**Synthesis and antimicrobial, anti-proliferative and anti-inflammatory activities of** **novel 1,3,5-substituted pyrazoline sulfonamides.**

**Supplementary Data**

[**Fig S1.** 1H NMR Spectrum of compound 1**b** (DMSO) 10](#_Toc80643473)

[**Fig S2.** 13C NMR Spectrum of compound 1**b** (DMSO) 10](#_Toc80643474)

[**Fig S3.** DEPT NMR Spectra of compound 1**b** (DMSO) 11](#_Toc80643475)

[**Fig S4.** HR-MS spectrum of compound 1**b** 11](#_Toc80643476)

[**Fig S5.** 1H NMR Spectrum of compound 2**b** (DMSO) 12](#_Toc80643477)

[**Fig S6.** 13C NMR Spectrum of compound 2**b** (DMSO) 12](#_Toc80643478)

[**Fig S7.** DEPT NMR Spectrum of compound 2**b** (DMSO) 13](#_Toc80643479)

[**Fig S8.** HR-MS Spectrum of compound 2**b** 13](#_Toc80643480)

[**Fig S9.** 1H NMR Spectrum of compound 4**b** (DMSO) 14](#_Toc80643481)

[**Fig S10.** 13C NMR Spectrum of compound 4**b** (DMSO) 14](#_Toc80643482)

[**Fig S11.** DEPT NMR Spectra of compound 4**b** (DMSO) 15](#_Toc80643483)

[**Fig S12.** HR-MS spectrum of compound 4**b** 15](#_Toc80643484)

[**Fig S13.** 1H NMR Spectrum of compound 6**b** (DMSO) 16](#_Toc80643485)

[**Fig S14.** 13C NMR Spectrum of compound 6**b** (DMSO) 16](#_Toc80643486)

[**Fig S15.** DEPT NMR Spectrum of compound 6**b** (DMSO) 17](#_Toc80643487)

[**Fig S16.** HR-MS spectrum of compound 6**b** 17](#_Toc80643488)

[**Fig S17.** 1H NMR Spectrum of compound 7**b** (DMSO) 18](#_Toc80643489)

[**Fig S18.** 13C NMR Spectrum of compound 7**b** (DMSO) 18](#_Toc80643490)

[**Fig S19.** DEPT NMR Spectrum of compound 7**b** (DMSO) 19](#_Toc80643491)

[**Fig S20.** HR-MS Spectrum of compound 7**b** 19](#_Toc80643492)

[**Fig S21.** 1H NMR Spectrum of compound8**b** (DMSO) 20](#_Toc80643493)

[**Fig S22.** 13C NMR Spectrum of compound8**b** (DMSO) 20](#_Toc80643494)

[**Fig S23.** DEPT NMR Spectrum of compound8**b** (DMSO) 21](#_Toc80643495)

[**Fig S24.** HR-MS spectrum of compound8**b** 21](#_Toc80643496)

[**Fig S25.** 1H NMR Spectrum of compound 9**b** (DMSO) 22](#_Toc80643497)

[**Fig S26.** 13C NMR Spectrum of compound 9**b** (DMSO) 22](#_Toc80643498)

[**Fig S27.** HR-MS spectrum of compound 9**b** 23](#_Toc80643499)

[**Fig S28.** 1H NMR Spectrum of compound **12b** (DMSO) 23](#_Toc80643500)

[**Fig S29.** 13C NMR Spectrum of compound **12b** (DMSO) 24](#_Toc80643501)

[**Fig S30.** DEPT NMR Spectrum of compound **12b** (DMSO) 24](#_Toc80643502)

[**Fig S31.** HR-MS spectrum of compound **12b** 25](#_Toc80643503)

[**Fig S32.** 1H NMR Spectrum of compound 13**b** (DMSO) 25](#_Toc80643504)

[**Fig S33.** 13C NMR Spectrum of compound 13**b** (DMSO) 26](#_Toc80643505)

[**Fig S34.** DEPT NMR Spectra of compound 13**b** (DMSO) 26](#_Toc80643506)

[**Fig S35.** HR-MS spectrum of compound 13**b** 27](#_Toc80643507)

[**Fig S36.** 1H NMR Spectrum of compound 14**b** (DMSO) 27](#_Toc80643508)

