Supporting Information

New 2-Arylpyrazolo[4,3-*c*]quinoline Derivatives as Potent and Selective Human A_3 Adenosine Receptor Antagonists.

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Contents of SI: Contains spectroscopic data (S2-S7) and elemental analysis data (S8) for the synthesized compounds.

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Experimental Section

3-(2-Nitro-phenyl)-1-phenyl-1*H*-pyrazole-4-carbaldehyde (3a). Mp: 145-146 °C. ^{1}H NMR ($CDCl_3$): δ 7.39-7.70 (m, 8H), 8.13 (d, *J* = 9 Hz, 1H), 8.51 (s, 1H), 9.86 (s, 1H). Anal. ($C_{16}H_{11}N_3O_3$): C, H, N.

1-(4-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3b). Mp: 148-149 °C. ^{1}H NMR (DMSO-d_6) δ 7.65 (d, *J* = 7.4 Hz, 2H), 7.77-7.82 (m, 3H), 7.98 (d, *J* = 7.6 Hz, 2H), 8.14 (d, *J* = 7.6 Hz, 1H), 9.43 (s, 1H), 9.84 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O_3$): C, H, N.

3-(2-Nitro-phenyl)-1-*p*-tolyl-1*H*-pyrazole-4-carbaldehyde (3c). Mp: 169-170 °C. ^{1}H NMR ($CDCl_3$) δ 2.41 (s, 3H), 7.29 (d, *J* = 7.6 Hz, 2H), 7.58-7.71 (m, 5H), 8.12 (d, *J* = 7.6 Hz, 1H). 8.46 (s, 1H), 9.85 (s, 1H). Anal. ($C_{17}H_{13}N_3O_3$): C, H, N.

1-(4-Methoxy-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3d). Mp: 173-175 °C. ^{1}H NMR ($CDCl_3$) δ 3.73 (s, 3H), 7.32 (d, *J* = 7.6 Hz, 2H), 7.72-7.81 (m, 4H), 8.40 (s, 1H), 8.75 (s, 1H), 8.83 (s, 1H), 9.85 (s, 1H). Anal. ($C_{17}H_{13}N_3O_4$): C, H, N.

1-(3-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3e). Mp: 200-202°C. ^{1}H NMR ($CDCl_3$) δ 7.35-7.45 (m, 2H), 7.63-7.67 (m, 4H), 7.83 (s, 1H), 8.20 (d, *J* = 7.4 Hz, 1H), 8.51 (s, 1H), 9.86 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O_3$): C, H, N.

1-(3,4-Dichloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3f). Mp: 183-186 °C. ^{1}H NMR ($CDCl_3$) δ 7.59-7.70 (m, 5H), 7.93 (s, 1H), 8.13 (d, *J* = 7.8 Hz, 1H), 8.49 (s, 1H), 9.85 (s, 1H). Anal. ($C_{16}H_9Cl_2N_3O_3$): C, H, N.

1-(4-Fluoro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3g). Mp: 158-160 °C. ^{1}H NMR ($CDCl_3$) δ 7.18 (d, *J* = 7.6 Hz, 2H), 7.62-7.76 (m, 4H), 8.13 (d, *J* = 7.8 Hz, 2H), 8.45 (s, 1H), 9.86 (s, 1H). Anal. ($C_{16}H_{10}FN_3O_3$): C, H, N.

1-(2-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3h). Mp: 160-164 °C. ^{1}H NMR ($CDCl_3$) δ 7.42-7.45 (m, 2H), 7.56-7.68 (m, 5H), 8.18 (d, *J* = 7.8 Hz, 1H), 8.48 (s, 1H), 9.89 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O_3$): C, H, N

1-(4-Butyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3i). Mp: 100-103 °C. ^{1}H NMR ($CDCl_3$) δ 0.88 (t, 3H), 1.30(m, 2H), 1.52 (m, 2H), 2.60 (t, 2H), 7.21 (m, 2H), 7.54-7.58 (m, 5H), 8.05(d, *J* = 8.4 Hz, 1H), 8.40 (s, 1H), 9.79 (s, 1H). Anal. ($C_{20}H_{19}N_3O_3$): C, H, N.

