

## Octamethoxynaphthalene from *Cassia nodosa*

PUJA SUHAG, MEENA RANI AND S.B. KALIDHAR  
Department of Chemistry and Biochemistry  
CCS Haryana Agricultural University, Hisar -125 004

Accepted 25 September 1998

Received 10 June 1998

A hitherto unreported compound, octamethoxynaphthalene has been isolated from *Cassia nodosa* stems. It was been characterised from the spectral data.

**C**ASSIA *nodosa* belongs to the family Leguminosae, subfamily Caesalpiniaceae. It is grown for its ornamental flowers and foliage<sup>1</sup>. Roots are used as a soap for washing clothes<sup>2</sup>. Ethanolic extract of the plant has antiinflammatory activity<sup>3</sup>. Leaves of the plant function as a purgative<sup>4</sup>. It has also been reported to possess insecticidal activity<sup>5</sup>. We report here the isolation and characterisation of a new compound from the stems of this plant.

The methanolic extract of the stems was subjected to silica gel column chromatography. Compound 1 was obtained on elution with hexane and it crystallised from hexane as colourless crystals. It was assigned the molecular formula  $C_{18}H_{24}O_8$  on the basis of elemental analysis and the GCMS fragmentation pattern. The <sup>1</sup>H NMR of the compound in CDCl<sub>3</sub> exhibited no signal for the aromatic proton. A singlet at δ 3.89 integrating to 24 protons could be due to eight aromatic methoxyls. The data fits for a fully substituted naphthalene derivative and the compound could be octamethoxynaphthalene (1). The <sup>13</sup>C NMR and DEPT-135 of the compound are consistent with the proposed structure. Aromatic carbons appeared as singlets at δ 150.00 and δ 127.60. The methoxyl carbons appeared at δ 60.84. The daughter ions in the MS lend further support to the proposed structure.

Stems were collected from the Landscape, CCS HAU, Hisar. <sup>1</sup>H NMR and <sup>13</sup>C NMR were recorded at 300 MHz and 75 MHz respectively in CDCl<sub>3</sub>; UV in CHCl<sub>3</sub>; IR in KBr. The dried stems (2 Kg) were crushed and extracted 4 times with hot methanol. Extractives were concentrated under reduced pressure and the viscous material was mixed with

