measured at 750 nm and expressed as mg/g GAE.

Results: Total phenolics content of *Marrubium vulgare* L., expressed as gallic acid equivalent (mg/g GAE) and spectrophotometric method, ranged from 2.19 to 5.43 mg/g across all harvesting years and locations. Ukrainian herb samples showed the lowest phenolic content in 2021 (2.19 mg/g) and the highest in 2022 (5.43 mg/g), while in 2020, 2023 and 2024 (3.12, 3.40 and 3.60 mg/g, respectively). Lithuanian herb samples collected in 2025 July reached 3.66 mg/g in Simaiciai and 3.81 mg/g in Klaipeda. The observed differences in content depending on the harvesting year are due to differences in climatic conditions (temperature, precipitation, etc.), which can significantly influence the plant secondary metabolites. Furthermore, differences between countries (geographical factors, soil composition) also contribute to these differences.

Conclusion: The total phenolic content of *Marrubium vulgare* L. varied greatly between harvest years in Ukraine and Lithuania, indicating clear differences related to year, climate and geographical location. Further research is needed on environmental and soil parameters that influence the accumulation of phenolic compounds.

References:

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