STRUCTURE OF FERKUCHIN

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UDC 547.992:547.37

In continuation of studies of terpenoids from *Ferula* plants [1, 2], we used column chromatography on KSK silica gel to isolate a new ester called ferkuchin from the neutral fraction of the ethanol extract of *Ferula kuhistanica* Korov. roots collected near Khaidarkon of Fergansk district.

Ferkuchin, $C_{24}H_{32}O_6$, mp 144-145°C, $[\alpha]_D$ +124.5° (*c* 1.0, $CHCl_3$), is a colorless crystalline substance that is very soluble in organic solvents and insoluble in water.

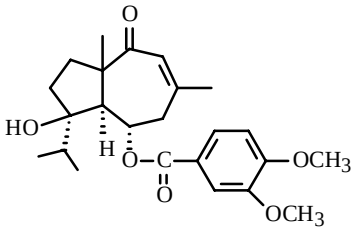
The IR spectrum contains absorption bands for ester carbonyl (1700 cm^{-1}), hydroxyl (3550 cm^{-1}), the carbonyl located in the 7-membered ring conjugated to the double bond (1640 cm^{-1}), and an aromatic ring (1520, 1560, 1620 cm^{-1}).

The UV spectrum exhibits maxima characteristic of an α,β-unsaturated ketone with λ_{max} 232 nm (log ε 4.01) and a 3,4-hydroxy-substituted aromatic ring at λ_{max} 262 and 292 nm (log ε 3.9 and 2.6).

The PMR spectrum of ferkuchin (taken on a Tesla B567A instrument at 100 MHz) contains signals for protons characteristic of carotane esters: doublets at 0.86 and 0.98 ppm (3H, each, J = 7 Hz, C_{11}-$2CH_3$), singlets at 1.34 and 1.85 ppm (3H each, C_1–CH_3, C_8–CH), a multiplet at 5.60 ppm (1H, C_6–H), a broad singlet at 5.85 ppm (1H, C_9–H), singlets at 3.84 and 3.90 ppm (3H each, 2×OCH_3), a doublet at 6.78 ppm (1H, J = 8 Hz, C_4'–H), a doublet at 7.39 ppm (1H, J = 2 Hz, C_7'–H), and a quartet at 7.55 ppm (1H, J = 8 and 2 Hz, C_3'–H).

Base hydrolysis of ferkuchin and lapidin from the neutral part of the hydrolysate gave the identical sesquiterpene alcohol lapidol, $C_{15}H_{24}O_3$, that was isolated previously from *Ferula lapidosa* [3]. The acid part of the hydrolysate gave an acid of composition $C_9H_{10}O_4$ with mp 180-181°C, identical to veratric acid [3, 4].

Thus, we found that ferkuchin is an ester of lapidol with veratric acid in the 6-position and has the structure **1**.



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0009-3130/01/3702-0195$25.00