Supplementary Information

Synthesis, Characterization, Absorption and Fastness Properties of Novel Monoazo Dyes Derived from 1-Phenyl-3-amino-4-(2-thiazolilazo)pyrazol-5-one

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Spectroscopic (NMR, IR, UV-Vis) and other data

1-Phenyl-3-amino-4-(2-thiazolilazo)pyrazol-5-one (**1a**)

Mp 218-220 °C; UV-Vis (DMSO) λ / nm 434; FTIR (KBr) ν / cm^{-1} 3397, 3307, 3234, 3184, 3082, 1664, 1592, 1503; ^{1}H NMR (400 MHz, DMSO-d_6) δ 6.65 (s, 2H, NH_2), 7.00 (s, 1H, ph), 7.25 (m, 2H, ph), 7.50 (m, 2H, ph), 7.75 (d, 1H, *J* 8.0 Hz, th), 8.05 (d, 1H, *J* 8.0 Hz, th), 12.30 (s, 1H, hyd NH). th: thiazol, hyd: hydrazo, ph: phenyl.

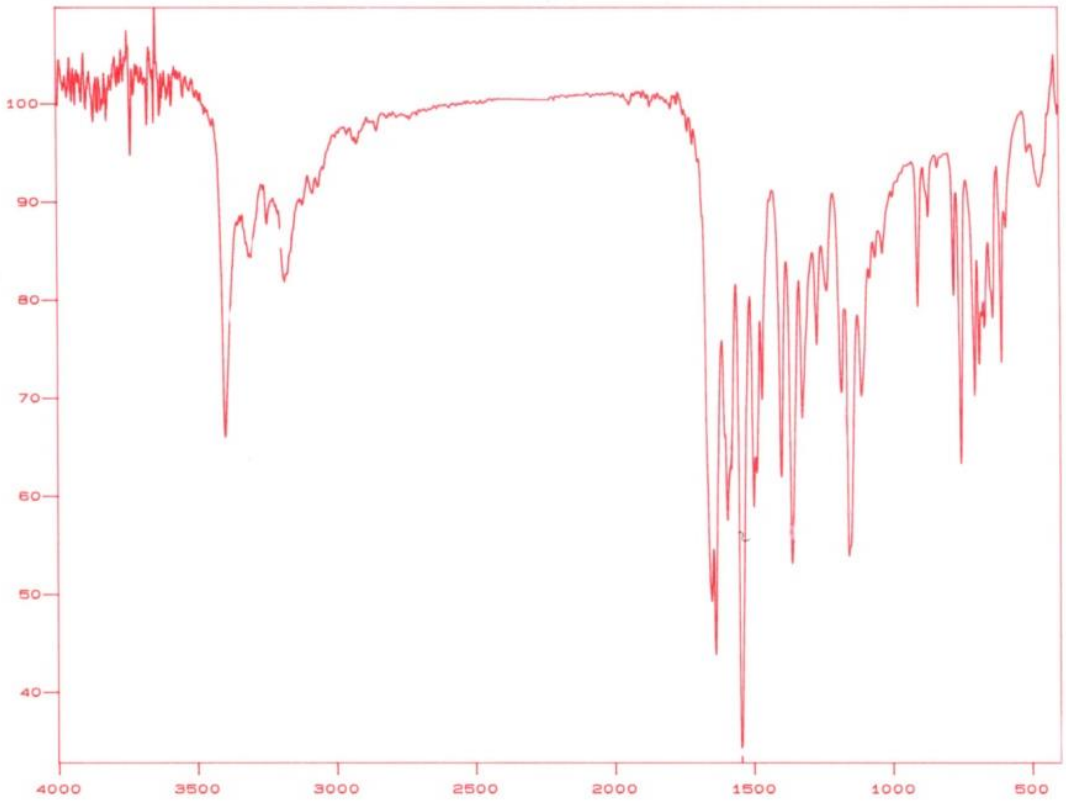

Figure S1. FTIR (KBr) spectrum of compound **1a**.

