chromatography<sup>3</sup> to give dehydrocorydaline (as chloride, 0.024%, IR, NMR, reduction with NaBH<sub>4</sub> to give ( $\pm$ )-corydaline, m.m.p.) and dehydrothalictrifoline (as chloride, 0.007%, NMR, reduction to give dl-thalictrifoline, m.m.p.). In conclusion, ( $\pm$ )-1-methylcorypalline, cavidine,  $\alpha$ -allocryptopine and dehydrothalictrifoline were isolated for the first time from the title plant.

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## TRITERPENOID CONSTITUENTS OF KAGENECKIA OBLONGA

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Key Word Index-Kageneckia oblonga; Rosaceae; pentacyclic triterpenes; ursolic acid; benthamic acid.

Plant. Kageneckia oblonga Ruiz et Pav., voucher specimen deposited in the Museo Nacional de Historia Natural, Santiago, Chile. Source. Southern slope of Manquehue Mountain, Santiago, Chile. Plant part examined. Leaves and twigs.

Extraction. 500 g of powdered plant material were extracted (Soxhlet) with CHCl<sub>3</sub>-AcOEt (1:1). The solvents were partially removed under vacuum, affording a precipitate which was filtered and washed with small portions of the same solvent mixture: 4.5 g.

Esterification and separation of the products. 0.9 g of crude product was methylated with CH<sub>2</sub>N<sub>2</sub> in Et<sub>2</sub>O, yielding 0.92 g of solid residue. Preparative TLC gave five chromatographically homogeneous fractions: A (400 mg), B (190 mg), C (11 mg), D (33 mg), E (5 mg).

Ursolic acid methyl ester¹ (Compound A). Identified by m.p.,  $[a]_D$ , IR, MS. (Found: C, 79·1; H, 10·8. Calc. for  $C_{31}H_{50}O_3$ ; C, 79·09; H, 10·71%). Acetate identified by m.p., m.m.p.,  $[a]_D$ , IR, MS and co-TLC. (Found: C, 77·15; H, 10·0. Calc. for  $C_{33}H_{52}O_4$ ; C, 77·30; H, 10·22%).

Benthamic acid methyl ester<sup>2</sup> (Compound B). Identified by m.p. (130–131°, lit. 127–129°), m.m.p.,  $[a]_D$ , IR, MS and co-TLC. (Found: C, 76·3; H, 10·3. Calc. for  $C_{31}H_{50}O_4$ ; C, 76·49; H, 10·35%). Monoacetate identified by m.p. (241–243°, lit. 235–238°),  $[a]_D$ , IR, NMR and MS. (Found: C, 74·8; H, 9·7. Calc. for  $C_{33}H_{52}O_5$ ; C, 74·96; H, 9·91%).

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<sup>&</sup>lt;sup>1</sup> Brieskorn, C. H. and Eberhardt, M. P. (1953) Arch. Pharm. 286, 124.

<sup>&</sup>lt;sup>2</sup> Bermejo, J., Bretón, J. L., de la Fuente, G. and González, A. G. (1967) *Tetrahedron Letters* 4649. Phyto 12/12—0