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PHENOLIC COMPOUNDS OF Phaseolus aureus

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Continuing a study of plants of the genus Phaseolus D., family Fabaceae (Leguminosae) [2-4], we have investigated the chemical composition of the epigeal part of Phaseolus aureus Piper. (mung bean) collected in the fruit-bearing period.

By paper chromatography, no less than 38 substances of phenolic nature were detected in the herbage studied. Chloroform, ethyl acetate, and butanol fractions were obtained by a procedure described previously. In the present communication we give the results of an investigation of the chloroform and ethyl acetate fractions.

In the chloroform fraction no less than nine substances of coumarin nature were detected, and in the ethyl acetate fraction 26 phenolic compounds.

By column chromatography on polyamide sorbent using eluting mixtures of chloroform and ethanol with increasing concentrations of the latter, substances (I)-(III) were isolated from the chloroform fraction, and (IV)-(VIII) from the ethyl acetate fraction.

Substance (I) — $C_{10}H_8O_4$, mp 202-204°C, λ_{max} 230, 256, 298, 343 nm: 7-hydroxy-6-methoxycoumarin (scopoletin) [6].

Substance (II) — $C_{10}H_8O_4$, mp 185-187°C, λ_{max} 230, 255, 295, 345 nm: 6-hydroxy-7-methoxycoumarin (isoscopoletin) [6].

Substance (III) — $C_9H_6O_3$, mp 228-230°C, λ_{max} 250, 328 nm: 7-hydroxycoumarin (umbelliferone) [6].

Substance (IV) — $C_{16}H_{10}O_7$, mp 310-312°C, λ_{max} 375, 256, 268 nm quercetin [5].

Substance (V) — $C_{15}H_{10}O_6$, mp 274-276°C, λ_{max} 369, 265 nm: kaempferol [5].

Substance (VI) — $C_{27}H_{30}O_{16}$, mp 189-192°C, λ_{max} 362, 258 sh., 264 nm: quercetin 3-rutionoside (rutin) [5].

Substance (VII) — $C_{16}H_{18}O_9$, mp 200-203°C, λ_{max} 325, 298, 240 nm, and substance (VIII), with the composition $C_{16}H_{18}O_9$, amorphous, λ_{max} 327, 298, 245 nm, were chlorogenic and neochlorogenic acids [1], respectively.

The structures of the compounds isolated were confirmed by UV and IR spectroscopy with ionizing and complex-forming additives, by the results of acid and enzymatic hydrolyses, and by comparison with authentic samples.

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