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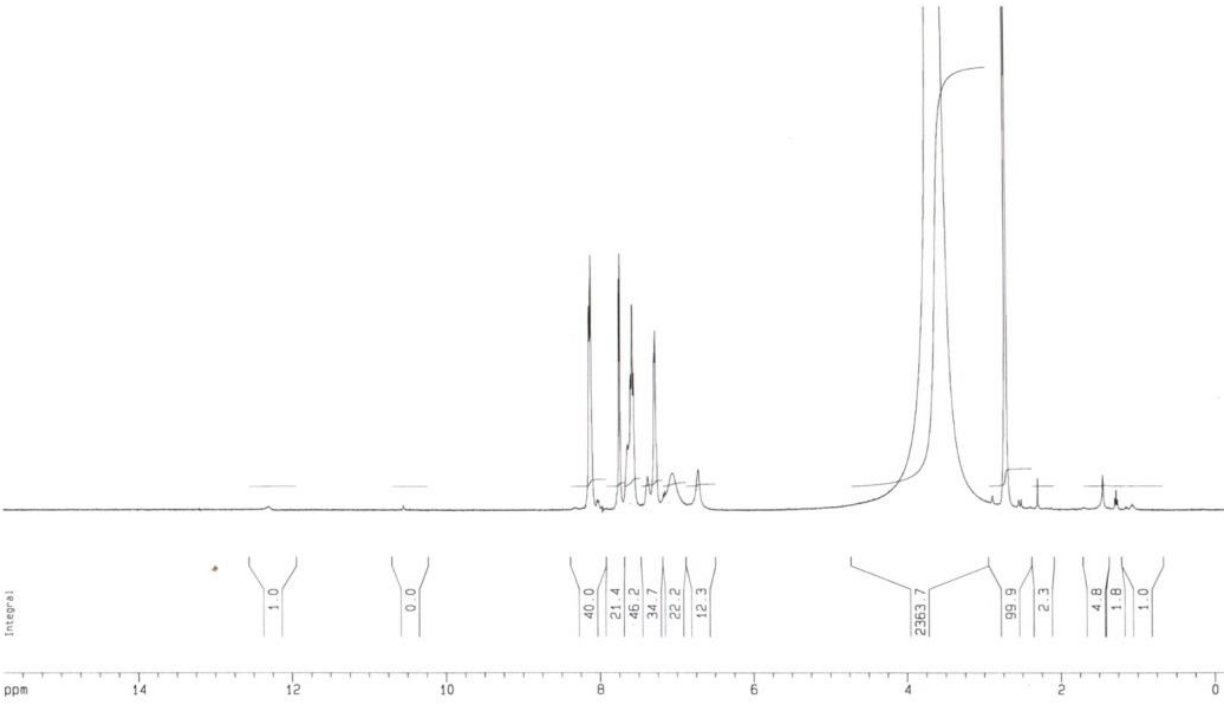

Figure S2. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **1a**.

1-Phenyl-3-amino-4-(4-methyl-2-thiazolilazo)pyrazol-5-one (**1b**)

Mp 240-242 °C; UV-Vis (DMSO) λ / nm 390,[a] 444; FTIR (KBr) ν / cm^{-1} 3423, 3319, 3249, 3185, 2922, 2830, 1669, 1599, 1545, 1499; ^{1}H NMR (400 MHz, DMSO-d_6) δ 2.75 (s, 3H, th CH_3), 6.50 (s, 2H, NH_2), 6.75 (s, 1H, ph), 7.00 (m, 1H, ph), 7.25 (m, 1H, ph), 7.50 (m, 2H, ph), 8.10 (s, 1H, th), 13.90 (s, 1H, hyd NH). [a]Shoulder, th: thiazol, hyd: hydrazo, ph: phenyl.

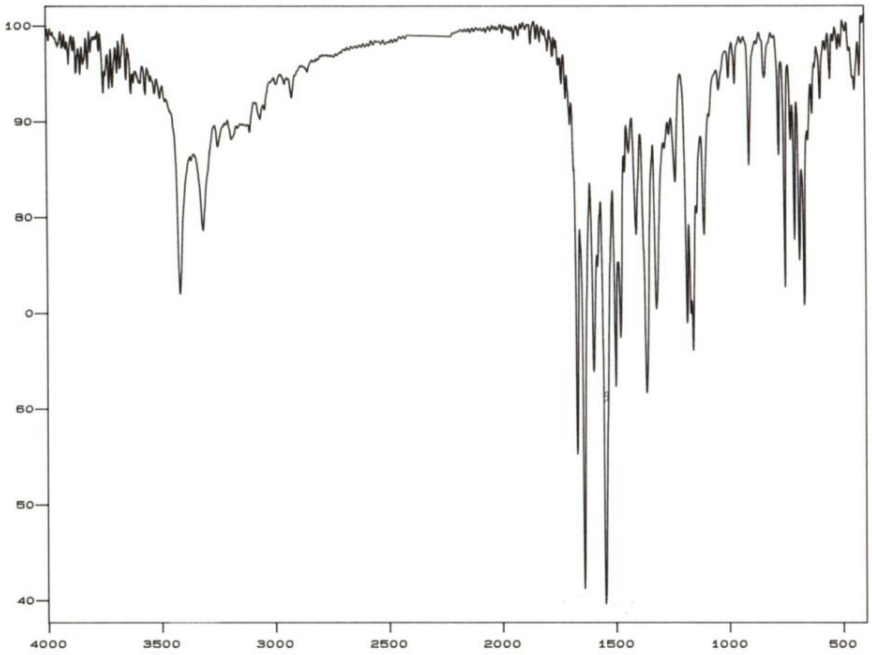

Figure S3. FTIR (KBr) spectrum of compound **1b**.

