Electronic Supplementary Information

The synthesis of two long-chain *N*-hydroxy amino coumarin compounds and their applications in the analysis of aldehydes†

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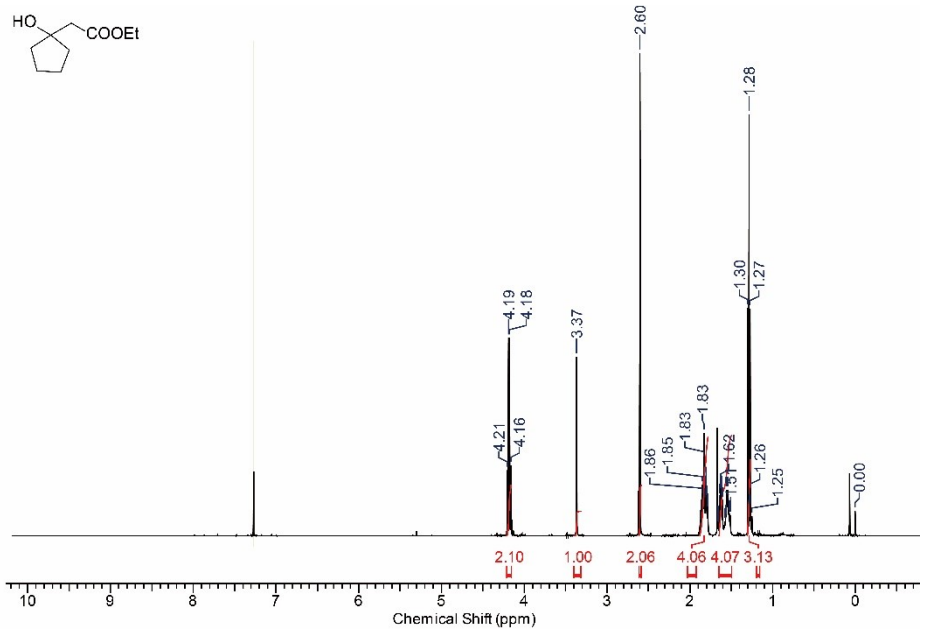

Fig. S1 ^{1}H NMR spectrum of compound **3** (500 MHz, $CDCl_3$).

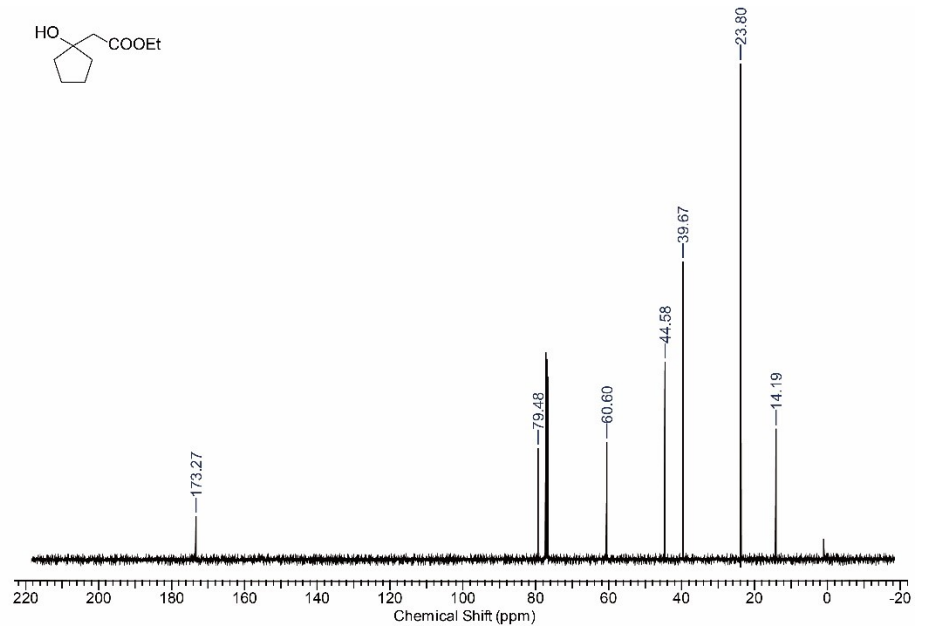

Fig. S2 ^{13}C NMR spectrum of compound **3** (125 MHz, $CDCl_3$).

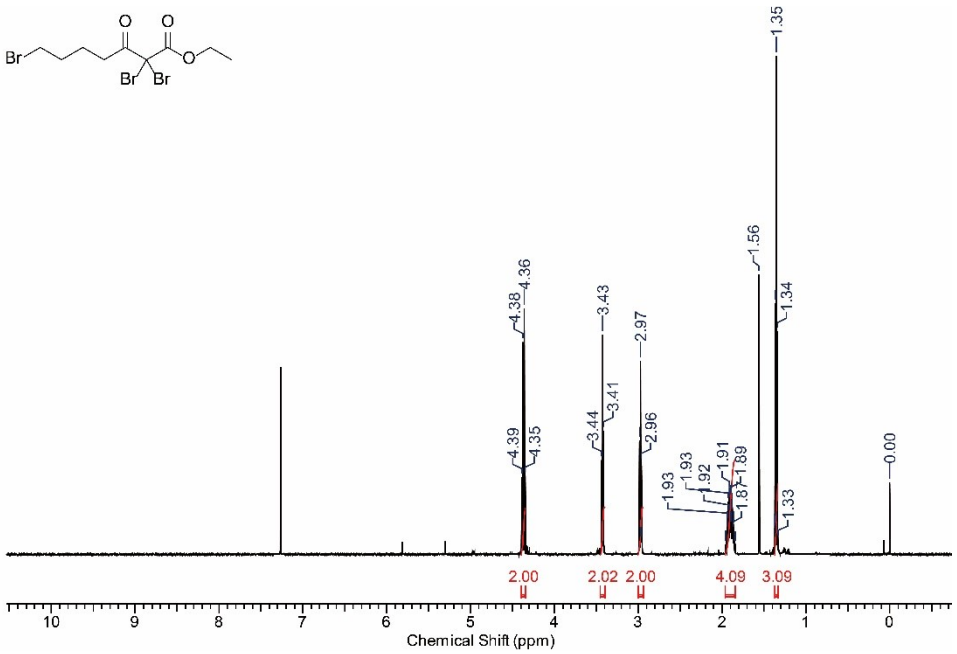

Fig. S3 ^{1}H NMR spectrum of compound **4** (500 MHz, $CDCl_3$).

