

Chemical Constituents of Rice Husks (*Oryza sativa* L.)

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Objective

Isolation and identification of constituents from rice husks (*Oryza sativa*) having bioactivity. To Comply with these objectives in this study attempts have been made to isolate and identify such constituents.

Materials and Methods

Rice varieties : Rice husks were collected from experimental farm of Konkuk University.

Methods : The husks of *Oryza sativa* was extracted with methanol at room temperature, after removal of solvents in vacuo the extract was partitioned with ethyl acetate and water and the water portion again extracted with n-butanol. So finally from methanol extract prepared ethyl acetate and n-butanol extract.

Results and Discussion

The husks of *Oryza sativa* has been the subject of very few investigations on the basis literature cited and there are mainly two or three reports on its constituents. More emphasis is now being given to the chemistry of rice husks to isolate and identify the bioactive constituents from the ethyl acetate and n-butanol extract of husks of *Oryza sativa*. Firstly, I discussed here about the ethyl acetate extract. After chromatography of ethyl acetate extract by silica gel and LiChroprep RP-18 (ODS silica gel) material afforded several compounds but those identified as : hentriacontane (M+ m/z 436), 1-tetratriacontanol (M+ m/z 494), momilactone-A (M+m/z314), momilactone-B (M+ m/z 330), β -sitosterol (M+ m/z 414), β -sitosterol- β -D-glucoside (M+ m/z [414-glucose]) and other compounds by its spectral analysis shows steroids, two compounds flavonoids and some compounds shows other class of compounds, whose structure elucidation/characterization and its final structure is now under investigation. The hentriacontane, 1-tetratriacontanol, β -sitosterol- β -D-glucoside are reported for the first time from rice husks. The spectral data of hentriacontane, 1-tetratriacontanol, β -sitosterol- β -D-glucoside are given in table-1. All the isolated compounds identified by 1D and 2D-NMR spectral methods viz: 1H, 13C, 1H-1H COSY, HSQC, HMQC, HMBC and aided by EI-MS, FAB-MS, IR and UV. All compounds for bioactivity is in progress.

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Table 1. Spectral data of hentriacontane, 1-tettratriacontanol, -sitosterol- -D-glucoside.

	Hentriacontane	1-tettratriacontanol	-sitosterol- -D-glucoside
IR	2920,1464,1215,76	3450, 2917, 1465, 1215, 75	3429,2933,1635,1376,107
Mass	436(2),408(15),380(22), 352(20),337 to 169 at the fragment of 14 (CH ₂),149(42),127(52), 113(70),99(78),85(100), 71(97), 57(96)	476[M+-H ₂ O](4.7), 448(23.4), 420(33.5),392(11.5),376(4.2), 362(5.6),321(5.7),306(6.4), 153(24.6),139(32.0),125(48.3), 111(74.4),97(100),71(61.7), 57(87.7).	414[M+-glucose](25),396[M+ H ₂ O] (100),382(42),367(9.4),329(9.9),303(9), 288(11.5),275(14.8),255(33.2),229(9.2), 213(20.5),199(8.4),173(9.4),159(19.5), 147(28.3),133(17.0),107(19.3),95(22.9), 81(25.3),55(20.8)
¹ H-NMR	δ 0.88(t,6H, 2 methyl), 1.25-1.31 (all 29 CH ₂).	0.88(3H,t,Me), 1.55-1.58(m, 6H,three CH ₂), 1.25-1.33 (60H,3 CH ₂), 3.64(OH)	H-1(1.13, 1H,m; 1.84, 1H,m), H-2(1.56, 1H,m; 1.95, 1H, m), H-3(3.51, 1H ,m), H-4(2.29,1H,dd,J=13.2,11.4Hz,H-4 2.28,1H,dd, J=13.2,4.8Hz,H-4 β) H-6(5.56, 1H, d), H-7(2.28,2H, m), H-8(1.56, 1H,dd),H-9(1.27,1H,m), H-11(1.15,1H,m; 1.81, 1H,m), H-12(1.15,1H,m; 1.81, 1H,m), H-14(1.46, 1H, m),H-15(1.50,2H, m), H-1(1.82,1H,m; 1.41, 1H,m), H-17(1.15,1H,m), H-18(0.63, 3H,s), H-19(0.94, 3H,s),H-20(1.71, 1H, m), H-21(0.92, 3H, d), H-22(1.30,2H,t), H-23(1.26,2H,t),H-24(1.35, 1H, m), H-25(1.35, 1H, m),H-26(1.78, 1H, m), H-27(0.91,3H,d),H-28(1.25,1H,m;1.38,1H), H-29(0.88,3H,d)3.90-4.08(glucose protons)
¹³ C-NMR	14.33(2-methyl), 32.15,29.92,29.88,29.59, 22. 91(all CH ₂)	63.34(C-OH), 14.33(Methyl), 33.04,32.15,29.92,29.88,29.84, 29.83,29.66,29.58,29.47,29.30, 25.96,24.98,22.91(all CH ₂)	C-1(37.31),C-2(31.57),C-3(71.80), C-4(42.19),C-5(140.72),C-6(121.71), C-7(31.87),C-8(31.87),C-9(50.10), C-10(36.48),C-11(21.11),C-12(39.81), C-13(42.33),C-14(56.79),C-15(24.32), C-16(28.26),C-17(56.11),C-18(11.87), C-19(19.39),C-20(36.17),C-21(18.82), C-22(33.95),C-23(26.13),C-24(45.85), C-25(29.18),C-26(19.84),C-27(19.07), C-28(23.09),C-29(12.32). Glucose carbons(71.3,62.5,77.4,71.5,77.5, 71.5,97.4)