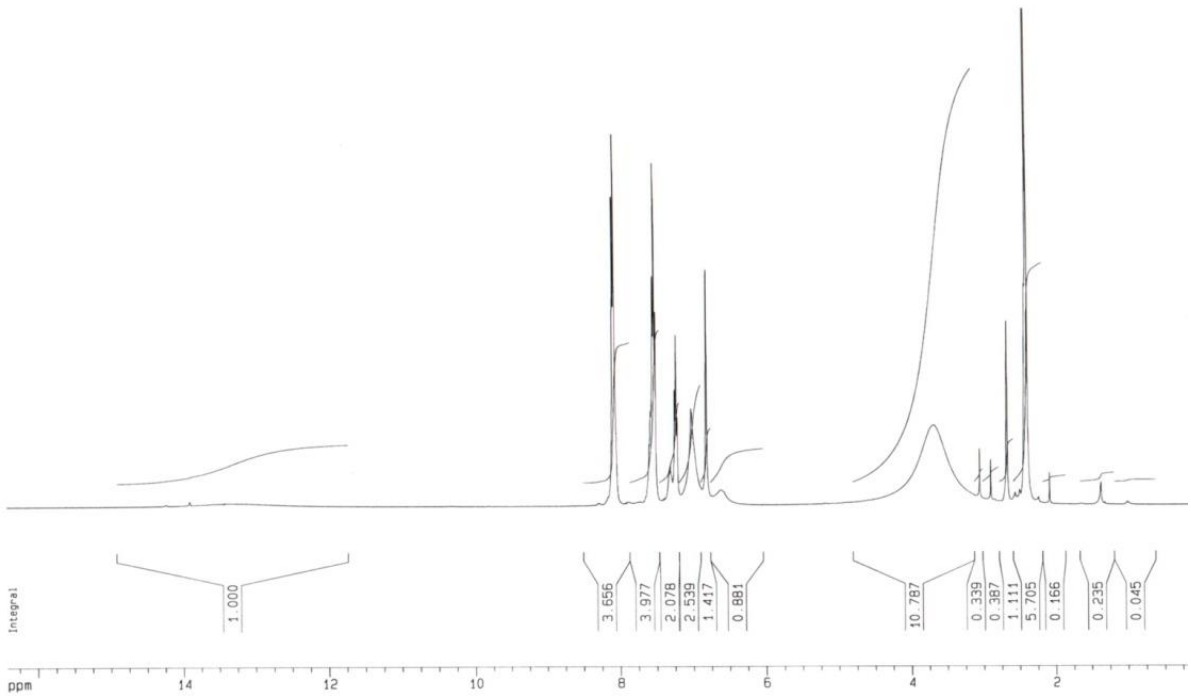

Figure S4. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **1b**.

1-Phenyl-3-amino-4-(5-nitro-2-thiazolilazo)pyrazol-5-one (**1c**)

Mp 262-263 °C; UV-Vis (DMSO) λ / nm 366, 540; FTIR (KBr) ν / cm^{-1} 3467, 3352, 3275, 3133, 3070, 1676, 1592, 1548, 1471; ^{1}H NMR (400 MHz, DMSO-d_6) δ 5.75 (s, 2H, NH_2), 7.00 (m, 1H, ph), 7.25 (m, 2H, ph), 7.75 (s, 1H, th), 8.45 (s, 1H, ph), 8.55 (s, 1H, ph), 13.75 (s, 1H, hyd NH). th: thiazol, hyd: hydrazo, ph: phenyl.