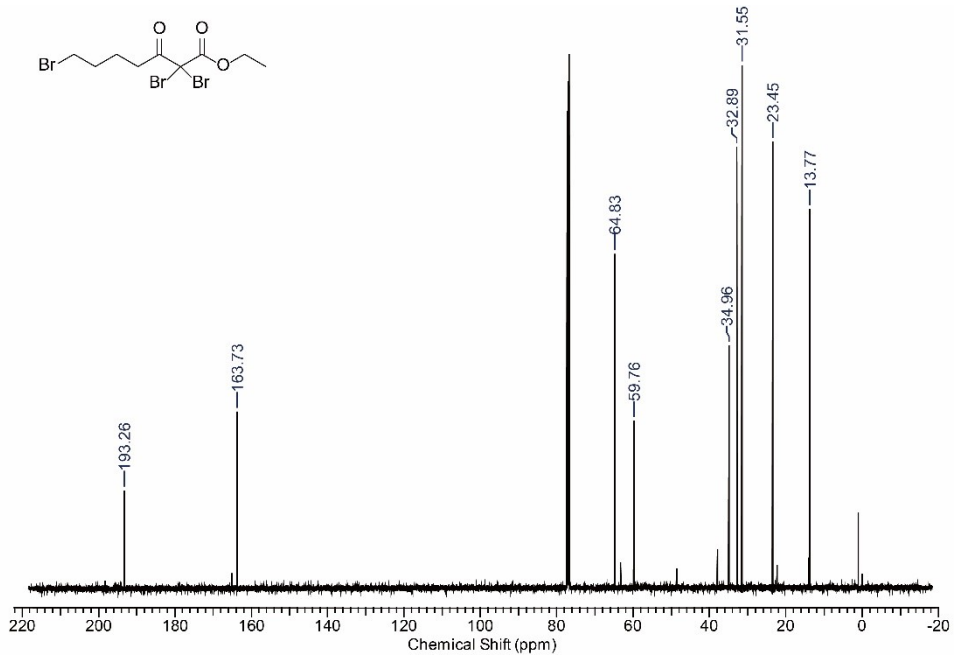

Fig. S4 ^{13}C NMR spectrum of compound **4** (125 MHz, $CDCl_3$).

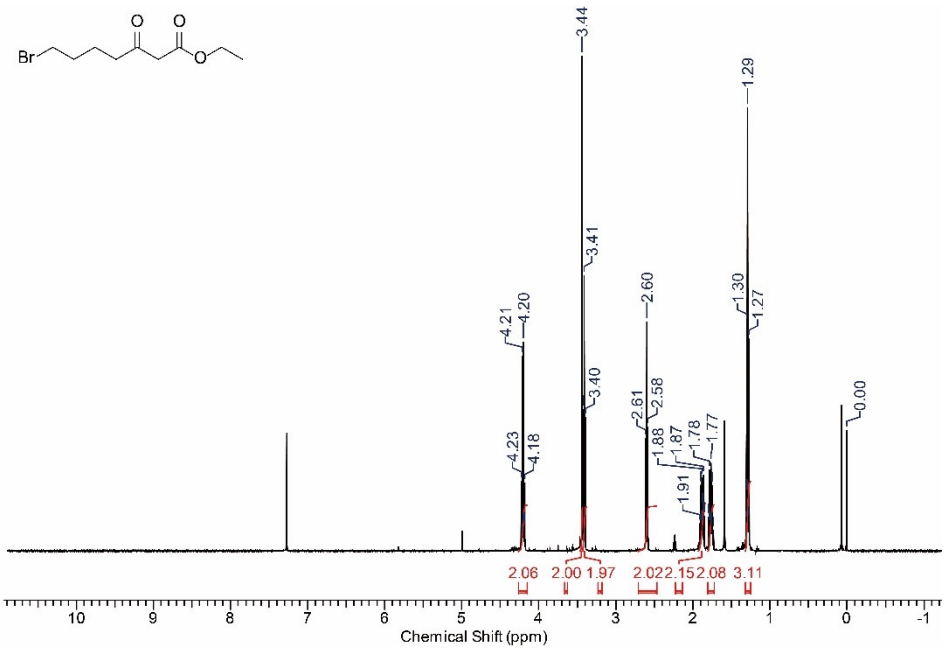

Fig. S5 ^{1}H NMR spectrum of compound **5** (500 MHz, $CDCl_3$).

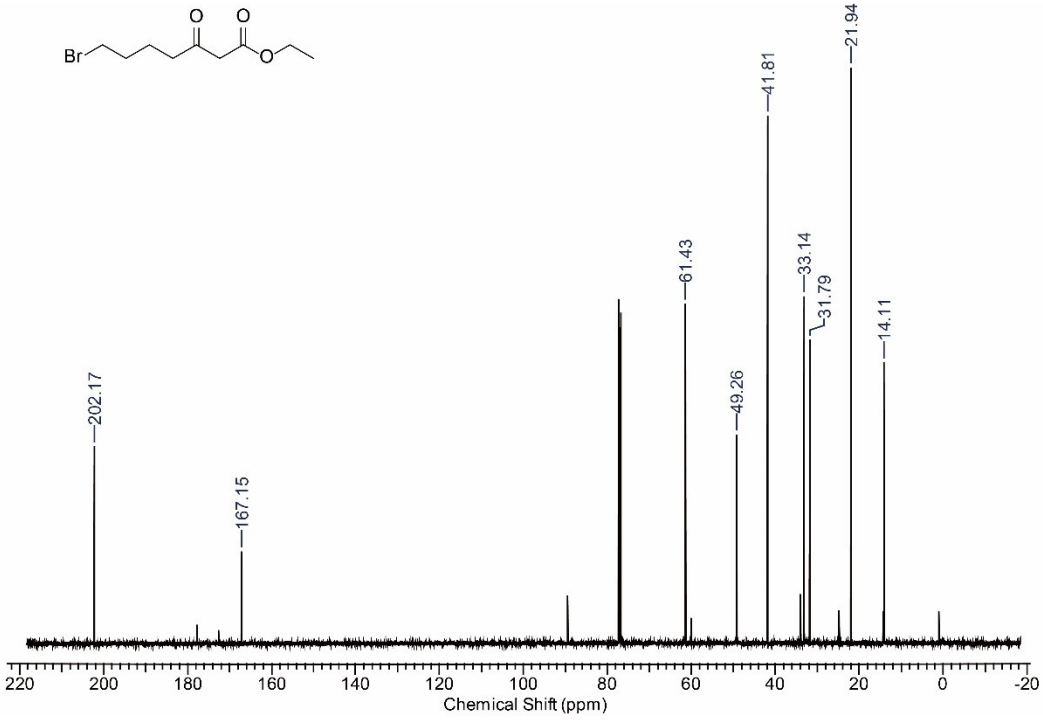

Fig. S6 ^{13}C NMR spectrum of compound **5** (125 MHz, $CDCl_3$).

