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SUPPORTING INFORMATION

Table of contents

- 1. General method for the synthesis of chalcone **1a-n**
- 2. Copies of NMR spectrum of 4a-n

1. General method for the synthesis of chalcone **1a-n**

The 3-acetyl-indole (1.59 g, 10 mmol) was dissolved in ethanol 100 mL, in a 250 mL round bottom flask equipped with condenser and inert atmosphere. Aldehyde (2 eq) and KOH (2 eq) in 10 mL water were added to the reaction mixture. The resulting reaction mixture were heated to reflux for 24 hours. Then the solvent was removed under reduced pressure and the crude product were subjected to column chromatography using DCM as an eluent. Finally the products **1a-n** were further purified by ether washing.

(E)-1-(1-H-Indol-3-yl)-3-phenylprop-2-en-1-one (1a)

Yellow powder; m.p. 219-221 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 7.20-7.24 (m, 2H, Ar-<u>H</u>), 7.40-7.50 (m, 4H, Ar-H), 7.62 (d, 1H, *J* = 15.4 Hz, COC<u>H</u>=CH), 7.82-7.85 (t, 3H, *J* = 8.04 Hz, Ar-<u>H</u> & COCH=C<u>H</u>), 8.33 (d, 1H, *J* = 7.32 Hz, Ar-<u>H</u>), 8.74 (s, 1H, Ar-<u>H</u>), 12.10 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.2, 117.7, 121.7, 121.8, 123.1, 124.6, 125.8, 128.4, 128.8, 129.7, 134.7, 135.2, 136.8, 139.5, 183.55; IR (KBr, cm⁻¹) v_{max}= 3414(NH), 3135(C-H), 2924, 2864, 2590, 1639(C=O),1513(C=C), 1442, 1150, 974, 745; [Anal. Calcd. for C₁₇H₁₃NO: C, 82.57; H, 5.30; N, 5.66; Found: C, 82.62; H, 5.28; N, 5.56]; LC/MS (ESI, *m/z*): 247.10 [M+] for 247.10 C₁₇H₁₃NO.

(*E*)-1-(1-*H*-Indol-3-yl)-3-(*p*-tolyl)prop-2-en-1-one (**1b**)

Yellow powder; m.p. 207-209 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 2.34 (s, 3H, C<u>H</u>₃), 7.19 – 7.26 (m, 4H, Ar-<u>H</u>), 7.47 (d, 1H, *J* = 13.92 Hz,COC<u>H</u>=CH), 7.58 (d, 1H, *J* = 15.4 Hz, Ar-<u>H</u>), 7.65 – 7.79 (t, 3H, *J* = 8.08 Hz, Ar-<u>H</u> & COCH=C<u>H</u>), 8.31 (d, 1H, *J* = 6.60 Hz, Ar-<u>H</u>), 8.70 (s, 1H, Ar-<u>H</u>), 12.09 (s, 1H, N<u>H</u>);¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.2, 117.7, 121.7, 121.9, 123.2, 123.6, 125.9, 128.4, 129.5, 132.5, 134.5, 134.7, 136.8, 139.6, 183.7; IR (KBr, cm⁻¹) v_{max}= 3157(NH), 2862(C-H), 2361, 1641(C=O),1568(C=C), 1517, 1441, 1147, 973; [Anal. Calcd. for C₁₈H₁₅NO: C, 261.12; H, 5.79; N, 5.36; Found: C, 261.10; H, 5.91; N, 5.35]; LC/MS (ESI, *m*/*z*): 216.10 [M+] for 216.12 C₁₈H₁₅NO.

(*E*)-3-(4-Chlorophenyl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (**1c**)

Yellow powder; m.p: 237-239°C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 7.20 – 7.25 (m, 3H, Ar-<u>H</u>), 7.45 – 7.53 (m, 4H, Ar-<u>H</u>), 7.61 (d, 1H, *J* = 15.4 Hz, COC<u>H</u>=CH), 7.84-7.90 (m, 2H, Ar-<u>H</u> & COCH=C<u>H</u>), 8.33 (d, 1H, *J* = 8.08 Hz, Ar-<u>H</u>), 8.74 (s, 1H, Ar-<u>H</u>), 12.13 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.2, 117.7, 121.7, 121.9, 123.2, 124.3, 125.4, 125.8, 128.8, 130.1, 134.2, 135.0, 136.9, 138.1, 183.4; IR (KBr, cm⁻¹) v_{max}=

3144(NH), 2925(C-H), 2862, 2365, 1638(C=O),1570(C=C), 1516, 1440, 1150, 976, 749; [Anal. Calcd. for C₁₇H₁₂ClNO: C, 72.47; H, 4.29; N, 4.97; Found: C, 72.38; H, 4.30; N, 4.87]; LC/MS (ESI, *m/z*): 281.10 [M+] for 281.06 C₁₇H₁₂ClNO.