1-(4-Ethyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3j): Mp: 119-124 °C. ^{1}H NMR ($CDCl_3$) δ 1.28(t, *J* = 7.4 Hz, 3H), 2.70 (q, *J* = 7.4 Hz, 2H), 7.33(d, *J* = 8.8 Hz, 2H), 7.61-7.72 (m, 5H), 8.12 (d, *J* = 7.8 Hz, 1H), 8.47 (s, 1H), 9.86 (s, 1H). Anal. ($C_{18}H_{15}N_3O_3$): C, H, N.

1-(4-Isopropyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carbaldehyde (3k). Oil. ^{1}H NMR(DMSO-d_6) δ 1.22-1.29 (m, 6H), 2.98-3.00 (m, 1H), 7.34-7.36 (d, *J* = 8 Hz, 2H), 7.62-7.70(m, 5H), 8.15-8.17 (d, *J* = 8 Hz, 1H), 8.47 (s, 1H), 9.86 (s, 1H). Anal. ($C_{19}H_{17}N_3O_3$): C, H, N.

3-(2-Nitro-phenyl)-1-phenyl-1*H*-pyrazole-4-carboxylic acid (4a). Mp: 155 °C dec. ^{1}H NMR (DMSO-d_6) δ 7.41 (d, *J* = 7.2 Hz, 1H), 7.50-8.16 (m, 8H), 9.12 (s, 1H), 12.73 (bs, 1H). Anal. ($C_{16}H_{11}N_3O_4$): C, H, N.

1-(4-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4b). Mp: 228-230 °C. ^{1}H NMR (DMSO) δ 7.65 (d, *J* = 7.8 Hz, 2H), 7.77-7.82 (m, 3H), 7.95-8.00 (d, *J* = 8 Hz, 2H), 8.14 (d, *J* = 7.2 Hz, 1H), 9.43 (s, 1H), 12.81 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O_3$): C, H, N.

3-(2-Nitro-phenyl)-1-*p*-tolyl-1*H*-pyrazole-4-carboxylic acid (4c). Mp: 206-209 °C. ^{1}H NMR (DMSO) δ 2.52 (s, 3H), 7.06 (s, 2H), 7.15-7.18 (m, 2H), 7.32-7.36 (m, 3H), 7.78-7.81 (s, 1H), 8.82 (s, 1H), 12.55 (bs, 1H). Anal. ($C_{17}H_{13}N_3O_3$): C, H, N.

1-(4-Methoxy-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4d). Mp: 226-229 °C. ^{1}H NMR (DMSO) δ 3.83 (s, 3H), 7.15(d, *J* = 7.8 Hz, 2H), 7.75-7.85 (m, 5H), 8.18(d, *J* = 8 Hz, 1H), 9.02 (s, 1H), 12.70 (bs, 1H). Anal. ($C_{17}H_{13}N_3O_4$): C, H, N.

1-(3-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4e). Mp: 194-197 °C. ^{1}H NMR (DMSO-d_6) δ 7.45-7.47 (d, *J* = 7.6 Hz, 1H), 7.55-7.73, 3H), 7.82 (d, *J* = 7.4 Hz, 1H), 7.96 (d, *J* = 7.6 Hz, 1H), 8.10-8.16 (m, 2H), 9.21 (s, 1H), 12.78 (bs, 1H). Anal. ($C_{16}H_{10}ClN_3O_4$): C, H, N.

1-(3,4-Dichloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4f). Mp: 238-242 °C. ^{1}H NMR (DMSO-d_6) δ 7.70-7.83 (m, 4H), 7.99 (d, *J* = 8 Hz, 1H), 8.15 (d, *J* = 7.8 Hz, 1H), 8.32 (s, 1H), 9.24 (s, 1H), 12.52 (bs, 1H). Anal. ($C_{16}H_9Cl_2N_3O_3$): C, H, N.

1-(4-Fluoro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4g). Mp: 211 °C. ^{1}H NMR (DMSO-d_6) δ 7.35-7.44 (t, *J* = 7.6 Hz, 2H), 7.72-7.94 (m, 3H), 7.97-8.04 (m, 2H), 8.14 (d, *J* = 7.6 Hz, 1H), 9.10 (s, 1H), 12.65 (bs, 1H). Anal. ($C_{16}H_{10}FN_3O_3$): C, H, N.

