

PHENOLIC COMPOUNDS FROM ROOTS OF *Lupinus polyphyllus*

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We reported earlier on the isolation from *Lupinus polyphyllus* Lindl. roots of 20 organic acids, among which 10 were carboxylic; 2, phenolic; and 8, fatty acids [1].

The goal of the present work was to study phenolic compounds from *L. polyphyllus* roots.

We studied roots collected during fruiting in September 2014 in Kharkov Region of Kharkov Oblast.

Total phenolic compounds were separated into individual components using HPLC on an Agilent Technologies 1200 3 D LC System chromatograph (USA) equipped with G1325C diode-matrix and G1362A refractometric detectors.

The investigation used reversed-phase (RP) chromatography over a Supelco Discovery C₁₈ chromatography column (250 × 4.6 mm) with silica gel (5 μm) modified by octadecyl groups. The mobile phase was solvent A [0.1% trifluoroacetic acid (TFA), 5% MeCN, H₂O, pH 2.08] and solvent B (0.1% TFA, MeCN). The chromatography conditions were mobile-phase flow rate 0.1 mL/min, eluent operating pressure 400 bar (40 kPa), column thermostat temperature 25°C, sample volume 10 μL, and chromatography time 40 min. We used gradient elution. The scan time was 0.6 s at wavelengths 280 and 255 nm.

Ground raw material (2.0 g, accurate weight) was placed into a 100-mL flask and extracted with refluxing doubly distilled H₂O (50 mL) for 30 min on a boiling-water bath. The obtained extract was filtered, cooled, transferred to a 100-mL flask, and adjusted to the mark with doubly distilled H₂O [2].

The quantitative contents in *L. polyphyllus* roots of gallic and ellagic acids, (+)-catechin, (+)-catechin gallate, (–)-epicatechin, epicatechin gallate, and epigallocatechin were analyzed by RP chromatography. Table 1 presents the results.

The phenolic composition of *L. polyphyllus* roots was studied. The quantitative contents of isolated compounds, the total of which was 1.972%, were determined.

The dominant compounds with respect to quantity (μg/μL) were (–)-epicatechin, 213.05376; (+)-catechin, 208.05657; and (–)-epigallocatechin, 154.95159. This indicated that *L. polyphyllus* roots contained mainly condensed tanning agents.

TABLE 1. Phenolic Compounds from Roots of *Lupinus polyphyllus*

Compound	Retention time, min	Concentration	
		μg/μL	%
Gallic acid	7.589	8.30934	0.020
(+)-Catechin	15.341	208.05657	0.493
(–)-Epigallocatechin	16.569	154.95159	0.367
Ellagic acid	19.249	127.52422	0.302
(–)-Epicatechin	20.595	213.05376	0.505
(+)-Catechin gallate	29.682	50.64361	0.121
(–)-Epicatechin gallate	30.476	69.14618	0.164
Total		831.68527	1.972

REFERENCES

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