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QUINONOID AND OTHER CONSTITUENTS FROM THE HEARTWOOD OF *TECOMELLA UNDULATA*

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Key Word Index—*Tecomella undulata*; Bignoniaceae; lapachol; wax alcohol ferulate; dehydrotectol; triacontanol; sitosterol; veratroylglucose.

Plant. Tecomella undulata (G. Don) Seem. Voucher specimen No. 8257 deposited at R.U.B.L. Harbarium. *Source.* University Reserve Forest of Rajasthan, India. *Uses.* In indigenous sytem of medicine.[1,2] *Previous work. T. undulata.*[2–6] On sister species *T. capensis*,[7,8] *T. stans*,[8 13] *T. radicans*,[14–16] *T. peroba* (Syn. *Paratecoma peroba*),[17,18] *T. garrocha*[19] and *T. australis*.[19]

Present work. The air dried and coarsely powdered heartwood (500 g) was successively extracted with hot petrol. (60–80°), and 95% EtOH.

Petrol extract. Concentrated and extracted with 2 N Na_2CO_3 followed by 2 N NaOH. The remaining petrol soln (blue–green) on removal of solvent furnished alkali-insoluble fraction (2·06 g).

Na_2CO_3 *soluble fraction.* Acidified with 2 N HCl; precipitate obtained chromatographed over silica gel, elution with C_6H_6 (100%) gave lapachol[20] fine yellow needles, m.p. 139–140° (C_6H_6). ν_{max} (KBr): 3340, 1660, 1630 and 1580 cm^{-1}, etc. Structure confirmed by co-TCL, IR and m.m.p.

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NaOH *soluble fraction.* Acidified with 2 N HCl; extracted with Et_2O, solvent removed and residue (0·39 g) obtained chromatographed over silica gel. The fraction C_6H_6–$CHCl_3$ (1:1) yielded compound *B* as a colourless microcrystalline solid (32 mg), m.p. 87–88° (petrol.). ν_{max} (KBr): 3401 (OH), 1709 (C=O), 1634 (C=C), 1600 (Ph) and 722 cm^{-1} [–$(CH_2)_n$–]; λ_{max} (EtOH) 218 (sh), 235, 298 (sh) and 325 nm, comparable to those reported for lignocerlylferulate;[21] NMR signals (CCl_4, δ values) 7·80 (*d*, *J* 16 Hz, 1H) for phenyl–CH=, 6·43 (*d*, *J* 16 Hz, 1H) for =CH–CO–, 4·28 (*t*, *J* 6 Hz, 2H) for CH_2O–, 4·03 (*s*, 3H) for methoxyl group, 1·30 (*s*) for protons of aliphatic methylenes and 0·9 (*t*, *J* 5 Hz, 3H) for methyl protons adjacent to CH_2. The splitting pattern of 3 aromatic protons was consistent with the disposition of –OH and –OMe on aromatic nucleus as in ferulic acid, viz: and an alcohol which appeared to be a long chain aliphatic alcohol but could not be decisively identified.

Alkali-insoluble fraction. On chromatography over deactivated alumina gave compounds *C*, *D* and *E*. Compound *C*. From petrol.–C_6H_6 fraction (1:1), further purified by preparative TLC (silica gel G, R_f 0·80, $CHCl_3$); blue-green solid (32 mg), m.p. 193–194° (MeOH) (Found: C, 80·47; H, 5·12. Calc. for $C_{30}H_{24}O_4$: C, 80·34; H, 5·39%). ν_{max} (KBr): 1650 (C=O) cm^{-1}, etc. These data indicated compound *C* was dehydrotectol,[17] confirmed by co-TLC, IR and m.m.p. Compound *D*. From C_6H_6–$CHCl_3$ (3:2) fraction; microcrystalline compound (18 mg), m.p. 85–86° (petrol., 60–80°). ν_{max} (KBr): 3289, 2890, 2809, 1471, 1063, 733 and 724 cm^{-1}; M^+ 438. The combined study of IR and MS confirmed *D* as triacontan-1-ol; acetate 67–68° (MeOH). Compound *E*. From $CHCl_3$ (100% fraction; colourless flakes (13 mg); m.p. 136–137° (MeOH–$CHCl_3$, 1:1). ν_{max} (Nujol): 3400 (OH) cm^{-1}; was identified as sitosterol (co-TLC).

Ethanol extract. Concentrated, H_2O added, EtOH completely removed; the aq. soln obtained was extracted first with Et_2O in order to remove aglucones and then with BuOH. The aqueous fraction contained glucose confirmed by co-PC. *Butanol fraction.* Solvent removed at reduced pressure, residue (8·27 g) mixture of glycosides including tecomelloside (TLC). Hydrolysed with 0·25 N H_2SO_4 (10 hr); extracted with Et_2O (aglucone not derivable from glycosides of iridoid[6] group), Et_2O evaporated, residue (1·53 g) chromatographed over silica gel. C_6H_6–Et_2O (1:1) fraction furnished an aglucone (0·592 g), m.p. 181–182° (EtOAC–petrol., 3:1); IR[22] and UV[23] indicated it to be veratric acid and was confirmed with an authentic specimen (co-TLC, IR and m.m.p.). From the acid hydrolysate the only sugar obtained was glucose (co-PC). Thus the existence of veratroylglucose was suggested but the glucoside itself was not isolated.

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