Phytochemistry, 1972, Vol. 11, p. 1855. Pergamon Press. Printed in England.

COMPOSITAE

CAMPESTEROL FROM *BLUMEA LACERA*

R. PAL, S. K. MOITRA, N. N. CHAKRAVARTI and R. N. ADHYA

Department of Chemistry, School of Tropical Medicine, Calcutta, India

(*Received* 31 *March* 1971)

Plant. Blumea lacera.[1] *Occurrence.* India, Ceylon, China and Malaya. *Uses.* Medicinal[2] (Antipyretic, cures bronchitis and blood diseases). *Previous work.* Isolation of essential oil[3] and coniferyl alcohol.[4]

Whole plant (*without roots*). (Extd. with light petroleum and $CHCl_3$; chromatographed over neutral Brockmann alumina) gave *campesterol*, $C_{28}H_{48}O$, m.p. 158–159° (MeOH) (m.m.p.; $[\alpha]_D$ of sterol and acetate).

[1] *Wealth of India*, Vol. I, p. 198, C.S.I.R., New Delhi (1948).
[2] *Indian Medicinal Plants* (edited by K. R. KIRTIKAR and B. D. BASU), 2nd edition, Vol. II, p. 1341.
[3] K. K. BASLAS and S. S. DESHPANDE, *J. Indian Chem. Soc.*, **27**, 25 (1950).
[4] F. BOHLMANN and C. ZDERO, *Tetrahedron Letters* 69 (1969).

Key Word Index—Blumea lacera; Compositae; sterols; campesterol.

Phytochemistry, 1972, Vol. 11, pp. 1855 to 1856. Pergamon Press. Printed in England.

TRITERPENOIDS AND TRIACONTANE FROM *CONYZA FILAGINOIDES**

JORGE A. DOMÍNGUEZ, GRACIELA QUINTERO and DANIEL BUTRUILLE

Department of Chemistry, Instituto Tecnologico y de Estudios Superiores de Monterrey, Monterrey, N.L., Mexico

(*Received* 24 *November* 1971)

Plant. Conyza filaginoides DC. (simonillo). *Uses.* Medicinal, stomach ailments.[1] *Previous work.* Physiological activity of the aqueous extract[2] and on sister species.[3]

Present work. Independent Soxhlet extn. with light petroleum and MeOH. The light petroleum extract was saponified with MeOH–KOH and the unsaponifiable portion was taken into isopropyl ether. The components were separated by chromatography on SiO_2

* Part XX in the series "Study of Mexican Medicinal Plants".

[1] M. MARTÍNEZ, *Las Plantas Medicinales de México*, 4a. Ed. Editorial Botas, México (1959).
[2] F. ALTAMIRANO, *Materia Medica Mexicana*, Sria. Fomento México 1, 295 (1894).
[3] R. HEGNAUER, *Chemotaxonomie der Pflanzen*, Birkhauser, Basle, 3 pág. 464, 509 (1964).

column and three were identified by comparison with authentic specimens. From unsaponifiable portion, *Triacontane*, $C_{30}H_{62}$ m.p. 63–65° IR, NMR. *α-Spinasterol*, $C_{29}H_{48}O$ (M^+412) m.p. 166° $[\alpha]_{589}$ −3·0° ($CHCl_3$) UV, IR, NMR, MS fragmentation as expected, peak base 271 *m/e*. co-TLC. Acetate, m.p. [α] IR, NMR, *β-amyrin* $C_{30}H_{50}O$ (M^+426) m.p. 192–195° [α] 79·6° ($CHCl_3$) IR, NMR, MS fragmentation, co-TLC and m.m.p. Acetate $C_{32}H_{32}O_2$ m.p. 240°, [α], IR, NMR and m.m.p.

Acknowledgements—This work was supported by a grant from Research Corporation. We thank Dr. H. Ramsay for his encouragements to Dr. F. Bielmann from Strasbourg and Dr. Judith Polonsky from Gif-sur-Yvette for the mass spectra.

Key Word Index—Conyza filaginoides; Compositae; triacontane; α-spinasterol; β-amyrin.

Phytochemistry, 1972, Vol. 11, pp. 1856 to 1857. Pergamon Press. Printed in England.

KAURENIC ACIDS IN *ESPELETIA* SPECIES*

A. USUBILLAGA and A. MORALES

Instituto de Investigación Química, Facultad de Farmacia, Universidad de Los Andes, Apartado 142, Mérida, Venezuela

(*Received* 14 *December* 1971)

In the course of our investigation on *Espeletia* species from the Venezuelan Andes, we have isolated (—)-kaur-16-en-19-oic (I) and (—)-kaur-15-en-19-oic acid (II) from three different species, *E. floccosa*, *E. figueirasii* and *E. moritziana*.

Aerial parts of the plants were dried and extracted with light petroleum. The acidic extract of the resin thus obtained was chromatographed on SiO_2. The fractions were monitored by TLC and all those containing I and II were pooled and methylated with diazomethane. The methyl esters were separated by elution from a column of SiO_2 plus 10% $AgNO_3$, but a small portion of each mixture of esters was saved for GLC. Light petroleum–Et_2O (3%) eluted methyl kaur-16-en-19oate (III), m.p. 84–85°, $[\alpha]_D^{25}$ −96·5 (EtOH; C, 3·7). The MS of III shows a molecular ion at *m/e* 316 ($C_{21}H_{32}O_2$). IR (KBr pellet): 1720 cm^{-1} (C=O), 1655 and 875 cm^{-1} (C=CH_2). NMR spectrum (60 MHz, $CDCl_3$): 0·88 δ (s, *t*-Me), 1·09 δ (S, *t*-Me), 2·0 δ (d, J = 1·5 Hz, 2H), 2·57 δ (broad, 1H), 3·58 δ (s, OCH_3), 4·70 δ (m, C=CH_2). The alcohol obtained by reduction of III with $LiAlH_4$ (m.p. 140–141°), shows a characteristic AB quartet centered at 3·57 δ in the NMR spectrum. Such evidence is indicative of a tetracyclic kauren-like diterpenoid with the carbonyl function on C-4 in an axial position.

By increasing the Et_2O concentration to 10% methyl kaur-15-en-19oate (IV) was eluted, m.p. 78–80°. IR spectrum: 1722 cm^{-1} (C=O), 813 cm^{-1} (CH=C). NMR spectrum: 0·85 δ (s, *t*-Me), 1·14 δ (S, *t*-Me, 1·68 δ (d, J = 1·5 Hz, 3H), 2·25 δ (broad, 1H), 3·62 δ (S, OCH_3), 5·05 δ (m, CH=C). This compound is identical (m.p. m.m.p., TLC, IR and NMR)

* The authors wish to express their gratitude to Dr. Ruiz-Terán and Dr. López-Figueiras, Department of Botany, University of Los Andes, for identification of the botanical material. They are also indebted to Mr. Luis Marquez for technical assistance.