1-(2-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4h). Mp: 237-240 °C. ^{1}H NMR (DMSO-d_6) δ 7.55-7.81 (m, 6H), 7.80 (t, *J* = 7.6 Hz, 1H), 8.12 (d, *J* = 7.8 Hz, 1H), 8.74 (s, 1H), 12.62 (bs, 1H). Anal. ($C_{16}H_{10}ClN_3O_3$): C, H, N.

1-(4-Butyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4i). Mp: 163-165 °C. ^{1}H NMR ($CDCl_3$) δ 0.83 (t, 3H), 1.28-1.35 (m, 2H), 1.48-1.60 (m, 2H), 2.56-2.64 (t, 2H), 7.20 (d, *J* = 8.4 Hz, 2H), 7.54-7.58 (m, 5H), 8.05 (d, *J* = 8 Hz, 1H), 8.40 (s, 1H), 12.48 (bs, 1H). Anal. ($C_{20}H_{19}N_3O_3$): C, H, N.

1-(4-Ethyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4j). Mp: 211-215 °C. ^{1}H NMR (DMSO-d_6) 1.27(t, *J* = 7.6 Hz, 3H), 2.71 (q, *J* = 7.4 Hz, 2H), 7.32 (d, *J* = 8.2Hz, 2H), 7.63-7.67 (m, 5H), 8.14 (d, *J* = 7.2 Hz, 1H), 8.50 (s, 1H), 12.52 (bs, 1H). Anal. ($C_{18}H_{15}N_3O_3$): C, H, N.

1-(4-Isopropyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid (4k). Mp: 168-171 °C. ^{1}H NMR (DMSO-d_6) 1.27-1.29 (m, 6H), 2.98-3.00 (m, 1H), 7.34 (d, *J* = 8 Hz, 2H), 7.65-7.67 (m, 5H), 8.15-8.17 (d, *J* = 7.8 Hz, 1H), 8.50 (s, 1H), 12.63 (bs, 1H). Anal. ($C_{19}H_{17}N_3O_3$): C, H, N.

3-(2-Nitro-phenyl)-1-phenyl-1*H*-pyrazole-4-carboxylic acid ethyl ester (5a). Mp: 138-140 °C. ^{1}H NMR (DMSO-d_6) δ 1.11 (t, *J* = 7.2 Hz 3H), 4.09 (q, *J* = 7.2 Hz, 2H) 7.51-8.15 (m, 9H), 9.20 (s, 1H). Anal. ($C_{18}H_{15}N_3O_4$): C, H, N.

1-(4-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5b). Mp: 170-173 °C. ^{1}H NMR (DMSO) δ 1.18(t, *J* = 7.2 Hz, 3H), 4.18 (q, *J* = 7.2 Hz, 2H), 7.65(d, *J* = 7.8 Hz, 2H), 7.77-7.82 (m, 3H), 7.99 (d, *J* = 8 Hz, 2H), 8.14 (d, *J* = 7.6 Hz, 1H), 9.43 (s, 1H). Anal. ($C_{18}H_{14}ClN_3O_4$): C, H, N.

3-(2-Nitro-phenyl)-1-*p*-tolyl-1*H*-pyrazole-4-carboxylic acid ethyl ester (5c). Mp: 150-154 °C. ^{1}H NMR ($CDCl_3$) δ 1.20 (t, *J* = 7.2 Hz, 3H), 2.40 (s, 3H), 4.151 (q, *J* = 7.2 Hz, 2H), 7.28(d, *J* = 7.6 Hz, 2H), 7.56–7.75 (m, 5H), 8.20 (d, *J* = 7.6 Hz, 1H), 8.47 (s, 1H). Anal. ($C_{19}H_{17}N_3O_4$): C, H, N.

1-(4-Methoxy-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5d). Mp: 149-152 °C. ^{1}HNMR ($CDCl_3$) δ 1.258 (t, *J* = 7.2 Hz, 3H), 3.83 (s, 3H), 4.32 (q, *J* = 7.2 Hz, 2H), 7.13 (d, *J* = 9 Hz, 2H), 7.38–7.41 (m, 1H), 7.60 (d, *J* = 3.8 Hz, 2H), 7.99 (d, *J* = 8.8 Hz, 2H), 8.24(d, *J* = 7.6 Hz, 1H), 9.3 (s, 1H). Anal. ($C_{19}H_{17}N_3O_5$): C, H, N.

