Phytochemical Evaluation of *Pongamia pinnata* L. Seed Oil.

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Accepted 27 April 2004
Revised 5 February 2004
Received 25 August 2003

Phytochemical evaluation of *Pongamia pinnata* seed oil resulted in the isolation of methyl oleate and 3'-methoxy (2",3":7,8) furanoflavone. These compounds were characterized on the basis of spectral and other data.

Pongamia pinnata L. (Leguminosae) is distributed throughout India and often cultivated as avenue trees. The plant is known to have very high medicinal value. Seeds are anthelmintic, bitter, acrid and carminative[1]. The oil is styptic, anthelmintic and reported to be good for the treatment of leprosy, piles, ulcers, chronic fever and pain in liver[3]. The reinvestigation of the seed oil is reported here.

Melting points were determined on a Ganson Electrical Melting Point apparatus. IR spectra were recorded on Hitachi 570 Infrared Spectrophotometer using KBr. ^{1}H NMR spectra were recorded on a Brucker AC–300F 300MHz NMR Spectrophotometer using TMS as internal standard. Chemical shifts are given in δ (ppm) and $CDCl_3$ was used as solvent. Mass spectra were recorded on VG–70S 11–250J GC–MS–DS Mass Spectrophotometer.

Seeds of *P. pinnata* were collected from Landscape, CCSHAU, Hisar. The seeds were separated from the seed coat and then extracted with hexane. The column chromatography of hexane extract (seed oil) afforded two compounds (A and B).

Compound A (methyl oleate, 1) was obtained on elution with petroleum ether as oil, 10 ml, Found: C, 77.01, H, 12.13. $C_{19}H_{36}O_2$ Required: C, 77.02, H, 12.16 %; UV λ_{max} (nm): 215, 224; IR υ_{max} (KBr): 723, 853, 1439, 1461, 1743, 2926, 3451; ^{1}H NMR, 5.28 (2H, m,-CH=CH-), 3.61 (3H, s, -CH_3), 2.24 (2H, t, *J* 8.0 Hz, -$COCH_2$-), 1.99 (4H, m, -CH_2-CH=CH-CH_2-), 1.59 (2H, m, -$COCH_2CH_2$-), 1.27 (20H, m, 10 x -CH_2-), 0.88 (3H, t, *J* 7.5 Hz, 1 x CH_3); MS (m/z, rel. int.), 297(M^+ +1, 46.9), 295 (4.0), 265 (66.3), 237 (2.2).

Compound B (3'- methoxy (2",3":7,8) furanoflavone, 2) was obtained on elution with chloroform-petroleum ether (1:3), 10 mg, m.p. 153-154°; Found: C, 73.92, H, 4.09. $C_{18}H_{12}O_4$ Required: C, 73.97, H, 4.11 %; UV: λ_{max} 259, 304 nm; IR: υ_{max} cm^{-1} 590, 693, 756, 954, 1031, 1079, 1163, 1225, 1284, 1340, 1405,1627, 2852, 2926; ^{1}H NMR (δ, $CDCl_3$): 8.19 (1H, d, *J* 10.0 Hz, H-5), 8.12 (2H, m, H-2' and H-6'), 7.75 (1H, d, *J* 2.0 Hz, H-5"), 7.52 (3H, m, H-6, H-4' and H-5'), 7.25 (1H, s, H-3), 7.16 (1H, d, *J* 2.0 Hz, H-4"), 3.93 (3H, s, OMe); MS m/z (rel. int.): 292 (M^+, 66.6), 291 (100.0), 263 (6.5), 250 (1.2), 160 (46.1), 132 (9.5), 118 (0.3), 104 (3.9), 101 (0.9), 90 (1.2).

