## **Supplementary Material**



Figure S1. <sup>1</sup>H NMR spectrum of compound **35a** (600 MHz, DMSO-d<sub>6</sub>).



Figure S2. <sup>13</sup>C NMR spectrum of compound **35a** (150 MHz, DMSO-d<sub>6</sub>).



Figure S3. gHSQC spectrum of compound **35a**.



Figure S4. gHMBC spectrum of compound **35a**.







Figure S6. <sup>1</sup>H NMR spectrum of compound **35b** (600 MHz, DMSO-d<sub>6</sub>).



Figure S7. <sup>13</sup>C NMR spectrum of compound **35b** (600 MHz, DMSO-d<sub>6</sub>).



Figure S8. gHSQC spectrum of compound **35b**.











Figure S11. <sup>1</sup>H NMR spectrum of compound **35c** (500 MHz, DMSO-d<sub>6</sub>).



Figure S12. <sup>13</sup>C NMR spectrum of compound **35c** (125 MHz, DMSO-d<sub>6</sub>).



Figure S13. gHSQC spectrum of compound **35c**.



Figure S14. gHMBC spectrum of compound **35c**.







Figure S16. <sup>1</sup>H NMR spectrum of compound **32a** (500 MHz, DMSO-d<sub>6</sub>).



Figure S17. <sup>13</sup>C NMR spectrum of compound 32a (125 MHz, DMSO-d<sub>6</sub>).



Figure S18. gHSQC spectrum of compound 32a.



Figure S19. gHMBC spectrum of compound 32a.

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Figure S20. FT-IR spectrum of compound **32a**.



Figure S21. DIP-ESI-MS of compound 32a.



Figure S22. <sup>1</sup>H NMR spectrum of compound **32b** (500 MHz, DMSO-d<sub>6</sub>).



Figure S23.  $^{13}$ C NMR spectrum of compound **32b** (125 MHz, DMSO-d<sub>6</sub>).



Figure S24. gHSQC spectrum of compound **32b**.



Figure S25. gHMBC spectrum of compound **32b**.

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Figure S26. FT-IR spectrum of compound **32b**.



Figure S27. DIP-ESI-MS of compound **32b**.



Figure S28. <sup>1</sup>H NMR spectrum of compound **32c** (500 MHz, DMSO-d<sub>6</sub>).



Figure S29. <sup>13</sup>C NMR spectrum of compound **32c** (125 MHz, DMSO-d<sub>6</sub>).



Figure S30. gHMBC spectrum of compound **32c**.













Figure S33. <sup>1</sup>H NMR spectrum of compound **22** (300 MHz, DMSO-d<sub>6</sub>).



Figure S34. <sup>13</sup>C NMR spectrum of compound **22** (75 MHz, DMSO-d<sub>6</sub>).



Figure S35. DIP-ESI-MS of compound 22.



Figure S36. <sup>1</sup>H NMR spectrum of compound **16a** (300 MHz, CDCl<sub>3</sub>).



Figure S37. <sup>13</sup>C NMR spectrum of compound **16a** (75 MHz, CDCl<sub>3</sub>).



Figure S38. gCOSY spectrum of compound 16a.





Figure S40. gHMBC spectrum of compound 16a.





Figure S41. FT-IR spectrum of compound 16a.



Figure S42. DIP-ESI-MS of compound 16a.



Figure S43. <sup>1</sup>H NMR spectrum of compound **16b** (300 MHz, CDCl<sub>3</sub>).



Figure S44. <sup>13</sup>C NMR spectrum of compound **16b** (75 MHz, CDCl<sub>3</sub>).



Figure S45. gHSQC spectrum of compound 16b.



Figure S46. gHMBC spectrum of compound 16b.





Figure S47. FT-IR spectrum of compound 16b.



Figure S48. DIP-ESI-MS of compound 16b.



Figure S49. <sup>1</sup>H NMR spectrum of compound **16c** (300 MHz, CDCl<sub>3</sub>).



Figure S50. <sup>13</sup>C NMR spectrum of compound **16c** (75 MHz, CDCl<sub>3</sub>).



Figure S51. gHSQC spectrum of compound 16c.



Figure S52. gHMBC spectrum of compound 16c.









Figure S54. DIP-ESI-MS of compound 16c.



