with $LiAlH_4$ yielded the diol with physical data identical with those reported [8].

Several other resin acids were detected but unfortunately were not present in sufficient quantities to allow further studies.

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TWO NEW QUINOLIZIDINE ALKALOIDS FROM *HEIMIA SALICIFOLIA*

XORGE ALEJANDRO DOMÍNGUEZ, JORGE MARROQUÍN, SERGIO QUINTERO B. BEATRIZ VARGAS S.

Departamento de Química, Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, N.L.

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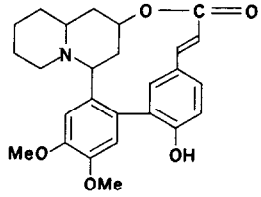
Key Word Index—*Heimia salicifolia*; Lythraceae; sitosterol; mannitol; sinicuichine; cryogenine; nesodine; two quinolizidine alkaloids.

Plant. Heimia salicifolia H.B.K., common name: sinicuiche, voucher No. 7302 (Lythraceae). *Source.* Collected at Villa Las Fuentes, Nuevo León, México in November and December 1973. *Uses.* For dysentery, chest ailments and the preparation of a hallucinogenic tea [1]. *Previous work.* From *H. salicifolia* and related species, 20 alkaloids have been reported [2–6]. All of them are *cis* or *trans* lactonic biphenyl or biphenylether quinolizidine derivatives. Their structure, stereochemistry and absolute configuration has been established [7]. Phenylalanine has been found to be a biosynthetic precursor of one of the major alkaloids of *H. salicifolia* [8]. The taxonomic status of the genus *Heimia* is not completely clear [9] and it appears that the type of alkaloids it contains may vary with the place and date of recollection [7].



(1)

Present work. From the ethanolic extracts a high yield of mannitol was obtained. TLC comparison with the known *Heimia* alkaloids (MeOH–Me_2CO 1:1, chromogenic agent, Dragendorff) showed that the light petrol and EtOH extracts, contained sinicuichine, cryogenine and nesodine. The first two were isolated and compared with authentic specimens by, mmp, (α) and TLC. Two new alkaloids *ALC*-1 and *ALC*-2 were isolated in this work; on the basis of their typical mass fragmentation [5], NMR [7,10] and properties of their methyl ether derivatives, they were shown to be stereomers of lythrine (**1**). They exhibited Bohlmann bands [11] in the IR, so they must be *trans*-quinolizidine derivatives.

EXPERIMENTAL

Dried and powderized aerial parts of *H. salicifolia* (850 g) were Soxhlet extracted, first with light petrol and then with EtOH. From the light petrol extract (8·5 g) only sitosterol (0·1 g) was isolated, mmp, CO-TLC, IR, NMR, (α). On concentration of the EtOH extract, a yellowish solid (16·3 g) was collected, which on recrystallization afforded 12 g of 1-mannitol, mp 165–166° mmp, $(\alpha)_D^{25}$ − 16·6°, mmp, IR, NMR, hexacetate, mmp, (α) NMR, IR. The EtOH filtrate was evaporated

yielding 40 g of green residue which was extracted with $CHCl_3$. The latter extract was chromatographed on a silicic acid column, with $CHCl_3$-EtOAc mixtures giving sinicuichine and cryogenine, and two yellowish solids which designated as *ALC*-1 and *ALC*-2 and gave positive the usual alkaloid tests [12].

