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FURTHER TERPENOIDS AND PHENOLICS OF *DRYMIS WINTERI**

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Key Word Index—*Drymis winteri*; Magnoliaceae; cryptomeridiol; flavones; flavanonol; tumour inhibitors.

Plant. Drymis winteri, collected in the Valdivia region of Chile. *Previous work.* The light petrol. extract of the bark of several *Drymis* species, including *D. winteri*, has been extensively studied and shown to contain a range of sesquiterpenes of the drimane type.[1]

Present work. As part of a general screening programme of Chilean flora for anti-tumour compounds* it has been found that the C_6H_6 and EtOAc extracts from the leaves of this plant were active in a test against mouse leukaemia lymphocytes (P388).[2]

Chromatography of the C_6H_6 extract through alumina afforded one major fraction, eluted with 1:3 $CHCl_3$–light petrol. This material crystallized, m.p. 132–134°, shown to be identical to cryptomeridiol[3] by comparison with an authentic sample. This appears to be the first example of the eudesmane class of sesquiterpenes in the *Drymis* species. This material was inactive in the P388 test.

The EtOAc was removed from the extract with this solvent and the residue macerated with water and re-extracted with $CHCl_3$ in order to separate the glycosides from the aglycones. Concentration of the chloroform layer afforded crystals of cirsimaritin (5,4′-dihydroxy-6,7-dimethoxyflavone),[4] identified by direct comparison with an authentic sample and by preparation of its acetate, m.p. 199–201° (MeOH), (Calc. for $C_{21}H_{22}O_8$: C, 63·31; H, 4·55. Found: C, 63·41; H, 4·48%).

The $CHCl_3$-insoluble part of the EtOAc extract was subjected to silica gel column chromatography, followed by paper chromatography to give the following compounds; Quercetin,[5] m.p. 313–314°, identical by direct comparison with authentic material. Taxifolin,[6] m.p. 228–230° (lit.[6] m.p. 234°), $[\alpha]_D^{20}$ +42° (*c* 1·0, acetone), λ_{max} 290, 330 nm, λ_{max}^{NaOMe} 245, 325 nm, $\lambda_{max}^{AlCl_3}$ 276 (sh), 312, 375 nm. Acetylation afforded a penta-acetate, m.p. 128–129°, τ 2·78 (3H, *m*, H-2′, H-5′, H-6′), 3·29–3·45 (2H, *dd*, *J* 2·1 Hz, H-6 and H-8),

* Part III in the series "Anti-tumour compounds from Chilean Plants". For Part II see GNECCO, S., POYSER, J. P., SILVA, M. and SAMMES, P. G. (1973) *Phytochemistry* **12**, 2467. This work was supported by the Organization of American States (Grant PMC-8/1).

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[2] Cytotoxicity (KB) and *in vivo* (P388) tests were carried out at the National Cancer Institute, N.I.H. For procedures see *Cancer Chemother. Rep.* **25**, 1 (1962).

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4·40–4·64 (2H, *dd*, *J* 12 Hz, H-2 and H-3), 7·68 (3H, *s*), 7·75 (9H, *s*), 8·00 (3H, *s*). The UV values are the same as those reported in the lit.[7] *Astilbin*,[8] m.p. 179–180° (lit.[8] 180°), $[\alpha]_D^{20}$ −18° (*c* 1·0, EtOH), M^+ 450 ($C_{21}H_{22}O_{11}$). Acid hydrolysis under standard conditions afforded rhamnose and taxifolin. *Quercitrin*,[9] m.p. 185–187°, (lit.[9] m.p. 182–185°), identical to an authentic sample. It gave an acetate, m.p. 198–199°; acid hydrolysis afforded rhamnose and quercetin.

Anti-tumour properties. Assay of taxifolin against the KB and P388 test systems showed it to be inactive against the KB test but active against the P388 system, with a T/C ratio of 140 at 150 mg/kg and 137 at 100 mg/kg.

Acknowlegements—We thank Dr. Lydia Rodriguez-Hahn for an authentic sample of cryptomeridiol.

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LACTONIC LIGNANS OF *POLYGALA CHINENSIS*

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Key Word Index—*Polygala chinensis*; Polygalaceae; suchilactone; chisulactone; helioxanthin.

Plant. Polygala chinensis L.[1] *Source.* Several parts of India.[2] *Uses.* As a substitute for *Polygala senega* as an expectorant. *Previous work.* On the whole plant reported to contain saponins,[3] but their nature was not determined.

Present work. The dried and powdered whole plant (5·8 kg) was first extracted in a Soxhlet with petrol. (60–80°) followed by EtOH, 16 hr each. Each of these extracts were examined separately.

Petrol. extract. The extractives crystallized from EtOH as needles (4·3 g). *Suchilactone.* The analytical TLC showed two spots and the components were separated by preparative TLC. The major compound, suchilactone, was identified as 2-piperonylidene-3-veratryl-3*S*-γ-butyrolactone (m.p., $[\alpha]_D$, UV, IR, PMR, MS). It was previously reported as a degradation product of helianthoidin.[4] The diol, $C_{21}H_{24}O_6$ (M^+, 372), from the $LiAlH_4$ reduction of suchilactone had m.p. 118°; λ_{max}^{EtOH} 208, 255–260 nm; ν_{max} (mineral oil)

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[2] The plant material was collected from Varanasi and the identity was confirmed by Dr. C. S. P. Rao, Department of Botany, Banaras Hindu University. A voucher specimen has been preserved at the Department of Pharmaceutics.
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