



CHEMICAL COMPONENTS OF *CITRUS SINENSIS* ROOTS VARIETY BLOOD RED

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ABSTRACT

The first chemical examination of *Citrus sinensis* roots variety blood red has afforded five known compounds which are hentriacontane, heneicosanoic acid, octacosanoic acid, euphol and 3,29-dihydroxy-24,25,26,27-tetra-norlanost-8-en-23,17-olide.

Key words: *Citrus sinensis*, Rutaceae, Hentriacontane, Heneicosanoic acid, Octacosanoic acid, Euphol, 3, 29-dihydroxy-24, 25, 26, 27-tetra-norlanost-8-en-23, 17-olide.

INTRODUCTION

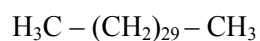
Citrus sinensis (L.) belongs to Rutaceae family, and it has the common names sweet orange and mosambi¹. It is cultivated in Haryana, Punjab and Rajasthan. The name blood red is due to red colour of the pulp². The plant is known to treat relapse sickness which affects women who return to strenuous work too soon after delivery, and it cures fractures³. In absence of chemical components of *C. sinensis* roots variety blood red, we have taken up the present study.

Melting points were determined on Ganson Electrical Melting Point Apparatus; ¹H NMR on Bruker AC 300 MHz NMR Spectrometer; IR on Hitachi 570 Infra Spectrophotometer; and Mass Spectra on VG 70 S 11-250 J GCMS-DS Spectrometer.

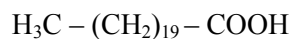
Roots of *C. sinensis* (3 Kg) were collected from Botanical Gardens, Hisar. These were chopped into small pieces which were dried in shade under a fan. Extraction was done with MeOH. Extractives were subjected to column chromatography. Elution had been

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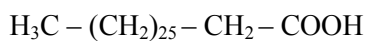
started with petroleum ether. The polarity of the solvent system was increased slowly. Five known compounds could be isolated and fully characterized.



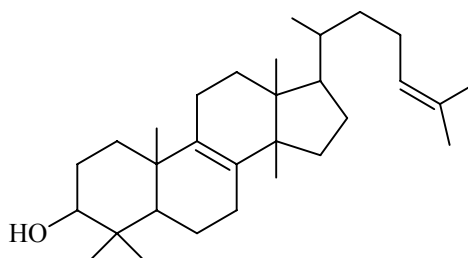
(1)



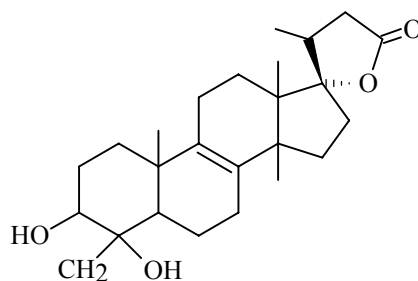
(2)



(3)



(4)



(5)

RESULTS AND DISCUSSION

Compound A (Hentriacontane, **1**) was obtained on elution with petroleum ether. It crystallized out from Methanol, 15 mg, mp 65⁰ (Lit⁴. mp 66-68⁰). ¹H NMR (δ, CDCl₃): 0.77 (6 H, t, *J* 7.0 Hz, 2 x CH₃), 0.86-1.36 (58 H, m, 29 x CH₂). MS (m/z, rel. int.): 436 (M⁺, 15).

Compound B (Heneicosanoic acid, **2**) was obtained on elution with benzene-petroleum ether (1 : 19). It crystallized out from MeOH, 20 mg, mp 72⁰ (Lit.⁵ mp 74⁰). IR (ν_{\max} , nujol, cm⁻¹): 1738, 2848. ¹H NMR (δ , CDCl₃): 0.76 ((3 H, t, *J* 7.5 Hz, CH₃), 1.18-1.53 (36 H, m, 18 x CH₂), 2.10 (2 H, t, *J* 7.5 Hz, CH₂COO). MS (m/z, rel. int.): 326 (M⁺, 26).

Compound C (Octacosanoic acid, **3**) was obtained on elution with benzene-petroleum ether (1 : 9). It crystallized out from methanol, 25 mg, mp 88⁰ (Lit.⁶ mp 89-90⁰). IR (ν_{\max} , nujol, cm⁻¹): 1737, 2848. ¹H NMR (δ , CDCl₃): 0.77 (3 H, *J* 7.5 Hz, CH₃), 1.18-1.50 (50 H, m, 25 x CH₂), 2.10 (2 H, t, *J* 7.5 Hz, CH₂COO). MS (m/z, rel. int.): 424 (M⁺, 46).

Compound D (Euphol, **4**) was obtained on elution with benzene-petroleum ether (1 : 1). It crystallized out from benzene as a white solid, 20 mg, m.p. 112⁰ (Lit.⁷ m.p. 116⁰). IR (ν_{\max} , nujol, cm⁻¹): 3426. ¹H NMR (δ , CDCl₃): 0.73 (3 H, s, CH₃), 0.75 (3 H, s, CH₃), 0.84 (3 H, s, CH₃), 0.86 (3 H, s, CH₃), 0.88 (3 H, s, CH₃), 1.04 (3 H, d, *J* 7.0 Hz, CH₃), 1.08-2.10 (29 H, m, 3 x CH, 10 x CH₂, 2 x CH₃), 3.45 (1 H, t, *J* 7.0 Hz, CHO), 5.28 (1 H, t, *J* 7.0 Hz, = CH-). MS (m/z, rel. int.): 426 (M⁺, 16).

Compound E (3, 29-Dihydroxy-24, 25, 26, 27-tetra-norlansot-8-en-23, 17-olide, **5**) was obtained on elution with ethyl acetate-benzene (1 : 19). It crystallized out from MeOH, 20 mg, mp 302⁰ (Lit.⁸ mp above 300⁰). It responded to Liebermann-Burchard test. IR (ν_{\max} , nujol, cm⁻¹): 1743, 3395. ¹H NMR (δ , CDCl₃): 0.76-1.18 (12 H, 4 x CH₃), 1.23-2.24 (23 H, m, 9 x CH₂, 2 x CH, CH₃), 3.80-4.23 (3 H, m, CHO, CH₂O). MS (m/z, rel. int.): 416 (M⁺, 51).

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