ALC-1 (*lythridine stereomer*) white crystals, mp 335–345° dec., $C_{26}H_{29}NO_5$. MS, *m/e* (%), M^+ 435 (15), 418 (3), 350 (8), 308 (4), 269 (5), 267 (9), 217·5 (1) 185 (5), 166 (5), 149 (17), 136 (10), 129 (10), 105 (8), 97 (15), 95 (15), 91 (25), 83 (20), 81 (20), 77 (8), 73 (21), 69 (40), 60 (16), 57 (32), 55 (33) 45 (35), 44 (50), 28 (100). IR $\tilde{\nu}_{max}$ 3400 (OH), 3100, 2900, 2776, 2700, 2500 (C-N), 1700 (CO), 1600, 1500 (Ar−) 1430 (CH_2), 1260 (C–O), 1110, 990 cm^{-1}; ORD in $CHCl_3$; $(\alpha)^{22}_{589}$ + 115·6° $(\alpha)_{578}$ + 124·5°; $(\alpha)_{546}$ + 139·0; $(\alpha)_{436}$ + 235·0, $(\alpha)_{365}$ and $(\alpha)_{326}$. NMR in $CHCl_3$, δ, 7·04–7·4 (*m*, 6H), 6·09 (*d*, 1H), 5·75 (*d*, 1H), 5·1 (*m*, 1H), 4·08–4·02 (*s*, 6H), 1·7 (*m*, 1H), 3·4–1·8 (14 H). *ALC*-1-*monoacetate*, $C_{28}H_{31}O_6N$, mp 126 128°; *ALC*-1-*monomethyl ether*, $C_{27}H_{29}O_5N$, mp 230–233°; $(\alpha)^{26}_{589}$ + 56·6°; $(\alpha)_{578}$ + 59·4°; $(\alpha)_{546}$ + 67·7°; $(\alpha)_{436}$ + 100·1°; $(\alpha)_{365}$ + 1146°; M^+ 449 (100), 434 (15), 418 (22), 374 (34), 364 (30), 350 (6), 322 (14), 308 (11), 291 (17), 281 (21), 270 (15), 267 (10), 225 (7), 136 (16), 84 (29). NMR, three singlets at 3·94 (3H), 3·88 (3H), 3·80 (3H).

ALC-2, white crystals, mp 309–10°, $C_{26}H_{29}O_5N$; MS; M^+ 435 (100), 418 (14), 391 (14), 374 (18), 350 (35), 308 (20), 367 (39), 217·5 (1), 199·5 (4), 197·5 (1), 126 (16), 74 (40). IR ν_{max} 3400 (OH), 3070, 2900, 2790, 2600, 1700 (CO), 1590, 1500, 1430, 1310, 1260, 1250, 1110, 1040, 970 cm^{-1}. $(\alpha)_{589}$ + 72·3°; $(\alpha)_{578}$ + 75·2°; $(\alpha)_{546}$ + 87·2°; $(\alpha)_{436}$ + 154·6°; $(\alpha)_{365}$ + 115·2°; $(\alpha)_{310}$ + 46·6°. NMR, 8·1 (*m*, 1H), 7·3 (broad, 5H), 3·87 (*d*, 1H), 5·4 (*d*, 1H), 5·18 (*m*, 1H), 4·06 (*s*, 3H), 3·92 (*s*, 3H), 2·9–1·2 (*m*, 14H). *ALC*-2 *methyl ether*. $C_{37}H_{31}O_5N$, mp 235–237°; NMR, four singlets at 4·02 (3H), 3·92 (3H), 3·88 (3H), 3·72 (3H).

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LIRIODENINE FROM *TALAUMA MEXICANA*

TETSUJI KAMETANI,* HIROFUMI TERASAWA and MASATAKA IHARA

Pharmaceutical Institute, Tohoku University, Aobayama, Sendai, Japan

and

JOSE IRIARTE

Division de Investigacion, Syntex, S.A., Apartado Postal 10–820 Mexico 10, D.F.

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In 1947, Pallares and Garza isolated an alkaloid, mp 176°, aztequine, from *Talauma mexicana* (DC.) Don, which is called Yoloxochitl, "the flower of the heart" in Mexico and used as a remedy for fevers, heart affections, paralysis and epilepsy. They proposed structure (**1**) for aztequine on the basis of results obtained by classical methods [1].

Previously, we synthesized (**1**), which could not be directly compared with the natural product because no aztequine was available [2]. The proposed structure (**1**) is questionable from the biogenetical point of view [3]. Therefore, we attempted to isolate aztequine from *T. mexicana*, but no compound corresponding to it could be found; instead we obtained liriodenine (**2**).