# STRUCTURE OF FEROCIDIN

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Plants of the *Ferula* L. genus (celery, Apiaceae) are rich sources of terpenoids such as coumarins, terpenoid esters, and sesquiterpene lactones [1-3]. Preparations with physiological properties are based on terpenoids.

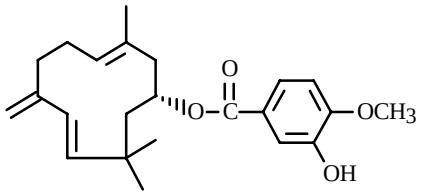
We isolated a new terpenoid ester from roots of *Ferula pachyphylla* Korov. and called it ferocidin. The UV spectrum of this compound exhibits maxima at 262 and 295 nm (log ε 4.16 and 4.05), which are typical of 3,4-dihydroxybenzoic acid derivatives.

The IR spectrum of the compound contains absorption bands at 3450-3540, 1715, 1615, 1530, 1270, and 1245 $cm^{-1}$, which are due to the presence of hydroxyl, ester carbonyl, and an aromatic ring.

Basic hydrolysis of ferocidin by aqueous alcoholic NaOH (20%) isolated a sesquiterpene alcohol $C_{15}H_{24}O$ (II) from the neutral part of the hydrolysate. It was identical to previously isolated fecerol [4]. Isovanillic acid $C_8H_8O_5$ (III), mp 250-251°C, was isolated from the acid part of the hydrolysate.

The PMR spectrum of the compound confirmed the above data. The following proton signals were observed ($C_5D_5N$, δ, ppm, J/Hz): 1.10 and 1.17 (3H, both s, $2CH_3$-1), 1.65 (3H, br.s, $CH_3$-8), 4.90 (1H, m, H-10), 5.44 (1H, t, J = 7.5, H-7), 4.96 and 5.06 (1H each, d, J = 2.0, $C_4$ $=CH_2$), 5.44 and 5.91 (1H each, d, J = 16.0, H-2, H-3), 6.85 (1H, d, J = 9.5, H-3′), 7.70 (1H, dd, $J_1$ = 9.5, $J_2$ = 2.5, H-2′), 7.60 (1H, d, J = 2.5, H-6′).

A comparison of the results with the literature led to the conclusion that ferocidin is the ester of fecerol with isovanillic acid. We propose the following structure for it:




Fecerol esters were isolated previously from *Ferula ceratophylla* and *Ferula tatarica* [4, 5].

The observation of esters in *F. pachyphylla* confirms that it belongs to the *Ferula* L. genus [6].

## REFERENCES

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