1-(3-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5e). Mp: 125-127 °C. ^{1}H NMR ($CDCl_3$) δ 1.18 (t, *J* = 7Hz, 3H), 4.18 (q, *J* = 7 Hz, 2H), 7.40-7.70 (m, 6H), 7.83-7.84 (m, 1H), 8.14-8.18 (d, *J* = 7.2 Hz, 1H), 8.49 (s, 1H). Anal. ($C_{18}H_{14}ClN_3O_4$): C, H, N.

1-(3,4-Dichloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5f). Mp: 185-188 °C. ^{1}H NMR ($CDCl_3$) δ 1.18 (t, *J* = 7 Hz, 3H), 4.18 (q, *J* = 7Hz, 2H), 7.58-7.68 (m, 5H), 7.95-7.96 (d, 1H), 8.14-8.19 (d, 1H), 8.47 (s, 1H). **Anal. (**$C_{18}H_{13}Cl_2N_3O_4$): C, H, N.

1-(4-Fluoro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5g). Mp: 157-159 °C. ^{1}H NMR (DMSO-d_6) δ 1.12 (t, *J* = 7 Hz, 3H), 4.16 (q, *J* = 7. Hz, 2H), 7.40 (t, *J* = 8.8 Hz, 2H), 7.71-7.94 (m, 3H), 7.99-8.03 (m, 2H), 8.16 (d, *J* = 8 Hz, 1H), 9.19 (s, 1H). Anal. ($C_{18}H_{14}FN_3O_4$): C, H, N.

1-(2-Chloro-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5h). Mp: 103-105 °C. ^{1}H NMR ($CDCl_3$) δ 1.19 (t, *J* = 7.2 Hz, 3H), 4.19 (q, *J* = 7.2 Hz, 2H), 7.38-7.70 (m, 7H), 8.13-8.17 (d, *J* = 7.2 Hz, 1H), 8.49 (s, 1H). Anal. ($C_{18}H_{14}ClN_3O_4$): C, H, N.

1-(4-Butyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5i). Mp: 109-112 °C. ^{1}H NMR ($CDCl_3$) δ 0.92 (t, *J* = 7.2 Hz, 3H), 1.19(t, 3H), 1.36 (m, 2H), 1.62 (m, 2H), 2.69 (t, 2H), 4.19(q, *J* = 7.2 Hz, 2H), 7.26 (d, *J* = 10 Hz, 2H), 7.63-7.69 (m, 5H), 8.15(d, *J* = 8.6 Hz, 1H), 8.46 (s, 1H). Anal. ($C_{22}H_{23}N_3O_4$): C, H, N.

1-(4-Ethyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5j). Mp:124-127 °C. ^{1}H NMR ($CDCl_3$) 1.18 (t, *J* = 7.2 Hz, 3H), 1.27(t, *J* = 7.6 Hz, 3H), 2.70 (q, *J* = 7.2 Hz, 2H), 4.17 (q, *J* = 7.2 Hz, 2H), 7.32 (d, *J* = 8.4 Hz, 2H), 7.60-7.69 (m, 5H), 8.15 (d, *J* = 8.8 Hz, 1H), 8.49 (s, 1H). Anal. ($C_{20}H_{19}N_3O_4$): C, H, N.

1-(4-Isopropyl-phenyl)-3-(2-nitro-phenyl)-1*H*-pyrazole-4-carboxylic acid ethyl ester (5k). Oil. ^{1}H NMR ($CDCl_3$) 1.18 (t, *J* = 7.6 Hz, 3H), 1.26-1.29 (m, 6H), 2.30 (q, *J* = 7.4 Hz, 1H), 4.15-4.17 (q, *J* = 7.2 Hz, 2H), 7.34 (d, *J* = 8 Hz, 2H), 7.65-7.67 (m, 5H), 8.16(d, *J* = 8 Hz, 1H), 8.50 (s, 1H). Anal. ($C_{21}H_{21}N_3O_4$): C, H, N.

2-Phenyl-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6a). Mp: 280-282 °C**.** ^{1}H NMR (DMSO-d_6) 7.25-7.58 (m, 6H), 8.15-8.18 (m, 3H), 9.27 (s, 1H), 11.26 (s, 1H). Anal. ($C_{16}H_{11}N_3O$): C, H, N.