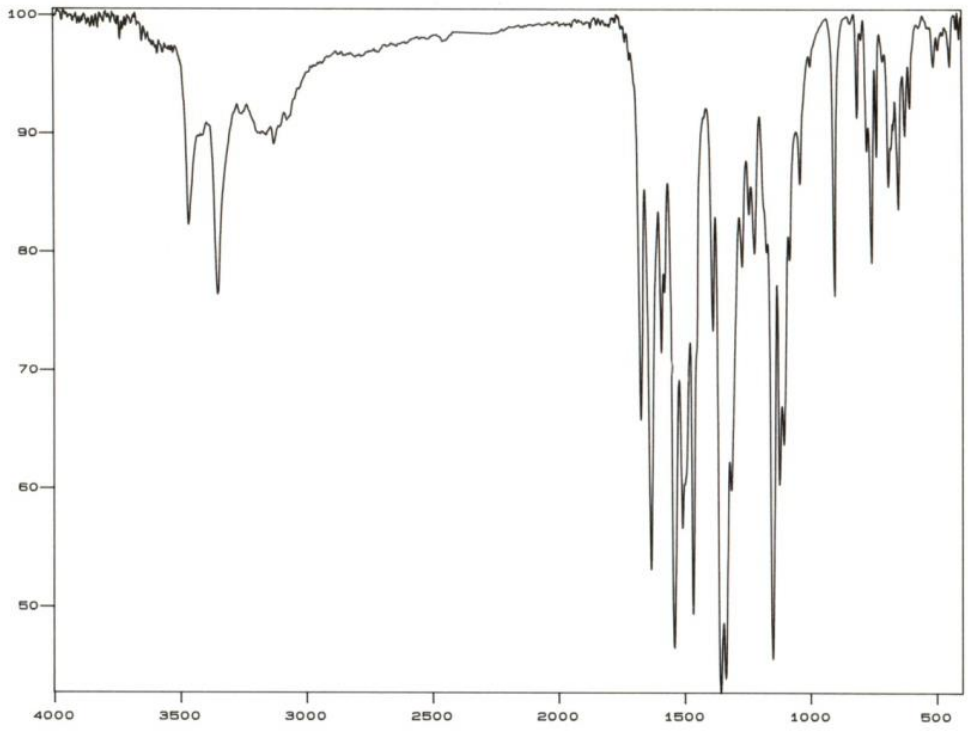

Figure S5. FTIR (KBr) spectrum of compound **1c**.

