PHENOLIC COMPOUNDS OF THE BARK OF Syringa amurensis

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The literature contains no information on the chemical composition of the bark of Amur lilac, Syringa amurensis Rupr., fam. Oleaceae, although its use in folk medicine as a tonic had been reported [1].

Air-dry Amur lilac bark collected in 1987 in Maritime Territory was extracted with aqueous ethanol and the evaporated extracts were chromatographed on silica gel L 40/100 using eluent mixture of chloroform and methanol in various ratios. The compounds were purified by recrystallization or by rechromatography on silica gel, polyamide, and Sephadex LH-20. This led to the isolation of eight phenolic compounds – phenylpropanoids (I-III), lignans (IV, V), and iridoids (VI-VIII) containing a phenylethanol fragment.

To identify the substances isolated we used UV, NMR, and mass spectra, and also the results of chemical transformations and direct comparisons with authentic samples of some of the substances.

Coniferin (I). White crystals with the composition $C_{16}H_{22}O_8$, mp 184-185°C (alcohol), λ_{max}^{EtOH} 258, 266 (sh.) nm.

Syringin (II) (eleutheroside B). White acicular crystals with the composition $C_{17}H_{24}O_9$, mp 190-192°C (water), λ_{max}^{EtOH} 266 nm.

Compounds (I) and (II) were cleaved by β-glucosidase, forming glucose and the aglycons – coniferyl alcohol (M^+ 180) and sinapyl alcohol (M^+ 210), respectively. The attachment of the glucose residue to the aromatic OH group in both compounds was shown on the basis that the initial glycosides did not react with diazobenzenesulfonic acid while the aglycons obtained were revealed by this reagent in the form of reddish pink spots.

Acetoside (III). Light yellow amorphous powder with the composition $C_{29}H_{36}O_{15}$, λ_{max}^{EtOH} 242, 299, 330 nm.

(+)-Lariciresinol 4-O-β-D-Glucopyranoside (IV). Light yellow amorphous powder with the composition $C_{26}H_{34}O_{11}$, $[\alpha]_D^{21}$ −20.5° (0.29 ethanol), λ_{max}^{EtOH} 227, 280 nm.

(−)-Olivil 4-O-β-D-Glucopyranoside (V). Light yellow amorphous substance with the composition $C_{26}H_{34}O_{12}$, $[\alpha]_D^{21}$ −64.2° (0.52; ethanol), λ_{max}^{EtOH} 227, 280 nm.

Compounds (IV) and (V) were cleaved by β-glucosidase with the formation of glucose and the aglycones (+)-lariciresinol (M^+ 360) and (−)-olivil (M^+ 376), respectively, and were identical with the lignan glycosides isolated previously from the bark of common lilac [2].

Oleuropein (VI). Light yellow amorphous substance with the composition $C_{25}H_{32}O_{13}\cdot H_2O$, $[\alpha]_D^{20}$ −165° (0.5; ethanol), λ_{max}^{EtOH} 232, 238 nm. On acetylation, compound (VI) gave a hexaacetate containing two aromatic acetoxy groups.

Ligustroside (VII). White amorphous substance with the composition $C_{25}H_{32}O_{12}\cdot H_2O$, $[\alpha]_D^{20}$ −175° (0.2, ethanol), λ_{max}^{EtOH} 227, 278 nm. On acetylation, compound (VII) gave a pentaacetate containing one aromatic acetoxy group.

Nüzhenide (VIII). Light yellow amorphous substance with the composition $C_{31}H_{44}O_{17}\cdot 2H_2O$, $[\alpha]_D^{20}$ −150° (0.7, ethanol), λ_{max}^{EtOH} 227, 278 nm. On acetylation, compound (VIII) formed an octaacetate containing one aromatic acetoxy group.

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The secoiridoids (VI-VIII) are based on methyl oleoside [3]. On saponification (2% NaOH) glycosides (VI), (VII), and (VIII) formed oleoside and the corresponding phenolic fragments — 3,4-dihydroxyphenylethanol (from compound (VI)), 4-hydroxyphenylethanol (tyrosol) [from (VII)], and salidroside (tyrosol 4-O-glucoside) [from (VIII)].

This is the first time that compounds (I-VIII) have been isolated from Amur lailac, but they have been described previously for the bark of common lilac [2, 4, 5].

It must be mentioned that the bark of Amur lilac contained a larger amount of iridoids — oleuropein (VI) and ligustroside (VII) — than common lilac, but no forsythiaside (an isomer of acteoside) was detected.

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PHENOLIC COMPOUNDS OF THE BARK OF Eleutherococcus senticosus

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There is no information in the literature on the chemical composition of the bark of prickly eleutherococcus, Eleutherococcus senticosus Masim, fam. Araliaceae, although the rhizomes with roots of this plant have been studied fairly thoroughly in the chemical respect [1-3]. In view of this, a comparative chemical study of the bark and roots of prickly eleutherococcus appeared of interest.

The air-dry bark of the stems of this plant, gathered in May, 1987, in Maritime Territory, was extracted with aqueous alcohol at the boil, and the evaporated extracts were chromatographed on silica gel L 40/100 using as eluents mixtures of chloroform and methanol in various ratios. The compounds were purified by recrystallization or rechromatography on silica gel, polyamide, and Sephadex SL-20. This led to the isolation of nine phenolic compounds — phenylpropanoids (I-IV), coumarins (V-VII), and phenolic carboxylic acids (VIII and IX).

The substances isolated were identified on the basis of UV, IR, and mass spectra and the results of chemical transformations, and also by direct comparison with authentic specimens of some of the substances.

Coniferin (I). White crystals with the composition $C_{16}H_{22}O_8$, mp 184-185°C (alcohol), λ_{max}^{MeOH} 258, 266 (sh.) nm.

Syringin (II) (eleutheroside B). White acicular crystals with the composition $C_{17}H_{24}O_9$, mp 190-192°C (water), λ_{max}^{MeOH} 266 nm.

Compounds (I) and (II) were cleaved under the action of β-glucosidase with the formation of glucose and the aglycons – coniferyl alcohol (M^+ 180) and sinapyl alcohol (M^+ 210), respectively.

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