

## VICENIN FROM THE FRUIT OF ANETHUM GRAVEOLENS

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In an ethanolic (70%) extract of the fruit of Anethum graveolens (dill) we have detected six compounds of flavonoid nature by two-dimensional paper chromatography. Using chromatography on columns of polyamide sorbent, we obtained a crystalline produce  $C_{27}H_{30}O_{15}$  with mp 228–229° C;  $[\alpha]_D^{21} + 50.4$  ( $c$  0.5; methanol); UV spectrum:  $\lambda_{\max}^{\text{ethanol}}$  275 and 336 m $\mu$  ( $\log \epsilon$  4.01, 4.0);  $\lambda_{\max}^{\text{CH}_3\text{COONa}}$  282 (305) and 390 m $\mu$ ;  $\lambda_{\max}^{\text{KOH}}$  285, 336, and 405 m $\mu$ . The substance gives the color reactions characteristic for flavone derivatives. The flavonoid was not cleaved by acid (5–20%  $H_2SO_4$ ) and enzymatic hydrolyses. Acid hydrolysis by Kiliani's method [1] led to the formation of apigenin (mp 349–350° C;  $\lambda_{\max}^{\text{ethanol}}$  269, 336 m $\mu$ ;  $\lambda_{\max}^{\text{CH}_3\text{COONa}}$  277, 380 m $\mu$ ;  $\lambda_{\max}^{\text{KOH}}$  275, 398 m $\mu$ ) and D-glucose. The quantitative yield of aglycone (43.1%) shows that it contains two carbohydrate substituents. A comparison of the UV spectra of the aglycone and the glycoside permit the conclusion that the OH groups in the glycoside are unsubstituted.

In view of the fact that the results of mild acid hydrolysis exclude the possibility of the existence of the carbohydrate components in the form of a biose, the assumption arises of the presence of the sugar residues in positions 6 and 8 of the flavonoid skeleton, i. e., the most probable structure for the compound is 6,8-di-C-glucosyl-5,7,3'-trihydroxyflavone (vicenin) [2,3]. A mixture of the substance isolated with an authentic sample of vicenin (V. I. Litvinenko) showed no depression of the melting point. There has, as yet, been no information on the presence of vicenin in the family Umbelliferae.

### REFERENCES

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