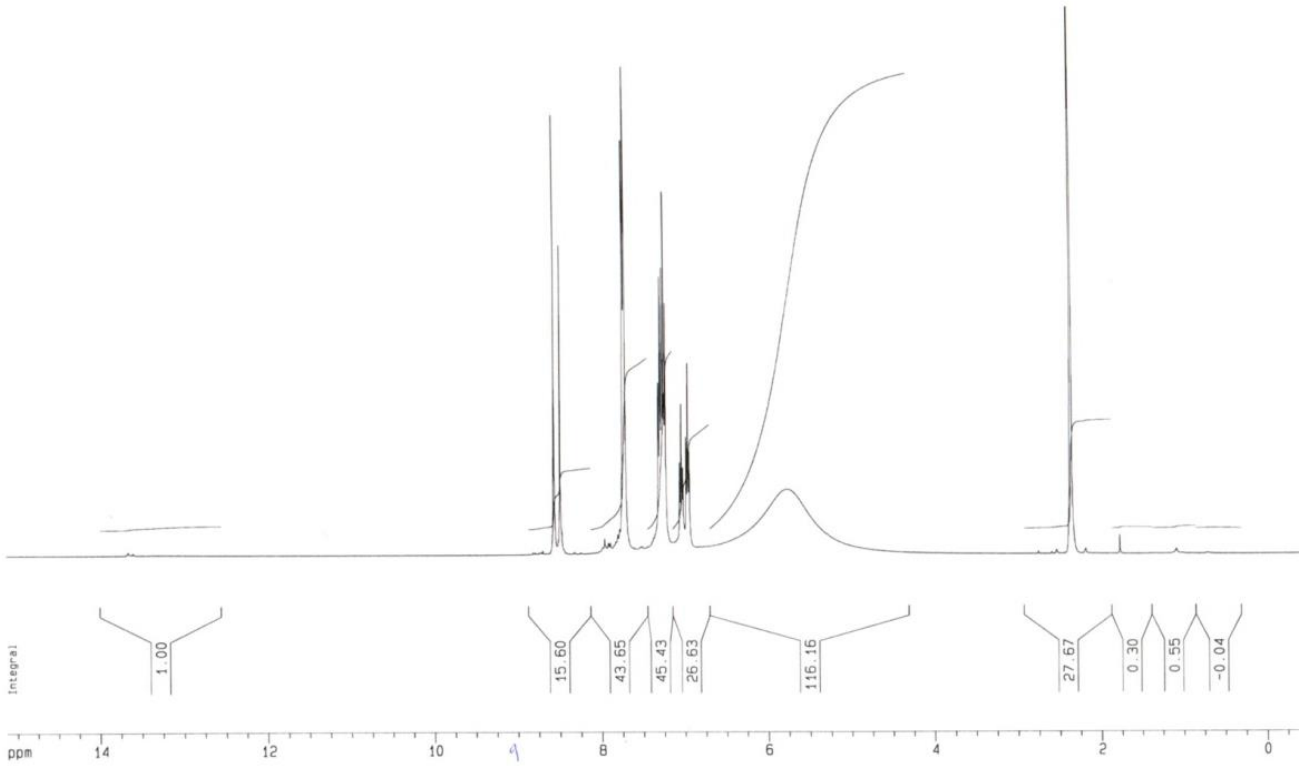

Figure S6. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **1c**.

1-Phenyl-3-acetamido-4-(2-thiazolilazo)pyrazol-5-one (**2a**)

Mp 244-245 °C; UV-Vis (DMSO) λ / nm 467; FTIR (KBr) ν / cm^{-1} 3442, 3184, 3082, 2844, 1720, 1664, 1621, 1592, 1503; ^{1}H NMR (400 MHz, DMSO-d_6) δ 3.10 (s, 3H, ac CH_3), 7.30 (m, 1H, ph), 7.50 (m, 2H, ph), 8.05 (m, 2H, ph), 8.20 (d, 1H, *J* 8.0 Hz, th), 8.40 (d, 1H, *J* 8.0 Hz, th), 9.25 (s, 1H, ac NH). ac: acetamido, th: thiazol, hyd: hydrazo, ph: phenyl.

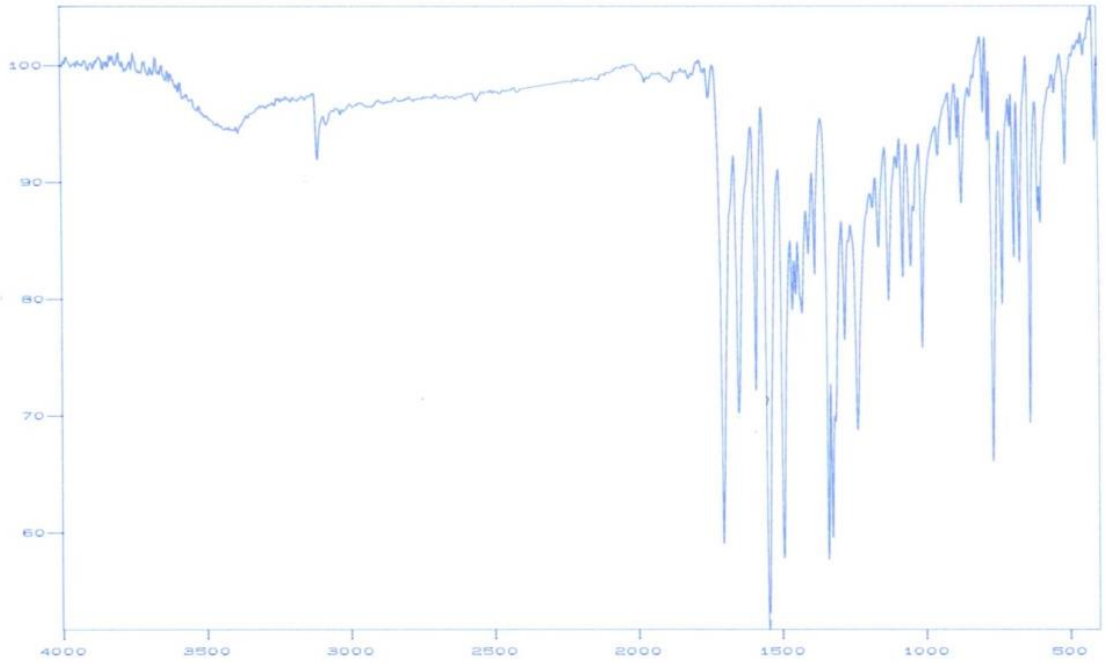

Figure S7. FTIR (KBr) spectrum of compound **2a**.

