Chemical Investigation of *Crataeva nurvala* Buch. Ham. Fruits

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Chemical investigation of fruits of *Crataeva nurvala* has revealed the presence of four known compounds which are pentadecane, octanamide, 12-tricosanone and friedelin. These compounds have been characterized on the basis of spectral and other data. These are being reported for the first time from the fruits of this plant.

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Crataeva nurvala (family: Capparidaceae) is commonly known as *barna* and *varuna*[1]. It is distributed, wild or cultivated, throughout India and tropical regions of the world[2]. Fruits are berry-like, globose or oblong; edible and used as astringent[3]. Fruiting occurs in April-June. Seeds are embedded in yellow pulp. Rind of the fruit is used as a mordant in dyeing[4]. As the fruits of the plant have not been extensively studied for chemical components, the present study was taken up.

Melting points were determined on a Ganson Electrical Melting Point Apparatus. ^{1}H NMR spectra were recorded on a Bruker AC 300 MHz NMR Spectrometer using TMS as an internal standard. Chemical shifts are given in δ (ppm) and $CDCl_3$ was used as solvent. IR spectra were recorded on a Hitachi 570 Infrared Spectrophotometer. Mass Spectra were obtained on a VG 70 S 11-250 J GCMS-DS Spectrometer.

Fruits of *C. nurvala* (5 kg) were collected from Botanical Gardens, HAU, Hisar. These were crushed, dried and extracted with hot methanol. The plant material (1 kg at a time) had been taken into a 5 l RB flask fitted with a water condenser for refluxing the material with MeOH. Refluxing was carried out for 6 h. The process had been repeated three times to prepare methanol extract of 5 kg of the material. The methanol extract was concentrated over water bath under reduced pressure. Extractives were subjected to silica gel (60-120 mesh) column chromatography. Four compounds were obtained.

Compound A (n-pentadecane, 1), molecular formula $C_{15}H_{32}$, was obtained on elution with petroleum ether as an oily liquid, 5 ml, b.p. 270 °[5]. IR (KBr, ν_{max}, cm^{-1}): 600, 800, 1026, 1261, 1378, 1441, 2362. ^{1}H NMR ($CDCl_3$, δ): 1.25 (26 H, br, 13* $-CH_2-$), 0.88 (6 H, t, *J* 7.5 Hz, 2* $-CH_3$). GCMS (m/z): 212 (M^+).

Compound B (octanamide, 2), molecular formula $C_8H_{17}NO$, was obtained on elution with benzene-petroleum ether (1:3) as a colourless solid, 10 mg, m.p. 112 ° (literature m.p. 110-112 °)[6]. IR (KBr, ν_{max}, cm^{-1}): 756, 802, 1026, 1235, 1372, 1740, 2925, 3456. ^{1}H NMR ($CDCl_3$, δ): 5.13 (2 H, s, $CONH_2$), 2.02 (2 H, t, *J* 7.5 Hz, $-CH_2CONH_2$), 1.66 (2 H, br, $-CH_2CH_2CONH_2$), 1.25 (8 H, br, 4* $-CH_2-$), 0.88 (3 H, t, *J* 7.5 Hz, 2* $-CH_3$). GCMS (m/z): 143 (M^+).

Compound C (12-*tricosanone*, 3), molecular formula $C_{23}H_{46}O$, was obtained on elution with benzene as a colourless solid, 10 mg, m.p. 69° (reported m.p. 68°)[6]. IR (KBr, ν_{max}, cm^{-1}): 765, 1012, 1257, 1460, 1617, 1733, 2916. ^{1}H NMR ($CDCl_3$, δ): 2.33 (4 H, *J* 7 Hz, $-CH_2CO-$), 1.54 (4H, m, 2* $-CH_2CH_2CO-$), 1.26 (32 H, br, 16* $-CH_2-$), 0.88 (6 H, t, *J* 7.0 H_z, 2* $-CH_3$). GCMS (m/z): 338 (M^+).

Compound D (friedelin, 4), molecular formula 426, was obtained on elution with ethyl acetate-benzene (1:19) as a colourless crystalline solid, 15 mg, m.p. 260 ° (reported m.p. 259-261 °)[7]. It gave pale brown colour on reaction with Ac_2O/H_2SO_4. IR (KBr, ν_{max}, cm^{-1}): 980, 1053, 1073, 1176, 1205, 1220, 1377, 1389, 1715. ^{1}H NMR ($CDCl_3$, δ): 1.25-2.31 (25 H, m, 11*-CH_2-, 3* -CH<), 1.16 (3H, s, $-CH_3$), 1.05 (3H, s, $-CH_3$), 1.01 (6 H, 2* $-CH_3$), 0.97 (3H, s, $-CH_3$), 0.88 (6H, s, 2* $-CH_3$). GCMS (m/z): 426 (M^+).

The four known compounds are being reported for the first time from the fruits of this plant.

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