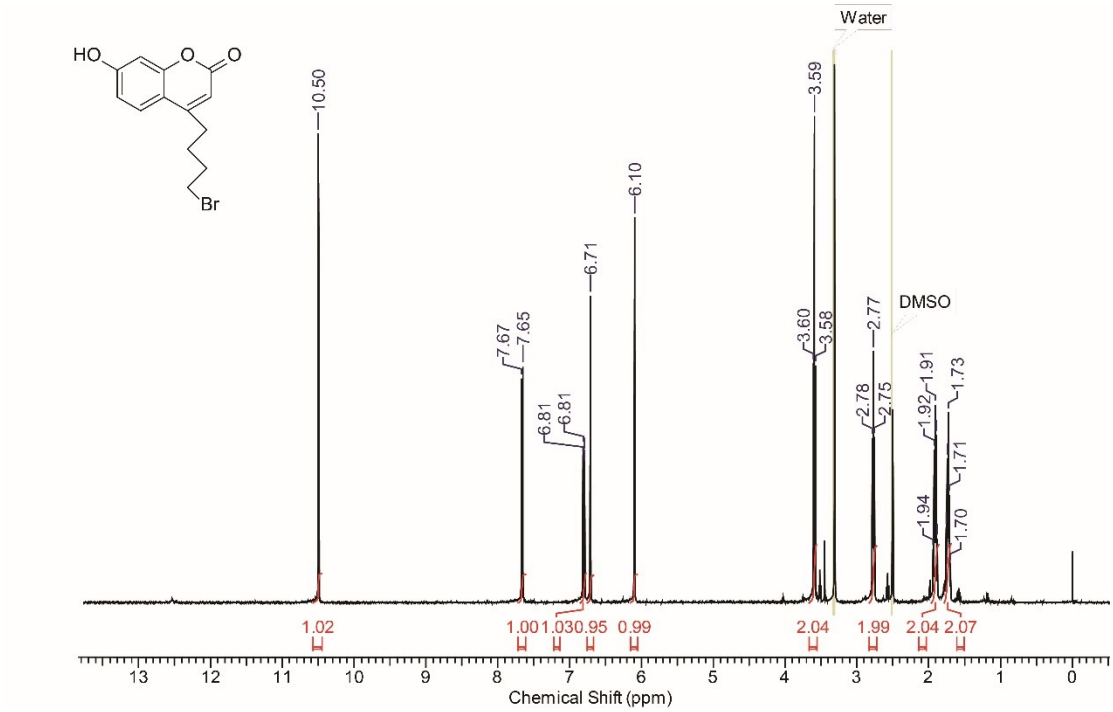

Fig. S7 ^{1}H NMR spectrum of compound **7a** (500 MHz, DMSO-*d*6).

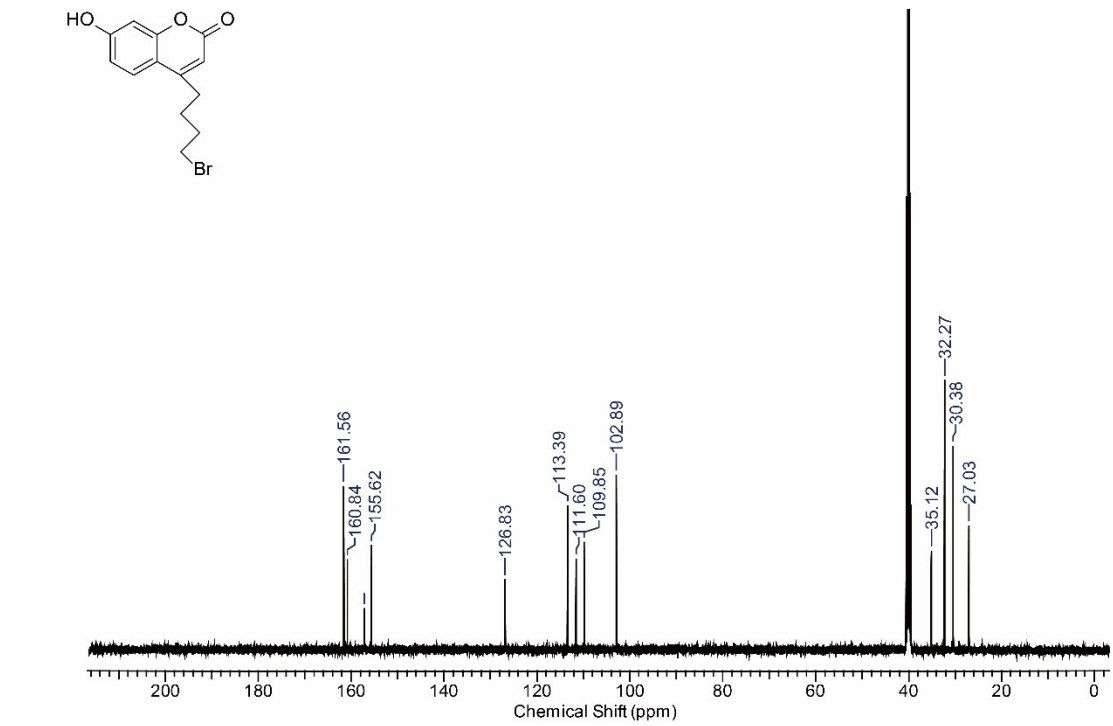

Fig. S8 ^{13}C NMR spectrum of compound **7a** (125 MHz, DMSO-*d*6).