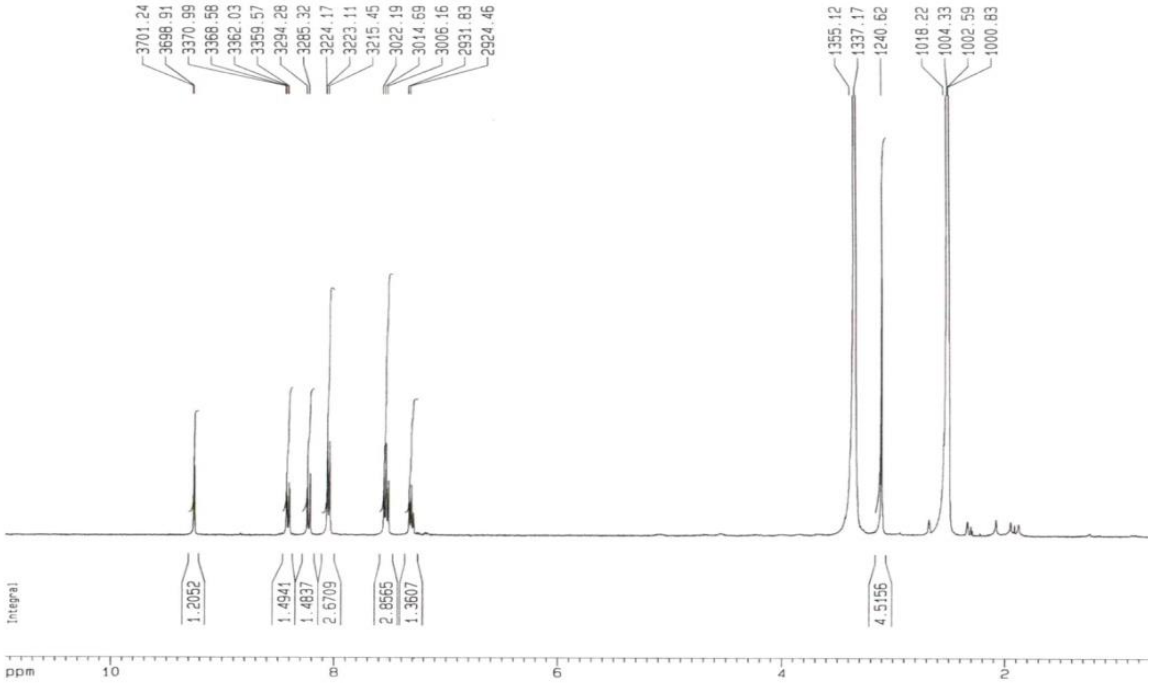

Figure S8. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **2a**.

1-Phenyl-3-acetamido-4-(4-methyl-2-thiazolilazo)pyrazol-5-one (**2b**)

Mp 250-252 °C; UV-Vis (DMSO) λ / nm 480; FTIR (KBr) ν / cm^{-1} 3457, 3082, 2928, 2838, 1669, 1638, 1604, 1599, 1545, 1499; ^{1}H NMR (400 MHz, DMSO-d_6) δ 2.80 (s, 3H, th CH_3), 3.90 (s, 3H, ac CH_3), 7.20 (m, 2H, ph), 7.50 (m, 2H, ph), 7.80 (s, 1H, ac NH), 7.90 (s, 1H, th), 8.05 (d, 1H, *J* 8.0 Hz, ph). ac: acetamido, th: thiazol, hyd: hydrazo, ph: phenyl.

