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SURENONE AND SURENIN, TWO NOVEL TETRANORTRITERPENOIDS FROM TOONA SURENI [BLUME] MERRILL.

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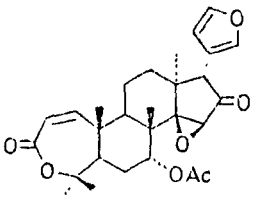
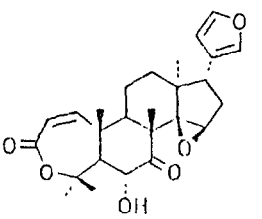
Summary: Ether extraction of the dried leaves of Toona sureni followed by chromatography afforded two new tetranortriterpenoids for which structures (2) and (3) are proposed on the basis of MS, NMR, and IR data.

A recent report in this journal of evodulone[2)] (1), a new tetranortriterpenoid isolated from Carapa procera, promts us to immediately report our investigations on Toona sureni [Blume] Merill (Meliaceae) from which we have isolated two tetranortriterpenoids of similar structure.

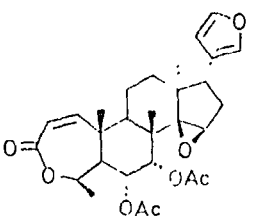
Isolation: The ether extract of 7.6 kg air dried finely powdered leaves of Toona sureni, collected from Bulolo, Papua New Guinea[3)], on chromatography over silica gel with methylene chloride - ethyl acetate and petroleum ether - ethyl acetate yielded 145 mg Cedrelone[4)], and 1.3 g of a new compound (2), m.p. 195°C (ethyl acetate), $[\alpha]_D^{20} = -11.1^\circ$ ($CHCl_3$, c = 0.4), for which we suggest the name surenone. Further chromatography gave 800 mg surenin (3), m.p. 240°C (dec., ethyl acetate), $[\alpha]_D^{20} = +74.5^\circ$C ($CHCl_3$, c = 0.05).



(1)



(2)



(3)

Structure of surenone (2): $C_{26}H_{32}O_6$ (440), calc. C. 70.89, H 7.32, found C 70.77, H 7.41; M^+ 440. IR (KBr): 3450 (OH), 1710 (cyclohexanone and α,β-unsaturated δ-lactone, 1630 (C=C), 1270, 830 (epoxide), 1500 and 880 cm^{-1} (furan). ^{1}H-NMR (90 MHz, $CDCl_3$): δ [ppm] 6.16, 7.14, 7.36 (1H each, β-substituted furan), 0.78, 1.24, 1.52, 1.59, 1.74 (3H each, tertiary methyl groups), 6.56 (1H, d, J=11.5 Hz, H-1), 5.94 (1H, d, H=11.5 Hz, H-2), 2.35 (1H, d, J=11.2 Hz, H-5α), 4.68 (1H, dd, J=11.2 Hz, 3.0 Hz, H-6β), 3.74 (1H, d, J=3.0 Hz, HO-C-6), 3.52 (1H, H-15) 2.72 (1H, H-17). ^{13}C-NMR[5)] (22.63 MHz, $CDCl_3$): δ [ppm] 158.4 (d, C-1), 123.1 (d, C-2), 167.7 (s, C-3), 85.1 (s, C-4), 71.9 (d, C-6), 209.7 (s, C-7), 69.5 (s, C-14), 55.4 (d, C-15), 17.2,

18.7, 21.1, 23.6, 26.9 (q each, tertiary methyl groups), 123.1 (s, C-20), 139.4 (d, C-21), 110.7 (d, C-22), 142.9 (d, C-23).

Structure of surenin (3): $C_{30}H_{38}O_8$ (526), calc. C 68.42, H 7.22, found C 68.34, H 7.45; M^+ 526. IR (KBr): 1710 (α,β-unsaturated δ-lactone), 1630 (C=C), 1745 (ester carbonyl), 1245 (C-O), 835 (epoxide), 1500 and 875 cm^{-1} (furan). ^{1}H-NMR (90 MHz, $CDCl_3$): δ [ppm], 6.14, 7.09, 7.35 (1H each, β-substituted furan), 0.94, 1.19, 1.51, (3H each, tertiary methyl groups), 1.41 (2 tertiary methyl groups) 6.64 (1H, d, J=11.5 Hz, H-1) 5.93 (1H, d, J=11.5 Hz, H-2), 2.62 (1H, d, J=12.0 Hz, H-5α), 5.26 (1H, dd, J=12.0 Hz, 3.2 Hz, H-6β), 5.08 (1H, d, H=3.2 Hz, H-7β), 3.42 (1H, H-15), 2.63 (1H, H-17), 1.96, 2.10 (3H each, CH_3CO). It follows from the signals at δ 5.26 and 5.08 that the two acetoxy groups are connected to secondary C-atoms in a vicinal cis arrangement. ^{13}C-NMR (22.63 MHz, $CDCl_3$)[5]: δ [ppm] 160.8 (d, C-1), 122.5 (d, C-2), 167.5 (s C-3), 84.6 (s, C-4), 72.4, 69.9 (d each, C-6, C-7), 72.3 (s, C-14), 56.2 (d, C-15), 16.1, 18.1, 18.4, 22.8, 26.5, (q each, tertiary methyl groups), 20.8, 21.1 (q each, $\underline{CH}_3$-CO), 169.7, 169.4, (s each, $CH_3\underline{CO}$), 123.4 (s, C-20), 139.4 (d, C-21), 110.8 (d, C-22), 142.8 (d, C-23).

The peaks for ring A of (2) and (3) correspond very well with the spectra reported for 7α-Obacunol[6], zapoterin acetate[6], tricoccin S_{13}[7], and evodulone[2].

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References and notes

1) K. Kypke, part of the planned Ph.D. Thesis.

2) B. L. Sondengam, C. S. Kamga, and J. D. Connolly, Tetrahedron Letters, 1357 (1979).

3) We thank the Department of Forests, Forest Research Station, Bulolo, Papua New Guinea, for the supply of the material.

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5) We wish to thank Dr. P. Fischer, Department of Organic Chemistry, University of Stuttgart, for recording the ^{13}C-NMR spectra.

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