

## COUMARINS AND FLAVONOIDS OF *Rhodea japonica*

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The present communication is devoted to a chemical study of the coumarins and flavonoids of *Rhodea japonica* (Thumb.). Paper chromatography in the systems ethyl acetate-formic acid-water (10:2:3), 15% acetic acid, tetrahydrofuran-chloroform-formamide (50:50:6.5), benzene-methyl ethyl ketone (95:5) water (35%), and chloroform-formamide (25%), and others showed the presence in the leaves of not less than five substances of flavonoid nature and four coumarins; the latter are also present in the rhizomes.

The phenols were extracted from the comminuted leaves with 80% ethanol. The ethanolic extract was evaporated and the chlorophyll that deposited was separated by centrifuging. The coumarins were extracted from the aqueous residue with chloroform, and the flavonoids with ethyl acetate. The coumarins were separated on a column of Kapron sorbent using as eluents benzene and benzene-chloroform in various ratios. In this way, we isolated scopoletin -  $C_{10}H_8O_4$  - with mp 200-202°C, and umbelliferone -  $C_9H_6O_3$  - with mp 230-232°C.

The flavonoid substances were also separated on a column of polyamide, which was eluted with chloroform and with chloroform-ethanol. This gave four flavonoids which were identified as kaempferol -  $C_{15}H_{10}O_6$  - mp 270-273°C, quercetin -  $C_{15}H_{10}O_7$  - mp 308-311°C, astragalin -  $C_{21}H_{20}O_{11}$  - mp 173-175°C,  $[\alpha]_D^{20} - 56.0$  (c 0.1; in dimethylformamide), and isoquercitrin -  $C_{21}H_{20}O_{12}$  - mp 218-220°C,  $[\alpha]_D^{20} - 38.0$  (c 0.5; pyridine).

The substances obtained were identified on the basis of the physicochemical properties of their cleavage products, UV and IR spectra, and melting points of mixtures with authentic samples.

This is the first time that the substances mentioned above have been obtained from *Rhodea japonica*.

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