

On the Structure of Edultin

A new 2*H*-furo[2,3-*h*]-1-benzopyran-2-one derivative, edultin (I), m.p. 138~140°, $[\alpha]_D^{10.7} + 41.13^\circ$ (pyridine) (*Anal.* Calcd. for $C_{21}H_{22}O_7$: C, 65.27; H, 5.74; mol. wt., 386.39. Found: C, 65.47; H, 5.75; mol. wt., 382.8. UV λ_{max}^{EtOH} m μ (log ϵ): 245 (4.61), 300 (4.84), 321 (5.01); IR ν_{max}^{Nujol} cm^{-1} : 1725, 1715, 1705, 1690, 1624, 1605, 1573, 1255, 1018, 895, 773, 763) was isolated from the root of *Angelica edulis* MIYABE, a plant of Umbelliferae family.

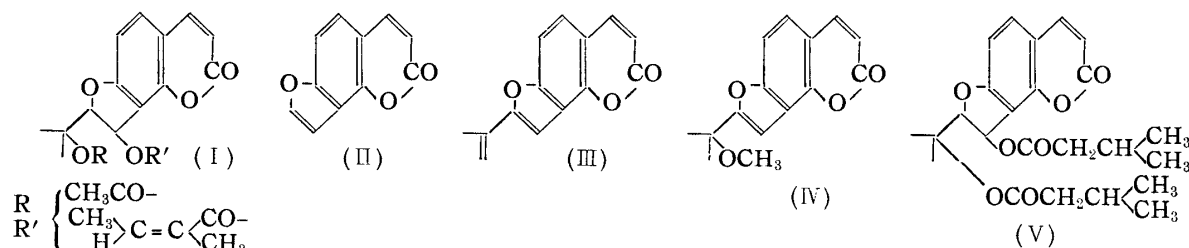
Alkali hydrolysis of edultin with 7.5% methanolic sodium hydroxide yielded angelicine (II), m.p. 140° (*Anal.* Calcd. for $C_{11}H_6O_3$: C, 70.97; H, 3.25; mol. wt., 186.16. Found: C, 70.82; H, 3.19; mol. wt., 198), oroselone (III), m.p. 180.5° (*Anal.* Calcd. for $C_{14}H_{10}O_3$: C, 74.33; H, 4.46. Found: C, 74.34; H, 4.39), oroselol methyl ether (IV), m.p. 117° (*Anal.* Calcd. for $C_{15}H_{14}O_4$: C, 69.75; H, 5.47. Found: C, 69.77; H, 5.44), acetic acid, and angelic acid, m.p. 45.3°.

Hydrolysis of edultin (I) with sodium methoxide gave oroselol methyl ether (IV) as the main product and acid hydrolysis of edultin with conc. hydrochloric acid in methanol afforded oroselone and an unidentified substance of m.p. 204°.

Oroselone and oroselol methyl ether were identified by their mixed melting point with the authentic specimens, isolated by Prof. H. Schmid¹⁾ of the Universität Zürich.

Reduction of angelic acid yielded 2-methylbutyric acid, identified as the crystalline amide. Angelic acid was also identified with authentic sample by a mixed melting point. Acetic acid was proved by paper partition chromatography.

Considering these results and several reports on oroselone (III), oroselol, and athamantin (V) obtained from *Athamanta oreoselium* (*Peucedanum oreoselium*)^{2~4)} the structure of edultin is assumed as described below. Further investigation for the position of the attached acids is on the way.



The writers express their deep gratitude to Prof. H. Schmid of the Universität Zürich for donation of the authentic specimens of oroselone and oroselol methyl ether, and to Prof. Kurihara, Tohoku College of Pharmacy, for authentic sample of angelic acid.

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