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Received 17 June 1987

A NEW DIHYDROSTILBENE IN *DENDROBIUM CHRYSANTHUM*

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Many phenanthrene stilbenoids have been isolated from plants of the Orchidaceae (1). These compounds are considered to play important roles in such plants as phytoalexins (2). Our present work describes the occurrence and structural elucidation of a new stilbenoid from *Dendrobium chrysanthum* Wall. ex Lindl.

The new compound was isolated from an EtOH extract after Si gel chromatography and exhibited  $C_{17}H_{20}O_5$  ( $M^+$  304). Its  $^1H$ -nmr spectrum indicated two singlets [2.80 (4H), 6.36 (2H) ppm] and an ABX system [6.60 (d,  $J=1.8$  Hz), 6.67 (dd,  $J=7.9, 1.8$  Hz), and 6.82 (d,  $J=7.9$  Hz)], in addition to three methoxy and two hydroxy groups. The singlet at 2.80 ppm was assigned to two pairs of methylene protons of a bibenzyl system. The ms showed two conspicuous fragments at  $m/z$  167 and 137. The former corresponds to a benzyl fragment bearing a hydroxy and two methoxy groups, and the latter to a benzyl fragment bearing one hydroxy and one methoxy group. By comparison with a synthetic stilbenoid (4,3'-dihydroxy-3,5,5'-trimethoxydihydrostilbene) (3), two protons at 6.36 ppm were attributed to those at C-2 and C-6, indicating that one moiety of the compound is a 4-hydroxy-3,5-dimethoxybenzyl residue. On the other hand, the ABX system was assignable to the protons at carbons-2', 5', and 6'. The nOe experiments supported these proposed oxygenation patterns, because a 21% nOe for the protons at 6.36 ppm and a 20.7% nOe of the protons at 6.60 ppm on irradiation of a methoxy at 3.84 ppm were observed. Therefore, the structure was concluded to be 4,4'-dihydroxy-3,3',5'-trimethoxybibenzyl.

## EXPERIMENTAL

**GENERAL EXPERIMENTAL PROCEDURES.**—The mp was determined on a Büchi melting point apparatus and is uncorrected. Mass spectrum was obtained on a Jeol-D300 spectrometer at 70 eV.  $^1H$ -nmr spectrum was determined on a Varian XL-300 spectrometer and chemical shifts were referenced to internal TMS.

**PLANT MATERIAL.**—The whole plant of *D. chrysanthum* was collected in May 1983, in Guangxi Province, China. The voucher specimen is kept at the Herbarium, China Pharmaceutical University.

**EXTRACTION AND ISOLATION.**—Whole plants (200 kg) of *D. chrysanthum* were extracted with EtOH. The extract was concentrated to give a brown residue, diluted with  $H_2O$ , and then the suspended solution was extracted with  $CHCl_3$ . The organic phase was subjected to chromatography on Si gel using  $C_6H_6$ -EtOAc (10:1) as solvent to give the compound (10 mg), which was crystallized from  $Et_2O$ , mp 87-89°.  $^1H$  nmr ( $CDCl_3$ )  $\delta$  2.80 (4H, s,  $2 \times CH_2$ ), 3.83 (3H, s,  $OCH_3$ ), 3.84 (6H, s,  $2 \times OCH_3$ ), 5.36, 5.46 (1H, each s, OH), 6.36 (2H, s, H-2,6), 6.60 (1H, d,  $J=1.8$  Hz, H-2'), 6.67 (1H, dd,  $J=7.9, 1.8$  Hz, H-6'), 6.82 (1H, d,  $J=7.9$  Hz, H-5'); ms  $m/z$  (rel. int.) 304 [ $M^+$ ] (22), 167 (100), 137 (34), 122 (12).

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Received 23 June 1987