(*E*)-3-(2,4-Dichlorophenyl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (1d)

Yellow powder; m.p: 244-247°C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 7.19-7.30 (m, 2H, Ar-<u>H</u>), 7.51 (t, 2H, *J* = 8.84 Hz, Ar-<u>H</u>), 7.7 (s, 1H, Ar-<u>H</u>), 7.72 – 7.89 (m, 2H, Ar-<u>H</u> & COC<u>H</u>=CH), 8.21 (d, 1H, *J* = 8.08 Hz, COCH=C<u>H</u>), 8.31 (d, 1H, *J* = 7.36 Hz, Ar-<u>H</u>), 8.75 (s, 1H, Ar-<u>H</u>), 12.10 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.42, 117.6, 121.6, 122.0, 123.3, 126.0, 127.8, 128.2, 129.4, 132.0, 133.0, 134.7, 134.8, 135.6, 135.7, 137.2, 182.8; IR (KBr, cm⁻¹) v_{max}= 3435(NH), 2932(C-H), 2869, 2594, 1636(C=O), 1574(C=C), 1440, 1153, 1047, 968; [Anal. Calcd. for C₁₇H₁₁Cl₂NO: C, 64.58; H, 3.51; N, 4.43; Found: C, 64.59; H, 3.53; N, 4.42]; LC/MS (ESI, *m/z*): 315.10 [M+] for 315.02 C₁₇H₁₁Cl₂NO.

(*E*)-1-(1-*H*-Indol-3-yl)-3-(4-methoxyphenyl)prop-2-en-1-one (1e)

Yellow powder; m.p: 168-172 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 3.37 (s, 3H, OC<u>H</u>₃), 7.01 (d, 2H, *J* = 8.8 Hz, Ar-<u>H</u>), 7.02 – 7.24 (m, 2H, Ar-<u>H</u>), 7.49 (d, 1H, *J* = 7.32 Hz, COC<u>H</u>=CH), 7.59 (d, 1H, *J* = 16.2 Hz, Ar-<u>H</u>), 7.70 (d, 1H, *J* = 15.4 Hz, COCH=C<u>H</u>), 7.80(d, 2H, *J* = 8.8 Hz, Ar-<u>H</u>), 8.33 (d, 1H, *J* = 6.6 Hz, Ar-<u>H</u>), 8.69 (s, 1H, Ar-<u>H</u>), 12.06 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 55.3, 112.1, 114.3, 117.8, 121.8, 122.3, 123.0, 126, 127.8, 130.1, 134.4, 136.8, 139.4, 160.7, 183.7; IR (KBr, cm⁻¹) v_{max}= 3100(NH), 2866(C-H), 2372, 1715(C=O), 1514(C=C), 1438, 1249, 1159, 976, 746; [Anal. Calcd. for C₁₈H₁₅NO₂: C, 77.96; H, 5.45; N, 5.05; Found: C, 77.90; H, 5.41; N, 5.11]; LC/MS (ESI, *m*/*z*): 277.10 [M+] for 277.11 C₁₈H₁₅NO₂.

(*E*)-3-(4-Bromophenyl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (**1f**)

Yellow powder; m.p: 235-238 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 7.22 – 7.25 (m, 2H, Ar-<u>H</u>), 7.50 (d, 1H, *J* = 8.04 Hz, Ar-<u>H</u>), 7.59 (d, 1H, *J* = 15.4 Hz, COC<u>H</u>=CH), 7.65 (d, 2H, *J* = 8.8 Hz, Ar-<u>H</u>), 7.81-7.89 (m, 3H, Ar-<u>H</u> & COCH=C<u>H</u>), 8.33 (d, 1H, *J* = 7.36 Hz, Ar-<u>H</u>), 8.75 (s, 1H, Ar-<u>H</u>), 12.13 (s, 1H, N<u>H</u>);¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.2, 117.7, 121.6, 121.8, 123.0, 125.5, 125.8, 130.2, 131.8, 134.5, 134.6, 135.1, 136.9, 138.2, 183.3; IR (KBr, cm⁻¹) v_{max}= 3215(NH), 2929(C-H), 1643(C=O), 1576(C=C), 1517, 1443,

1144, 970, 734; [Anal.Calcd. for C₁₇H₁₂BrNO: C,62.60;H,3.71; N, 4.21; Found: C,62.65;H,3.81; N, 4.19]; LC/MS (ESI, *m/z*): 325.10[M+] for 325.01 C₁₇H₁₂BrNO.