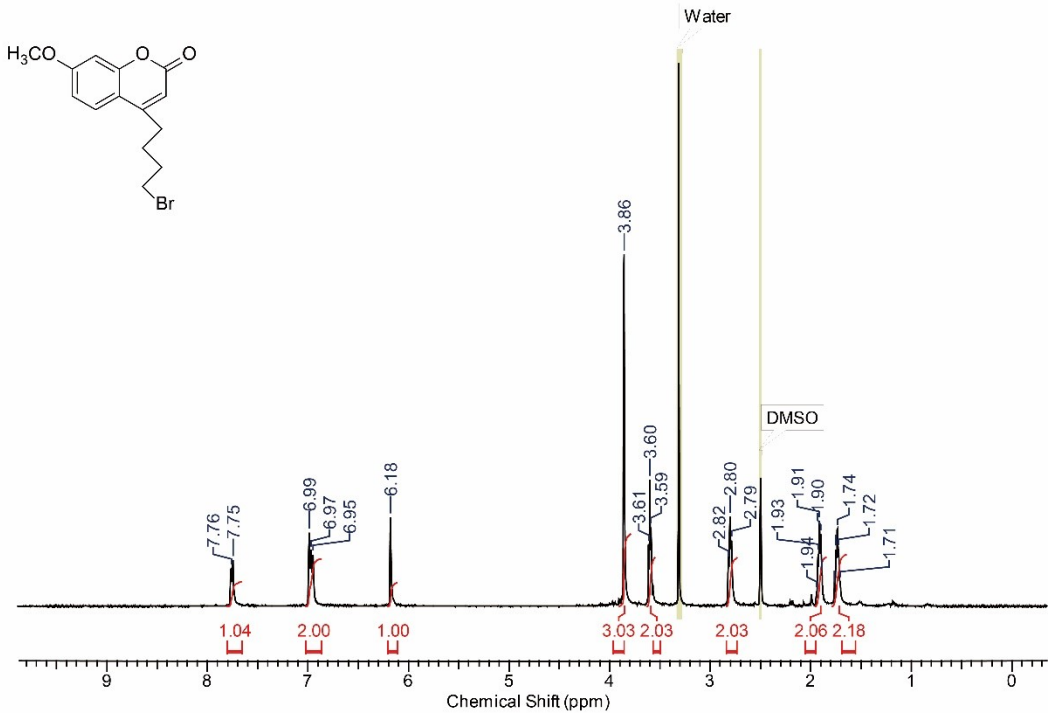

Fig. S9 ^{1}H NMR spectrum of compound **7b** (500 MHz, DMSO-*d*6).

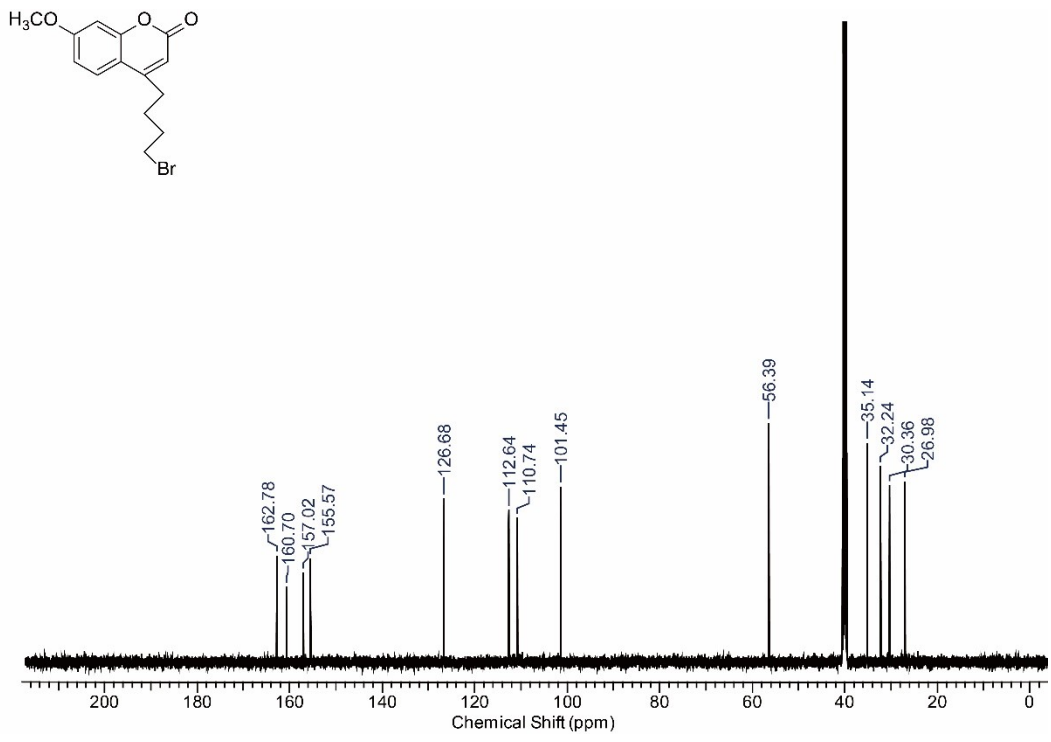

Fig. S10 ^{13}C NMR spectrum of compound **7b** (125 MHz, DMSO-*d*6).

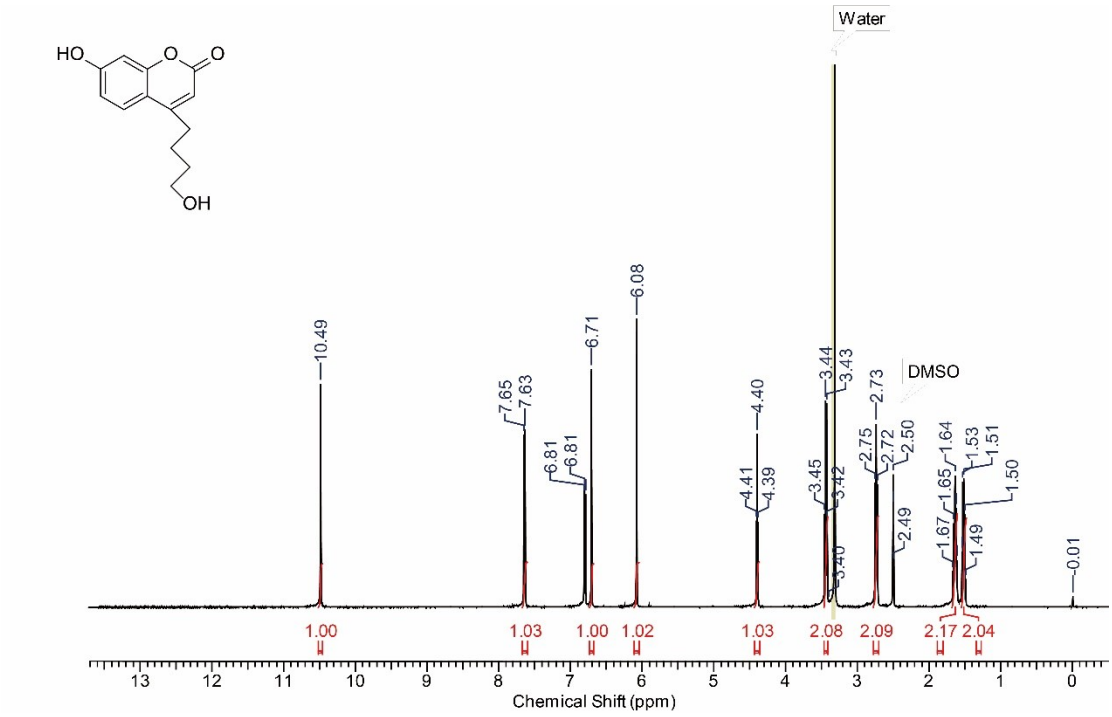

Fig. S11 ^{1}H NMR spectrum of compound **8a** (500 MHz, DMSO-*d*6).

