ALKALOIDS FROM *ANNONA CHERIMOLIA* SEED

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Annona cherimolia Mill. *(Annonaceae)* is an evergreen fruit tree cultivated in the south of Spain on the Coast of Granada. An ethanolic extract of the seed is used in folk medicine as an insecticide. Leboeuf and Cavé have isolated and identified many alkaloids from the stem bark and leaves of *Annonaceae,* and Urzúa and Cassels (1) have identified some alkaloids from cherimolia twig, but alkaloids have not previously been isolated from *Annonaceae* seeds.

We have isolated three alkaloids. Two were identified by ^{1}H-nmr, ms, uv, ir, and hplc as liriodenine and anonaine. The third, which was not isolated in its pure form, was tentatively identified on the basis of the ^{1}H-nmr and ms analysis of its mixture with liriodenine, as lanuginosine. Other alkaloids were also isolated, but these have not been identified.

EXPERIMENTAL

ISOLATION OF ALKALOIDS.[1]—Dried at room temperature, seeds (14 kg) of *Annona cherimolia* Mill., which had been collected in Almuñecar (Granada, Spain) in October-November 1976, were defatted with light petroleum 50-70° (Soxhlet). The marc (10 kg) was completely extracted at room temperature through a continuous percolation with 95% ethanol. The ethanolic extract was reduced to a small volume (300 g). The resulting dark brown viscous mass was extracted with chloroform. The chloroform extract was dried (anhydrous Na_2SO_4) and evaporated to give a residue of 50 g.

Residue 1 was chromatographed on silica gel-60 (E. Merck). The column was gradually eluted with chloroform, followed by a mixture of chloroform and methanol. Elution was followed by tlc. The alkaloid-containing fractions, eluted with chloroform-methanol (95:5 and 90:10), were concentrated and extracted with 5% hydrochloride (5 x 50 ml); the acidic solution was basified with 5% NH_4OH and extracted with ether-chloroform 1:1 (5 x 50 ml). The ether extract was washed with water, then dried and evaporated to give an alkaloidal mixture (50 mg).

The resulting alkaloidal mixture was subjected to preparative tlc and yielded five compounds, Bases A, B-1, B-2, and C (chloroform-methanol, 95:5), as well as Base D (chloroform-methanol, 90:10).

Base B (30 mg) was separated by preparative tlc into two compounds. Base B-1 was identified as liriodenine (24 mg) by ir, uv, ms, ^{1}H-nmr, and hplc, and Base B-2 upon its mixture with liriodenine, was tentatively identified as lanuginosine (6 mg) by ^{1}H-nmr and ms.

Base D was identified as anonaine by ir, uv, tlc, and hplc by using an authentic sample.

Bases A and C have not been identified.

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LITERATURE CITED

1. A. Urzúa and B. K. Cassels, *Rev. Latinoamer. Quim.*, 8, 133 (1977).

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