LETTERS TO THE EDITOR

THE CRYSTALLINE CONSTITUENTS OF EUPHORBIACEAE

Part VIII. The Triterpenes of *E. antiquorum* Latex

WITH a view to examine the unidentified triterpene fraction, the coagulated latex of *E. antiquorum*[1] Linn. (500 g.) was refluxed with alcohol (2 × 1 l.) and the alcoholic extract saponified with 6% alcoholic KOH. The unsaponified fraction was acetylated with Py-Ac_2O over a steam-bath for 3½ hr. This acetate mixture (25 g.) could be fractionally separated from $CHCl_3$-MeOH into four successive fractions.

Fraction A, colourless needles from $CHCl_3$-MeOH, m.p. 242–43°, m.m.p. unchanged by authentic β-amyrin acetate, $(\alpha)_D$ +91·6°, (C, 1·2 in $CHCl_3$). Upon hydrolysis, β-amyrin[2] was identified by comparison with an authentic sample and preparation of benzoate.

Fraction B, crystallised from $CHCl_3$-MeOH (three times) as colourless plates, m.p. 123–24°, $(\alpha)_D$ +75° (C, 1·0 in $CHCl_3$) (Found: C, 82·23; H, 11·08; $C_{32}H_{52}O_2$ requires C, 82·06; H, 11·11%). Hydrolysis with 6% alc. KOH furnished the free triterpene which crystallised from methanol as colourless needles, m.p. 99°, $(\alpha)_D$ +50° (C, 1·1 in $CHCl_3$) (Found: C, 81·23; H, 11·58; $C_{30}H_{50}O$, CH_3OH requires C, 81·21; H, 11·79%). After drying at 80°/10 mm. for 8 hr., m.p. 114–115° (Found: C, 84·32; H, 11·9; $C_{30}H_{50}O$ requires C, 84·50; H, 11·74%); benzoate, colourless needles from $CHCl_3$–MeOH, m.p. 134–135°, $(\alpha)_D$ +70° (C, 1·0 in $CHCl_3$); ketone, colourless plates from MeOH, m.p. 104–105°, $(\alpha)_D$ +35° (C, 1·0 in $CHCl_3$). Reduction with Pd/H gave rise to a dihydroacetate, colourless needles from $CHCl_3$–MeOH, m.p. 132–133°, $(\alpha)_D$ +65° (C, 1·0 in $CHCl_3$) which isomerised with chloroformic hydrogen chloride to give Fraction I, colourless long needles, identical with lanost-9(11) enyl acetate,[3] m.p. 169–171°, $(\alpha)_D$ +80° (C, 1·1 in $CHCl_3$) and Fraction II, colourless plates, m.p. 136–138°. From these and other reactions, fraction B was regarded identical with cycloartenyl acetate[4] which appears to be the major fraction of the triterpene mixture.

Fraction C, colourless needles from MeOH, m.p. 108–109°, m.m.p. underpressed with authentic euphadienyl acetate, $(\alpha)_D$ +40° (C, 1·0 in $CHCl_3$). It is hydrolysed with alcoholic alkali to give euphol,[5] crystallised from methanol as colourless needles, m.p. 116–117°, $(\alpha)_D$ +32° (C, 1·2 in $CHCl_3$).

Fraction D, appeared to be a mixture and therefore it (1 g.) was deacetylated and chromatographed over alumina (30 g.). Petroleum ether eluted euphol (identified as its acetate and benzene eluted a compound which gave an acetate, colourless needles from MeOH, m.p. 124–125°, unchanged by authentic euphorbol acetate, $(\alpha)_D$ ±0° isolated from *E. cattimandoo*[6] latex (Found: C, 81·97; H, 11·41; $C_{33}H_{54}O_2$ requires C, 82·17; H, 11·20%). Pure euphorbol was obtained by hydrolysis of the acetate, shining plates from MeOH, m.p. 126–127°, $(\alpha)_D$ ±0° (Found: C, 84·49; H, 11·22; $C_{31}H_{52}O$ requires C, 84·53; H, 11·81%), benzoate, crystallised from $CHCl_3$–MeOH as needles, m.p. 134–136°, $(\alpha)_D$ +20° (C, 1·8 in $CHCl_3$).

The separation of the acetate mixture from the latex by chromatography over alumina was found to be effective, but laborious and required large quantities of petroleum ether as eluant.

The present sample did not contain the dihydroxy triterpene reported in an earlier one.[1] The identification of β-amyrin, cycloartenol uphol and euphorbol was possible only after saponification.

All the compounds recorded in this paper analysed satisfactorily.

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