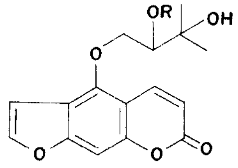
torin, imperatorin, oxypeucedanin, oxypeucedanin hydrate, peucenin, and a sterol mixture (MP, TLC, UV, IR, NMR, MS).

The concentrated methanolic extract was kept in a refrigerator. The precipitated hesperidin was filtered off and the fluorescing components of the mother liquor were separated on a polyamide column. Elution began with H_2O followed by H_2O–MeOH mixtures. TLC control of the fractions eluted with 20% MeOH showed the presence of several fluorescing polar compounds. They were separated by preparative TLC (silica gel) in $CHCl_3$–MeOH 9:1. The most polar zones yielded a yellow (R_f: 0:22; system: $CHCl_3$–MeOH 85:15), and three violet fluorescing compounds. One of the latter (R_f: 0·19) was identified (TLC, hydrolysis) as scopolin, the second (R_f: 0·25) as marmesinin. The third glycoside (R_f: 0·10) afforded on acidic hydrolysis the same aglycon as marmesinin. Its R_f-value suggests to be a diglycoside of marmesin.

The yellow fluorescing glycoside crystallized from MeOH in white needles, turning slowly yellow by heating (m. 210–220°, dec.). Its UV spectrum is typical of the 5-alkoxy-furocoumarin nucleus [2]; λ_{max}: 240 sh, 249, 259, 266, 308 nm; λ_{min}: 235, 255, 263, 275 nm. The glycoside was hydrolysed with N H_2SO_4, the aglycon extracted with EtOAc and identified as oxypeucedanin hydrate (**1**). The sugar moiety was identified by PC as D-glucose. Thus, the probable structure of the glycoside is **2**.



(**1**) R = H

(**2**) R = Glc

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ISOLATION OF IPOLAMIIDE FROM *STACHYTARPHETA INDICA*

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Key Word Index—*Stachytarpheta indica*; Verbenaceae; iridoids; ipolamiide; hebenstreitia glycoside B.

Plant. Stachytarpheta indica VAHL. (Voucher specimen deposited at Faculty of Pharmaceutical Sciences, Chulalongkorn University, Department of Pharmacognosy). *Local name*. Ya Phanngu-Khieo, Pra-in-proei. *Source*. Ayudhaya, Thailand. *Previous work*. Occurrence of hebenstreitia glycoside B in *Stachytarpheta*-species [1].

Present work. Aerial parts (dry, 1200 g) of *Stachytarpheta* were macerated overnight with 80% EtOH. After decantation the residue was remacerated. The EtOH was removed under vacuum and the residual aqueous solution treated by standard procedures (lead acetate and charcoal method) [2]. Crystallization and recrystallization from EtOH afforded 14 g needles (1·17%). The properties of this compound and of its tetra- and penta-acetates are identical with those reported for ipolamiide [3] and its acetates respectively (analysis, m.p., optical rotation, UV, IR, NMR). M^+ of the penta-acetate *m/e* 616.

The compound is also identical (m.p., TLC, IR) with the hebenstreitia glycoside B isolated by Kooiman [1].

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A HYDROXY β-DIKETONE FROM LEAF WAX OF *FESTUCA OVINA**

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Key Word Index—*Festuca ovina*; Gramineae; leaf wax; 5-hydroxytritriacontane-12,14-dione.

Plant. Festuca ovina L. *Source.* Seeds of strain 1792 (glaucous strain) from Dr. R. P. Knowles, Canada Department of Agriculture, Saskatoon, Sask., (original seeds from Alma Ata, Kazakhstan, U.S.S.R.). *Previous work.* Tritriacontane-12,14-dione was isolated from leaf wax of *Festuca glauca* [1].

Present work. Wax was extracted from leaves (1·2% of dry wt) and hydroxy β-diketone (1·3% of wax) isolated as described previously [2]. The m.p. was 78° and $[\alpha]_D^{25}$ +0·58°, $[\alpha]_{546}^{25}$ +1·08°, $[\alpha]_{436}^{25}$ +1·55°, $[\alpha]_{365}^{25}$ +2·46° (*c.* 2·2 in $CHCl_3$). GLC comparison with other hydroxy β-diketones [2] showed that it contained 33 carbons and that homologues were absent. The structure was shown to be 5-hydroxytritriacontane-12,14-dione by MS: *m/e* 508, 490 ($M-H_2O$), 472 ($M-2H_2O$), 451 (4,5 cleavage, 35% of base peak), 422 (5,6 cleavage + H), 365, 352, 337 (11,12-cleavage), 295 (13,14-cleavage) 276, 241, 238, 223 (14,15-cleavage-H_2O), 181 (12,13-cleavage-H_2O), 180, 100, 83, 81, 71, 69, 57, 55, 43 (base peak), 41. Peaks at 337 and 295 showed that the longer methylene chain was not hydroxylated and therefore the peak at 451 showed that the hydroxyl group was at C-5. Location of the hydroxyl group on a carbon separated from a terminal CH_3 group by 3 methylene groups was confirmed by the carbon-13 NMR spectrum (C-3 signal at 27·86 ppm; compare carbon-13 spectrum of 10-hydroxytetradecanoate [3]). Both spectroscopic methods indicated that isomers with the hydroxyl at other positions were absent.

This is the second hydroxy β-diketone to be isolated which occurs as a single isomer, the other being 25-hydroxyhentriacontane-14,16-dione from rye [2] and durum wheat [4]. 5-Hydroxyhentriacontane-14,16-dione has been found in wax from oats but 6-hydroxy and 7-hydroxy isomers were also present [3,5] In the present compound the hydroxyl group is situated at carbon 8 with respect to the carbonyl group but in the other hydroxy β-diketones it is at carbons 6, 7, 9 or 10 which are often also the sites of double bond formation in fatty acids. There are, however, a number of hydroxy fatty acids with the hydroxyl group at carbon 8 [6].

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