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*Abstract*

# Extraction and HPLC-UV Analysis of Usnic Acid in *Usnea barbata* Collected in the Altai Krai †

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**Abstract:** *Usnea barbata* L. (*Parmeliaceae* Zenker.) is used in folk medicine as an antimicrobial agent in various diseases of bacterial genesis. The antimicrobial activity is associated with the presence of the lichen acids, especially usnic acid (UA). Aim of the study is isolation, identification and assay of UA by HPLC-UV. The lichen *Usnea barbata* was collected from tree branches in the Altai Krai during the growing season (June-July 2022). The sum of lichen acids was isolated in the form of sodium salts by re-extraction with 20% sodium hydroxide solution from chloroform extract. The re-extract was acidified with 10% hydrochloric acid until a precipitate formed, which was filtered off, dried, dissolved in acetonitrile and analyzed. The HPLC analysis was conducted using a MiliChrom A-02 HPLC System equipped with UV-spectrophotometric detector. The chromatographic conditions: column - reverse-phase, ProntoSIL 120-5 C18 (75×2.0 mm, 5 μm); column oven temperature - 40°C; mobile phase (MP) - 0.1% trifluoroacetic acid aqueous solution (solvent A), 100% acetonitrile (solvent B); MP flow rate - 150 μL/min with gradient elution - from 10 to 50% of solvent B in 5 minutes, gradually increased to 100% up to 20 minutes; sample injection volume - 4 μL; detection at 230 and 280 nm. By comparing the retention times (τ = 15.0±0.1 min) and spectral characteristics (λmax) with those of the 0.05% UA reference sample solution, the presence of UA in the studied thallus was established. Quantitative content, calculated from the peak area, compared with the peak area of the reference sample -1.45±0.07%.

**Keywords:** *Usnea barbata*; usnic acid; HPLC-UV

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