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NOTE

Phytochemical Examination of *Emilia sonchifolia* DC.

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Three flavones *i.e.*, luteolin m.p. 325-326 ºC, m.f. $C_{15}H_{10}O_6$, $[M]^+$ 286, quercetin m.p. 311-300 ºC, m.f. $C_{15}H_{10}O_7$, $[M]^+$ 302 and isorhamnetin m.p. 305-306 ºC, m.f. $C_{16}H_{12}O_7$, $[M]^+$ 316 have been isolated from seeds of *Emilia sonchifolia* DC. by various chemical gradations, colour reactions and spectral analysis.

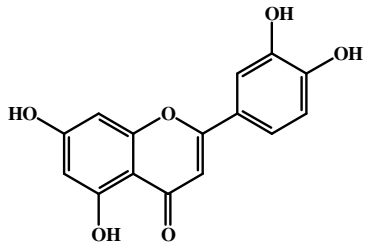
Key Words: *Emilia sonchifolia* DC., Compositae, Seeds, Flavonoids.

Emilia sonchifolia DC.[1,2] belongs to family compositae which is commonly known as 'Hiranakhuri' in Hindi. It is found almost throughout in India. It is a glabrous scabrid or puberulous slender herb, 30-40 cm high. It is edible and is used as a salad plant before flowering. The stem-leaves are cooked and eaten as vegetable. The plant is sudorific. A decoction of it is used as febrifuge in infantile tympanites and in bowel complaints. Its root is used for diarrhoea. The juice of fresh leaves is used for sore ears, sore eyes and night-blindness.

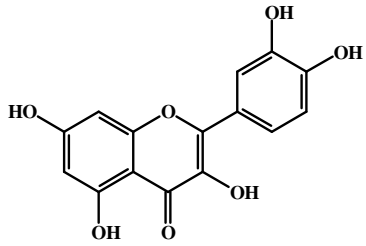
All the melting points were determined by thermoelectrically melting point apparatus and are uncorrected. The IR spectra were recorded in KBr disc. ^{1}H NMR spectra at 300 MHz in $CDCl_3$ using TMS as internal standard. ^{13}C NMR spectra were recorded at 90 MHz using $CDCl_3$ as solvent. UV spectra were determined in MeOH and Mass spectra on a Jeol D-300 mass spectrometer.

The seeds of *Emilia sonchifolia* DC. were collected from Sagar region and were identified by Taxonomist Department of Botany, Dr. H.S. Gour Central University, Sagar. A voucher specimen has been deposited in the Natural Products Laboratory, Department of Chemistry, Dr. H.S.Gour Central University, Sagar, India.

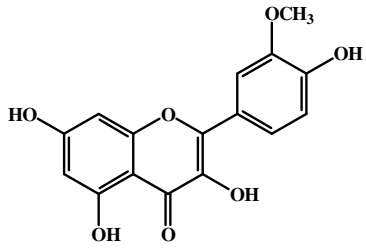
Extraction and isolation of the compound: Air dried and powdered seeds (4.5 kg) of *Emilia sonchifolia* DC. were extracted with petroleum ether (60-80 ºC) in a Soxhlet extractor for 7 days. The defatted seeds were extracted with 95 % ethanol for 3 days. The total ethanolic extract was concentrated under reduced pressure to give dark brown viscous mass. It gave three spots on TLC examination indicating it to be mixture of three compounds **A**, **B** and **C**. These were separated by TLC, purified by column chromatography and preparative TLC and studied separately.