[**Fig S37.** 13C NMR Spectrum of compound 14**b** (DMSO) 28](#_Toc80643509)

[**Fig S38.** DEPT NMR Spectrum of compound 14**b**(DMSO) 28](#_Toc80643510)

[**Fig S39.** HR-MS spectrum of compound 14**b** 29](#_Toc80643511)

[**Fig S40.** 1H NMR Spectrum of compound 16**b** (DMSO) 29](#_Toc80643512)

[**Fig S41.** 13C NMR Spectrum of compound 16**b** (DMSO) 30](#_Toc80643513)

[**Fig S42.** DEPT NMR Spectrum of compound 16**b** (DMSO) 30](#_Toc80643514)

[**Fig S43.** HR-MS spectrum of compound 16**b** 31](#_Toc80643515)

[**Fig S44.** 1H NMR Spectrum of compound 17**b** (DMSO) 31](#_Toc80643516)

[**Fig S45.** 13C NMR Spectrum of compound 17**b** (DMSO) 32](#_Toc80643517)

[**Fig S46.** DEPT NMR Spectrum of compound 17**b** (DMSO) 32](#_Toc80643518)

[**Fig S47.** HR-MS Spectrum of compound 17**b** 33](#_Toc80643519)

[**Fig S48.** 1H NMR Spectrum of compound **18b** (DMSO) 33](#_Toc80643520)

[**Fig S49.** 13C NMR Spectrum of compound 18**b** (DMSO) 34](#_Toc80643521)

[**Fig S50.** DEPT NMR Spectrum of compound 18**b** (DMSO) 34](#_Toc80643522)

[**Fig S51.** HR-MS spectrum of compound 18**b** 35](#_Toc80643523)

[**Fig S52.** 1H NMR Spectrum of compound 19**b** (DMSO) 35](#_Toc80643524)

[**Fig S53.** 13C Spectrum of compound 19**b** (DMSO) 36](#_Toc80643525)

[**Fig S54.** HR-MS spectrum of compound 19**b** 36](#_Toc80643526)

[**Fig S55.** 1H NMR Spectrum of compound 20**b** (DMSO) 37](#_Toc80643527)

[**Fig S56.** 13C NMR Spectrum of compound **20b** (DMSO) 37](#_Toc80643528)

[**Fig S57.** HR-MS spectrum of compound **20b** 38](#_Toc80643529)

[**Fig S58.** 1H NMR Spectrum of compound 21**b** (DMSO) 38](#_Toc80643530)

[**Fig S59.** 13C NMR Spectrum of compound **21b** (DMSO) 39](#_Toc80643531)

[**Fig S60.** DEPT NMR Spectrum of compound 21**b** (DMSO) 39](#_Toc80643532)

[**Fig S61.** HR-MS spectrum of compound 21**b** 40](#_Toc80643533)

[**Fig S62.** 1H NMR Spectrum of compound 22**b** (DMSO) 40](#_Toc80643534)

[**Fig S63.** 13C NMR Spectrum of compound 22**b** (DMSO) 41](#_Toc80643535)

[**Fig S64.** DEPT NMR Spectrum of compound 22**b** (DMSO) 41](#_Toc80643536)

[**Fig S65.** HR-MS spectrum of compound 22**b** 42](#_Toc80643537)

[**Fig S66.** 1H NMR Spectrum of compound 23**b** (DMSO) 42](#_Toc80643538)

[**Fig S67.** 13C NMR Spectrum of compound **23b** (DMSO) 43](#_Toc80643539)

[**Fig S68.** DEPT NMR Spectrum of compound 23**b** (DMSO) 43](#_Toc80643540)

[**Fig S69.** HR-MS spectrum of compound 23**b** 44](#_Toc80643541)

[**Fig S70.** 1H Spectrum of compound 24**b** (DMSO) 44](#_Toc80643542)

[**Fig S71.** 13C NMR Spectrum of compound 24**b** (DMSO) 45](#_Toc80643543)

[**Fig S72.** HR-MS spectrum of compound 24**b** 45](#_Toc80643544)

[**Fig S73.** 1H NMR Spectrum of compound 25**b** (DMSO) 46](#_Toc80643545)

[**Fig S74.** 13C NMR Spectrum of compound 25**b** (DMSO) 46](#_Toc80643546)

[**Fig S75.** 13DEPT NMR Spectrum of compound 25**b** (DMSO) 47](#_Toc80643547)

