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STUDIES ON CHILEAN LICHENS, IV. ADDITIONS TO THE CHEMISTRY OF *LOBODIRINA CEREBRIFORMES*

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The study of *Lobodirina cerebriformes* (Mont.) Follm. (Roccellaceae) has been carried out by Huneck (1); roccellic acid and lobodirin were reported. We have since undertaken new research in order to obtain roccellic acid, which stimulates plant growth (2,3). Besides the aforementioned metabolite, portentol was obtained.

Portentol and acetylportentol are the only cycloaliphatic lactones found in lichens, and they have been described only in species of the family Roccellaceae (4).

The specimens analyzed by Huneck and those analyzed by us came from different geographical areas. It is possible that chemical differences among specimens are caused by the actual existence of chemical races (5,6). It may also be that these specimens exhibit a different chemistry due to hybridization (7).

EXPERIMENTAL

GENERAL EXPERIMENTAL PROCEDURES.—Melting points were determined on a Kofler hot plate. Optical rotations were measured with a Schmidt-Haensch polarimeter. Spectra were recorded with the following instruments: ir, Perkin Elmer Model 683 and pmr, Varian XL-100; tlc were performed on silica gel from E. Merck.

PLANT MATERIAL.—*Lobodirina cerebriformes* (Mont.) Follm. (Roccellaceae) was collected on coastal rocks at the mouth of Limari River (Ovalle, Chile) in September 1980. Voucher specimens are deposited at University of Valparaíso.

EXTRACTION, ISOLATION, AND IDENTIFICATION OF ROCCELLIC ACID AND PORTENTOL.[1]—The dried and ground thalli (500 g) were worked up by standard procedures (1). The compounds obtained were roccellic acid (102 g), identified by comparison with an authentic material (mmp, tlc, optical rotation, and ir spectrum) and portentol (0.85 g; 0.17%), which was identified by standard spectral and physical data (5) as well as by transformation in acetylportentol, which, in turn, was identified by comparison with an authentic sample (mmp, tlc, ir, and pmr spectra) (5).

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[1]Full details of the isolation and identification of the compounds are available on request to the senior author.

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6-METHOXY FLAVONES FROM *ANISOMELES OVATA* (SYN. *ANISOMELES INDICA*)

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Chemical examination of the aerial parts of *Anisomeles ovata* R.Br. has yielded the flavones listed below. Plant material was collected on a hillside near Mangalagiri, Guntur District, Andhra Pradesh, India, in Autumn 1980. Full details of the isolation and identification of the compounds are available on request from the senior author.

	Compound	Identified by	Reference
1.	5-hydroxy,6,7,3′,4′-tetra-methoxy flavone	mp; ^{1}H-nmr; ms; uv; ir	(1)
2.	5,4′-dihydroxy,6,7,3′-tri-methoxyflavone, cirsilineol (Anisomelin) (2)	mp; ^{1}H-nmr; uv; ir	(3)
3.	5,7,4′-trihydroxyflavone (Apigenin)	mp; ^{1}H-nmr; ms; uv; ir	(4)

The structures of **1** and **2** were confirmed by conversion to 5,6,7,3′,4′-pentamethoxyflavone.

Wollenweber and Dietz reported that the majority of flavones isolated from *Labiatae* were substituted in 6- and/or 8-positions (5). Our report also supports this observation.

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