ISOLATION OF LAPACHOL FROM *DIPHYSA ROBINOIDES*

LORENZO SAGRERO-NIEVES

CONAFRUT-VERACRUZ, Apdo. Postal No. 375, 91000 Xalapa, Veracruz, Mexico

Previous chemical studies of heartwood and root from genera of Bignonaceae and Proteaceae have shown the presence of the compound known as lapachol, an important quinone (1) having antimicrobial characteristics (2,3). This work describes the isolation of lapachol from *Diphysa robinoides* Bent (Leguminosae).

PLANT MATERIAL.—The plant material was collected near the central coast of Veracruz State, México, where the tree grows wild on a limited scale, and was authenticated by the Herbarium of the Universidad Veracruzana at Xalapa, where a voucher specimen has been deposited. There is no previous report of the isolation of lapachol from other species of the genus *Diphysa*.

EXTRACTION AND ISOLATION OF LAPACHOL.—Dry wood (4 kg), when sawed up, gave 300 g of a powdered material with toxic effects on human skin. This material was extracted with EtOH at room temperature. The extract was concentrated in vacuo, and the ethanolic concentrate extracted with C_6H_6. The C_6H_6 fraction was evaporated to dryness and extracted with a mixture of hexane-Me_2CO (8:2) to give a yellow residue (800 mg). Purification by recrystalization from the same solvent gave 500 mg of yellow crystals with mp 126-127°. This product gave a positive test for quinone with alkali solutions.

The mass spectrum gave data corresponding to $C_{15}H_{14}O_3$, molecular weight 242, and the ms, ^{1}H-nmr and ir spectra were identical with those reported for lapachol (4,5).

ACKNOWLEDGMENTS

The author gratefully acknowledges the help of Dr. Catherine E. Costello, Chemistry Department, Massachusetts Institute of Technology, Cambridge, Mass., and the NIH Facility Grant RR00317. The author thanks Dr. Pedro Joseph-Nathan, Centro de Estudios Avanzados, Instituto Politécnico Nacional, México, D.F., for his valuable suggestions about spectroscopic data.

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Received 29 July 1985

ALKALOIDS FROM EMBRYO OF THE SEED OF *NELUMBO NUCIFERA*

SANSEI NISHIBE,* HIROKI TSUKAMOTO, HIDEHIRO KINOSHITA, SHIZUKA KITAGAWA, and AKIYO SAKUSHIMA

Faculty of Pharmaceutical Sciences, Higashi Nippon Gakuen University, Ishikari-Tobetsu, Hokkaido 061-02, Japan

The embryo of the seed of *Nelumbo nucifera* Gaertn. (Nymphaeaceae) (embryo loti) has been used in traditional medicine as an antifebrile, antipsychotic, and antihypertensive agent (1).

Chao *et al.* (2) reported the isolation of liensinine from the embryo loti of Chinese origin, which had antihypertensive activity. On the other hand, Tomita *et al.* (3) reported the isolation of isoliensinine from the embryo loti of Taiwan origin, which is inactive. Despite the absence of liensinine, we have observed that the aqueous extract of the embryo loti of Taiwan origin shows antihypertensive activity on spontaneously hypertensive rats.

Our interest has been directed to the investigation of the constituents of the embryo loti, with the aim of isolating biologically active substances; this paper describes the isolation of four alkaloids, i.e., isoliensinine, neferine, (±)-armepavine, and 4′-methyl-*N*-methylcoclaurine.

The antihypertensive principle was characterized as neferine.