(*E*)-3-(4-Fluorophenyl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (**1g**)

Yield (84%); Yellow powder; m.p: 204-206°C; ¹H-NMR (400 MHz, DMSO- d_6) δ : 7.22 – 7.29 (m, 3H, Ar-<u>H</u>), 7.51(d, 1H, J = 8.8 Hz, Ar-<u>H</u>), 7.64 (t, 1H, J = 15 Hz, COC<u>H</u>=CH), 7.78 – 7.83 (m, 2H, Ar-<u>H</u> & COCH=C<u>H</u>), 7.91 – 7.94 (m 2H, Ar-<u>H</u>), 8.35 (d, 1H, J = 7.32 Hz, Ar-<u>H</u>), 8.74 (s, 1H, Ar-<u>H</u>), 12.13 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO- d_6) δ : 112.2, 114.7, 115.7, 116.0, 117.7, 121.8, 121.9, 123.2, 124.6, 125.9, 130.6, 130.7, 131.9, 134.8, 136.9, 138.3, 161.5, 164.4, 183.6; IR (KBr, cm⁻¹) v_{max}= 3409(NH), 2867(C-H), 2979, 1641(C=O), 1514(C=C), 1439, 1237, 1009, 774, 507; [Anal. Calcd. for C₁₇H₁₂FNO: C, 76.97; H, 4.56; N, 5.28; Found: C, 76.98; H, 4.44; N, 5.32]; LC/MS (ESI, m/z): 265.09[M+] for 265.10 C₁₇H₁₂FNO.

(E)-3-(3-Fluorophenyl)-1-(1-H-indol-3-yl)prop-2-en-1-one (1h)

Yellow powder; m.p: 224-226°C; ¹H-NMR (400 MHz, DMSO- d_6) δ : 7.20 – 7.38 (m, 3H, Ar-<u>H</u>), 7.42 – 7.56 (m, 1H, COC<u>H</u>=CH), 7.60 – 7.72 (m, 3H, Ar-<u>H</u> & COCHC<u>H</u>), 7.81 (d, 1H, J = 3.2 Hz, Ar-<u>H</u>), 7.91 (d, 1H, J = 2.4 Hz, Ar-<u>H</u>), 8.35 (s, 1H, Ar-<u>H</u>), 8.75 (s, 1H, Ar-<u>H</u>), 12.15 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO- d_6) δ : 112.2, 114.0, 114.2, 115.7, 115.9, 116.3, 116.5, 117.8, 121.8, 121.9, 123.2, 125.2, 125.8, 126.0, 130.7, 135.1, 136.9, 138.1, 161.4, 163.8, 183.3; IR (KBr, cm⁻¹) v_{max}= 3433(NH), 3047(C-H), 2866, 1933, 1642(C=O), 1562(C=C), 1440, 1153, 1008, 879; [Anal. Calcd. for C₁₇H₁₂FNO: C, 76.97; H, 4.56; N, 5.28; Found: C, 76.80; H, 4.09; N, 5.25]; LC/MS (ESI, *m/z*): 265.10[M+] for 265.01 C₁₇H₁₂FNO.

(*E*)-1-(1-*H*-Indol-3-yl)-3-(*m*-tolyl)prop-2-en-1-one (1i)

Yellow powder; m.p: 197-199 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 2.35 (s, 3H, C<u>H</u>₃), 7.18 – 7.25 (m, 2H, Ar-<u>H</u>), 7.31 (t, 1H, *J* = 8.04 Hz, Ar-<u>H</u>), 7.49 (d, 1H, *J* = 6.60 Hz, Ar-<u>H</u>), 7.57 (s, 1H, Ar-<u>H</u>), 7.61 (d, 2H, *J* = 5.8 Hz, Ar-<u>H</u> &COC<u>H</u>=CH), 7.67 (s, 1H,Ar-H), 7.81 (d, 1<u>H</u>, *J* = 15.4 Hz, COCH=C<u>H</u>), 8.33 (d, 1H, *J* = 8.8 Hz, Ar-<u>H</u>), 8.73 (d, 1H, *J* = 2.9 Hz, Ar-<u>H</u>), 12.10 (s, 1H, N<u>H</u>);¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 20.9, 112.1, 117.7, 121.7, 121.8, 123.0, 124.4, 125.7, 125.8, 128.6, 128.7, 130.5, 134.7, 135.1, 136.8, 138.0, 139.6, 183.6; IR (KBr, cm⁻¹) v_{max}= 3411(NH), 2922(C-H), 1641(C=O), 1561(C=C), 1439, 1154, 1006, 746; [Anal. Calcd. for C₁₈H₁₅NO: C, 82.73; H, 5.79; N, 5.36; Found: C, 82.75; H, 5.91; N, 5.49]; LC/MS (ESI, *m*/*z*): 261.30[M+] for 261.32 C₁₈H₁₅NO.