Figure S55.  $^{1}$ H NMR spectrum of compound **25** (300 MHz, CDCl<sub>3</sub>).



Figure S56. <sup>13</sup>C NMR spectrum of compound **25** (75 MHz, CDCl<sub>3</sub>).



Figure S57. DIP-ESI-MS of compound 25.



Figure S58. <sup>1</sup>H NMR spectrum of compound **17a** (300 MHz, CDCl<sub>3</sub>).



Figure S59. <sup>13</sup>C NMR spectrum of compound **17a** (75 MHz, CDCl<sub>3</sub>).



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Figure S60. FT-IR spectrum of compound 17a.



Figure S62. <sup>1</sup>H NMR spectrum of compound **17b** (300 MHz, CDCl<sub>3</sub>).



Figure S63.  $^{13}$ C NMR spectrum of compound **17b** (75 MHz, CDCl<sub>3</sub>).



Figure S64. gHSQC spectrum of compound 17b.



Figure S65. gHMBC spectrum of compound 17b.



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Figure S66. FT-IR spectrum of compound 17b.







Figure S68. <sup>1</sup>H NMR spectrum of compound **17c** (300 MHz, CDCl<sub>3</sub>).





Figure S69. FT-IR spectrum of compound 17c.



Figure S70. DIP-ESI-MS of compound 17c.



Figure S71. <sup>1</sup>H NMR spectrum of compound **27** (300 MHz, Acetona-d<sub>6</sub>).



Figure S72.  $^{13}$ C NMR spectrum of compound **27** (75 MHz, Acetona-d<sub>6</sub>).







Figure S74. <sup>1</sup>H NMR spectrum of compound **18a** (300 MHz, DMSO-d<sub>6</sub>).



Figure S75. <sup>13</sup>C NMR spectrum of compound **18a** (75 MHz, DMSO-d<sub>6</sub>).



Figure S76. gHSQC spectrum of compound 18a.



Figure S77. NOESY 1D experiment of compound 18a.



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Figure S78. FT-IR spectrum of compound 18a.



Figure S79. DIP-ESI-MS of compound 18a.



Figure S80. <sup>1</sup>H NMR spectrum of compound **18b** (300 MHz, DMSO-d<sub>6</sub>).



Figure S81. <sup>13</sup>C NMR spectrum of compound **18b** (75 MHz, DMSO-d<sub>6</sub>).



Figure S82. gHSQC spectrum of compound 18b.





Figure S83. FT-IR spectrum of compound 18b.



Figure S84. DIP-ESI-MS of compound 18b.



Figure S85. <sup>1</sup>H NMR spectrum of compound **18c** (300 MHz, CDCl<sub>3</sub>).



Figure S86.  $^{13}$ C NMR spectrum of compound **18c** (75 MHz, CDCl<sub>3</sub>).



Figure S87. gHSQC spectrum of compound **18c**.



Figure S88. gHMBC spectrum of compound 18c.



Figure S89. FT-IR spectrum of compound 18c.



Figure S90. DIP-ESI-MS of compound 18c.



Figure S91. <sup>1</sup>H NMR spectrum of compound **19a** (300 MHz, CDCl<sub>3</sub>).



Figure S92. FT-IR spectrum of compound **19a**.



Figure S93. DIP-ESI-MS of compound 19a.



Figure S94. <sup>1</sup>H NMR spectrum of compound **19b** (600 MHz, CDCl<sub>3</sub>).



Figure S95. <sup>13</sup>C NMR spectrum of compound **19b** (150 MHz, CDCl<sub>3</sub>).



Figure S96. gHSQC spectrum of compound 19b.



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Figure S97. FT-IR spectrum of compound 19b.



Figure S98. DIP-ESI-MS of compound 19b.



Figure S99. <sup>1</sup>H NMR spectrum of compound **19c** (600 MHz, CDCl<sub>3</sub>).



Figure S100. <sup>13</sup>C NMR spectrum of compound **19c** (150 MHz, CDCl<sub>3</sub>).



Figure S101. gHSQC spectrum of compound **19c**.



Figure S102. gHMBC spectrum of compound **19c**.





Figure S103. FT-IR spectrum of compound **19c**.



Figure S104. DIP-ESI-MS of compound **19c**.