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SHORT COMMUNICATION

CHEMICAL CONSTITUENTS OF *ARTABOTRYS ODORATISSIMUS* (SEEDS)

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ABSTRACT

3-Hydroxy-9-methoxypterocarpan, nonacosanoic acid 2', 3'-dihydroxypropyl ester, pentacosanoic acid 2,-3'-dihydroxypropyl ester and docosanoic acid have been isolated for the first time from the seeds of Artabotrys odoratissimus and identified by spectroscopic data of these natural products and their derivatives.

Key words: 3-Hydroxy-9-methoxypterocarpan and cosanoic acids derivative.

INTRODUCTION

Artabotrys odoratissimus R. Brown, belongs to the family annonaceae which is an evergreen perennial shrub, mostly native of tropical Africa, Eastern Asia and India[1]. This plant is used in Indian system of medicine for the treatment of vomiting, biliousness and disease of blood and heart. The leaves are reported to contain an anti-fertility principal[2]. Oil of seeds of the plants are reported to contain antidandruff, anti-itching, anti-thrombin and hair loss preventing activities[3]. In continuation to our previous communication[4], we report here in isolation and identification of four compounds *viz*; 3-Hydroxy-9-methoxypeterocarpan, nonacosanoic acid 2',3'-dihydroxypropyl ester, pentacosanoic acid 2', 3'-dihydroxypropyl ester and docosanoic for the first time from this plant.

EXPERIMENTAL

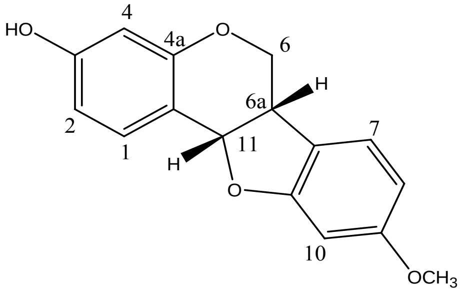
The melting points were measured on a Yazawa hot stage microstage apparatus and are uncorrected. Optical rotations were measured on JASCO DIP-360 Polarimeter (Cell length 5 CM). UV absorption spectra were recorded on JASCO UV/visible spectrophotometer (model no. 7800) while IR on JASCO FT-IR 5300 spectrometer. NMR spectra were recorded on an AMX 300 NMR spectrometer (Bruker, Karlsruhe, Germany).

The seeds of *A .odoratissimus* were collected from the garden of Banaras Hindu University and then authenticated by Professor. V. K. Joshi, Department of Dravya Guna, IMS, Banaras Hindu University, Varanasi-221005, INDIA.

RESULTS AND DISCUSSION

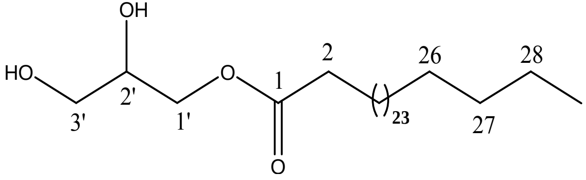
The milled seeds (1 kg) were extracted with 95% ethanol by cold percolation method, solvent was removed under vacuum at 40^0C. The left residue (80 gm) was then fractionated into *n*-hexane, chloroform, *n*-butanol and aqueous soluble fraction. The chloroform soluble fraction was chromatographed over silica gel. Elution of column with solvents of increasing polarity resulted in the isolation of four compound *viz*; 3-hydroxy-9-methoxypterocarpan (25 mg, *n*-hexane: EtOAc 1:1), nonacosanoic acid 2', 3'-dihydroxypropyl ester (22mg, EtOAc), pentacosanoic acid 2,-3'-dihydroxypropyl ester (24mg, EtOAc : MeOH 9:1, early fraction) and docosanoic acid(20 mg, EtOAc : MeOH 9:1, latter fraction).

Compound **1.** $[\alpha]^{22}_{D}$ -226^{0} (c, 0.1, $CHCl_3$); MF. $C_{16}H_{14}O_4$, M^+ at *m/z* 270 (EI-MS); *m.p.* 127-128^{0}C; IR (KBr)υ_{max} 3404, 2949, 1619, 1600, 1499, 1474, 1365, 1281, 1149, 1028, 934, 837, 764 cm^{-1}; UV λ_{max} 282, 287 (MeOH) nm; ^{1}H-NMR ($CDCl_3$): δ_H 7.37 (1H, *d*, J= 8.3, H-1), 6.54 (1H, *d*, J= 8.3, H-2), 6.44-6.41 (*m*, H-4), 3.67–3.51 (*m*), 4.23 (1H, *dd*, J= 6.0, 9.8, H-6), 3.67–3.51 (*m*, H-6a), 7.12 (1H, *d*, J= 8.7, H-7), 6.56–6.41 (H-8 & H-10), 5.49 (1H, *d*, J= 6.0), 3.76 (3H, *s*, 9-OCH_3), 5.59 (*br hump*, 3-OH); ^{13}C-NMR: δ_C 132.4 (C-1), 110.1 (C-2), 157.5 (C-3), 103.8 (C-4), 156.8 (C-4a), 66.7 (C-6), 39.7 (C-6a), 119.4 (C-6b), 125.0 (C-7), 106.6 (C-8), 161.2 (C-9), 97.1 (C-10), 160.8 (C-10a), 78.8 (C-11a), 112.6 (C-11b), 55.7 (-OCH_3). On the basis of above spectral data the structure of this compound was settled as 3-hydroxy-9-methoxypetrocarpans commonly known as (-) medicarpen. The above spectral values were in good agreement with the reported data in the literature[5, 6, 7].