[**Fig S76.** HR-MS spectrum of compound 25**b** 47](#_Toc80643548)

[**Fig S77.** 1H NMR Spectrum of compound 26**b** (DMSO) 48](#_Toc80643549)

[**Fig S78.** 13C NMR Spectrum of compound 26**b** (DMSO) 48](#_Toc80643550)

[**Fig S79.** DEPT Spectrum of compound 26**b** (DMSO) 49](#_Toc80643551)

[**Fig S80.** HR-MS spectrum of compound 26**b** 49](#_Toc80643552)

**Synthesis of the chalcone derivatives** (**1a-26a**)

A solution of acetophenones (0.30 mol) and aldehydes (0.30 mol) in methanol (60 mL) was stirred in an aqueous sodium hydroxide solution (100 mL, 2.8 M) for 4 h at room temperature. The mixture was monitored by TLC. Then, the mixture was cooled overnight at 0 °C. The separated solid was filtered and washed with water (3x10 mL) and cooled ethanol (3x10 mL). The solid was dried under vacuum and purified by recrystallization from ethanol to afford the pure chalcones.

*(E)-3-(3-hydroxyphenyl)-1-phenylprop-2-en-1-one* **(1a)**

Yellow powder. Yield 70.4 %. 1H NMR (500 MHz, DMSO) δ 9.63 (s, 1H), 8.16 – 8.10 (m, 2H), 7.82 (d, *J* 15.5 Hz, 1H), 7.67 (dt, *J* 7.5, 1.5 Hz, 1H), 7.66 (d, *J* 15.5 Hz, 1H), 7.59 – 7.54 (m, 2H), 7.31 (dt, *J* 7.5, 1.5 Hz, 1H), 7.26 (t, *J* 7.5 Hz, 1H), 7.23 (t, *J* 2.0 Hz, 1H), 6.88 (ddd, *J* 8.0, 2.5, 1.0 Hz, 1H).

*(E)-3-(2-methoxyphenyl)-1-phenylprop-2-en-1-one* **(2a)**

Yellow powder. Yield 89 %. 1H NMR (500 MHz, DMSO) δ 8.13 – 8.08 (m, 2H), 8.05 (d, *J* 15.5 Hz, 1H), 7.95 (dd, *J* 8.0, 1.5 Hz, 1H), 7.86 (d, *J* 16.0 Hz, 1H), 7.69 – 7.62 (m, 1H), 7.57 (t, *J* 7.5 Hz, 2H), 7.48 – 7.41 (m, 1H), 7.11 (d, *J* 8.5 Hz, 1H), 7.03 (t, *J* 7.5 Hz, 1H), 3.89 (s, 3H).

*(E)-3-(2-chlorophenyl)-1-phenylprop-2-en-1-one* **(3a)**

Yellow powder. Yield 89 %. 1H NMR (500 MHz, DMSO) δ 8.19 (dd, *J* 7.5, 2.5 Hz, 1H), 8.17 – 8.13 (m, 2H), 8.04 (d, *J* 15.5 Hz, 1H), 7.96 (d, *J* 15.5 Hz, 1H), 7.71 – 7.64 (m, 1H), 7.61 – 7.51 (m, 3H), 7.48 – 7.41 (m, 2H).

*(E)-3-(3-nitrophenyl)-1-phenylprop-2-en-1-one* **(4a)**

Yellow powder. Yield 86%. 1H NMR (500 MHz, DMSO) δ 8.76 (t, *J* 1.5 Hz, 1H), 8.33 (d, *J* 8.0 Hz, 1H), 8.26 (dd, *J* 8.0, 2.0 Hz, 1H), 8.22 – 8.18 (m, 2H), 8.15 (d, *J* 16.0 Hz, 1H), 7.85 (d, *J* 15.5 Hz, 1H), 7.74 (t, *J* 8.0 Hz, 1H), 7.69 (t, *J* 7.5 Hz, 1H), 7.59 (t, *J* 7.5 Hz, 2H).

*(E)-3-phenyl-1-(p-tolyl)prop-2-en-1-one* **(5a)**

Yellow powder. Yield 82 %. 1H NMR (500 MHz, DMSO) δ 8.07 (d, *J* 8.0 Hz, 2H), 7.92 (d, *J* 15.5 Hz, 1H), 7.87 (dd, *J* 5.5, 3.5 Hz, 2H), 7.73 (d, *J* 15.5 Hz, 1H), 7.50 – 7.42 (m, 3H), 7.37 (d, *J* 8.0 Hz, 2H), 2.40 (s, 3H).