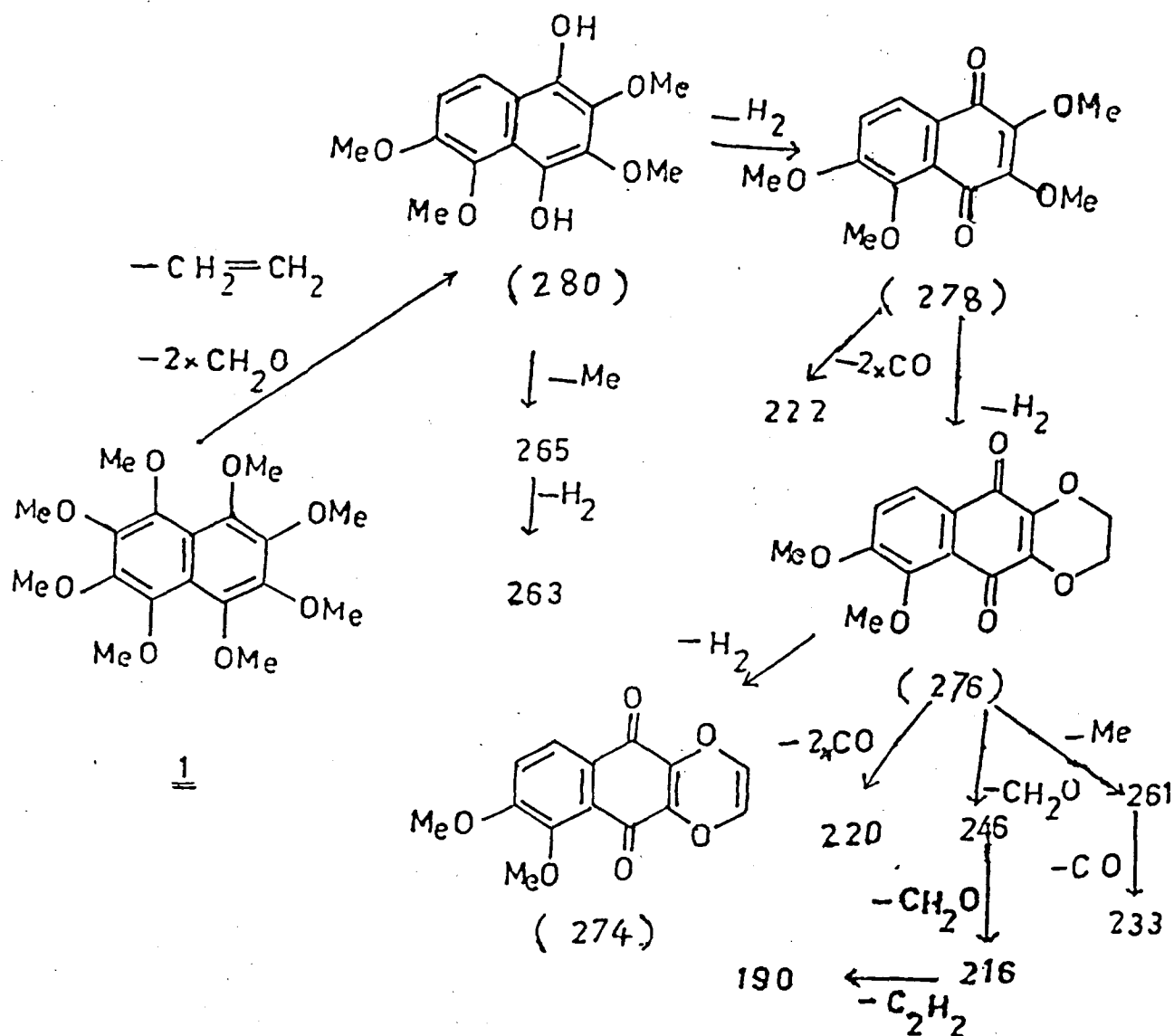
silica gel (60-120 mesh), dried on a water bath and subjected to silica gel column chromatography. Elutions afforded octamethoxynaphthalene (1, 100 mg), chrysophanol<sup>6</sup> (25 mg), lupenone<sup>7</sup> (20 mg), lupane-3 β, 11α, 20-triol<sup>8</sup> (20 mg) and 1,2-dihydroxy-3-methylanthraquinone<sup>9</sup> (25 mg). The compound 1 has m.p. 166°; (Found C, 58.65; H, 6.50.  $C_{18}H_{24}O_8$  requires : C, 58.69; H, 6.52%); IR  $\nu_{max}$  KBr cm<sup>-1</sup>: 1580, 1460, 1200, 1160, 1005, 820, 710; UV  $\lambda_{max}$  CHCl<sub>3</sub> nm: 212.8, 228.8, 247.2, 256.0 and 296.8; <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>, δ): 3.89 (24H, s, 8 x OMe); <sup>13</sup>C NMR (75MHz, CDCl<sub>3</sub>, δ): 150.5 (s, C-1, C-2, C-3, C-4, C-5, C-6, C-7 and C-8), 127.6 (s, C-4a and C-8a), 60.8 (OCH<sub>3</sub>); GCMS m/z (rel. int.) 280 (6.89), 278 (32.48), 276(72.63), 274(42.72), 265(9.25), 263(44.88), 261(100.00), 246(0.10), 233(2.19), 222(0.44), 220(1.90), 216(3.25), 190(3.09).

### ACKNOWLEDGEMENTS

We are grateful to Mr. S.R. Dubey, CCS HAU, Hisar for providing us the plant material; Mr. Avatar Singh, RSIC, Chandigarh and Mr. Sanjeev Sharma, NIPER, Mohali, for providing the spectral data.

### REFERENCES

1. Singh, U., Wadhvani, A.M. and Joshi, B.M. In; **Dictionary of economic plants in India**. I.C.A.R. New Delhi, 1983, 44.
2. Usher, G. In; **A Dictionary of Plants used by man**, CBS Publishers and Distributors, Delhi 1984, 129.
3. Abatan, M.O. **Fitoterapia**, 1990 61 (4), 336.
4. Rai, P.P. **Current Science**, 1979, 48, 15.
5. Rizvi, S.A.I., Lal, J. and Gupta, P.C. **Phytochemistry**, 1971, 10, 670.



#### MS FRAGMENTATION PATTERN

- Kalidhar, S.B. and Sharma, P. *J. Indian Chem. Soc.*, 1985, 62, 411.
- Appleton, R.A. and Enzell, C.R. *Phytochemistry*, 1971, 10, 447.
- Garcia-Alvarez, M.C., Savona, G. and Rodriguez, B. *Phytochemistry*, 1981, 20, 481.
- Thomson, R.H. In; *Naturally Occurring Quinones*, Academic Press, London, 1971.