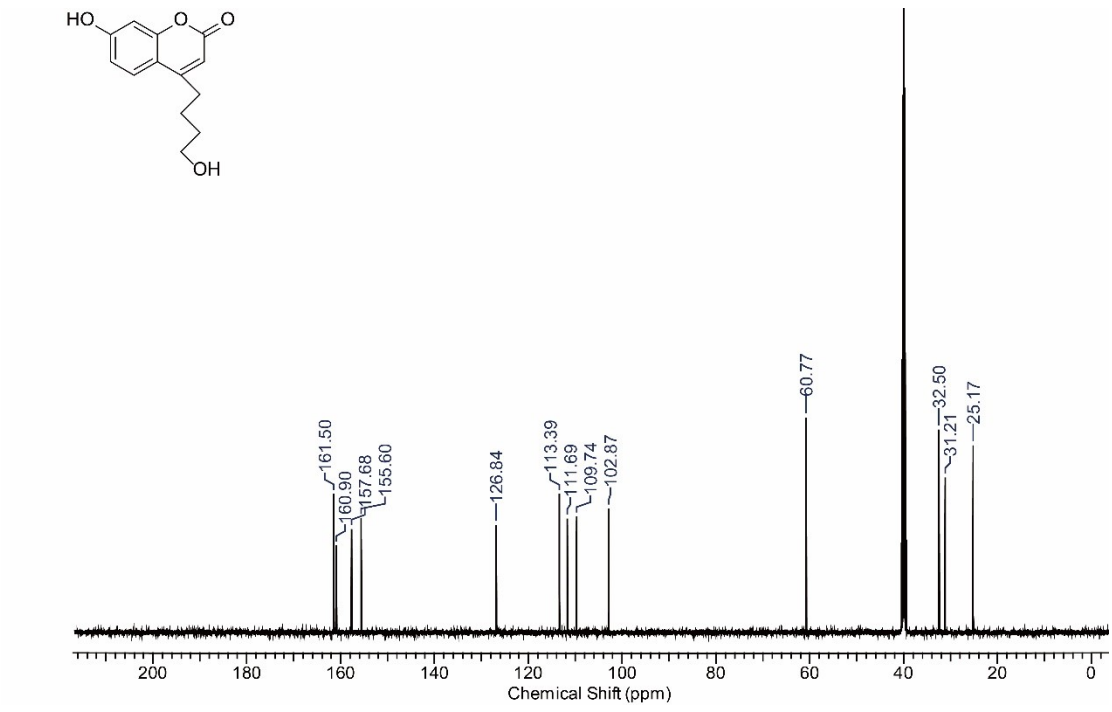

Fig. S12 ^{13}C NMR spectrum of compound **8a** (125 MHz, DMSO-*d*6).

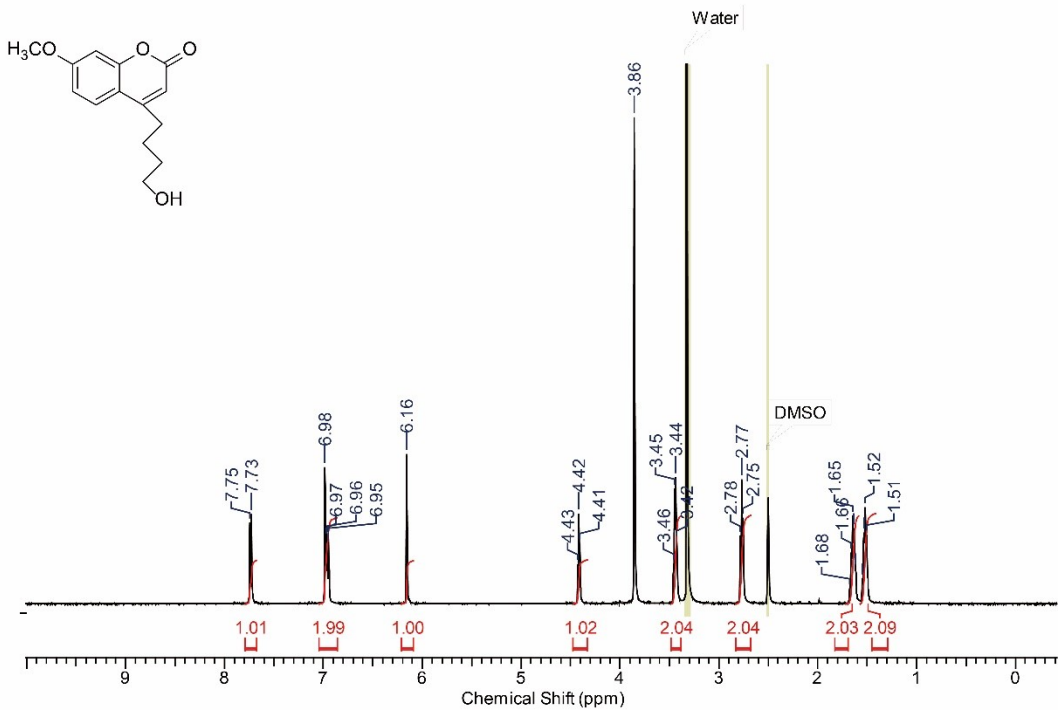

Fig. S13 [1]H NMR spectrum of compound **8b** (500 MHz, DMSO-*d*6).

