

Chicago, Lisle, Illinois, in 1980. An herbarium sample documenting the collection has been deposited in the Herbarium of the Field Museum of Natural History, Chicago, IL.

The fresh green leaf material (30.2 kg) was extracted with MeOH, and the concentrated extract was fractionated to afford Et<sub>2</sub>O, EtOAc (16.4 g), and H<sub>2</sub>O soluble fractions. Chromatography of the EtOAc extract on silica gel 60 (600 g) eluting with CHCl<sub>3</sub>-MeOH-7% HOAc (5:1:1, lower phase) afforded ricinine (0.07%) and *N*-demethylricinine (0.008%).

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#### LITERATURE CITED

1. J.M. Watt and M.G. Breyer-Brandwijk, "The Medicinal and Poisonous Plants of Southern and Eastern Africa," 2nd ed., London: E. and S. Livingstone, Ltd., 1962.
2. G.F. Asprey and P. Thornton, *West Ind. Med. J.*, **24**, 23 (1953).
3. A. Petelot, "Les Plantes Medicinales du Cambodge, du Laos et du Vietnam," Vol. 1-4. *Arch. Res. Agronom. Pastorales au Vietnam* No. 23 (1954).
4. J.C. Saha, E.C. Savini, and S. Kasinathan, *Indian J. Med. Res.*, **49**, 130 (1961).
5. L.K. Sussman, *J. Ethnopharmacol.*, **2**, 259 (1980).
6. H. Matsuda, *Chem. Pharm. Bull.*, **14**, 877 (1966).
7. S.M. Khafagy, A.F. Mahmoud, and N.A. Ebdel Salam, *Planta Med.*, **37**, 191 (1979).
8. G.R. Waller and L.M. Henderson, *J. Biol. Chem.*, **236**, 1186 (1961).
9. K.S. Yang and G.R. Waller, *Phytochemistry*, **4**, 881 (1965).
10. G.R. Waller, K.S. Yang, R.K. Gholson, and L.A. Hadwiger, *J. Biol. Chem.*, **241**, 4411 (1966).
11. R.D. Johnson and G.R. Waller, *Phytochemistry*, **13**, 1493 (1974).
12. L. Skursky, D. Burleson and G.R. Waller, *J. Biol. Chem.*, **244**, 3238 (1969).
13. G.R. Waller, M.S.I. Tang, R. Scott, F.J. Goldberg, J.S. Mayes, and H. Auda, *Plant Physiol.*, **40**, 803 (1965).
14. G.R. Waller and J.L.C. Lee, *Plant Physiol.*, **44**, 522 (1969).
15. H.J. Lee and G.R. Waller, *Phytochemistry*, **11**, 965 (1972).
16. G.R. Waller and L. Skursky, *Plant Physiol.*, **50**, 622 (1972).

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#### C-GLYCOSYLPHENOLICS FROM *RHYNCHOSIA SUAVEOLENS*

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In our continuing chemical analysis (1-3) of *Rhynchosia* species, we report here the phenolics of the leaves of *Rhynchosia suaveolens* DC. (Leguminosae).

#### EXPERIMENTAL

**PLANT MATERIALS.**—The leaves of *R. suaveolens* were collected from Tirumala, Andhra Pradesh, India. The plant was identified by Dr. K.N. Rao, Lecturer in Botany, S.V. University, Tirupati, India. Vouchers (no. RSL-III) of the plant are deposited in the Herbarium of the Botany Department, S.V. University, Tirupati, India.

**EXTRACTION AND ISOLATION OF PHENOLICS.**—Dried leaves of *R. suaveolens* (1 kg) were extracted and processed by standard procedures (4-7). The compounds obtained were luteolin, orientin, isoorientin, vitexin, isovitexin, vicenin-2, mangiferin, isomangiferin, and a cyclitol, (+)-pinitol.

All phenolics were identified by standard procedures and hydrolytic data, as well as by authentic sample comparison and color reaction procedures (4-7). This is the first report of the occurrence of xanthone-C-glycosides from the genus *Rhynchosia*. Xanthenes have been found in a limited number of families. They always occur in the Guttiferae and Gentianaceae (8) and are considered to be characteristic of these plants; xanthone-C-glycosides are known to occur in two genera, *Hedyrarium* and *Peltoporum* of the Leguminosae and in ferns (9). Full details of the isolation and identification of the compounds are available on request to the senior author.

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#### LITERATURE CITED

1. D. Adinarayana, D. Gunasekar, and P. Ramachandraiah, *Curr. Sci.*, **48**, 727 (1979).
2. D. Adinarayana, D. Gunasekar, P. Ramachandraiah, O. Seligmann, and H. Wagner, *Phytochemistry*, **19**, 478 (1980).
3. D. Adinarayana, P. Ramachandraiah, O. Seligmann, and H. Wagner, *Phytochemistry*, **20**, 2058 (1981).
4. J.B. Harborne, "Phytochemical Methods," London: Chapman and Hall, 1973, pp. 52-59.
5. K. Paech and M.V. Tracey, "Modern Methods of Plant Analysis," Vol. III, New York: Springer Verlag, 1955, pp. 66-79.
6. T.J. Mabry, K.R. Markham, and M.B. Thomas, "The Systematic Identification of Flavonoids," New York: Springer Verlag, 1970, pp. 41-53, 261-273.
7. J.B. Harborne, T.J. Mabry, and H. Mabry, "The Flavonoids," London: Chapman and Hall, 1975, pp. 21-30.
8. K. Hostettmann and H. Wagner, *Phytochemistry*, **16**, 821 (1977).
9. P.M. Richardson, *Biochem. Syst. Ecol.*, **11**, 371 (1983).

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#### METHYL $\beta$ -ORCINOLCARBOXYLATE AND DEPSIDES FROM *PARMELIA FURFURACEA*

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Species of the genus *Parmelia* have been shown to produce antimicrobial constituents (1), and in the case of *Parmelia furfuracea* (L.) Ach., a common conifer lichen, extracts have been utilized to give base materials for perfumes (2). In keeping with our current experience in antimicrobial testing (3) and bioautography (4) as selection guidelines during isolation procedures of marine natural products, crude extracts of this lichen were tested against *Bacillus subtilis*, *Escherichia coli*, *Penicillium digitatum*, and *Saccharomyces cerevisiae*, each of them being representative of a different class of microorganisms (gram-positive bacteria, gram-negative bacteria, fungi, and yeasts, respectively).

All the extracts exhibited strong activity against the former two and a modest activity against the fungus. Hence, by preparative tlc, besides the common cortical depsides atranorin and chloroatranorin (inactive), the active methyl  $\beta$ -orcinolcarboxylate has been isolated in good yield, for the first time from this species. Remarkably, its most pronounced activity is the antifungal one.

#### EXPERIMENTAL

GENERAL EXPERIMENTAL PROCEDURES.—Spectra were recorded with the following instruments:  $^1\text{H}$  and  $^{13}\text{C}$  nmr, Varian XL 200, and Brüker WP 80; ms, LKB-Shimadzu 9000 S. The INEPT pulse sequence has been performed with the XL data system for the  $^{13}\text{C}$ -nmr spectra. Analytical tlc was performed