2-*p*-Tolyl-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6c). Mp: 288-289 °C. ^{1}H NMR (DMSO-d_6) 2.38 (s, 3H), 7.25 (t, *J* = 7.6 Hz, 1H), 7.36-7.48 (m, 4H), 7.98 (d, *J* = 8.2 Hz, 2H), 8.11 (d, *J* = 7.6 Hz, 1H), 9.31 (s, 1H), 11.23 (bs, 1H). Anal. ($C_{17}H_{13}N_3O$): C, H, N.

2-(4-Methoxy-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6d). Mp: 280-282 °C. ^{1}H NMR (DMSO) 3.83 (s, 3H), 7.12 (d, *J* = 9 Hz, 2H), 7.22-7.45 (m, 3H), 7.99 (d, *J* = 9 Hz, 2H), 8.10 (d, *J* = 7.6 Hz, 1H), 9.24 (s, 1H), 11.22 (bs, 1H). Anal. ($C_{17}H_{13}N_3O_2$): C, H, N.

2-(4-Butyl-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6i). Mp: 193-196 °C. ^{1}H NMR ($CDCl_3$) δ 0.95(t, 3H), 1.33-1.44 (m, 2H), 1.61-1.69 (m, 2H), 2.69 (t, 2H), 7.32-7.48 (m, 5H), 7.55 (d, *J* = 8.8 Hz, 2H), 8.28 (d, *J* = 7.8 Hz, 1H), 8.72 (s,1H), 10.01 (bs, 1H, NH). Anal. ($C_{20}H_{19}N_3O$): C, H, N.

2-(4-Ethyl-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6j). Mp: 275-279 °C. ^{1}H NMR ($CDCl_3$) δ 1.29(t, *J* = 7.2 Hz, 3H), 2.73(q, *J* = 8 Hz, 2H), 7.27-7.47 (m, 5H), 7.78 (d, *J* = 8.4 Hz, 2H), 8.29 (d, *J* = 8 Hz, 1H), 8.71 (s, 1H), 9.76 (bs, 1H). Anal. ($C_{18}H_{15}N_3O$): C, H, N.

2-(4-Isopropyl-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6k). Mp: 268-273 °C. ^{1}H NMR ($CDCl_3$) δ 1.30-1.32 (m, 6H), 2.99 (q, *J* = 6.8 Hz, 1H), 7.28 (d, *J* = 8 Hz, 2H), 7.40 (d, *J* = 8 Hz, 2H), 7.46 (m, 1H), 7.79 (d, *J* = 8 Hz, 2H), 8.29 (d, *J* = 7.6 Hz, 1H), 8.70 (s, 1H), 9.49 (bs, 1H). Anal. ($C_{19}H_{17}N_3O$): C, H, N.

2-(4-Chloro-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6b). Mp: 268-272 °C. ^{1}H NMR (DMSO-d_6) δ 7.21-7.49 (m, 3H), 7.66 (d, *J* = 7.4 Hz, 2H), 8.11-8.17 (m, 3H), 9.41 (s, 1 H), 11.27 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O$): C, H, N.

2-(3-Chloro-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6e). Mp: > 300 °C. ^{1}H NMR (DMSO-d_6) δ 7.24-7.63 (m, 5H), 8.09-8.23 (m, 3H), 9.42 (s, 1H), 11.27 (bs, 1H). Anal. ($C_{16}H_{10}ClN_3O$): C, H, N.

2-(3,4-Dichloro-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6f). Mp > 300 °C. ^{1}H NMR (DMSO-d_6) δ 7.19-7.38 (m, 3H), 7.84 (d, *J* = 8.8 Hz, 1H), 8.11 (d, *J* = 9.2 Hz, 2H), 8.41 (s, 1H), 9.45 (s, 1H), 11.25 (bs, 1H). Anal. ($C_{16}H_9Cl_2N_3O$): C, H, N.

2-(4-Fluoro-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6g). Mp > 300°C; ^{1}H NMR (DMSO-d_6) δ 7.24 (t, *J* = 8 Hz, 1H), 7.36-7.49 (m, 4H), 8.10-8.17 (m, 3H), 9.35 (s, 1H), 11.26 (bs, 1H). Anal. ($C_{16}H_{10}FN_3O$): C, H, N.