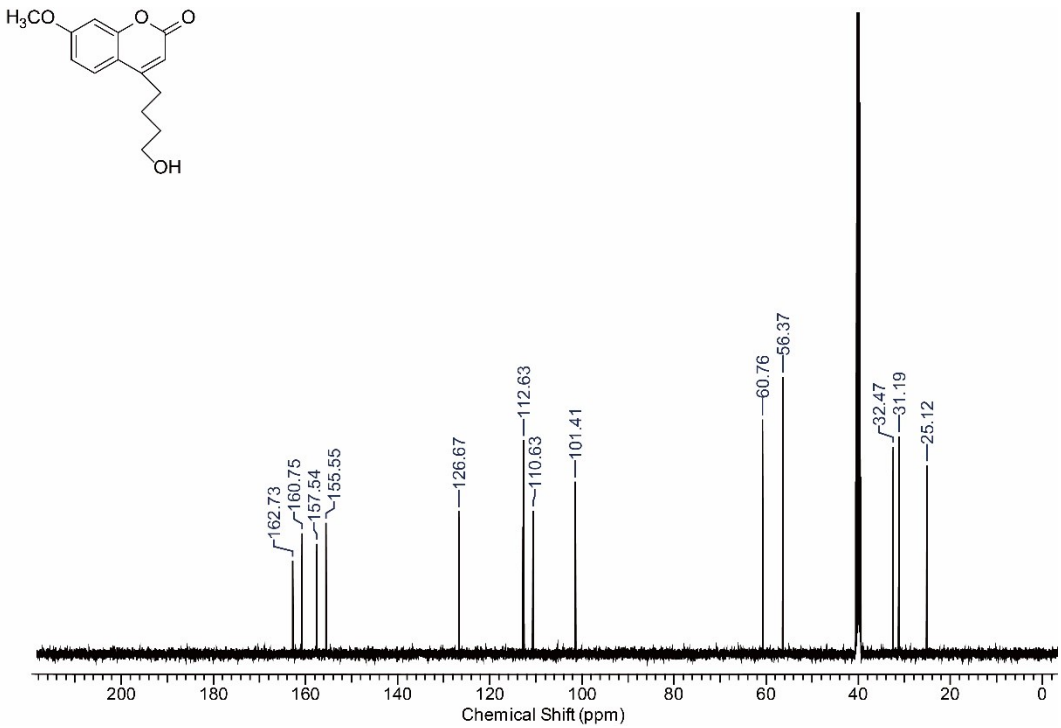

Fig. S14 [13]C NMR spectrum of compound **8b** (125 MHz, DMSO-*d*6).

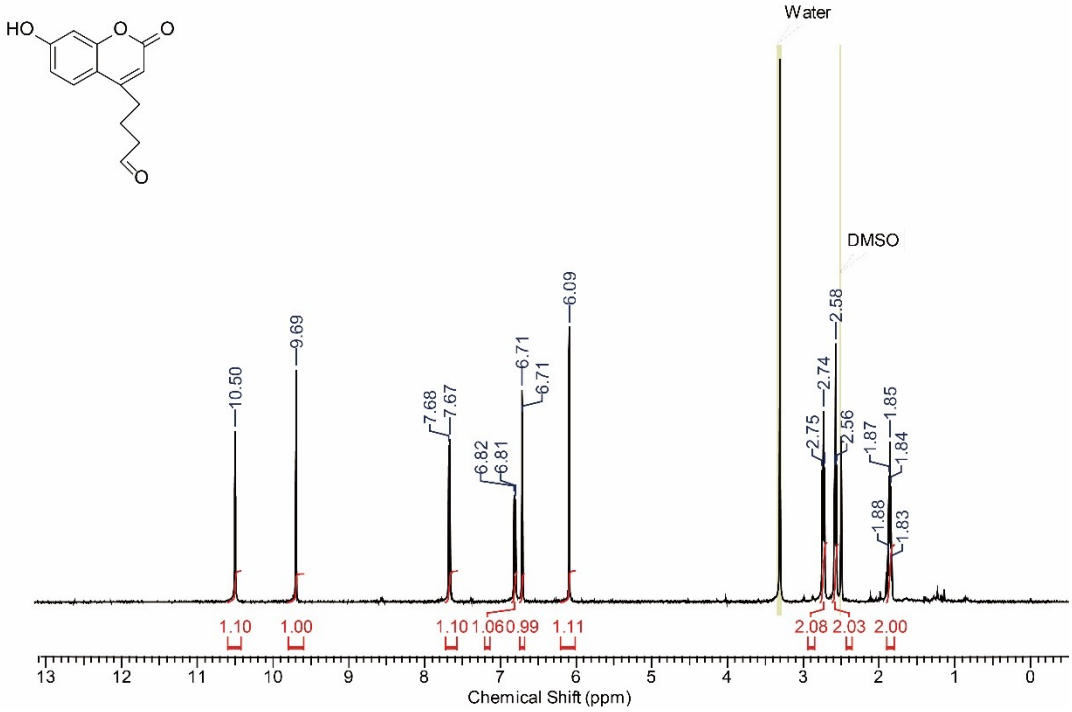

Fig. S15 ^{1}H NMR spectrum of compound **9a** (500 MHz, DMSO-*d*6).

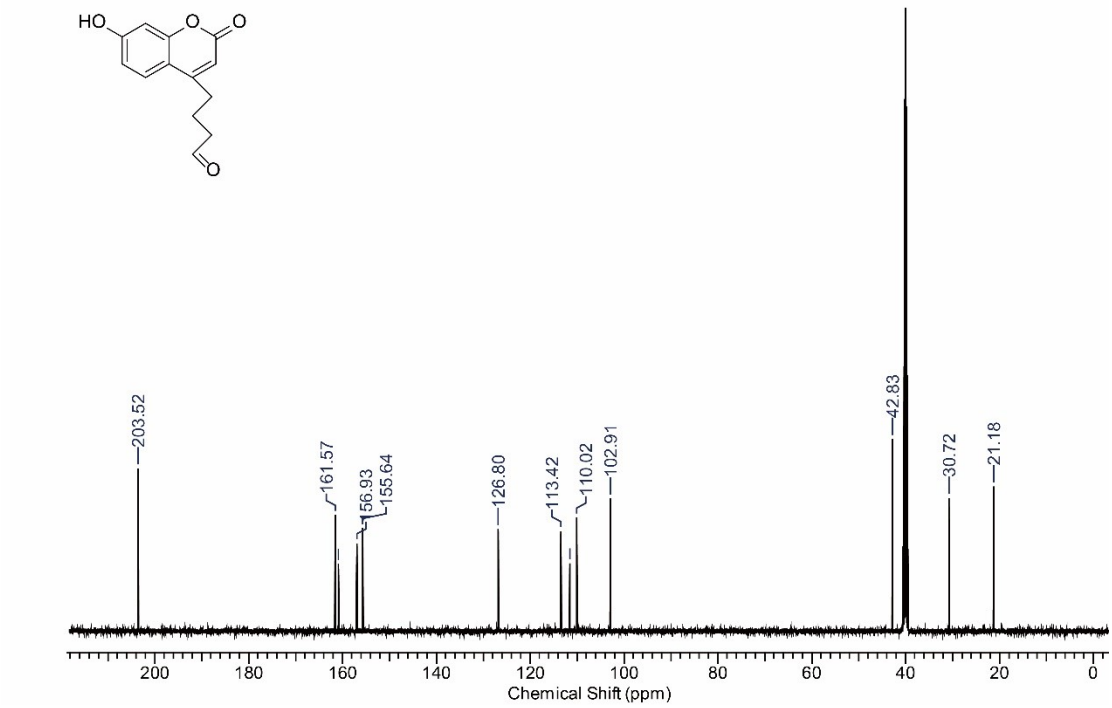

Fig. S16 ^{13}C NMR spectrum of compound **9a** (125 MHz, DMSO-*d*6).

