

Substance (IV) — $C_{18}H_{16}O_5$, mp 180–183°C (ethanol). Yield 0.007%. UV spectrum, $\lambda_{\text{max}}^{C_2H_5OH}$ nm: 244 (ϵ 15,200), 276 (ϵ 13,600), 342 (ϵ 19,200).

IR spectrum, ν_{max}^{KBr} cm^{-1} : 3600–3400 (–OH), 1670 (>C=O), 1630, 1590 (aromatic nucleus). From its physicochemical constants and spectral characteristics, (IV) was identified as 5-hydroxy-4',7-dimethoxy-6-flavone [6].

This is the first time that arborescin and 5-hydroxy 4',7-dimethoxy-6-methylflavone have been isolated from *Artemesia austriaca*.

The extraction of the epigeal part of *Artemesia austriaca* with hot water, followed by extraction with chloroform and chromatography of the resin so obtained on a column of KSK silica gel (1:20) yielded 0.11% of arborescin and 0.05% of austricin, calculated on the air-dry raw material.

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CARBONIZED CALCIUM HYDROMETASILICATE — A NEW EFFECTIVE ADSORBENT FOR THE SEPARATION OF NATURAL COMPOUNDS BY THIN-LAYER CHROMATOGRAPHY

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Carbonized calcium hydrometasilicate (KMK-20 — the numeral denotes the approximate percentage CO_2 content) is a surface-layer silicate material (the matrix being CaSiO_3 and the working surface CaCO_3 ; $s \sim 200 \text{ m}^2/\text{g}$, $V_{\text{pore}} \sim 0.9 \text{ cm}^3/\text{g}$, $\text{pH} \sim 7.6$, grain size 5–10 μm [1]). In its chromatographic activity, determined from the separation of a standard mixture of dyes (Fig. 1), KMK-20 is not inferior to adsorbents widely used in the TLC of natural compounds. Our aim was a study of the possibility of using KMK-20 for this purpose.

The results of a separation of a number of natural compounds on KSK silica gel, Silufol UV-254, and KMK-20 indicates its higher separating capacity and sensitivity. Thus, in the case of teucrins H1–H4, diterpene furo lactones of the clerodane type (Fig. 2), the R_f values on KMK-20 were 13, 70, 40, and 60 (here and below, R_f 100), and on KSK silica gel they were 33, 68, 69, and 80. In the separation of the glycosides linarin and pectolinarin on KMK-20 it was possible to reveal an impurity component of the linarin which was not determined on Silufol UV-254 (Fig. 3). The aglycons of these glycosides — acacetin and pectolinarigenin — were separated on KMK-20 with R_f 35 and 83, and on Silufol UV-254 with R_f 51 and 56, respectively. A mixture of alkaloids was also readily separated on KMK-20: codeine, floripavine, fugapavine, and mecambridine — R_f 43, 55, 74, and 83, respectively (eluent: ethyl acetate–methanol–chloroform–water (7:2:1:1)). Methanolic extracts of the epigeal and radical parts of mullein were separated with the following R_f values: KMK-20 — 33, 36, 45, 51, 60, 64, 73*, 80*, 90 (epigeal part) and 51, 60, 65, 70, 75*, 81*, and 97 (radical part); Silufol UV-254 — 14, 29, 31, 34, 37, 40, 98, and 13, 29, 37, 42, and 97, respectively (* — spot detected only in TLC on KMK-20; eluent: ethyl acetate–methanol–chloroform–water (7:2:1:1)).

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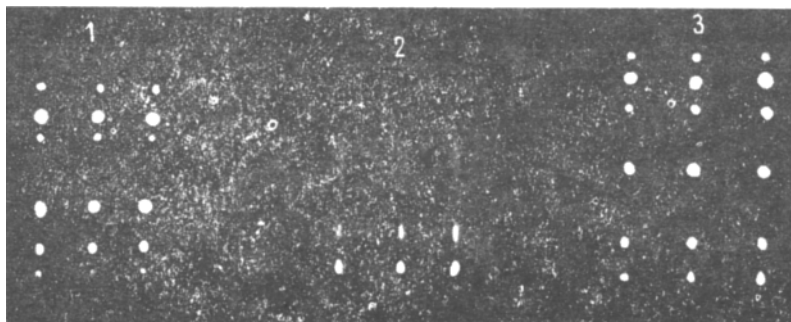


Fig. 1. Contact photograph from a chromatogram of the separation of a six-component standard mixture of Merck azo dyes: on KSK (1), Silufol UV-254 (2), and KMK-20 (3); eluent — benzene.

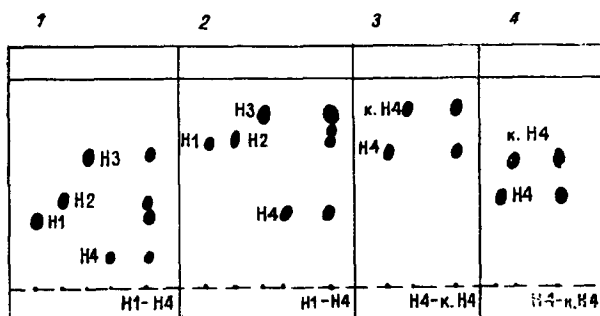


Fig. 2

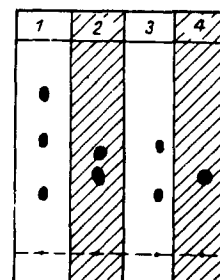


Fig. 3

Fig. 2. Chromatograms of the separation of teucrins H1-H4, diterpene furolactones of the clerodane type, on KMK-20 (1) and KSK (2) with chloroform-methanol (19:1) as the eluent, and of teucrin H4 and the ketone of teucrin H4 (K.H4) on KMK-20 (3) and KSK-4) with chloroform methanol (9:1) as the eluent.

Fig. 3. Chromatograms of the separation of linarin and pectolinarin on KMK-20 (1) and Silufol UV-254 (2) and of linarin on KMK-20 (3) and on Silufol UV-254 (4) with ethyl acetate-methanol-chloroform-water (7:2:1:1) as eluent.

Thus, the use of KMK-20 in the TLC of natural compounds can substantially facilitate the separation of substances with similar properties and provide a possibility for the reliable estimation of the purity of individual compounds. Its use in TLC does not require the performance of grinding and sieving operations; the absence of a hydroxylic coating on the surface eliminates the necessity for performing activation. The aragonite present in the carbonate layer possesses luminophoric properties and therefore eliminates the necessity for adding a luminophoric component.

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