2-(2-Chloro-phenyl)-2,5-dihydro-pyrazolo[4,3-*c*]quinolin-4-one (6h). Mp > 300 °C. ^{1}H NMR (DMSO-d_6) δ 7.26-7.29 (t, 1H), 7.38-7.39 (d, *J* = 7.6 Hz, 1H), 7.47-7.63 (m, 5H), 8,04- (d, *J* = 7.6 Hz, 1H), 8,99 (s, 1H), 11,29 (s, 1H). Anal. ($C_{16}H_{10}ClN_3O$): C, H, N.

2-Phenyl-2*H*-pyrazolo[4,3-*c*]quinoline (7). Mp: 140-142 °C. ^{1}H NMR (DMSO-d_6) δ 7.52(d, *J* = 8 Hz, 1H), 7.61-8.00 (m, 6H), 8.15 (d, *J* = 7.4 Hz, 1H), 8.47-8.51 (d, *J* = 7.8 Hz, 1H), 9.28 (s, 1H), 9.43 (s, 1H). Anal. ($C_{16}H_{11}N_3$): C, H, N.

4-Chloro-2-phenyl-2*H*-pyrazolo[4,3-c]quinoline (8). Mp: 295-297 °C. ^{1}H NMR ($CDCl_3$) δ 7.42-7.58 (m, 6H), 7.88-8.10 (m, 3H), 8.58-8.61 (m, 1H). Anal. ($C_{16}H_{10}ClN_3$): C, H, N.

2-Phenyl-2*H*-pyrazolo[4,3-*c*]quinolin-4-amine (9). Mp > 300 °C. ^{1}H NMR (DMSO-d_6) δ 7.40-7.69 (m, 6H), 7.96 (d, *J* = 8 Hz, 2H), 8.24 (d, *J* = 8 Hz, 1H), 8.50 (bs, 2H), 9.57 (s, 1H). Anal. ($C_{16}H_{12}N_4$): C, H, N.

N-Cyclohexyl-2-phenyl-2*H*-pyrazolo[4,3-*c*]quinolin-4-amine (10). Mp: 168-170 °C. ^{1}H NMR (DMSO-d_6) δ 1.18-1.57 (m, 4H), 1.62-1.91 (m, 4H), 2.03-2.18 (m, 2H), 4.18-4.31 (m, 1H), 7.18-7.23 (m, 2H), 7.40-7.63 (m, 4H + NH), 7.97(d, *J* = 7.6 Hz, 2H), 8.19 (d, *J* = 7.4 Hz, 1H), 9.25 (s, 1H). Anal. ($C_{22}H_{22}N_4$): C, H, N.

N-benzyl-2-phenyl-2*H*-pyrazolo[4,3-*c*]quinolin-4-amine (11). Mp: 138-140 °C. ^{1}H NMR (DMSO-d_6) δ 4.84 (d, *J* = 5.6 Hz, 2H), 7.35-7.63 (m, 11H + NH), 7.96(d, *J* = 7.2 Hz, 2H), 8.19(d, *J* = 7.4 Hz, 1H), 9.23 (s, 1H). Anal. ($C_{23}H_{18}N_4$): C, H, N.

4-(4-methylpiperazin-1-yl)-2-phenyl-2*H*-pyrazolo[4,3-*c*]quinoline (12). Mp: 177 °C. ^{1}H NMR (DMSO-d_6) δ 2.27 (s, 3H), 2.49-2.51 (m, 4H) 3.86-3.91 (m, 4H), 7.23-7.66 (m, 6H), 8.16-8.26 (m, 3H), 9.40 (s, 1H). Anal. ($C_{21}H_{21}N_5$): C, H, N.

4-Methoxy-2-phenyl-2*H*-pyrazolo[4,3-*c*]quinoline (13). Mp: 93-95 °C. ^{1}H NMR (DMSO-d_6) δ 4.13 (s, 3H), 7.42-7.62 (m, 6H), 8.16(d, *J* = 7.2 Hz, 2H), 8.30 (d, *J* = 7.8 Hz, 1H), 9.38 (s, 1H). Anal. ($C_{17}H_{13}N_3O$): C, H, N.

1-Phenyl-3-(2-phenyl-2*H*-pyrazolo[4,3-*c*]quinolin-4-yl)urea (14). Mp: 255-258 °C. ^{1}H NMR (DMSO) δ 7.13(d, *J* =7.2 Hz, 1H), 7.40-8.01 (m, 12H), 8.36 (d, *J* = 7.8 Hz, 1H), 9.64 (s, 1H), 10.46 (s, 1H), 12,96 (s, 1H). Anal. ($C_{23}H_{17}N_5O$): C, H, N.

