(Institute of Natural Products, Canary Islands, Spain) for the ir and pmr spectra of acetyl methyl pomolate (acetyl methyl benthamate). The financial assistance of the University Grants Commission, New Delhi is gratefully acknowledged.

References

1. J. D. HOOKER, The Flora of British India (L. Reeve & Co, London), 1890, Vol. V, p. 578.
2. N. K. HART, S. K. JOHNS and J. A. LAMBERTON, *Aust. J. Chem.*, 1968, **21**, 1397; 1968, **21**, 2597.
3. S. MATSUURA and L. T. LEE, *Yakugaku Zasshi*, 1973, **93**, 1682; 1974, **94**, 150.
4. T. TOKEMATO, T. MIYASE and G. KUSANO, *Phytochemistry*, 1975, **14**, 1890.
5. T. TOKEMATO, T. MIYASE and G. KUSANO, *Phytochemistry*, 1975, **14**, 2534.
6. S. HAYASHI, T. OKUDE, A. SHIMAZU and T. MATSUURA, *Chem. Parm. Bull.*, 1969, **17**, 165.
7. R. E. MARKER, H. M. CROOKS, JR., E. M. JONES and E. L. WITTBECKER, *J. Amer. Chem. Soc.*, 1942, **64**, 219.
8. J. BERMEJO, J. L. BRETON, G. DE LA FUENTE and A. G. GONZALEZ, *Tetrahedron Letters*, 1967, **47**, 4649.

Triterpenoids from *Dillenia pentagyna*

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Manuscript received 17 April 1979, revised 20 December 1980, accepted 9 June 1981

DILLENIA pentagyna (Fam: Dilleniaceae) is a medicinal plant[1,2] and has not been chemically investigated so far. Four triterpenes, lupeol, betulin, betulonic acid and morolic acid have been isolated from the stem bark of this plant and are reported here.

The air-dried powdered stem bark of *D. pentagyna* (2 kg) was extracted with EtOH under reflux for 25 days on a water bath. The extract (2.5 litres) was filtered off, concentrated to 100 ml and poured into H_2O (500 ml). The H_2O insoluble material was extracted with hexane and C_6H_6 respectively. The hexane soluble fraction on column chromatography over alumina gave two compounds called compound-A and compound-B. The C_6H_6 fraction on concentration gave a dirty white solid mass which was again extracted with petrol (60-80°) and $CHCl_3$ respectively and gave Compound-C and Compound-D.

Compound-A, on crystallization (MeOH : $CHCl_3$) furnished silky needles, $C_{30}H_{50}O$ (M^+ 426), m.p. 213-14°. It gave LB test for triterpenoids, ν_{max}^{KBr} cm^{-1} 3325 (OH), 1639, 1380 and 885. It was identified as lupeol by mixed m.p., co-tlc and co-ir with an authentic sample[3].

Compound-B, crystallized as white needles from aq. EtOH, $C_{30}H_{50}O_2$ (M^+ 442), m.p. 251-52°. It gave the usual tests for triterpenoids, ν_{max}^{KBr} cm^{-1} 3350 (OH). From the detailed study of its ir, ^1H nmr, ms and derivatives it was proved to be betulin[4] which was further confirmed by co-tlc and co-ir with authentic specimen.

Compound-C was crystallized from EtOH as white needles, $C_{30}H_{46}O_3$ (M^+454), m.p. 250-52° (d). It gave LB test and noller reaction for terpenoids, ν_{max}^{KBr} cm^{-1} 3460, 1640, 1380, 880. It formed a monomethyl ester, m.p. 164-65° (Found; C, 79.50; H, 10.25; $C_{31}H_{48}O_3$ required; C, 79.48; H, 10.25%). Its ^1H nmr spectrum ($CDCl_3$, δ, TMS) showed a signal at 3.60(s) for a carbomethoxy group. It formed a semicarbazone, m.p. 282-83° and an oxime, m.p. 236° (d). The identity of this compound with betulonic acid[4] was established by mixed m.p. and co-tlc with an authentic sample.

Compound-D was crystallized from EtOH, $C_{30}H_{48}O_3$, (M^+456), m.p. 272-73°. It gave LB test for triterpenoids. ν_{max}^{KBr} cm^{-1} 3450, 1640, 804, 828. It formed an acetate (Ac_2O/Py, m.p. 255-57°; ν max 1740) and a methyl ester (CH_2N_2, m.p. 228-29°; ^1H nmr, $CDCl_3$, δ, 3.60 ppm, 3H) showing the presence of $-OH$ and $-COOH$ groups in the compound-D. It was identified as morolic acid[5] by comparison of mixed m.p. and co-tlc with an authentic sample.

Acknowledgement

The authors are thankful to the Director, Dr. S. Silvavinayakam, CIBA—GEIGY Research Centre, Bombay for his kind help in micro-analyses and spectral data of the compounds, One of us (S.D.S.) is thankful to the State Council of Science and Technology, U.P., Lucknow for financial assistance.

References

1. *The Wealth of India.*, (CSIR, Pub.), 1952, Vol. III, p. 65.
2. K. R. KIRTIKAR and B. D. BASU, *Indian Medicinal Plants.*, 1956, 3, 54.
3. J. S. CHAUHAN and S. K. SRIVASTAVA, *Phytochem.*, 1978, 17, 1005.
4. J. S. CHAUHAN and S. K. SRIVASTAVA, *Proc. Nat. Acad. Sci.*, 1978, **48(A)**, part I.
5. D. H. R. BARTON and C. J. W. CROOK *J. Chem. Soc.*, 1951, 257.

The Triterpenoid Constituents of the Leaves of *Nycthanthus arbortristis* Linn

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Manuscript received 26 February 1981, accepted 9 June 1981

THE shrub *Nycthanthus arbortristis* Linn[1] (Fam: Oleaceae, Ver. name. Tel: Parijataka) is widely cultivated throughout India as a garden plant. Isolation of nycthanthic acid, a 3-4 secotriterpene