Phytochemistry, 1968, Vol. 7, pp. 501 to 502. Pergamon Press. Printed in England

SHORT COMMUNICATION

CONSTITUENTS OF LEAVES, HEARTWOOD AND ROOT OF *MIMUSOPS ELENGI*

G. MISRA and C. R. MITRA

Utilisation Research Laboratory, National Botanic Gardens, Lucknow, India

(*Received* 4 *October* 1967)

Plant. Mimusops elengi—Sapotaceae.

Uses. Medicinal.[1,2]

Previous work. Seed kernel,[3–5] testa and mesocarp,[6] bark.[7] On sister species *M. hexandra*.[8,9]

Leaves. Extr. EtOH: *quercitol* $C_6H_{12}O_5$ (1·7 per cent of air dried leaves), m.p., $(\alpha)_D$, mxd m.p.; m.p. and $(\alpha)_D$ of benzoate. Extr. hexane: A hard, white somewhat thermoplastic resinous product, soluble in chloroform, hot hexane and benzene and insoluble in alcohol, ether and acetone. *Hentriacontane*, m.p., mxd m.p., ν_{max}^{KBr} 720 cm^{-1} (alkane chain)[10] and *β-carotene*, m.p., mxd m.p. and u.v. Aqueous fraction: *glucose*, paper co-chromatography.

Heartwood. Extr. EtOH; hexane soluble fraction: *lupeol* $C_{30}H_{50}O$, m.p., $(\alpha)_D$, mxd m.p.,[11] i.r., co-TLC. *α-Spinasterol* $C_{29}H_{48}O$, m.p., $(\alpha)_D$, mxd m.p.,[8] i.r., co-TLC and positive Tortelli–Jaffe colour test. Aqueous alc. fraction: acid hydrolysis: *mixture of seven triterpene acids* (TLC), m.p. 320–321°; confirmed *hederagenin*, co-TLC[12] of the mixture as well as of its methylester. Hexane insoluble fraction: *β-D-glucoside of β-sitosterol* $C_{35}H_{60}O_6$, m.p., $(\alpha)_D$, mxd m.p.,[8] i.r.; acid hydrolysis to glucose and β-sitosterol, m.p., $(\alpha)_D$, mxd m.p. and i.r.

Root. Extr. EtOH; hexane soluble: *lupeol acetate* $C_{32}H_{52}O_2$, m.p., $(\alpha)_D$, mxd m.p.,[11] i.r., co-TLC; alkali hydrolysis to *lupeol* $C_{30}H_{50}O$, m.p., $(\alpha)_D$, mxd m.p.,[11] i.r. and co-TLC; m.p., mxd m.p.,[11] i.r. of benzoate $C_{37}H_{54}O_2$ and to *acetic acid*, lanthanum nitrate–iodine[13] positive. *Taraxerol* $C_{30}H_{50}O$, m.p., mxd m.p.,[9] $(\alpha)_D$, co-TLC and *α-spinasterol*. Hexane insoluble fraction: *β-D-glucoside of β-sitosterol*.

[1] W. DYMOCK, *Pharmacographia Indica*, Vol. 2, pp. 362–365, Kegan Paul, Trench, Trübner, London (1891).
[2] *Wealth of India, Raw Materials*, Vol. 6, pp. 383–384, CSIR, New Delhi, India (1962).
[3] M. G. RAU and J. L. SIMONSEN, *Indian Forest Records* **9**, 10 (1922); A. R. S. KARTHA and K. N. MENON, *Proc. Indian Acad. Sci.* **19A**, 1 (1944); *Chem. Abstr.* **39**, 207 (1945).
[4] B. J. HEYWOOD and G. A. R. KON, *J. Chem. Soc.* 713 (1940); *Chem. Abstr.* **34**, 6637 (1940); B. J. HEYWOOD, G. A. R. KON and L. L. WARE, *J. Chem. Soc.* 1124 (1939).
[5] A. W. VAN DER HAAR, *Rec. Trav. Chim.* **49**, 1155 (1929); *Chem. Abstr.* **24**, 857 (1930).
[6] G. MISRA and C. R. MITRA, *Phytochem.* **6**, 453 (1967).
[7] G. MISRA and C. R. MITRA, *Phytochem.* **6**, 1309 (1967).
[8] C. R. MITRA and G. MISRA, *Phytochem.* **4**, 345 (1965).
[9] G. MISRA and C. R. MITRA, *Phytochem.* **5**, 535 (1966).
[10] L. J. BELLAMY, *The Infra-red Spectra of Complex Molecules*, pp. 27–28, Methuen, London (1962).
[11] S. K. NIGAM and C. R. MITRA, *Indian J. Chem.*, **5**, 395 (1967).
[12] H. S. GARG and C. R. MITRA, *Planta Med.* **15**, 74–80 (1967).
[13] F. FEIGL, *Spot Tests*, Vol. 2, p. 247, Elsevier, London (1954).

The triterpene alcohol, m.p. 236–237°, reported earlier,[6] was confirmed as *lupeol** $C_{30}H_{50}O$, m.p., $(\alpha)_D$, mxd m.p.,[11] i.r. and co-TLC.

Besides other constituents already reported[7] the *M. elengi* bark also yielded *lupeol.* Xylose has also since been confirmed as a constituent sugar of the kernel saponin in addition to those reported earlier.[5]

On systematic chemical examination of the various constituents present in the different parts of the two species of *Mimusops*, e.g. *M. hexandra* and *M. elengi*, it is interesting from biogenetic consideration, to note that α-spinasterol, β-D-glucoside of β-sitosterol and quercitol are the common constituents in the different parts of both the species. *M. elengi* also shows the presence of lupeol in most of the parts. Of the two species *M. elengi* leaves give maximum yield of quercitol (1·7 per cent). The acetates of α- and β-amyrins are present only in the fruit pulp of *M. hexandra*, but ursolic acid is present in the fruit pulps of both the species. While taraxerol is found in the bark of both the plants, *M. hexandra* bark contains, in addition, cinnamic acid ester of α-amyrin and *M. elengi* bark, the C_{18} fatty acid ester of α-spinasterol. Hederagenin, present with six other triterpene acids in the heartwood of *M. elengi*, is for the first time being reported from this genus. Seed coat and kernel of both these plants have been found to contain identical constituents, the former includes dihydroquercetin and quercetin whose presence supports the postulated biosynthetic pathway for interconversion of flavonoid compounds (flavonols: flavanone→dihydroflavonol→flavonol).[14]

Acknowledgement—Authors' thanks are due to Mr. J. Saran for micro-analyses and to Dr. L. B. Singh, Director, National Botanic Gardens for his interest in the work.

* The m.p. of lupeol did not rise above 190° in all cases except the one marked.*

[14] V. P. MAIER and D. M. METZLER, *Phytochem.* **6**, 763–765 (1967).