*(E)-3-(3-hydroxyphenyl)-1-(p-tolyl)prop-2-en-1-one* **(6a)**

Yellow powder. Yield 87 %. 1H NMR (500 MHz, DMSO) δ 7.98 – 7.92 (m, 2H), 7.52 (d, *J* 15.0 Hz,1H), 7.49 (d, *J* 15.0 Hz,1H), 7.35 (d, *J* 8.0 Hz, 2H), 6.85 (t, *J* 8.0 Hz 1H), 6.57 (t, *J* 2.0 Hz, 1H), 6.44 (dt, *J* 7.0, 1.5 Hz, 1H), 6.32 (dd, *J* 7.5, 1.5 Hz, 1H), 2.39 (s, 3H).

*(E)-3-(2-methoxyphenyl)-1-(p-tolyl)prop-2-en-1-one* **(7a)**

Yellow powder. Yield 78 %. 1H NMR (500 MHz, DMSO) δ 8.07 – 8.00 (m, 3H), 7.96 (dd, *J* 8.0, 2.0 Hz, 1H), 7.85 (d, *J* 16.0 Hz, 1H), 7.44 (ddd, *J* 8.5, 7.0, 1.5 Hz, 1H), 7.36 (d, *J* 8.0 Hz, 2H), 7.11 (d, *J* 8.0 Hz, 1H), 7.03 (t, *J* 7.5 Hz, 1H), 3.89 (s, 3H), 2.39 (s, 3H).

*(E)-3-(4-chlorophenyl)-1-(p-tolyl)prop-2-en-1-one* **(8a)**

Yellow powder. Yield 79%. 1H NMR (500 MHz, DMSO) δ 8.07 (d, *J* 8.5 Hz, 2H), 7.95 (d, *J* 15.5 Hz, 1H), 7.94 – 7.90 (m, 2H), 7.71 (d, *J* 16.0 Hz, 1H), 7.52 (d, *J* 8.5 Hz, 2H), 7.38 (d, *J* 8.0 Hz, 2H), 2.41 (s, 3H).

*(E)-3-(3-nitrophenyl)-1-(p-tolyl)prop-2-en-1-one* **(9a)**

Yellow powder. Yield 90%. 1H NMR (500 MHz, DMSO) δ 8.76 (t, *J* 1.5 Hz, 2H), 8.33 (d, *J* 8.0 Hz, 1H), 8.26 (ddd, *J* 8.0, 2.0, 1.5 Hz, 1H), 8.14 (d, *J* 15.8 Hz, 1H), 8.11 (d, *J* 8.0 Hz, 2H), 7.83 (d, *J* 15.5 Hz, 1H), 7.74 (t, *J* 8.0 Hz, 1H), 7.39 (d, *J* 8.0 Hz, 2H), 2.41 (s, 3H).

*(E)-1-(4-methoxyphenyl)-3-(p-tolyl)prop-2-en-1-one* **(10a)**

Yellow powder. Yield 86 %. 1H NMR (500 MHz, CDCl3) δ 8.07 – 8.00 (m, 2H), 7.78 (d, *J* 15.5 Hz, 1H), 7.54 (d, *J* 8.5 Hz, 2H), 7.50 (d, *J* 15.5 Hz, 1H), 7.22 (d, *J* 8.0 Hz, 2H), 7.02 – 6.94 (m, 2H), 3.89 (s, 3H), 2.39 (s, 3H).

*(E)-1,3-bis(4-methoxyphenyl)prop-2-en-1-one* **(11a)**

Yellow powder. Yield 92 %. 1H NMR (500 MHz, CDCl3) δ 8.07 – 7.99 (m, 2H), 7.77 (d, *J* 15.5 Hz, 1H), 7.63 – 7.56 (m, 2H), 7.42 (d, *J* 15.5 Hz, 1H), 7.01 – 6.89 (m, 4H), 3.88 (s, 3H), 3.85 (s, 3H).