2-Phenyl-6-(furan-2-yl)-*2H*-pyrazolo[4,3-*c*][1,2,4]triazolo[4,3-*a*]quinoline (15). Mp > 300 °C. ^{1}H NMR (DMSO-d_6) δ 6.90-7.00 (m, 2H), 7.19-7.20 (m, 1H), 7.41-7.67 (m, 5H), 8.15-8.19 (m, 3H), 8.45-8.50 (m, 1H), 9.70 (s, 1H). Anal. ($C_{21}H_{13}N_5O$): C, H, N.

2-Phenyl-6-(4-chlorophenyl)-2*H*-pyrazolo[4,3-*c*][1,2,4]triazolo[4,3-*a*]quinoline (16). Mp: 280-282 °C. ^{1}H NMR (DMSO-d_6) δ 7.25-7.52 (m, 6H), 7.61-7.84 (m, 4H), 8.14-8.18 (d, 2H), 8.42-8.58 (d, 1H), 9.62 (s, 1H). Anal. ($C_{23}H_{14}ClN_5$): C, H, N.

4-Chloro-N'-(2-phenyl-2*H*-pyrazolo[4,3-c]quinolin-4-yl)benzohydrazide (17). Mp: > 300 °C. ^{1}H NMR (DMSO-d_6) δ 7.11-7.61 (m, 8H), 7.99-8.03 (m, 5H), 9.17 (s, 1H), 9.95-10.06 (bs, 1H), 10.26 (bs, 1H). Anal. ($C_{23}H_{16}ClN_5O$): C, H, N.

2-Phenyl-2*H*-pyrazolo[4,3-*c*]quinoline-4(5*H*)-thione (18). Mp: 280 °C dec. ^{1}H NMR (DMSO-d_6) δ 7.38-7.71 (m, 6H), 8.15-8.23 (m, 3H), 9.42 (s, 1H), 13.01 (bs, 1H). Anal. ($C_{16}H_{11}N_3S$): C, H, N.

4-(Methylthio)-2-phenyl-2*H*-pyrazolo[4,3-*c*]quinoline (19). MP: 147-150 °C. ^{1}H NMR (DMSO-d_6) δ 2.76 (s, 3H), 7.48-7.68 (m, 5H), 7.91 (d, *j* = 7.8 Hz, 1H), 8.19 (d, *j* = 8 Hz, 2H), 8.39 (d, *j* = 9 Hz, 1H), 9.45 (s, 1H). Anal. ($C_{17}H_{13}N_3S$): C, H, N.

5-Methyl-2-phenyl-2*H*-pyrazolo[4,3-c]quinolin-4(5*H*)-one (20). Mp: 219-222 °C. ^{1}H NMR (DMSO-d_6) δ 3.65 (s, 3H), 7.35-7.63 (m, 6H), 8.12 (d, *J* = 8.2 Hz, 2H), 8.24(d, *J* = 7 Hz, 1H), 9.43 (s, 1H). Anal. ($C_{17}H_{13}N_3O$): C, H, N.

(E)-ethyl 3-(3-(2-nitrophenyl)-1-phenyl-1*H*-pyrazol-4-yl)acrylate (21). Mp: 295-298 °C. ^{1}H NMR ($CDCl_3$) δ 1.24-1.59 (t, *J* = 7 Hz, 3H), 4.20 (q, *J* = 7 Hz, 2H), 6.08 (d, *J* = 16.2, 1H), 7.46 (d, *J* = 16 Hz, 1H), 7.50-8.15 (m, 9H), 8.23 (s, 1H). Anal. ($C_{20}H_{17}N_3O_4$): C, H, N.

Ethyl-3-(3-(2-aminophenyl)-1-phenyl-1*H*-pyrazol-4-yl)propanoate (22). ^{1}H NMR ($CDCl_3$) δ 1.23 (t, *J* = 7.2 Hz, 3H), 2.59 (t, *J* = 7.6 Hz, 2H), 2.97 (t, *J* = 7.4 Hz, 2H), 4.14 (q, 7.2 Hz, 2H), 4.75 (bs, 2H), 6.76-7.47 (m, 7H), 7.68 (d, *J* = 8.4 Hz, 2H), 7.87 (s, 1H). Anal. ($C_{20}H_{21}N_3O_2$): C, H, N.