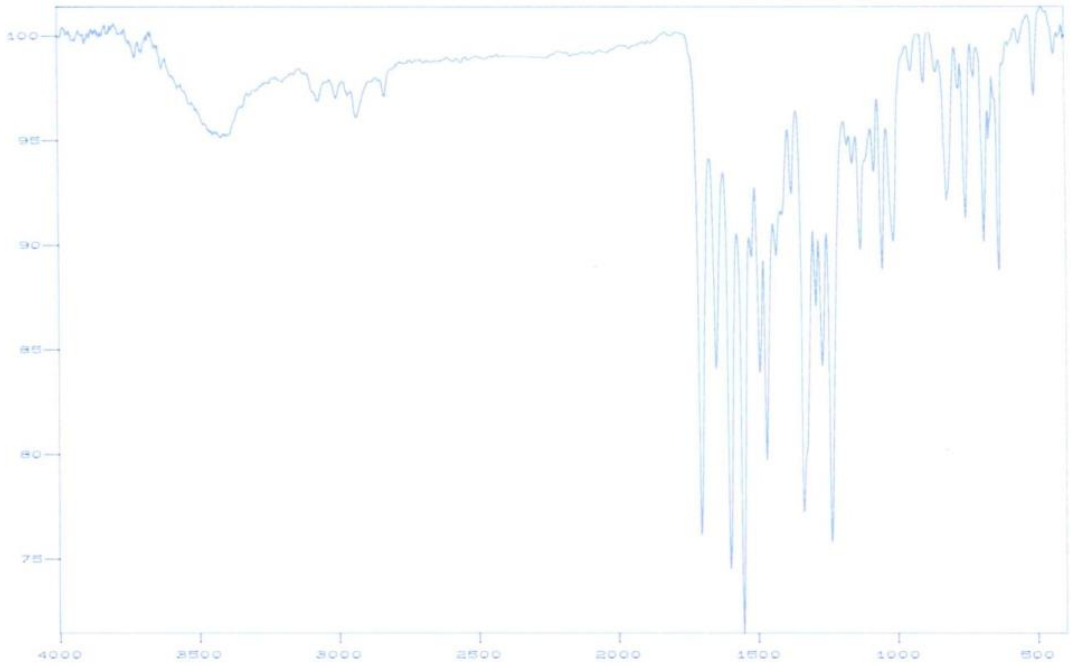

Figure S9. FTIR (KBr) spectrum of compound **2b**.

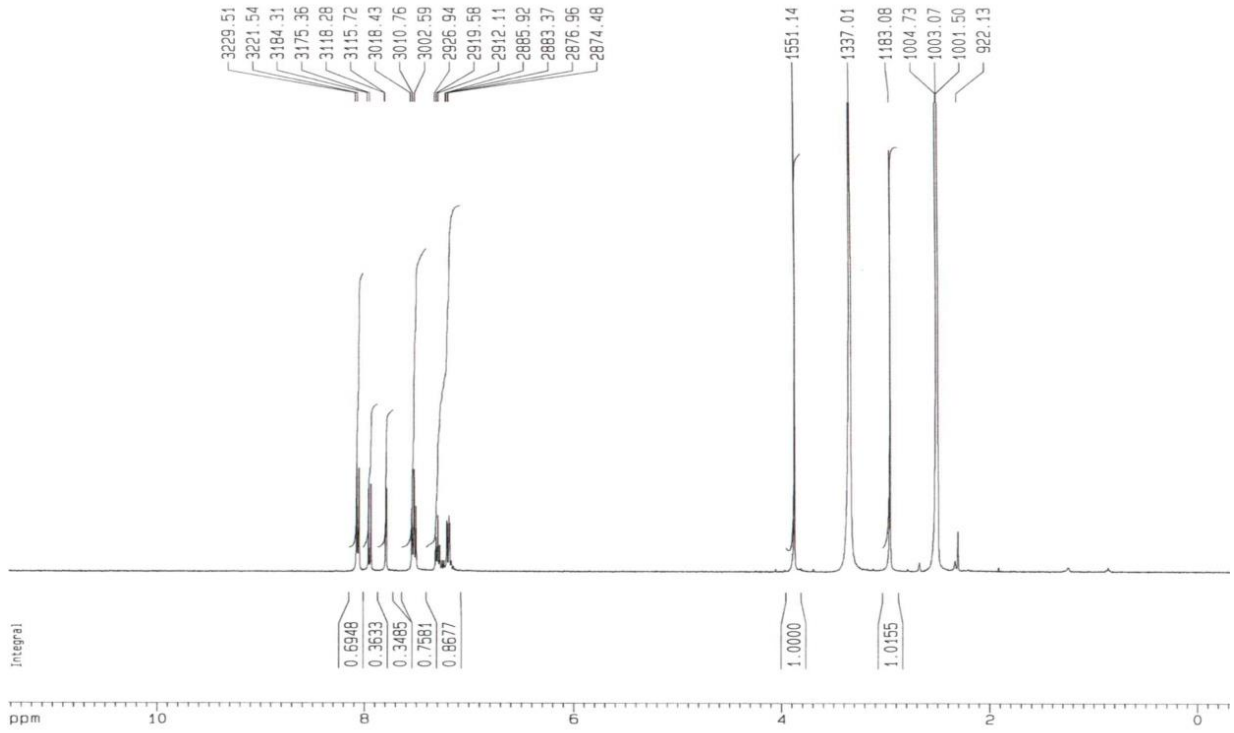

Figure S10. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **2b**.

1-Phenyl-3-acetamido-4-(5-nitro-2-thiazolilazo)pyrazol-5-one (**2c**)

Mp 273-275 °C; UV-Vis (DMSO) λ / nm 324, 470; FTIR (KBr) ν / cm^{-1} 3473, 3070, 2922, 1720, 1677, 1626, 1580, 1503, 1470; ^{1}H NMR (400 MHz, DMSO-d_6) δ 3.10 (s, 3H, ac CH_3), 6.80-7.80 (s, m, 5H, ph), 8.10 (s, 1H, th), 8.60 (s, 1H, ac NH), 14.40 (s, 1H, hyd NH). ac: acetamido, th: thiazol, hyd: hydrazo, ph: phenyl.