*(E)-3-(2,3-dimethoxyphenyl)-1-(4-methoxyphenyl)prop-2-en-1-one* **(12a)**

Yellow powder. Yield 85%. 1H NMR (500 MHz, CDCl3) δ 8.11 – 8.00 (m, 3H), 7.61 (d, *J* 16.0 Hz, 1H), 7.27 (dd, *J* 8.0, 1.5 Hz, 1H), 7.09 (t, *J* 8.0 Hz, 1H), 7.02 – 6.93 (m, 3H), 3.91 – 3.87 (m, 9H).

*(E)-3-(2-chlorophenyl)-1-(4-methoxyphenyl)prop-2-en-1-one* **(13a)**

Yellow powder. Yield 79 %. 1H NMR (500 MHz, CDCl3) δ 8.15 (d, *J* 15.5 Hz, 1H), 8.07 – 8.00 (m, 2H), 7.78 – 7.70 (m, 1H), 7.49 (d, *J* 15.5 Hz, 1H),  
7.48 – 7.39 (m, 1H), 7.35 – 7.28 (m, 2H), 7.02 – 6.95 (m, 2H),  
3.89 (s, 3H).

*(E)-1-(4-methoxyphenyl)-3-(3-nitrophenyl)prop-2-en-1-one* **(14a)**

Yellow powder. Yield 90%. 1H NMR (500 MHz, DMSO) δ 8.76 (t, *J* 1.5 Hz, 1H), 8.33 (d, *J* 8.0 Hz, 1H), 8.26 (ddd, *J* 8.0, 2.0, 1.0 Hz, 1H), 8.24 – 8.19 (m, 2H), 8.16 (d, *J* 15.5 Hz, 1H), 7.81 (d, *J* 15.5 Hz, 1H), 7.74 (t, *J* 8.0 Hz, 1H), 7.13 – 7.07 (m, 2H), 3.88 (s, 3H).

*(E)-1-(4-chlorophenyl)-3-phenylprop-2-en-1-one* **(15a)**

Yellow powder. Yield 90 %. 1H NMR (500 MHz, CDCl3) δ 7.99 – 7.94 (m, 1H), 7.81 (d, *J* 15.5 Hz, 1H), 7.67 – 7.61 (m, 1H), 7.48 (d, *J* 15.0 Hz,  
1H), 7.49 – 7.44 (m, 1H), 7.44 – 7.40 (m, 2H).

*(E)-1-(4-chlorophenyl)-3-(3-hydroxyphenyl)prop-2-en-1-one* **(16a)**

Yellow powder. Yield 93 %. 1H NMR (500 MHz, DMSO) δ 8.19 – 8.11 (m, 2H), 7.79 (d, *J* 15.5 Hz, 1H), 7.66 (d, *J* 15.5 Hz, 1H), 7.64 – 7.60 (m, 2H), 7.28 (dt, *J* 8.0, 1.5 Hz, 1H), 7.25 (t, *J* 7.5 Hz, 1H), 7.22 (t, *J* 2.0 Hz, 1H), 6.88 (ddd, *J* 8.0, 2.5, 1.5 Hz, 1H).

*(E)-1-(4-chlorophenyl)-3-(2-methoxyphenyl)prop-2-en-1-one* **(17a)**

Yellow powder. Yield 89 %. 1H NMR (500 MHz, DMSO) δ 8.15 – 8.09 (m, 2H), 8.05 (d, *J* 16.0 Hz, 1H), 7.94 (dd, *J* 8.0, 1.5 Hz, 1H), 7.83 (d, *J* 16.0 Hz, 1H), 7.63 – 7.57 (m, 2H), 7.47 – 7.40 (m, 1H), 7.09 (d, *J* 8.0 Hz, 1H), 7.02 (t, *J* 7.5 Hz, 1H), 3.88 (s, 3H).

*(E)-1-(4-chlorophenyl)-3-(3-nitrophenyl)prop-2-en-1-one* **(18a)**

Yellow powder. Yield 93%. 1H NMR (500 MHz, DMSO) δ 8.78 (t, *J* 1.5 Hz, 1H), 8.33 (d, *J* 7.5 Hz, 1H), 8.27 (ddd, *J* 8.5, 2.5, 1.0 Hz, 1H), 8.25 – 8.19 (m, 2H), 8.14 (d, *J* 15.5 Hz, 1H), 7.86 (d, *J* 15.5 Hz, 1H), 7.75 (t, *J* 8.0 Hz, 1H), 7.68 – 7.62 (m, 2H).