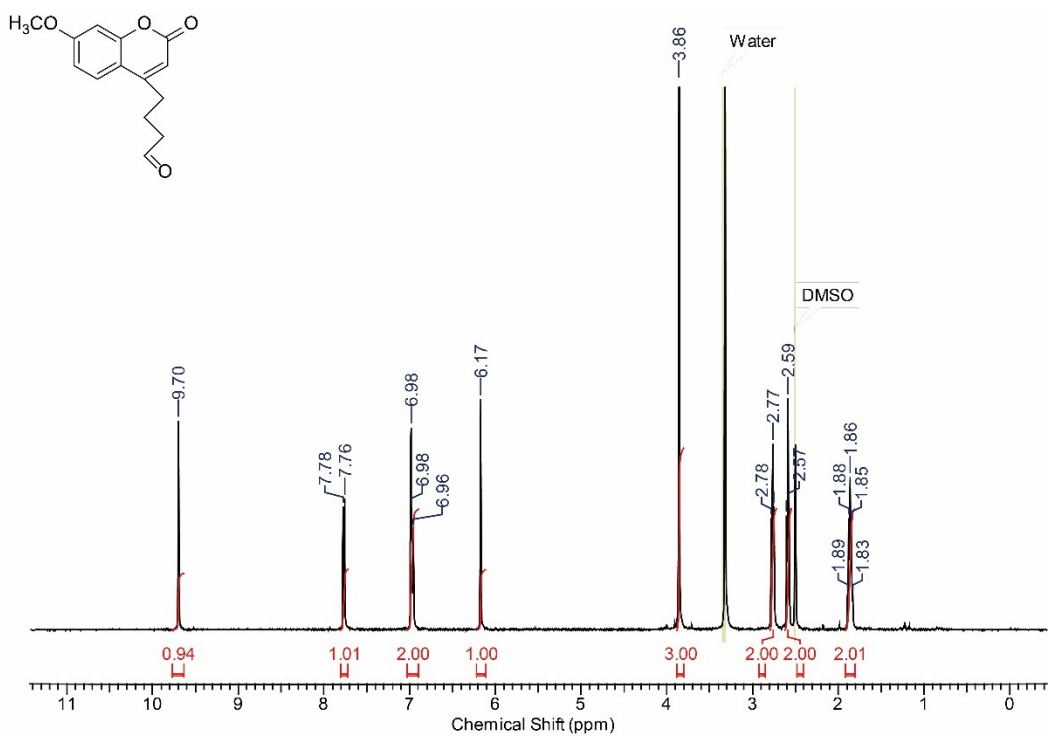

Fig. S17 ^{1}H NMR spectrum of compound **9b** (500 MHz, DMSO-*d*6).

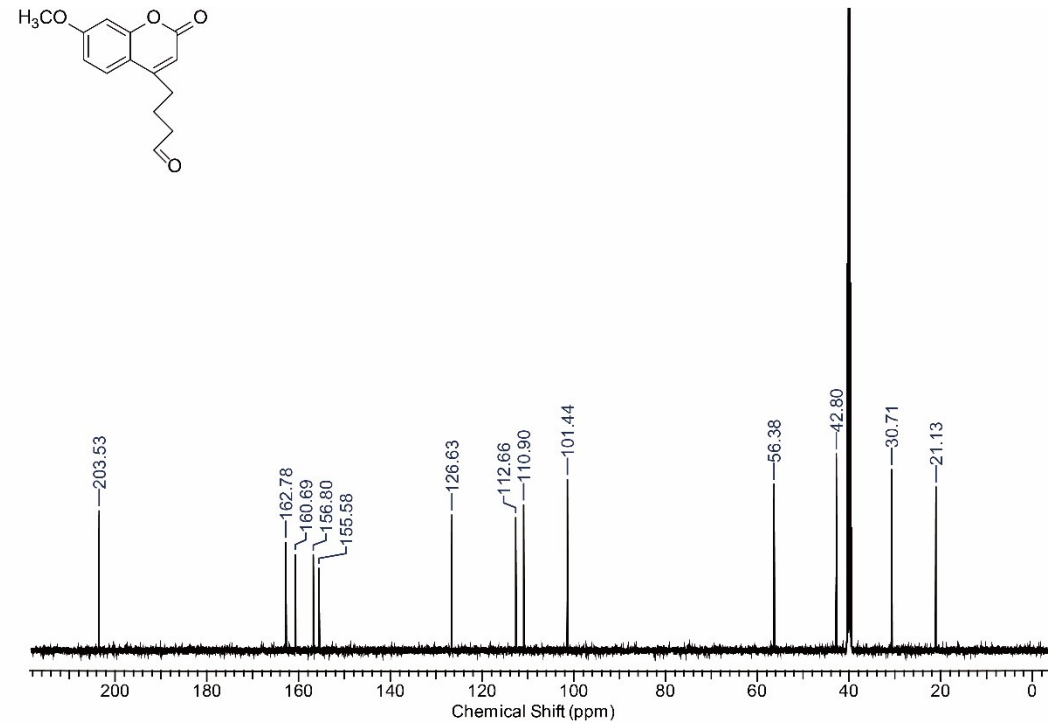

Fig. S18 ^{13}C NMR spectrum of compound **9b** (125 MHz, DMSO-*d*6).

