

Isolation Analysis Of Flavonoids From Triticum Aestivum

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ABSTRACT: Flavonoids tricin, iso-orientin, vanillin, iso-vitexin, apigenin, 8-hydroxy flavones, 4'-hydroxy chalcone have been isolated from leaves of early stage triticum aestivum. Their quantitative analysis has been done through elemental and spectral analysis.

KEYWORDS: analysis, anticancer, extraction, isolation, flavonoids, tricin, triticum aestivum.

1. INTRODUCTION

Flavonoids represent a large group of polyphenolic natural compounds wide spread in seeds, fruit skin, peel and leaves of plants^[1]. Their valuable cardioprotective^[2], antioxidant^{[3],[4]}, anti-cancer^{[5],[6],[7]}, anti-inflammatory^{[8],[9]}, antiviral^[10], anti-allergic^[11], anti-osteoporotic^[12], anti-ulcer properties^{[13],[14]}. Triticum aestivum is a medium sized evergreen tree. This plant is rich in flavonoids with flavones, flavanones, flavans and bioflavans as the major constituents. Investigation of the anti-carcinogenic constituents from the stem leaves of triticum aestivum led to the isolation of seven new flavones tricin, iso-orientin, vanillin, iso-vitexin, apigenin, 8-hydroxyl flavones, 4'-hydroxy chalcone. The structures of these compounds were elucidated by elemental, spectroscopic analysis. This paper deals with the structural elucidation and the anti-carcinogenic activities of the isolates.

2. EXPERIMENTAL

Extraction was done using Soxhlet taking 200ml of 80%ethanol. All melting points were determined on a Yanaco micro-melting point apparatus. IR spectra were taken on a Perkin Elmer System 2000 FT-IR spectrometer. UV spectra were obtained on a Shimadzu UV-160A spectrophotometer in EtOH. EI-mass spectra were recorded on a VG Biotech Quattro 5022 spectrometer. HR-EI, FAB and HR-FAB-mass spectra were recorded on a JEOL JMX- HX 110 spectrometer. NMR spectra and chemical shifts are given in ppm with TMS as internal standard. Silica gel was used for CC and silica gel 60 F-254 for TLC preparation. TLC optical rotations were measured using a Jasco DIP – 370 polarimeter in CHCl₃.

Compound 1- M.P.-245-246°C, UV- 257,269,350nm, IR- 3550,3350(OH), 1660(C=O), 1620,1575(C=C), H¹ NMR- 7.35(1H,H-6'), 7.34(1H,H-2'), 6.89(H-5'), 6.52(H-3), 6.47(H-8), 4.90(H-1''), 4.16(H-2''), 3.89(H-6''), 3.76(H-6''), 3.49(H-5''), 3.44(H-3''), C¹³ NMR- 18.13(C-4), 166.39(C-2), 164.97(C-7), 162.15(C-5), 158.84(C-9), 151.17(C-4'), 147.16(C-3'), 123.69(C-1'), 120.47(C-6'), 116.94(C-5'), 114.31(C-2'), 109.28(C-6), 105.36(C-10), 104.06(C-3), 95.35(C-8), 82.76(C-5''), 80.27(C-3''), 75.46(C-1''), 72.77(C-1''), 71.95(C-4''), 63.02(C-6''), Hrms(-ve ion mode)- 447.089(M-H)⁺, 357.052(MH-90)⁺, 327.047(MH-120)⁺

Compound 2- M.P.- 81.5°C, UV-246-252nm, IR-3300-3500cm⁻¹ H¹ NMR- 3.95(H-3), 6.39(H-1), 7.04(H-1), 7.42(H-1), 9.823(CHO-1), C¹³ NMR- 191.21(C-1), 152.18(C-2), 147.50(C-3), 129.77(C-4), 127.49(C-5), 114.75(C-6'), 109.34(C-7'), 56.10(C-8),

Compound 3- M.P.- 120-121°C, UV-366nm, IR- 1683(C=O), 1586(C=C), 1575(C=C), 2340.5(C-H), 3384(OH)cm⁻¹ H¹ NMR- 7.95(H-2,6), 6.95(H-3,5), 7.85(H-2',6'), 7.25(H-3',5'), 7.42(H-1), 7.82(H-1)

Compound 4- M.P.- 234-236°C, UV- 210,271,312nm, IR- 3408, 1651, 1602, 1559 cm⁻¹ H¹ NMR- 8.24(H-2',6'), 7.05(H-3',5'), 4.12(CH₃O-7), 4.03(CH₃O-3), 3.99(CH₃O-6), 3.96(CH₃O-5), 3.89(CH₃O-4',2'), 7.9(H-2'), 4.04(CH₃O-3), 3.99(CH₃O-3'), 3.96(CH₃O-4'), C¹³ NMR- 143.21(C-2), 137.89(C-3), 171.80(C-4), 147.51(C-5), 143.47(C-6), 151.51(C-7), 137.23(C-8), 146.85(C-9), 111.73(C-10), 123.61(C-1'), 160.88(C-4'), 129.04(CH-2'), 114.09(CH-3',5'), 129.04(CH-6'), 61.94(CH₃O-3), 62.25(CH₃O-5), 61.76(CH₃O-6), 61.61(CH₃O-7), 55.36(CH₃O-4'), Hrms(+ve ion mode)- 388(M-H)⁺, 373(M-CH₃)⁺

Compound 5- M.P.- 220-221°C, UV-270,337 nm, H¹ NMR- 4.58(H-1''), 6.52(H-8), 6.7(H-3), 6.9(H-3',5'), 7.93(H-2',6'), 13.55(OH-5), C¹³ NMR- 184.04(C-4), 166.21(C-2), 165.33(C-7), 162.86(C-4'), 162.04(C-5), 158.69(C-9), 129.45(C-6',2'), 123.14(C-1'), 117.08(C-3',5'), 109.29(C-6), 104.98(C-10), 103.87(C-3), 95.34(C-8), 82.62(C-5''), 80.16(C-3''), 75.31(C-1''), 72.59(C-2''), 71.79(C-4''), 62.86(C-6''), Hrms(-ve ion mode)- 431.0978

Compound 6- M.P.- 345-350°C, UV- 267,296, 336nm, H¹ NMR- 7.87, 6.94, 7.875 (d'), 6.642(s), 6.214, 6.476(d), 8.69(3'), 0.35, 2.66(5'), 2.39(2'), 0.2(6), 2.12(8), C¹³ NMR- 7.8(3',5'), 2.5(3), 0.51(2',3',6'), 7.1(6'), 4.8(5'), 1.1(2'), Hrms(-ve ion mode)-269.2(M-H)⁺, 539.2(2M-H)⁺

Compound 7- M.P. – 287-289°C, UV- 225, 269, 352nm, IR- 3410, 2940, 2840, 1665, 1610cm⁻¹ H¹ NMR- 7.33(H-22, 62), 6.98(H-3), 6.56(H-8), 6.21(H-6), 3.9(CH₃O), C¹³ NMR- 182.4(C-4), 164.6(C-2), 164.2(C-7), 161.9(C-9), 157.8(C-5), 148.7(C-32,52), 140.3(C-42), 120.9(C-12), 104.8(C-22,62), 104.2(C-10), 104.1(C-3), 99.3(C-6), 94.7(C-8), 56.8(CH₃O), Hrms(-ve ion mode)- 329.0650(M-H)⁺

3. CONCLUSION

On the basis of the activity of these compounds it is recommended that juice of early stage triticum aestivum be given to patients suffering from Sick cell anemia, anxiety disorders and colitis cancer.

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