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PHYTOCHEMICAL CHARACTERIZATION OF *JUNIPERUS spp*. BERRIES USING SPECTROPHOTOMETRIC AND HPLC METHODS

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The aim of this study was to evaluate the phytochemical composition of *Juniperus sabina* L. and *Juniperus communis* L. berries collected from different regions of Armenia by determining the content of phenolic compounds, flavonoids, and organic acids. The study was conducted to assess the potential of *Juniperus* species as a source of biologically active compounds for food and agricultural applications. Mature berries of *J. sabina* (Gegharkunik region) and *J. communis* (Yerevan, Kotayk, and Tavush regions) were collected from natural populations. Dried and powdered berry samples were extracted with 70% ethanol using ultrasonic-assisted extraction. Total phenolic content was determined by the Folin–Ciocalteu method, with absorbance measured at 765 nm, and results were expressed as mg gallic acid equivalents (GAE) per gram of dry extract. Total flavonoid content was determined by spectrophotometric analysis after extraction with acidified ethanol, and results were expressed as mg quercetin equivalents (QE) per gram of sample. Organic acids were analyzed by high-performance liquid chromatography (HPLC) using a UV detector at 210 nm. The chromatographic method allowed the identification and quantification of fumaric, succinic, citric, acetic, lactic, shikimic, ascorbic, malic, formic, and tartaric acids in *Juniperus* berry extracts. The obtained results demonstrated differences in the phytochemical composition of *Juniperus*

species depending on species and geographical origin. The highest total phenolic content was observed in *J. communis* berries from Yerevan (5.38 ± 0.08 mg GAE/g dry extract), whereas *J. sabina* samples from Gegharkunik showed lower values (1.71 ± 0.05 mg GAE/g). Flavonoid content ranged from 64.18 ± 1.42 to 98.70 ± 2.14 mg QE/g, with the highest concentration detected in *J. communis* berries from Kotayk. HPLC analysis revealed the presence of nine organic acids in the studied samples. Malic acid was the predominant organic acid, with concentrations ranging from 7.21 to 8.34 mg/g dry mass. Shikimic acid was the second most abundant compound, reaching 5.21 mg/g in *J. communis* berries from Tavush. Ascorbic acid content varied from 0.47 to 0.59 mg/g, indicating the presence of antioxidant-related metabolites. The study showed that *J. communis* berries are a rich source of phenolic compounds, flavonoids, and organic acids compared with *J. sabina*. The combination of spectrophotometric and HPLC methods provided comprehensive information on the chemical profile of *Juniperus* berries. The obtained results confirm their potential application as natural sources of bioactive compounds for functional foods and plant-based products.

Keywords: *Juniperus* spp., phenolic compounds, flavonoids, HPLC, organic acids.

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