*(E)-1-(4-fluorophenyl)-3-(3-nitrophenyl)prop-2-en-1-one* **(19a)**

Yellow powder. Yield 92%. 1H NMR (500 MHz, DMSO) δ 8.73 (t, *J* 2.0 Hz, 1H), 8.32 – 8.25 (m, 3H), 8.25 – 8.19 (m, 1H), 8.11 (d, *J* 15.5 Hz, 1H), 7.81 (d, *J* 15.7 Hz, 1H), 7.71 (t, *J* 8.0 Hz, 1H), 7.43 – 7.31 (m, 2H).

*(2E,4E)-1,5-diphenylpenta-2,4-dien-1-one* **(20a)**

Yellow powder. Yield 83%. 1H NMR (500 MHz, DMSO) δ 8.05 – 7.98 (m, 2H), 7.66 (td, *J* 7.5, 1.0 Hz, 1H), 7.66 – 7.57 (m, 2H), 7.60 – 7.49 (m, 3H), 7.46 – 7.32 (m, 4H), 7.32 – 7.18 (m, 2H).

*(2E,4E)-5-phenyl-1-(p-tolyl)penta-2,4-dien-1-one* **(21a)**

Yellow powder. Yield 86%. 1H NMR (500 MHz, CDCl3) δ 7.92 – 7.85 (m, 2H),7.59 (ddd, *J* 15.0 8.5, 2.0 Hz, 1H), 7.53 – 7.45 (m, 2H), 7.40 – 7.32 (m, 2H), 7.35 – 7.27 (m, 1H), 7.28 (d, *J* 8.0 Hz, 2H), 7.09 (d, *J* 15.0 Hz, 1H), 7.06 – 6.95 (m, 2H), 2.42 (s, 3H).

*(2E,4E)-1-(4-methoxyphenyl)-5-phenylpenta-2,4-dien-1-one* **(22a)**

Yellow powder. Yield 86%. 1H NMR (500 MHz, CDCl3) δ 8.03 – 7.95 (m, 2H), 7.59 (ddd, *J* 15.0, 8.5, 2.0 Hz, 1H), 7.53 – 7.46 (m, 2H), 7.42 – 7.33 (m, 2H), 7.37 – 7.28 (m, 1H), 7.11 (d, *J* 14.5 Hz, 1H), 7.07 – 6.93 (m, 4H), 3.88 (s, 3H).

*(2E,4E)-1-(2,5-dimethoxyphenyl)-5-phenylpenta-2,4-dien-1-one* **(23a)**

Yellow powder. Yield 90%. 1H NMR (500 MHz, DMSO) δ 7.61 – 7.55 (m, 2H), 7.42 – 7.36 (m, 2H), 7.36 – 7.32 (m, 1H), 7.32 – 7.26 (m, 1H), 7.21 (dd, *J* 15.5, 10.5 Hz, 1H), 7.16 – 7.06 (m, 3H), 7.00 (dd, *J* 2.0, 1.0 Hz, 1H), 6.93 (d, *J* 15.0 Hz, 1H), 3.80 (s, 3H), 3.74 (s, 3H).

*(2E,4E)-1-(4-chlorophenyl)-5-phenylpenta-2,4-dien-1-one* **(24a)**

Yellow powder. Yield 87%. 1H NMR (500 MHz, DMSO) δ 8.05 – 7.99 (m, 2H), 7.66 – 7.60 (m, 2H), 7.63 – 7.56 (m, 2H), 7.54 (ddd, *J* 15.0, 7.0, 3.5 Hz, 1H), 7.46 – 7.39 (m, 2H), 7.39 – 7.32 (m, 2H), 7.29 – 7.20 (m, 2H).

*(2E,4E)-1-(4-fluorophenyl)-5-phenylpenta-2,4-dien-1-one* **(25a)**

Yellow powder. Yield 78%. 1H NMR (500 MHz, DMSO) δ 8.13 – 8.06 (m, 2H), 7.61 – 7.57 (m, 2H), 7.54 (ddd, *J* 15.0, 7.5, 1.5 Hz, 1H), 7.45 – 7.32 (m, 7H), 7.28 – 7.18 (m, 2H).