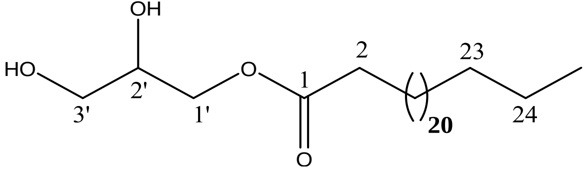
***Compound*-1**

Compound **2.** $[\alpha]^{22}_{D}$ -3.87 (MeOH + $CHCl_3$, c, 0.10); MF: $C_{32}H_{64}O_4$, M^+ at *m/z* 512 (EI-MS); *m.p* 90-91^{0}C; IR (KBr)υ_{max} 3425, 2919, 2851, 2363, 1734, 1468, 1179, 1051, 720 cm^{-1}; ^{1}H-NMR ($CDCl_3$+ DMSO-d_6, 200 MHz): δ_H 4.04 (2H, *t*, J=5.3 Hz, H-1'), 3.80 (1H, *m*, H-2'), 3.48 (2H, *m*, H-3'), 2.29 (2H, *t*, J=7.3 Hz, H-2), 1.56 (6H,*brm*, H-26,27,28), 1.24 (46H, *brs*, H-3 to H25), 0.87 (3H, *t*, J= 6.0 Hz, CH_3); ^{13}C-NMR δ_C 172.6 (C-1), 68.9 (2'), 64.3 (C-1'), 62.3 (C-3'), 33.1 (C-2), 30.7 (C-28), 28.5 (C-7 to C-27), 28.2 (C-3), 28.0 (C-4), 23.8 (C-5), 21.5 (C-6), 13.1 (CH_3). On the basis of above spectral data the structure of compound **2** was established as nonacosanoic acid 2', 3',-hydroxy-propyl ester. The above spectral data are in good agreement with the reported data in the literature[8].



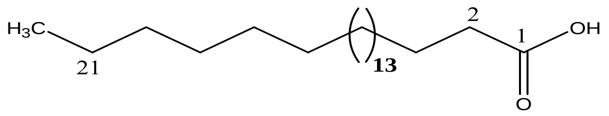
***Compound*-2**

Compound **3.** $[\alpha]^{22}_{D}$ -3.11 (MeOH+ $CHCl_3$, c, 0.22); MF: $C_{28}H_{56}O_4$, FAB-MS: m/z 457 $[M+H]^+$; *m.p.* 72-74^{0}C; IR (KBr)υ_{max} 3225, 1733, 1704, 1389, 725 cm^{-1}; ^{1}H-NMR ($CDCl_3$ + DMSO-d_6): δ_H 4.11 (2H, *t*, J=6.2 Hz, H-1'), 3.80 (1H, *m*, H-2'), 3.34 (2H, *m*, H-3'), 2.26 (2H, *t*, J= 7.3 Hz, H-2), 1.56 (4H, H-23,24), 1.25 (40H, *brs*, H-3 to H-22), 0.87 (3H, *t*, J= 6.0 Hz, CH_3); ^{13}C-NMR δ_C 172.2 (C-1), 69.0 (2'), 66.5 (C-1'), 64.5 (C-3'), 32.9 (C-2), 30.7 (C-24), 30.3 (C-6 to C-23), 30.1 (C-3), 25.9 (C-4), 23.7 (C-5), 14.1 (CH_3). Thus, the structure of compound **3** was established as pentacosanoic acid 2, 3-dihydroxy-propylester which is in good agreement with the reported data in the litrature[9].



***Compound*-3**

Compound **4.** MF: $C_{22}H_{44}O_2$, M^+ at m/z 340; *m.p.* 70-72^{0}C; IR (KBr)υ_{max} 3430, 2919, 2850, 2362,1693, 1594, 1468, 1351 cm^{-1}; 325, 311, 297, 283, 269, 255, 241, 227, 213, 199, 185, 171, 157, 143, 129; ^{1}H-NMR δ_H 2.28, (2H, *t*, J= 7.19 Hz, H_2-2), 1.60 (2H, *m*, H-3), 1.25 (36H, *brs*, H-4 to H-21), 0.87 (3H, *t*, J=6.2 Hz, H-22); ^{13}C-NMR δ_C 176.1 (C-1), 34.3 (C-2), 25.0 (C-3), 22.7 (C-21), 14.2 (C-22), 29.4 (C-4 to C-20) has suggested it to be docosanoic acid which is consistent with the ^{13}C-NMR data of compound **4**[10].



***Compound*-4**

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> *"I like to see a man proud of the place in which he lives. I like to see a man live so that his place will be proud of him."*
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> **- Abraham Lincoln**