



## **GENTIAN ROOT: COMPARISON OF OPTIMIZED HEAT ASSISTED AND ULTRASOUND-ASSISTED EXTRACTION METHODS**

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*Gentiana lutea* L. underground parts, also known as gentian root, is used for the preparation of dietary supplements, functional food, pharmaceutical, or cosmetic products. In our previous study, the ultrasound-assisted extraction (UAE) and heat-assisted extraction (HAE) procedures were optimized to maximize the yield of the gentiopicroside, isogentisin, and total phenolic content (TPC) from gentian root. Therefore, the aim of this study was to compare the influence of those two extraction methods on the yield of gentiopicroside, isogentisin, and TPC. Gentian root extracts were prepared in five replications under the optimal conditions by UAE (80 °C, 31 min, solid-to-solvent ratio 1:42, ethanol concentration 49%) and by HAE (65 °C, 129.08 min, solid-to-solvent ratio 1:40, ethanol concentration 49.33%). Gentiopicroside and isogentisin content were analyzed by HPLC and expressed as mg/g of dry weight (dw). TPC was determined spectrophotometrically using the Folin–Ciocalteu method and expressed as mg of gallic acid equivalents (GAE)/g dw. Results are considered statistically equal, according to the t-test, in the case of a P-value higher than 0.05. Gentiopicroside content in the extracts obtained by UAE was  $15.78 \pm 1.16$  mg/g dw, while in the case of HAE content was  $15.16 \pm 1.10$  mg/g dw, indicating that there was no significant difference ( $P = 0.40$ ). Isogentisin content in the extract prepared by UAE was  $7.87 \pm 0.91$  mg/g dw, whereas in the case of HAE content was slightly higher  $8.58 \pm 0.51$  mg/g dw. Also, there was no statistical difference ( $P = 0.17$ ) between these values. Moreover, there was no statistical difference ( $P = 0.6680$ ) between TPC in the extracts obtained by UAE ( $11.29 \pm 0.82$  mg GAE/g dw) and HAE ( $11.46 \pm 0.22$  mg GAE/g dw). Therefore, both methods (optimized UAE and HAE) are effective and there was no significant difference between the extraction yield of gentian roots target compounds.

*Keywords: Gentiopicroside, Isogentisin, Total phenolic content*

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