*(2E,4E)-1-(3-nitrophenyl)-5-phenylpenta-2,4-dien-1-one* **(26a)**

Yellow powder. Yield 77%. 1H NMR (500 MHz, DMSO) δ 8.70 (t, *J* 2.0 Hz, 1H), 8.48 (ddd, *J* 8.0, 2.5, 1.5 Hz, 1H), 8.43 (d, *J* 7.5 Hz, 1H), 7.87 (t, *J* 8.0 Hz, 1H), 7.66 – 7.58 (m, 3H), 7.46 (d, *J* 15.0 Hz, 1H), 7.42 (d, *J* 7.5 Hz, 2H), 7.40 – 7.34 (m, 1H), 7.34 – 7.24 (m, 2H).

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| **Fig S1.** 1H NMR Spectrum of compound 1**b** (DMSO) | | | | | | |
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| **Fig S2.** 13C NMR Spectrum of compound 1**b** (DMSO) | | | | | | |
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| **Fig S3.** DEPT NMR Spectra of compound 1**b** (DMSO) | | | | | | |
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| **Fig S4.** HR-MS spectrum of compound 1**b** | | | | | | |
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| **Fig S5.** 1H NMR Spectrum of compound 2**b** (DMSO) | | | | | | |
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| **Fig S6.** 13C NMR Spectrum of compound 2**b** (DMSO) | | | | | | |
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| **Fig S7.** DEPT NMR Spectrum of compound 2**b** (DMSO) | | | | | | |
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| **Fig S8.** HR-MS Spectrum of compound 2**b** | | | | | | |
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| **Fig S9.** 1H NMR Spectrum of compound 4**b** (DMSO) | | | | | | |
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| **Fig S10.** 13C NMR Spectrum of compound 4**b** (DMSO) | | | | | | |
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| **Fig S11.** DEPT NMR Spectra of compound 4**b** (DMSO) | | | | | | |
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| **Fig S12.** HR-MS spectrum of compound 4**b** | | | | | | |
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| **Fig S13.** 1H NMR Spectrum of compound 6**b** (DMSO) | | | | | | |
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| **Fig S14.** 13C NMR Spectrum of compound 6**b** (DMSO) | | | | | | |
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| **Fig S15.** DEPT NMR Spectrum of compound 6**b** (DMSO) | | | | | | |
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| **Fig S16.** HR-MS spectrum of compound 6**b** | | | | | | |
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| **Fig S17.** 1H NMR Spectrum of compound 7**b** (DMSO) | | | | | | |
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| **Fig S18.** 13C NMR Spectrum of compound 7**b** (DMSO) | | | | | | |
|  | | | | | | |
| **Fig S19.** DEPT NMR Spectrum of compound 7**b** (DMSO) | | | | | | |
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| **Fig S20.** HR-MS Spectrum of compound 7**b** | | | | | | |
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| **Fig S21.** 1H NMR Spectrum of compound8**b** (DMSO) | | | | | | |
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| **Fig S22.** 13C NMR Spectrum of compound8**b** (DMSO) | | | | | | |
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| **Fig S23.** DEPT NMR Spectrum of compound8**b** (DMSO) | | | | | | |
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| **Fig S24.** HR-MS spectrum of compound8**b** | | | | | | |
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| **Fig S25.** 1H NMR Spectrum of compound 9**b** (DMSO) | | | | | | |
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| **Fig S26.** 13C NMR Spectrum of compound 9**b** (DMSO) | | | | | | |
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| **Fig S27.** HR-MS spectrum of compound 9**b** | | | | | | |
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| **Fig S28.** 1H NMR Spectrum of compound **12b** (DMSO) | |
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| **Fig S29.** 13C NMR Spectrum of compound **12b** (DMSO) | |
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| **Fig S30.** DEPT NMR Spectrum of compound **12b** (DMSO) | |
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| **Fig S31.** HR-MS spectrum of compound **12b** | |
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| **Fig S32.** 1H NMR Spectrum of compound 13**b** (DMSO) | | |
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| **Fig S33.** 13C NMR Spectrum of compound 13**b** (DMSO) | | |
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| **Fig S34.** DEPT NMR Spectra of compound 13**b** (DMSO) | | |
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| **Fig S35.** HR-MS spectrum of compound 13**b** | | |
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| **Fig S36.** 1H NMR Spectrum of compound 14**b** (DMSO) | | | | | |
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| **Fig S37.** 13C NMR Spectrum of compound 14**b** (DMSO) | | | | | |
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| **Fig S38.** DEPT NMR Spectrum of compound 14**b**(DMSO) | | | | | |
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| **Fig S39.** HR-MS spectrum of compound 14**b** | | | | | |
