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FLAVONOIDS OF *Lagochilus platycalyx*

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The genus *Lagochilus*, family Lamiaceae consists of 44 species, 33 of which grow in Central Asia [1].

Lagochilus platycalyx is a fairly widespread mountain species of the flora of Uzbekistan [2]. It has been found pharmacologically that an infusion of this plant possesses sedative and hypotensive properties, and there have been no indications whatever that it possesses a toxic action [3].

The comminuted air-dry leaves, gathered in the period of mass flowering at the beginning of June, 1988, in the outskirts of the village of Brichmulla, Bostanlykskii region, Tashkent province, were subjected to extraction with chloroform and then with 50% aqueous acetone. The aqueous acetone extract was concentrated to small volume and the flavonoids were extracted with ethyl acetate-ethanol (9:1). Their composition was analyzed by chromatography on Filtrak No. 11 paper and on Silufol plates in the n-butyl alcohol-acetic acid-water (4:1:5) and chloroform-methanol-ethyl acetate (3.5:1.5:0.5) systems. Seven substances of phenolic nature were detected.

The separation and isolation of individual compounds was achieved by column chromatography on polyamide. On elution with water, aqueous alcohol (9:1), and the ethyl acetate-methanol (9:1) system, four substances of flavonoid nature were isolated. They were identified on the basis of physicochemical constants, the results of IR spectroscopy with diagnostic reagents, chromatographic comparison with authentic markers, and a study of the products of acid hydrolysis and alkaline degradation.

Substance (I) - pale yellow crystals with the composition $C_{27}H_{30}O_{16}$, mp 191-192°C - formed on acid hydrolysis the aglycon quercetin and the sugars glucose and rhamnose. On the basis of physicochemical constants, IR and UV spectra, and a comparison with an authentic sample, substance (I) was identified as quercetin 3-O-[6-O-(α -L-rhamnopyranosyl)- β -D-glucopyranoside], which is known in the literature as rutin [4].

Substance (II) - bright yellow crystals with the composition $C_{15}H_{10}O_7$, mp 305-307°C - corresponded in its physicochemical constants to myricetin.

Substance (III) - yellow crystals with the composition $C_{15}H_{10}O_8$, mp 360°C - corresponded in its physicochemical constants to myricetin.

Substance (IV) - pale yellow crystals with the composition $C_{15}H_{10}O_6$, mp 272-274°C - corresponding in its physicochemical constants to kaempferol.

It had been shown previously by chromatography that the epigeal part of *L. platycalyx* contains rutin [5]. For a reliable identification we isolated it in the crystalline state and made a complete study of its physicochemical properties. We are the first to have isolated quercetin, kaempferol, and myricetin from the plant under investigation.

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PHENOLIC COMPOUNDS FROM THE TUBULAR FLOWERS

of *Leucanthemum vulgare*

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We have shown previously that the flavonoid composition of the ligulate flowers of the oxeye daisy, *Leucanthemum vulgare* Lam. (family *Asteraceae*) growing on the territory of Georgia differs from that of the tubular flowers. We have isolated apigenin and glycosides of it from the ligulate flowers of this plant [1, 2].

In the present communication we report the results of a study of the tubular flowers. The air-dry raw material was subjected to preliminary extraction with chloroform and was then extracted with 80% methanol. The alcohol was distilled off from the alcoholic extract, and then the flavonoids were extracted with ethyl acetate and chromatographed on a column of polyamide sorbent with the use as eluent of aqueous alcohol containing increasing concentrations of ethanol. As a result, nine individual compounds were obtained, two of which were phenolic carboxylic acids and seven were flavonoids. They were identified from their physicochemical properties and UV and IR spectra and by comparison with authentic samples.

Substance (I) (mp 202-204°C) was chlorogenic acid [3]; (II) (mp 193-196°C) caffeic acid [3]; (III) (mp 189-191°C) rutin [4]; (IV) (mp 235-237) hyperin (quercetin 3-galactoside) [4]; (V) (mp 224-226°C) chrysin 7-glucuronide [5]; (VI) (mp 315-317°C) quercetin [4]; (VII) (mp 329-331°C) luteolin [4]; (VIII) (mp 299-302°C) isorhamnetin [5]; and (IX) (mp 287-290°C) chrysin [5].

This is the first time that any of these substances have been isolated from the tubular flowers of *L. vulgare*.

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