4-Phenyl-3,4,10-triaza-tricyclo[9.4.0.2,6]pentadeca-1(15),2,5,11,13-pentaen-9-one (23). Mp: 235-237 °C. ^{1}H NMR ($CDCl_3$) δ 2.58-2.63 (m, 2H), 2.81-3.18 (m, 2H), 7.14-7.63 (m, 7H), 7.80 (d, *J* = 8 Hz, 2H), 8.40 (s, 1H), 9.62 (s, 1H). Anal. ($C_{18}H_{15}N_3O$): C, H, N.

Elemental analysis of Synthesized Derivatives

			Calcd						Found				
Compd.	**Formula**	**MW**	**%C**	**%H**	**%F**	**%Cl**	**%N**	**%C**	**%H**	**%F**	**%Cl**	**%N**
6a	$C_{16}H_{11}N_3O$	261.28	73.55	4,24			16.08	73.85	4,64			16.28
6b	$C_{16}H_{10}ClN_3O$	295.72	64.98	3.41		11.99	14.21	64.68	3.21		11.69	14.41
6c	$C_{17}H_{13}N_3O$	275.30	74.17	4.76			15.26	74.47	4.96			15.56
6d	$C_{17}H_{13}N_3O_2$	291.30	70.09	4.50			14.42	70.39	4.22			14.01
6e	$C_{16}H_{10}ClN_3O$	295.72	64.98	3.41		11.99	14.21	65.28	3.71		12.28	14.01
6f	$C_{16}H_9Cl_2N_3O$	330.17	58.20	2.75		21.48	12.73	58.42	2.55		21.35	12.63
6g	$C_{16}H_{10}FN_3O$	279.27	68.81	3.61	6.80		15.05	68.65	3.25	7.10		15.25
6h	$C_{16}H_{10}ClN_3O$	295.72	64.98	3.41		11.99	14.21	64.68	3.21		11.56	14.45
6i	$C_{20}H_{19}N_3O$	317.38	75.69	6.03			13.24	75.59	6.28			13.68
6j	$C_{18}H_{15}N_3O$	289.33	74.72	5.23			14.52	74.92	5.29			14.91
6k	$C_{19}H_{17}N_3O$	303.14	75.23	5.65			13.85	75.53	5.92			13.52
7	$C_{16}H_{11}N_3$	245.28	78.35	4.52			17.13	78.23	4.33			17.23
9	$C_{16}H_{12}N_4$	260.29	73.83	4.65			21.52	73.51	4.92			21.35
Compd.	**Formula**	**MW**	**%C**	**%H**	**%S**	**%Cl**	**%N**	**%C**	**%H**	**%S**	**%Cl**	**%N**
10	$C_{22}H_{22}N_4$	342.18	77.16	6.48			16.36	77.48	6.32			16.23
11	$C_{23}H_{18}N_4$	350.42	78.83	5.18			15.99	78.58	5.26			16.30
12	$C_{21}H_{21}N_5$	343.43	73.44	6.16			20.39	73.54	6.39			20.18
13	$C_{17}H_{13}N_3O$	275.30	74.17	4.76			15.26	74.25	4.58			15.13
14	$C_{23}H_{17}N_5O$	379.41	72.81	4.52			18.46	72.65	4.91			18.83
15	$C_{21}H_{13}N_5O$	351.36	71.79	3.73			19.93	71.67	3.42			19.69
16	$C_{23}H_{14}ClN_5$	395.84	69.79	3.56		8.96	17.69	69.75	3.42		8.66	17.47
17	$C_{23}H_{16}ClN_5O$	413.86	66.75	3.90		8.57	16.92	66.49	4.21		8.59	16.66
18	$C_{16}H_{11}N_3S$	277.34	69.29	4.00	11.56		15.15	69.19	4.34	11.48		15.46
19	$C_{17}H_{13}N_3S$	291.37	70.08	4.50	11.01		14.42	70.39	4.83	11.28		14.75
20	$C_{17}H_{13}N_3O$	275.30	74.17	4.76			15.26	74.25	4.55			14.95
23	$C_{18}H_{15}N_3O$	289.33	74.72	5.23			14.52	74.55	5.48			14.88