Compound A, named methyl oleate was obtained as liquid from petroleum ether. The IR spectrum of the compound showed the presence of carbonyl group (1743 cm^{-1}). The elemental analysis and MS suggested the molecular formula and molecular mass of the compound A to be $C_{19}H_{36}O_2$ and 296 respectively. The ^{1}H NMR of the compound in $CDCl_3$, showed a multiplet at δ 5.28, for two protons, which could be olefinic protons. A singlet at δ 3.61, representing three protons, could be methyl protons attached to an electron withdrawing group. A triplet (*J* 8.0 Hz) at δ 2.24, for two protons, was attributable to methylene α to a keto group. A multiplet at δ 1.99, integrating to four protons, was due to methylenes vicinal to double bond. A multiplet at δ 1.59, for two protons, was attributable to methylene β to carbonyl group. A multiplet at δ 1.27, representing twenty protons, was assignable to ten methylenes. A triplet (*J* 7.5 Hz) at δ 0.88, integrating to three protons, was assignable to terminal methyl group. This data proposed the compound A to be methyl oleate (1). The data of the isolated compound A fully agreed with the literature data of methyl oleate[2] which is being reported for the first time from a plant source.

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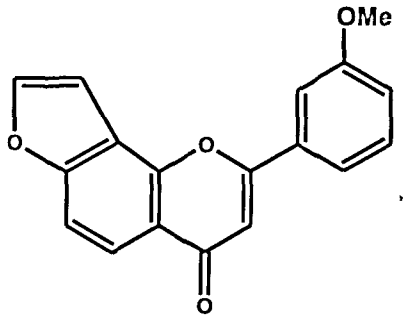
1. CH_3-$(CH_2)_6$-CH_2-CH=CH-CH_2-$(CH_2)_4$-CH_2-CH_2-COO-CH_3.



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Compound B was also obtained as a colourless solid. It also responded to Mg/HCl test. Its UV spectrum (λ_{max} 259 and 304 nm) showed the compound to be a furanoflavone[3]. The IR spectrum showed the presence of a carbonyl group (1627 cm^{-1}). Its ^1H NMR spectrum, showed two doublets (*J* 2.0 Hz) at δ 7.75 and 7.16 for H-5" and H-4" furano protons. Another doublet (*J* 10.0 Hz) at δ 8.19, for one proton was assignable to H-5. Two multiplets at δ 8.12 (two protons) and 7.52 (three protons), were assignable to H-2', H-6' and H-6; H-4' and H-5' respectively. Singlets at δ 7.25 (one proton) and 3.93 (three protons), were attributable to H-3 and methoxy protons. The compound B could thus characterized as 3'- methoxy (2",3":7,8) furanoflavone (2). The RDA fission in the MS fragmentation pattern suggested the presence of methoxy groups in the B-ring by showing peaks at 160 (A-ring fragment) and 132 (B-ring fragment).

ACKNOWLEDGEMENTS

We are grateful to Landscape, HAU, Hisar, for the supply of plant material; Mr. Avtar Singh for providing ^1H NMR data; and Mr. Rakesh Sharma for providing MS data.

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Pharmacokinetic Interaction between Sparfloxacin and an Antacid in Normal Volunteers

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Accepted 7 May 2004

Revised 5 February 2004

Received 31 March 2003

This Study was conducted to examine if antacid alters the pharmacokinetics of sparfloxacin by microbiological assay using plate diffusion technique using *Klebsiella pneumoniae*. The plasma concentration of sparfloxacin was determined in six healthy male volunteers at 1, 2, 3, 4, 5, 6, 24 and 36 h, after administration of 200 mg single oral dose of sparfloxacin. The effect of concurrent administration of 100 mg of antacid on sparfloxacin kinetics was then determined. Co administration of antacid significantly reduced the C_{max} [0.338±0.158 μg/ml Vs. 0.8715±0.85 μg/ml; p<0.05] and AUC_{36}-α [3.670±2.12 μg/ml.h Vs 8.8372±4.03 μg/ml.h; p<0.05] of sparfloxacin Concomitant administration of antacid containing aluminum and magnesium reduces the bioavailability of sparfloxacin in normal volunteers.

Sparfloxacin is a difluroquinolone with a dimethyl piperazinyl group[1]. It has two methyl groups in the piperazinyl ring and an additional fluorine atom at position 8, which enhances its activity against Gram-positive or Gram–negative organisms. Also sparfloxacin has approximately four and

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