(*E*)-3-(3-Bromophenyl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (**1j**)

Yellow powder; m.p: 228-230°C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 7.19 – 7.26 (m, 2H, Ar-<u>H</u>), 7.39 (t, 1H, *J* = 8.08 Hz, Ar-<u>H</u>), 7.50 (d, 1H, *J* = 8.08 Hz, Ar-<u>H</u>), 7.57 – 7.60 (m, 2H, Ar-<u>H</u> & COC<u>H</u>=CH), 7.80 (d, 1H, *J* = 8.08 Hz, Ar-<u>H</u>), 7.89 (d, 1H, *J* = 15.4 Hz, COCH=C<u>H</u>), 8.16 (s, 1H, Ar-<u>H</u>), 8.31 (d, 1H, *J* = 6.60 Hz, Ar-<u>H</u>), 8.78 (s, 1H, Ar-<u>H</u>), 12.14 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 112.2, 117.7, 121.7, 121.9, 122.3, 123.1, 125.8, 126.1, 127.8, 130.2, 130.8, 132.2, 135.1, 136.8, 137.7, 137.8, 183.2; IR (KBr, cm⁻¹) v_{max}= 3386(NH), 3248(C-H), 2958, 2867, 1716, 1618(C=O),1520(C=C), 1470,1422, 1243, 1137, 1153, 748, 698; [Anal. Calcd. for C₁₇H₁₂BrNO: C, 62.60; H, 3.71; N, 4.29; Found: C, 62.53; H, 3.70; N, 4.30]; LC/MS (ESI, *m/z*): 325.1[M+] for 325.01 C₁₇H₁₂BrNO.

(*E*)-1-(1-*H*-Indol-3-yl)-3-(4-(trifluoromethyl)phenyl)prop-2-en-1-one (1k)

Yellow powder; m.p: 240-242 °C; ¹H-NMR (400 MHz, DMSO- d_6) δ : 7.23 (t, 2H, J = 5.88 Hz, Ar-<u>H</u>), 7.50 (d, 1H, J = 6.6 Hz, Ar-<u>H</u>), 6.68 (d, 1H, J = 15.4 Hz, COC<u>H</u>=CH), 7.7 (d, 2H, J = 8.04 Hz, Ar-<u>H</u>), 7.97 (d, 1H, J = 15.4 Hz, COCH=C<u>H</u>), 8.06 (d, 2H, J = 7.36 Hz, Ar-<u>H</u>), 8.33 (d, 1H, J = 6.96 Hz, Ar-<u>H</u>), 8.78 (s, 1H, Ar-<u>H</u>), 12.16 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO- d_6) δ : 112.2, 117.7, 121.7, 121.9, 123.2, 125.5, 125.8, 127.3, 128.9, 129.6, 135.2, 136.9,137.6, 139.5, 183.1; IR (KBr, cm⁻¹) v_{max}= 3128(NH), 3044(C-H), 2870, 1644(C=O), 1519(C=C), 1439, 1336, 1154, 794, 753; [Anal. Calcd. for C₁₈H₁₂F₃NO: C, 68.57; H, 3.84; N, 4.44; Found: C, 68.75; H, 3.91; N, 4.49]; LC/MS (ESI, m/z): 315.10 [M+] for 315.0 C₁₈H₁₂F₃NO.

