

FUROCOUMARINS OF *CYMOPTERUS WATSONII*

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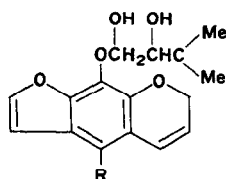
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Key Word Index—*Cymopterus watsonii*; Umbelliferae; spring parsley; heraclenol; byakangelicin; furocoumarins.

Plant. Spring parsley [*Cymopterus watsonii* (Coul. and Rose) Jones] was collected in Iron County, Utah in May, 1971 and was found to contain the furocoumarins: xanthotoxin, bergapten and isopimpinellin [1].

Present work. Using a high pressure liquid chromatographic method described previously [2] an unknown furocoumarin residue was collected and two compounds (1 and 2) were isolated in pure form.



(1) R = H

(2) R = OMe

Heracleol (1) was sublimed at 112° from the residue and recrystallized from MeOH–isooctane. From the residue after sublimation, byakangelicin (2) was crystallized using the solvent pairs acetone and *n*-hexane and finally MeOH–isooctane.

Compound 1 (heracleol): C₁₆H₁₆O₆, dark yellow crystals, m.p. 116–18°. (Ref. [3] 117–18°), [α]_D²⁵ +15.6 (pyridine) (Ref. [3] [α]_D³² +16.5, pyridine); λ_{max}^{EtOH} 242, 250, 285 nm; ν_{max}^{KBr} 2406, 1717,

1594, 1578 cm⁻¹; NMR (CDCl₃, TMS as external reference δ ppm) 7.91 (1H, *d*, *J* 10.2, H at C-4), 7.84 (1H, *d*, *J* 2.4, H at C-7), 7.48 (1H, *s*, H at C-5), 6.94 (1H, *d*, *J* 2.4, H at C-6), 6.44 (1H, *d*, *J* 10.2, H at C-3), 4.92–4.68 (2H, *m*, ether methylene protons), 4.04–3.91 (1H, *m*, carbinol H), 1.37 (3H, *s*, C-methyl), 1.35 (3H, *s*, C-methyl). A comparison sample was not available.

Compound 2 (byakangelicin): C₁₇H₁₈O₇, light yellow crystals, m.p. 124–125° [α]_D²⁵ +21.6 (EtOH), m.p. 124–25°. Identical with an authentic [4] sample of byakangelicin (NMR, IR and m.m.p.).

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