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| **Fig S40.** 1H NMR Spectrum of compound 16**b** (DMSO) | | | | |
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| **Fig S41.** 13C NMR Spectrum of compound 16**b** (DMSO) | | | | |
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| **Fig S42.** DEPT NMR Spectrum of compound 16**b** (DMSO) | | | | |
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| **Fig S43.** HR-MS spectrum of compound 16**b** | | | | |
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| **Fig S44.** 1H NMR Spectrum of compound 17**b** (DMSO) | | | | |
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| **Fig S45.** 13C NMR Spectrum of compound 17**b** (DMSO) | | | | |
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| **Fig S46.** DEPT NMR Spectrum of compound 17**b** (DMSO) | | | | |
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| **Fig S47.** HR-MS Spectrum of compound 17**b** | | | | |
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| **Fig S48.** 1H NMR Spectrum of compound **18b** (DMSO) | | | | |
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| **Fig S49.** 13C NMR Spectrum of compound 18**b** (DMSO) | | | | |
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| **Fig S50.** DEPT NMR Spectrum of compound 18**b** (DMSO) | | | | |
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| **Fig S51.** HR-MS spectrum of compound 18**b** | | | | |
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| **Fig S52.** 1H NMR Spectrum of compound 19**b** (DMSO) | | | | |
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| **Fig S53.** 13C Spectrum of compound 19**b** (DMSO) | | | | |
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| **Fig S54.** HR-MS spectrum of compound 19**b** | | | | |
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| **Fig S55.** 1H NMR Spectrum of compound 20**b** (DMSO) | | | |
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| **Fig S56.** 13C NMR Spectrum of compound **20b** (DMSO) | | | |
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| **Fig S57.** HR-MS spectrum of compound **20b** | | | |
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| **Fig S58.** 1H NMR Spectrum of compound 21**b** (DMSO) | | | |
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| **Fig S59.** 13C NMR Spectrum of compound **21b** (DMSO) | | | |
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| **Fig S60.** DEPT NMR Spectrum of compound 21**b** (DMSO) | | | |
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| **Fig S61.** HR-MS spectrum of compound 21**b** | | | |
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| **Fig S62.** 1H NMR Spectrum of compound 22**b** (DMSO) | | | | |
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| **Fig S63.** 13C NMR Spectrum of compound 22**b** (DMSO) | | | | |
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| **Fig S64.** DEPT NMR Spectrum of compound 22**b** (DMSO) | | | | |
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| **Fig S65.** HR-MS spectrum of compound 22**b** | | | | |
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| **Fig S66.** 1H NMR Spectrum of compound 23**b** (DMSO) | | | | |
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| **Fig S67.** 13C NMR Spectrum of compound **23b** (DMSO) | | | | |
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| **Fig S68.** DEPT NMR Spectrum of compound 23**b** (DMSO) | | | | |
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| **Fig S69.** HR-MS spectrum of compound 23**b** | | | | |
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| **Fig S70.** 1H Spectrum of compound 24**b** (DMSO) | | | | |
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| **Fig S71.** 13C NMR Spectrum of compound 24**b** (DMSO) | | | | |
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| **Fig S72.** HR-MS spectrum of compound 24**b** | | | | |
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| **Fig S73.** 1H NMR Spectrum of compound 25**b** (DMSO) | | | | |
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| **Fig S74.** 13C NMR Spectrum of compound 25**b** (DMSO) | | | | |
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| **Fig S75.** 13DEPT NMR Spectrum of compound 25**b** (DMSO) | | | | |
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| **Fig S76.** HR-MS spectrum of compound 25**b** | | | | |
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| **Fig S77.** 1H NMR Spectrum of compound 26**b** (DMSO) | | | | |
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| **Fig S78.** 13C NMR Spectrum of compound 26**b** (DMSO) | | | | |
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| **Fig S79.** DEPT Spectrum of compound 26**b** (DMSO) | | | | |
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| **Fig S80.** HR-MS spectrum of compound 26**b** | | | | |
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