(*E*)-1-(1-*H*-Indol-3-yl)-3-(thiophen-2-yl)prop-2-en-1-one (11)

Yellow powder; m.p: 209-211°C; ¹H-NMR (400 MHz, DMSO- d_6) δ : 7.14 – 7.25 (t, 1H, J = 4.40 Hz, Ar-<u>H</u>), 7.18 – 7.25 (m, 2H, Ar-<u>H</u>), 7.47 – 7.51 (m, 2H, Ar-<u>H</u> & COC<u>H</u>=CH), 7.58 (d, 1H, J = 3.64 Hz, Ar-<u>H</u>), 7.69 (d, 1H, J = 5.12 Hz, Ar-<u>H</u>), 7.79 (d, 1H, J = 15.4 Hz, COCH=C<u>H</u>), 8.32 (d, 1H, J = 6.6 Hz, Ar-<u>H</u>), 8.65 (s, 1H, Ar-<u>H</u>), 12.09 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO- d_6) δ :112.1, 117.4, 121.7, 121.8, 123.0, 123.2, 125.8, 128.4, 128.8, 131.1, 132.4, 134.5, 136.8, 140.2, 183.1; IR (KBr, cm⁻¹) v_{max}= 3432(NH), 3094(C-H), 2921, 1632(C=O), 1581(C=C), 1491, 1198, 428; [Anal. Calcd. for C₁₅H₁₁NOS: C,

71.12; H, 4.38; N, 5.53; Found: C, 71.21; H, 4.43; N, 5.49]; LC/MS (ESI, *m/z*): 253.10 [M+] for 253.06 C₁₅H₁₁NOS.

(*E*)-3-(Furan-2-yl)-1-(1-*H*-indol-3-yl)prop-2-en-1-one (**1m**)

Yellow powder; m.p: 157-159 °C; ¹H-NMR (400 MHz, DMSO- d_6) δ : 6.64 (t, 1H, J = 5.12 Hz, Ar-<u>H</u>), 6.97 (d, 1H, J = 3.64 Hz, Ar-<u>H</u>), 7.18 – 7.23 (m, 2H, Ar-<u>H</u>), 7.44 – 7.53 (m, 3H, Ar-<u>H</u> & COCH=C<u>H</u>), 7.84 (s, 1H, Ar-<u>H</u>), 8.32 (d, 1H, J = 16.12 Hz, COC<u>H</u>=CH), 8.61 (d, 1H, J = 2.96 Hz, Ar-<u>H</u>), 12.08 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO- d_6) δ : 112.1, 112.7, 114.8, 117.5, 121.7, 121.75, 121.8, 123.1, 125.8, 126.6, 134.3, 136.8, 145.1, 151.5, 183.1; IR (KBr, cm⁻¹) v_{max}= 3434(NH), 3041(C-H), 2917, 1621(C=O), 1548(C=C), 1428, 1155, 771, 452; [Anal. Calcd. for C₁₅H₁₁NO₂: C, 75.94; H, 4.67; N, 5.96; Found: C, 75.90; H, 4.91; N, 5.49]; LC/MS (ESI, m/z): 237.10[M+] for 237.08 C₁₅H₁₁NO₂.

(E)-1-(1-H-Indol-3-yl)-3-(3,4,5-trimethoxyphenyl)prop-2-en-1-one (1n)

Yellow powder; m.p: 217-219 °C; ¹H-NMR (400 MHz, DMSO-*d*₆) δ : 3.68 (s, 3H, OC<u>H</u>₃), 3.87 (s, 6H, 2xOC<u>H</u>₃), 7.17 (s, 3H, Ar-<u>H</u>), 7.22 (t, 1H, *J* = 7.32 Hz, Ar-<u>H</u>), 7.50 (d, 1H, *J* = 7.32 Hz, Ar-<u>H</u>), 7.58 (d, 1H, *J* = 15.4 Hz, COCH=C<u>H</u>), 7.74 (d, 1H, *J* = 15.4 Hz, COC<u>H</u>=CH), 8.34 (d, 1H, *J* = 7.32 Hz, Ar-<u>H</u>), 8.73 (s, 1H, Ar-<u>H</u>), 12.10 (s, 1H, N<u>H</u>); ¹³C-NMR (100 MHz, DMSO-*d*₆) δ : 56.1, 60.1, 106.0, 112.2, 121.7, 121.7, 123.0, 123.8, 125.8, 130.7, 134.6, 139.0, 139.9, 153.0, 183.2; IR (KBr, cm⁻¹) v_{max}= 3214(NH), 3115(C-H), 2830, 1641(C=O), 1582(C=C), 1506, 1421, 1266, 1185, 1128, 969, 575; [Anal. Calcd. for C₂₀H₁₉NO₄: C, 71.20; H, 5.68; N, 4.15; Found: C, 71.77; H, 5.51; N, 4.44]; LC/MS (ESI, *m*/*z*): 337.10[M+] for 337.13 C₂₀H₁₉NO₄.









































































