DETERMINATION OF QUALITATIVEAND QUANTITATIVE COMPOSITION OF PHENOLIC COMPOUNDS IN RAPESEED HONEY SAMPLES

Ernesta Zaksaitė[1], Mindaugas Liaudanskas[1,2], Sonata Trumbeckaitė[1], Vaidotas Žvikas[1,2]

[1]Department of Pharmacognosy, Faculty of Pharmacy, Lithuanian University of Health Science, Lithuania
[2]Institute of Pharmaceutical Technologies of the Faculty of Pharmacy of Lithuanian University of Health Science, Lithuania
ernesta.zaksaite@stud.lsmu.lt

Honey is one of the oldest sweeteners in the world. Researchers discovered that different types of honey contain around 200 dissimilar substances. One of them is phenolic compounds, that are responsible for antioxidant activity, and it is important for human health due to the antioxidant and anti-inflammatory properties. [1] Therefore, it is important to investigate the phytochemical composition and biological properties of honey samples obtained from different regions of Lithuania. In this work, is important to determine the qualitative and quantitative composition of phenolic compounds in rapeseed honey samples, collected in different regions of Lithuania.

Rapeseed honey samples were collected in 2023 from six different apiaries. They were in Kloniniai Mijaugonys, Šeduva, Mažeikiai, Šilutė, Biržai and Kėdainiai districts. 1 g honey was dissolved in 10 ml 70 % ethanol. Then samples were extracted by ultrasound 20 min. in an ultrasonic bath. Before analysis, extracts were filtered through a 0.22 µm membrane filter. All samples contained flavonoids: quercetin, isorhamnetin, hyperoside and hydroxycinnamic acids – p-coumaric acid. Quercetin determined in rapeseed honey samples ranged between 2.12 µg/g and 6.36 µg/g. The highest quercetin content was detected in a sample from Šeduva (6.36 µg/g). The lowest quercetin content was found in a sample from Kėdainiai (2.12 µg/g). The coefficient of variation (CV) was 34.58%, this indicates a significant variability of quercetin content in the rapeseed honey samples. Isorhamnetin determined in rapeseed honey samples varied between 1.25 µg/g and 8.96 µg/g. The highest isorhamnetin content was detected in a sample from Šeduva (8.96 µg/g). The lowest isorhamnetin content was found in a sample from Šilutė (1.25 µg/g). The CV% was 87.18%, which indicates a very significant variability of isorhamnetin content in the rapeseed honey samples. Hyperoside determined in rapeseed honey samples ranged between 2.64 µg/g and 10.85 µg/g. In rapeseed honey sample from Šeduva district was evaluated the highest hyperoside content (10.85 µg/g). Rapeseed honey from Kloniniai Mijaugonys district ascertained the lowest hyperoside content (2.64 µg/g). The CV was 43.94%. p-Coumaric acid determined in rapeseed honey samples varied between 1.92 µg/g and 10.57 µg/g. The highest p-coumaric acid content was evaluated in a sample from Šilutė (10.57 µg/g). The lowest p-coumaric acid content was ascertained in a sample from Kėdainiai (1.92 µg/g). The CV% was 75.53%, which also indicates significant variability of p-coumaric acid content in rapeseed honey samples.

The results of our research have shown that all investigated samples of rapeseed honey contains flavonoids: quercetin, isorhamnetin, hyperoside and hydroxycinnamic acids – p-coumaric acid. Rapeseed honey sample from Šeduva region had the highest amount of quercetin, isorhamnetin and hyperoside. The highest p-coumaric amount was evaluated in a sample from Šilutė region.

[1] Cheung, Y., Meenu, M., Yu, X., & Xu, B. (2019). Phenolic acids and flavonoids profiles of commercial honey from different floral sources and geographic sources. International Journal of Food Properties, 22(1), 290–308. https://doi.org/10.1080/10942912.2019.1579835