PHENOLIC COMPOUNDS OF *Ajania achilleoides*

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In the present paper we give the results of an investigation of the phenolic compounds contained in the epigeal part of *Ajania achilleoides* (Turcz.) Poljak. The plant was collected by the resources-prospecting division of the combined Soviet-Mongolian complex biological expedition at the South Gobi aimak in August, 1974, in the period of incipient budding.

The plant material was extracted with 70% ethanol. The concentrated extract was treated with hot water, and then the aqueous extract was treated successively with chloroform and ethyl acetate. When the chloroform fraction was separated on silica gel (Woelm, activity grade V, chloroform–ethanol (19:1)), substances (I) and (II) were obtained. By chromatography on polyamide, the ethyl acetate fraction yielded substances (III) and (IV). All the substances isolated gave a positive cyanidin reaction.

Substance (I) had the composition $C_{17}H_{14}O_7$, mp 288°C, M^+ 330, $\lambda_{max}^{CH_3OH}$: 272, 350 nm. Its PMR spectrum had the following signals (DMSO-d, δ, ppm): 7.28, singlet, 2 H (H-2' and H-6'); 6.9, singlet, 1 H (H-3); 6.56 and 6.18, doublets, 1 H, J = 2.5 Hz (H-8 and H-6): and 3.84, singlet, 6 H (two OCH_3 groups).

The triacetate of (I) had mp 248-250°C, M^+ 456. The PMR spectrum of the triacetate ($CDCl_3$, ppm), contained the signals of three acetoxy groups; 2.4, singlet, 3 H; and 2.3, singlet, 6 H.

The mass spectra of (I) and its triacetate each contained a peak with m/e 152, which is characteristic for flavones with a dihydroxy-substituted ring A.

The facts given indicate for (I) the structure of 4',5,7-trihydroxy-3',5'-dimethoxyflavone — tricin [1, 2].

Substance (II) had the composition $C_{17}H_{14}O_7$, mp 226-227°C, $\lambda_{max}^{CH_3OH}$: 275, 344 nm. The results of UV spectroscopy with additives permitted the assumption that (II) contained a disubstituted ring B, OH groups in positions 4', 5 , and 7, and a substituted hydroxy group in position 6. The Bargellini reaction for (II) was negative [3].

PMR spectrum of (II) (DMSO-d, δ, ppm): 7.72, multiplet, 2 H (H-2' and H-6'); 6.92, doublet, 1 H, J = 9 Hz) (H-5'); 6.80, singlet, 1 H (H-8); 6.60, singlet, 1 H (H-3); 3.88 and 3.76, singlets, 3 H (two OCH_3 groups).

On the basis of the results obtained and a comparison of them with literature information [4], substance (II) can be identified as 4',5,7-trihydroxy-3',6-dimethoxyflavone.

Substance (III) with mp 330°C and substance (IV) with mp 238-239°C were identified by UV and IR spectroscopy and mixed melting points with authentic samples as luteoline and its 7-glucoside (cynaroside), respectively.

7-Hydroxy-6-methoxycoumarin (scopoletin) and 6,7-dimethoxycoumarin (scoparone) were identified in the chloroform extract by paper chromatography and thin-layer chromatography [5], in comparison with markers.*

This is the first time that any of the substances described above has been detected in *Ajania achilleoides*.

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POLYPHENOLIC COMPOUNDS OF THE ROOTS OF *Hibiscus cannabinus*

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The bark of the roots of kenaf of variety 1574 collected after the harvesting of the green bast was extracted with chloroform, benzene, acetone, and methanol. Polyphenols were detected in the last two extracts. The treatment of the chromatograms with the vanillin reagent [1] showed that flavans of a simpler structure had passed into the acetone and very complex ones, of the tannin type, into the methanol.

The methanolic fraction was evaporated in vacuum in a current of nitrogen to dryness and the residue was treated with dry methanol. The polyphenols were precipitated from the solution obtained with chloroform and were dried over phosphorus pentoxide. In this way proanthocyanidin (I) was obtained. On a chromatography of (I) in the butan-1-ol—acetic acid—water (40:12:28) system could be seen a diffuse band. Compound (I) decomposed at a temperature of about 200°C. The hydrolysis of (I) with 0.5 N HCl and PC of the hydrolysis products showed that from the tenth to the fortieth minute the splitting out of monomeric flavans took place, and subsequent heating led to the formation of insoluble phlobaphenes [2]. The products of acid cleavage were extracted with diethyl ether. PC and TLC on "Silufol" plates revealed two compounds (II) and (III) (BAW and chloroform—ethyl acetate—ether (7:2:1) systems).

Separation of (II) and (III) into individual components was achieved by column chromatography (with type KSK silica gel as adsorbent and ether as eluent).

Flavan (II) formed colorless needles with mp 250-252°C (decomp.) λ_{max} 280 nm (ethanol) and was identified as (—)-epicatechin gallate [3].

Flavan (III) formed colorless crystals with mp 230-232°C (decomp.), λ_{max} 280 nm (ethanol) and its R_f value coincided with that of (—)-epicatechin, with an authentic sample of which it gave no depression of the melting point. It has been established that the roots of kenaf contain proanthocyanidins in the formation of which (—)-epicatechin gallate and (—)-epicatechin participate.

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