A NEW LIGNAN FROM CARISSA CARANDAS*

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(Received 7 March 1975)

Key Word Index—Carissa carandas; Apocynaceae; lignan; carinol; demethyltetrahydrogmelinol.

The alcoholic extract of the roots of Carissa carandas L. has been reported to possess cardio-tonic activity [1] and to produce a perceptible decrease in blood pressure in normal anaesthetized cats [2]. Chemical studies have led to the isolation of possibly a new cardioactive substance [3]; glucosides of odoroside H [4], a new terpenoid carindone [5] besides carissone, lupeol, ursolic acid and its methyl ester [6]. A recent investigation of the pharmacological activity [7] of the extract showed an increase in free histamine in the guinea pig lung and a pronounced decrease in blood pressure at 1 mg/kg dose which lasted for 4-5 hr. On fractionation of the extract, the hypotensive activity was found to be localized in the C₆H₆-soluble fraction which prompted further examination of its constituents.

The active fraction was fractionated into Et₂O and CHCl₃ soluble and insoluble fractions and the activity was now found to be present in the CHCl₃-insoluble fraction. It showed one major spot Rₗ 0.38 in CHCl₃-EtOHAc (1:4) (TLC), and was chromatographed over Si gel which led to the isolation of the substance corresponding to the above spot as an amorphous powder, named "carinol". The CHCl₃-MeOH (98:2) eluates containing carinol were found to be inactive whereas the subsequent eluates which possessed hypoten-

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sive activity, showed only streaking and no pure substance has so far been isolated.

Carinol, C_{20}H_{26}O_7 (M^+ 378), was a phenolic lignan and showed characteristic IR peaks for hydroxy (3300) and trisubstituted benzene ring (1600, 1529, 1157, 1054, 1027, 831 and 800 cm\(^{-1}\)). The PMR spectrum of carinol exhibited two benzylic methylenes at 2.50 (m) and 2.88 (s), two \(-\text{CH}_2\_\text{O}\) groups at 3.70 (s) and 3.81 (d, J 4 Hz), two aromatic methoxyls at 3.90 and six aromatic protons in the region of 6.65-7.10 ppm.

Structure (I) was deduced for carinol, from the results of periodate oxidation and from spectral analyses of the compound itself and of its tetracetate, dimethyl ether and dimethyl ether diacetate (see Experimental). This structure was confirmed by the identity of its dimethyl ether (2) with tetrahydrogmelinol (mp 131\(^\circ\)) (a), \(\delta^\text{H} -3.0\) (C, 1.0, EtOH). v\(_\text{Rf}\): 215, 230 and 281 nm (E 9000, 11840 and 5620); v\(_\text{ray}\): 3300 (OH), 2910 (CH\(_3\)), 1600, 1529, 1157, 1054, 1027 and 800 cm\(^{-1}\). 225, 273, 286 and 296 nm (E 13250, 5076, 424 and 9170) which shifted to 249 and 290 nm on addition of a drop of 10\% NaOH. PMR: ppm 2.00, 2.09 (3 H each, s, 2 -OCOMe), 2.30 (6 H, s, 2 -OCOMe), 2.60 (2 H, m, Ph-CH\(_2\)-CH-), 2.76 (2 H, d, J 4 Hz, \(-\text{CO-CH}_3\)), 2.82 (6 H, s, 2 -OCMe), 3.48 (2 H, d, J 6 Hz, \(-\text{CO-CH}_3\)), 3.68-3.98 (6 ArH). MS: m/e 472 (M\(^+\)), 430, 370 (M-CH\(_2\)-\text{C}=\text{O}-\text{MeCOOH}), 328 [M-2(CH\(_2\)-\text{C}=\text{O}-\text{MeCOOH})], 191 (M-CH\(_2\)-\text{C}=\text{O}-\text{MeCOOH})-137 and 137.

Acknowledgements—The authors thank Messers R. K. Mukerji, B. B. P. Srivastava and R. K. Singh for IR, NMR and MS data, and Mr. E. Samson for technical assistance.

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