

Oxoaporphine alkaloids in *Guatteria diospyroides* Baill. and *Annona squamosa* L. (Annonaceae)

(with 1 figure)

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Abstract. A comparative study of the TLC profiles of *Guatteria diospyroides* Baill. and *Annona squamosa* L. were carried out from plants collected in the same locality of Chiapas, Mex. Four structures were analyzed, root, stem, leaf and seed. The profiles showed interspecific similarity and intraspecific differences. The root contains the highest concentration of the two major alkaloids and from this part they were extracted, analyzed and identified by spectroscopy as liriodenine and oxoanalogine.

Resumen. Se efectuó un estudio comparado de los perfiles en placa delgada de *Guatteria diospyroides* Baill. y *Annona squamosa* L., en plantas colectadas en la misma localidad de Chiapas, Méx. Se analizaron 4 estructuras de las plantas, raíz, tallo, hojas y semilla. Los perfiles mostraron similitud interespecífica y diferencias intraespecíficas. En la raíz se encuentra la concentración más elevada de los alcaloides mayoritarios y de esta parte se extrajeron, analizaron por espectroscopía y se identificaron como liriodenina y oxoanalogina.

The aporphines are a large and important group of isoquinoline alkaloids. They are found in several families, among them the Annonaceae, a large family distributed in the tropics which comprises 130 genera and over 2000 species (2). The most important genera having the largest number of species are *Guatteria*, with 250 species (5), and *Annona*, with 120 species (3).

From these two genera we chose *Guatteria diospyroides* and *Annona squamosa*, collected in the same locality of the state of Chiapas, Mex. The study includes a distribution analysis of alkaloids by TLC in root, stem, leaf and seed and the isolation and identification of the major alkaloids

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MATERIAL & METHODS

Guatteria diospyroides Baill. and *Annona squamosa* L. were collected in Los Llanos, Tonalá, state of Chiapas, Mexico. Voucher specimens were deposited at the Herbario de la Facultad de Ciencias, UNAM (FCME).

Extraction. Roots, stems, leaves and seeds of *Guatteria diospyroides* and *Annona squamosa* were ground and moistened with a saturated solution of Na_2CO_3 , dried at room temperature and extracted with CHCl_3 . The extracts were purified by acid - base extractions with CHCl_3 (3x) in the usual manner.

Chomatographic profiles. Part of the chloroform extracts was concentrated for the TLC profiles; in the plate 10 mg of each sample (conc. 5 mg/ml) were applied using CHCl_3 -MeOH 9:1 as a mobile phase.

Isolation of the two major alkaloids. Using the same method they were isolated from the root which is the organ that showed highest amount in the profiles. The products obtained were separated by fractional crystallization and the two fractions obtained were analyzed by spectroscopy (UV, IR, RMP, MS).

RESULTS & DISCUSSION

The two major alkaloids of the species, isolated from the root, lirioidenine (Fig. 1a) and oxoanalobine (Fig. 1b), belong to the group of oxoaporphines and were identified by their p.f. and spectra.

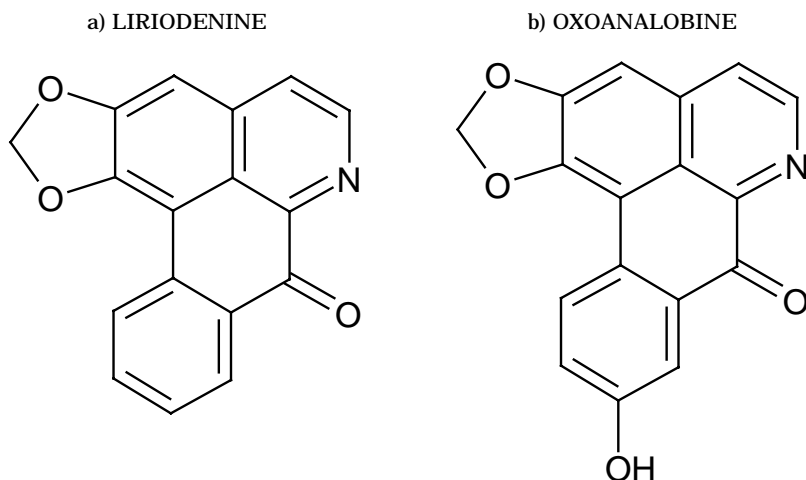


Fig. 1.- Alkaloid structures

Liriodenine: p.f., 282 - 283 °C (dec.)

Salient spectroscopic data: UV: 246 (log ϵ , 4.20), 265 (log ϵ , 4.12), 304 (log ϵ , 3.72) nm; IR: 1662 (carbonyl) cm^{-1} ; RMP: 6.65 (2H, methylenedioxy), 7.5 - 8.7 (7H, aromatic) ppm; MS: M^+ , 275 (1).

Oxoanalobine: p.f., 275 - 276 °C (dec.)

Salient spectroscopic data: UV: 248 (log ϵ , 4.40), 270 (log ϵ , 4.30), 320 (log ϵ , 3.82) nm; IR: 3430 (hydroxyl), 1662 (carbonyl) cm^{-1} ; RMP: 6.62 (2H, methylenedioxy), 7.4-8.7 (6H, aromatic) ppm; MS: M^+ , 291 (4).

All data are in accordance with those reported in the literature.

In the interspecific comparison, the chromatographic profiles of the two species showed a great similarity; however, there were in both the same intraspecific differences; the leaf exhibited the highest number of spots, 7, the root showed 4 spots, and in this structure the oxoaporphine alkaloids had the highest concentration.

Guatteria diospyroides and *Annona squamosa* collected in the same locality of Chiapas although belonging to different genera, have similar alkaloid profiles and the same major aporphine alkaloids, liriodenine and oxoanalobine.

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