A = Luteolin



B = Quercetin



C = Isorhamnetin

Study of the compound A: It was crystallized as yellow needles, m.p. 325-326 ºC, m.f. $C_{15}H_{10}O_6$, $[M]^+$ 286, UV (MeOH, λ_{max} nm): 262, 273, 356, IR (KBr, ν_{max}, cm^{-1}): 3448 (OH), 1655 ν(C=O), 1620, 1586 ν(aromatic C=C bonds); ^{1}H NMR (300 MHz, $CDCl_3$), δ, 6.74 (1H, s, H-3), 6.48 (1H, d, *J* = 2.1 Hz, H-6), 6.82 (1H, d, *J* = 2.2 Hz, H-8), 7.45 (1H, d, *J* = 2.2, H-2'), 6.88 (1H, d. *J* = 8.4, H-5'), 7.42 (1H, dd, *J* = 8.4, 2.3, H-6'); ^{13}C NMR (90 MHz, $CDCl_3$) δ, 164.1 (s, C-2), 102.1 (d, C-3), 182.1 (s, C-4), 161.1 (s, C-5), 89.1 (d, C-6), 163.1 (s, C-7), 94.1 (d, C-8), 156.1 (s, C-9), 104.1 (s, C-10), 121.1 (s, C-1'), 113.1 (d, C-2'), 145.1 (s, C-3'), 150.1 (s, C-4'), 116.1 (d, C-5'). 119.1 (d, C-6'). It was also confirmed by comparison of its spectral data with repeated literature value[3-6].

Study of the compound B: It was crystallized as bright yellow needles crystals, m.p. 311-313 ºC, $C_{15}H_{10}O_7$, $[M]^+$ 302, UV (MeOH, λ_{max}, nm): 254, 372; ^{1}H NMR (300 MHz, $CDCl_3$) δ,12.46 (1H, s, 5-OH), 10.70 (1H, s, br, 3-OH), 9.58 (1H, s, br, 7-OH), 9.35 (2H, s, br, 2 ×-OH), 6.18 (1H, d. *J* = 2.0 Hz, H-6), 6.43 (1H, d, *J* = 2.2 Hz, H-8),7.65 (1H, d, *J* = 2.4 Hz, H-2'), 6.88 (1H, d, *J* = 8.3 Hz, H-5'), 7.54 (1H, dd, *J* = 2.3, 8.4 Hz, H-6'); ^{13}C NMR (90 MHz, $CDCl_3$) δ, 147.5 (s, C-2), 135.8 (s, C-3), 175.6 (s, C-4), 160.5 (s, C-5), 98.4 (d, C-6), 164.2 (s, C-7), 93.5 (d, C-8), 156.4 (s, C-9), 103.5 (s, C-10), 121.7 (s, C-1'), 116.0 (d, C-2'), 147.0 (s, C-3') 144.7 (s, C-4'), 1145')120.0 (d, C-6'). It was also confirmed by comparison of its spectral data with literature value[7].

Study of the compound C: It was crystallized a yellow needles, m.p. 305-306 ºC, m.f. $C_{16}H_{12}O_7$, $[M]^+$ 316, UV MeOH, λ_{max}, nm): 255, 268, 306, 327,370; IR IR (KBr, ν_{max}, cm^{-1}): 3425 ν(OH), 2910 ν(CH), 1635 ν(C=O), 1595 ν(C=C), 1165 ν(C-O); ^{1}H NMR (300 MHz, $CDCl_3$) δ, 12.42 (1H, s, 5-OH), 7.72 (1H, d, *J* = 1.9 Hz, H-2'), 7.69 (1H, dd, *J* = 8.0, 1.9 Hz, H-6') 6.91 (1h, d, *J* = 8.0, Hz, h-5'), 6.47 (1H, d, *J* = 8 Hz, H-8), 6.20 (1H, d, *J* = 8 Hz, H-6), 3.84 (3H, s, OCH_3); ^{13}C NMR (90 MHz, $CDCl_3$) δ, 177.1 (C-4), 165.1 (C-7), 162.7 (C-5), 157.4 (C-9), 144.9 (C-3'), 149.6 (C-4'), 147.9 (C-2), 137.1 (C-3), 124.1 (C-1'), 123.7 (C-6'), 116.7 (C-5'), 112.7 (C-2'), 104.3 (C-10), 97.3 (C-6), 94.7 (C-8). It was also confirmed by comparison of its spectral data with repeated literature value[8,9].

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