

BIGNONIACEAE

LAPACHOL AND OTHER CONSTITUENTS FROM THE BIGNONIACEAE

PAHUP SINGH, LALIT PRAKASH and KRISHNA C. JOSHI

Organic Chemistry Laboratories, University of Rajasthan Jaipur-4, India

(Received 29 July 1971)

Plants. *Tecomella undulata* Smith, *Heterophragma adenophyllum* Wall and *Millingtonia hortensis* L. *Uses.* Medicinal.¹ *Previous work.* *T. undulata*.² On sister species *T. mollis*,³ *T. radicans*,⁴ *T. ipe*,⁵ *T. avellanadae*,⁵ *T. indica*,⁶ *T. capensis*⁷ and *T. stans*,^{7,8} on *H. adenophyllum*⁹ and *M. hortensis*.¹⁰

Bark. (*Tecomella undulata*) Extr. benzene; ether soluble fraction; extr. with 2 N Na₂CO₃; acidified with 2 N HCl; acidic fraction chromatographed over silica gel. *Lapachol*. C₁₅H₁₄O₃, m.p., m.m.p., IR² co-TLC. From benzene-petrol. (9:1) fraction and crystallized from benzene. *Veratric acid*. C₉H₁₀O₄, m.p., 181–182°, C, 59.34; H, 5.66, (Calc. C, 59.34; H, 5.49); IR, UV and NMR; From benzene-ether (1:1) fraction and crystallized from benzene. Methyl ester C₁₀H₁₂O₄, m.p. 59–60°,¹¹ C, 61.28; H, 6.01, (Calc. C, 61.23; H, 6.01); IR, UV. *Dehydrotectol*. C₃₀H₂₄O₄, m.p., m.m.p., co-TLC, IR.¹² From petrol-benzene (9:1) fraction and crystallized from EtOH. *Sitosterol*. C₂₉H₅₀O, m.p., m.m.p., IR, co-TLC, acetate, m.p.,¹³ From petrol-benzene (1:4) fraction and crystallized from MeOH.

Heartwood (*Heterophragma adenophyllum*). Extr. petrol (60–80°); ether soluble fraction; extr. with 10% NaOH; acidified with 2 N HCl; chromatographed over deactivated silica gel. *Lapachol*. C₁₅H₁₄O₃, m.p., m.m.p., IR,² co-TLC. From benzene fraction and crystallized from benzene. *Sitosterol*. C₂₉H₅₀O, m.p., m.m.p., IR, co-TLC, acetate m.p.¹³ From benzene-CHCl₃ (1:1) fraction and crystallized from MeOH.

Heartwood (*Millingtonia hortensis*). Extr. with petrol (60–80°); conc. and crystallized. *Sitosterol*. C₂₉H₅₀O, m.p., m.m.p., IR, co-TLC, acetate, m.p.¹³ and crystallized from MeOH.

Acknowledgements—The authors are indebted to Dr. R. H. Thomson (Univ. of Aberdeen) for providing a sample of dehydrotectol, and to Dr. R. P. Rastogi (Scientist, C.D.R.I., Lucknow) for mass and NMR spectra. The authors also thank the C.S.I.R., New Delhi for award of a Research Fellowship to one of us (P.S.) and Professor R. C. Mehrotra (Head, Dept. of Chemistry, Univ. of Rajasthan, Jaipur) for encouragement.

¹ R. N. CHOPRA, I. C. CHOPRA and B. S. VERMA, *Indian Medicinal Plants*, Suppl. 70 (1969).

² S. R. GUPTA, K. K. MALIK and T. R. SESHADRI, *Indian J. Chem.* 7, 457 (1969).

³ G. G. COLIN, *J. Am. Pharm. Assoc.* 15, 556 (1926).

⁴ D. S. VANFLEET, *Phytomorphology (India)* 4, 300 (1954).

⁵ RAFAEL MAISON and DAVID KURLA, *Semana Med. (Buenos Aires)* I, 410 (1954).

⁶ D. SESHAGIRI RAO, *Eco. Botany* 11, 274 (1957).

⁷ M. M. TAHA, *Biochem. J.* 58, 413 (1954).

⁸ Y. HAMMOUDA, M. PLAT and JEAN LE MEN, *Ann. Pharm. Franc.* 21 (9–10), 699 (1963).

⁹ S. K. KAPOOR, LALIT PRAKASH and ASIF ZAMAN, *Indian J. Appl. Chem.* 31 (5–6) (1968).

¹⁰ R. C. SHARMA, A. ZAMAN and A. R. KIDWAI, *Phytochem.* 7, 1891 (1968).

¹¹ I. HEILBRON and H. M. BUNBURY, *Dictionary of Organic Compounds*, Vol. 4, p. 662, Eyre & Spottiswoode, London (1953).

¹² A. R. BURNETT and R. H. THOMSON, *J. Chem. Soc. C*, 850 (1968).

¹³ KRISHNA C. JOSHI and L. B. SINGH, *Z. Naturforsch.* 25b, 270 (1970).

¹⁴ I. HEILBRON and H. M. BUNBURY, *Dictionary of Organic Compounds*, Vol. 4, p. 362, Eyre & Spottiswoode, London (1953).

¹⁵ S. M. PARTRIDGE, *Nature, Lond.* 164, 443 (1949).

Key Word Index—*Tecomella undulata*; *Heterophragma adenophyllum*; *Millingtonia hortensis*; Bignoniaceae; lapachol; dehydrotectol; veratric acid; sitosterol.