**SUPPLEMENTARY DATA**

**Characterization data of newly synthesized hydrazone derivatives**

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 4**

IR: vmax3288, 2945, 1653 for CO of CONH, 1568, 1506, 1352, 1273, 1213, 1157, 840, 561 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.75(t, CH3), 6.40(s, CH), 3.20(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.21(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3), 6.78(s, CH), 6.24(s, CH), 6.15(s, CH), 5.1(s, OH), 4.9(s, OH), 6.34(s, H). MS: m/z, 384.1; elemental analysis [C21H24N2O5]: C 68.09%, H 7.09%, N 7.56%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 5**

IR: vmax3660, 2943, 2806, 1674 for CO of CONH, 1595, 1544, 1273, 1041, 842, 758, 636, 574 cm1. 1H NMR (400 MHz, DMSO-d6): δ 3.73(t, CH3), 6.40(s, CH), 3.20(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.20(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.60 (s, N=CH), 7.2(s, CH), 7.2(s, CH), 7.7(s, CH), 8.15(s, CH), 6.34(s, H). MS: m/z, 575.4; elemental analysis [C19H18I2N2O3]: C 40.58%, H 3.51%, N 4.97%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 11**

IR: vmax3460, 3361, 3221, 3041, 2993, 1658 for CO of CONH, 1625, 1589, 1490, 1448, 1317, 1226, 964, 869, 771, 678 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.72(t, CH3), 6.40(s, CH), 3.25(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.25(d, CH2), 3.07(d, CH2), 8.2(s, NH), 8.8(s, N=CH), 3.0(s, CH), 6.87(s, CH), 6.57(s, CH), 6.83(s, CH), 4.0(d NH2), 6.33(s, H). MS: m/z, 367.3; elemental analysis [C21H25N3O3]: C 71.26%, H 7.70%, N 11.85%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 18**

IR: vmax3431, 3211, 3045, 3016, 1653 for CO of CONH, 1573, 1504, 1467, 1292, 1251, 1157, 1056, 819, 682, 516 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.75(t, CH3), 6.40(s, CH), 3.22(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.18(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 7.4(s, CH), 6.8(s, CH), 7.1(s, CH), 6.8(s, CH), 5.0(s, OH), 6.33(s, H). MS: m/z, 339.1; elemental analysis [C19H20N2O4]: C 39.47%, H 3.47%, N 4.85%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 30**

IR: vmax3460, 3361, 3221, 1658 for CO of CONH, 1625, 1589, 1448, 1317, 1282, 1226, 869, 771, 678, 576 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.71(t, CH3), 6.40(s, CH), 3.25(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.24(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3) 6.48(s, CH), 6.96(s, CH), 6.28(s, CH), 4.0(d NH2), 6.34(s, H). MS: m/z, 366.3; elemental analysis [C21H25N3O3]: C 71.26%, H 7.70%, N 11.85%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 34**

IR: vmax3419, 3223, 3089, 2900, 2806, 1651 for CO of CONH, 1570, 1502, 1371, 1055, 815, 675, 514 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.73(t, CH3), 6.40(s, CH), 3.20(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.24(d, CH2), 3.07(d, CH2) 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3), 6.68(s, CH), 7.04(s, CH), 6.55(s, CH), 5.2(s, OH), 6.33(s, H). MS: m/z, 367.2; elemental analysis [C21H24N2O4]: C 69.92%, H 6.70%, N 8.55%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 35**

IR: vmax3089, 1680 for CO of CONH, 1608, 1519, 1419, 1342, 1242, 1101, 968, 910, 665, 582, 534 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.75(t, CH3), 6.40(s, CH), 3.20(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.24(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3), 7.51(s, CH), 7.47(s, CH), 8.01(s, CH), 6.34(s, H). MS: m/z, 396.2; elemental analysis [C21H23N3O5]: C 65.77%, H 6.54%, N 10.89%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 37**

IR: vmax3288, 3251, 3180, 3109, 1660 for CO of CONH, 1589, 1523, 1475, 815, 732 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.74(t, CH3), 6.40(s, CH), 3.22(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.23(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3) 6.87(s, CH), 6.41(s, CH), 6.41(s, CH), 4.2(d NH2), 6.32(s, H). MS: m/z, 366.1; elemental analysis [C21H25N3O3]: C 71.26%, H 7.70%, N 11.85%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 42**

IR: vmax3288, 2945, 1653 for CO of CONH, 1568, 1506, 1352, 1273, 1213, 1157, 1066, 840, 665, 561 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.73(t, CH3), 6.40(s, CH), 3.22(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.24(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3), 6.78(s, CH), 6.95(s, CH), 6.68(s, CH), 5.0(s, OH), 6.34(s, H). MS: m/z, 366.8; elemental analysis [C21H24N2O4]: C 69.92%, H 6.70%, N 8.55%.

**Spectral characterization (IR, 1H-NMR and Mass data) of compound 45**

IR: vmax3192, 3018, 2837, 1680 for CO of CONH, 1556, 1278, 1145, 1055, 810, 673, 514 cm-1. 1H NMR (400 MHz, DMSO-d6): δ 3.73(t, CH3), 6.40(s, CH), 3.22(d, CH2), 6.51(s, CH), 6.54(s, CH), 4.23(d, CH2), 3.07(d, CH2), 8.1(s, NH), 8.6(s, N=CH), 3.0(s, CH), 1.2(t, CH3), 7.12(s, CH), 7.21(s, CH), 7.08(s, CH), 6.34(s, H).MS: m/z, 351.2; elemental analysis [C21H24N2O3]: C 74.49%, H 7.19%, N 7.98%.