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COMPONENTS OF THE RESIN OF THE ROOTS OF *Ferula kirialovii*

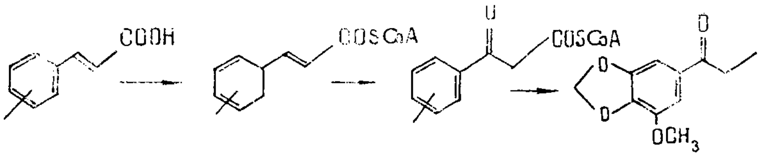
T. V. Bukreeva

UDC 633.82/88

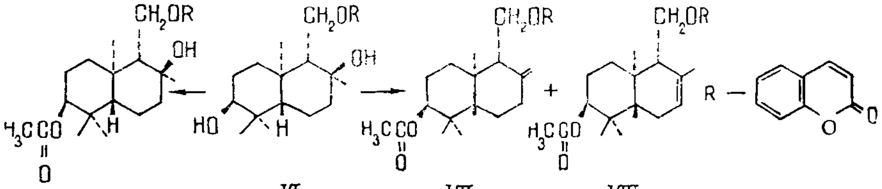
Colorless crystalline nodules have been isolated by the chromatography of the acid fraction of an acetone extract of the roots of *Ferula kirialovii* M. Pimen. (*Ferula pseudooreoselinum* auct.), collected by L. V. Kuz'mina,(Uzbek SSR, Chatkal range, Mt. Bolshio Chimgan), on a column of silica gel L 40/100 with elution by chloroform and then with a mixture of chloroform and ethanol. When they were recrystallized from hot water, acicular crystals of umbelliferone with mp 233-234°C were obtained [1].

From an acetone extract of the roots of *Ferula kirialovii* collected by M. G. Pimenov (Northern slopes of the Ugam range, R. Sairamsu, Kazakhstan SSR), by chromatography on a column of neutral alumina (activity grade II), with elution by petroleum ether and mixtures of petroleum ether containing gradually increasing proportions of benzene, oily fractions were isolated in which, on standing, colorless tabular crystals were formed. After being washed with cold diethyl ether, the substance was recrystallized from a mixture of diethyl ether and petroleum ether. This gave acicular crystals with mp 88°C of crocatone (latifolone) [2-5].

Previously, crocatone (latifolone) had been isolated only from the roots of some species of the family Apiaceae [2-8], including the roots of some representative of the genus *Ferula* [9-13]. Biogenetically, crocatone (IV) can probably be regarded as the product of the reduction of the carboxy group in the form of the CoA thioester of the corresponding benzoylacetic acid (III), which is the product of the β-oxidation [14] of the CoA thioester (II) of a substituted cinnamic acid (I).



I II III IV



V VI VII VIII

Then, by chromatographing an extract with benzene, fractions that crystallized on standing were obtained. After recrystallization from benzene, colorless acicular crystals of β-sitosterol with mp 136-137°C were obtained. We have also obtained β-sitosterol from the roots of *Ferula kirialovii* collected by L. P. Markova (Uzbek SSR, Valley of the R. Ugam).

On subsequent elution of the column with a mixture of benzene and chloroform and then with pure chloroform, resinous fractions which crystallized in the form of small prisms were obtained. After washing with diethyl ether, a substance was obtained with mp 175-176°C, which was samarkandin [15].

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On the prolonged heating of samarkandin (VI) in a mixture of pyridine with an excess of acetic anhydride, samarkandin monoacetate (V) was obtained in small amount and, in large amount, with almost the same composition, badrakemin acetate (VII) and conferol acetate (VIII).

The very fact of the formation in this reaction of compounds with an exocyclic double bond (VII) confirms the equatorial orientation of the tertiary OH group in samarkandin [16] and in isosamarkandin, its epimer at C_3. Coplanarity for antiparallel elimination is better achieved with the hydrogen from the methyl groups, which favors the formation of the exocyclic isomer (VII) [17, 18, 19].

The compunds isolated were identified by a comparison of melting points and the results of IR and PMR spectroscopy.

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