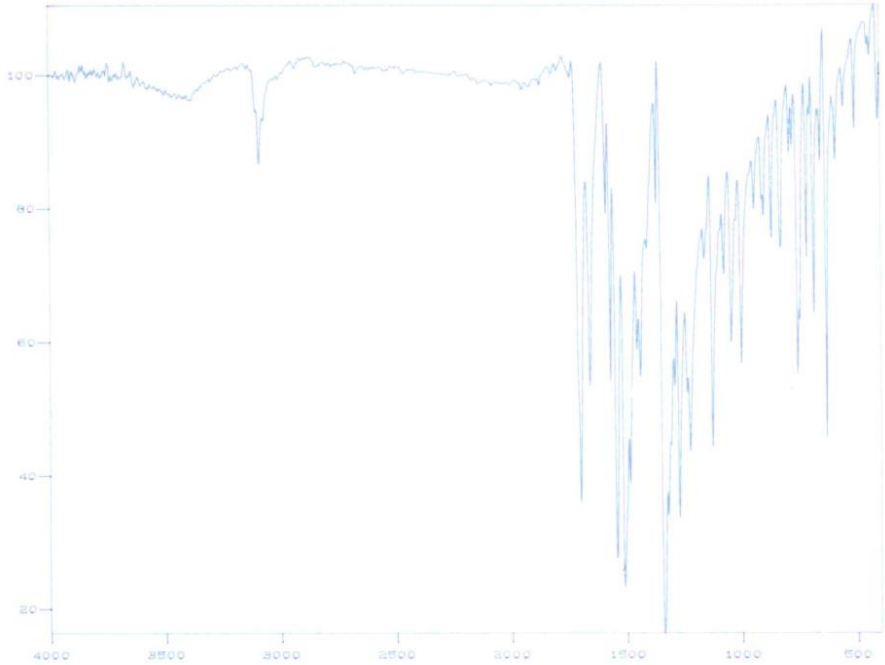

Figure S11. FTIR (KBr) spectrum of compound **2c**.

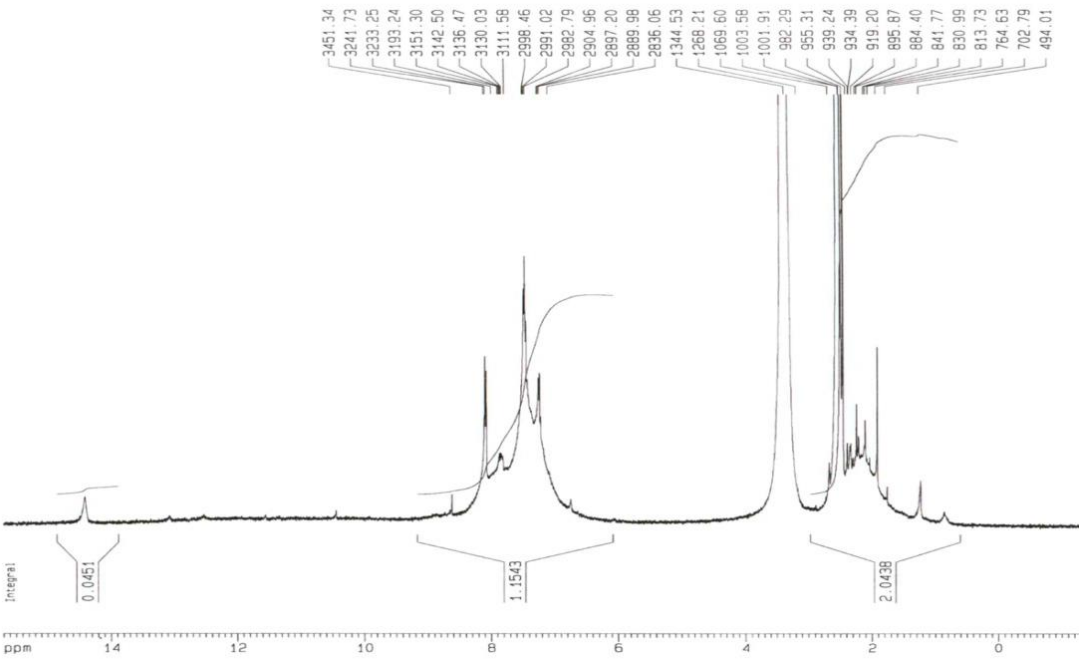

Figure S12. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **2c**.

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