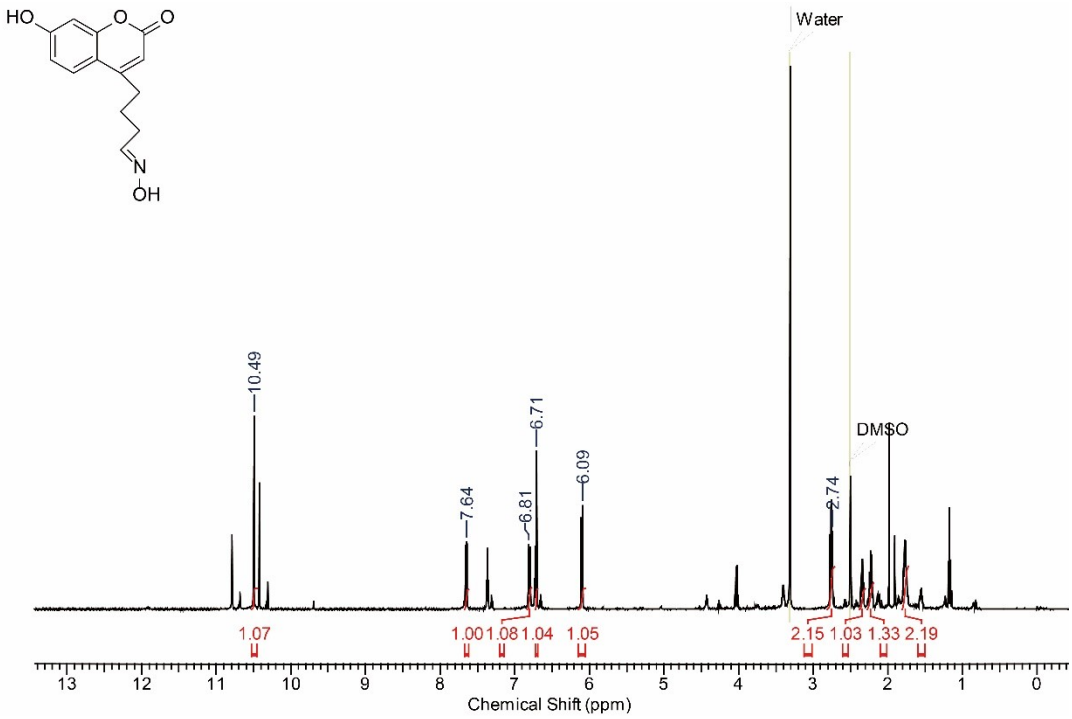

Fig. S19 ^{1}H NMR spectrum of compound **10a** (500 MHz, DMSO-*d*6).

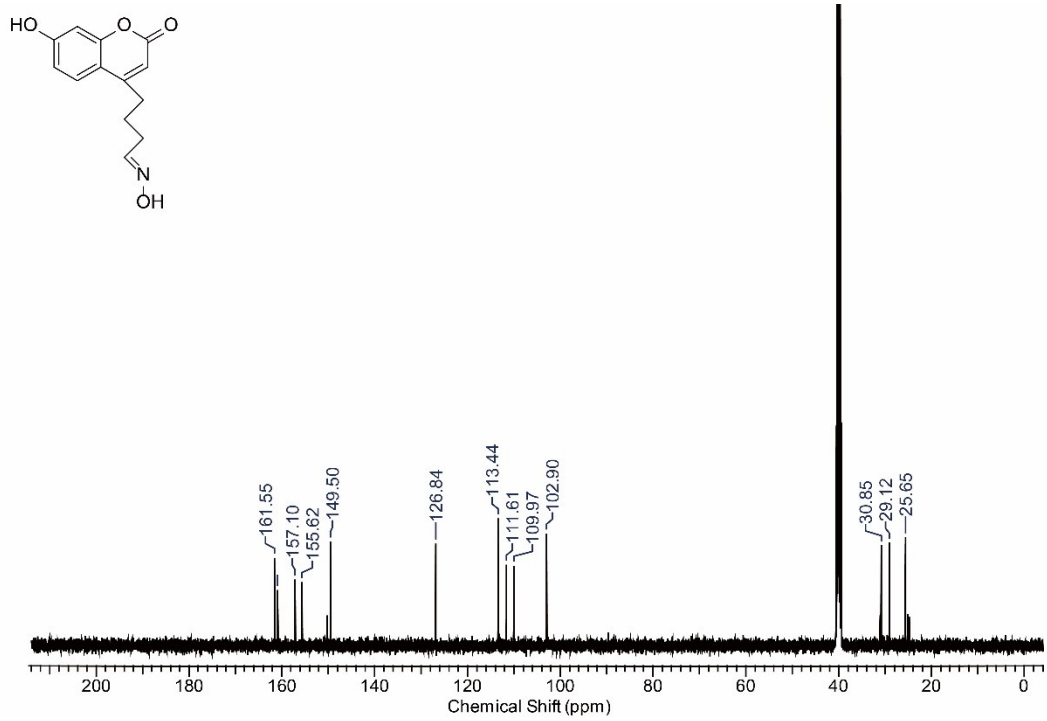

Fig. S20 ^{13}C NMR spectrum of compound **10a** (125 MHz, DMSO-*d*6).

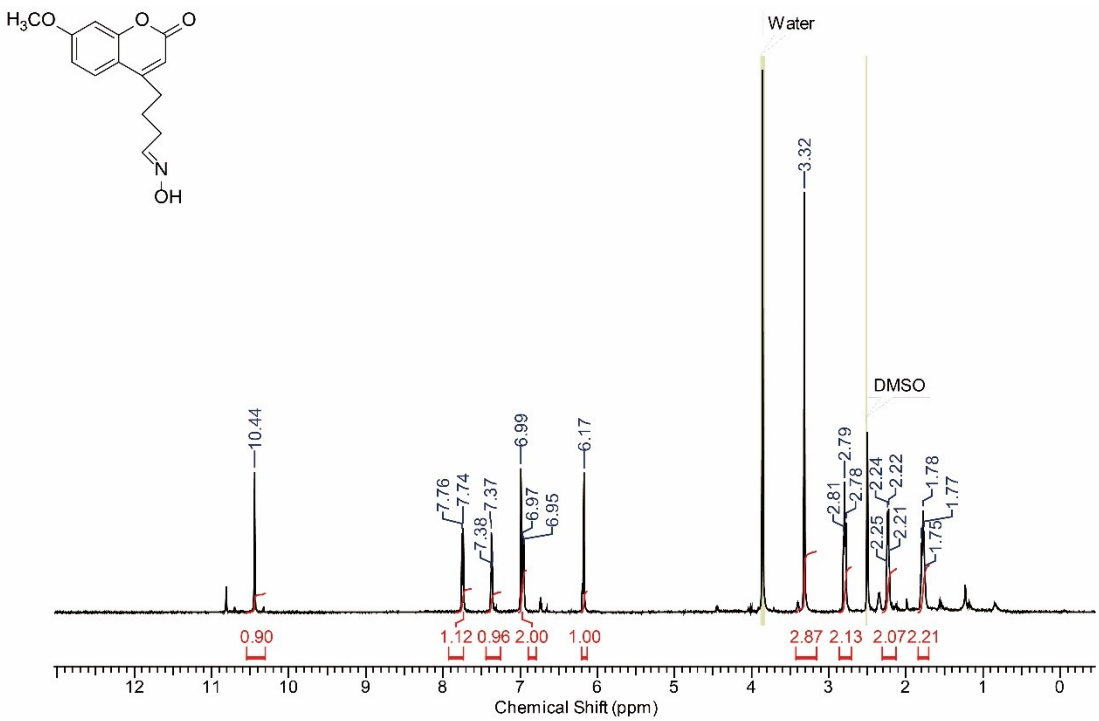

Fig. S21 ^{1}H NMR spectrum of compound **10b** (500 MHz, DMSO-*d*6).

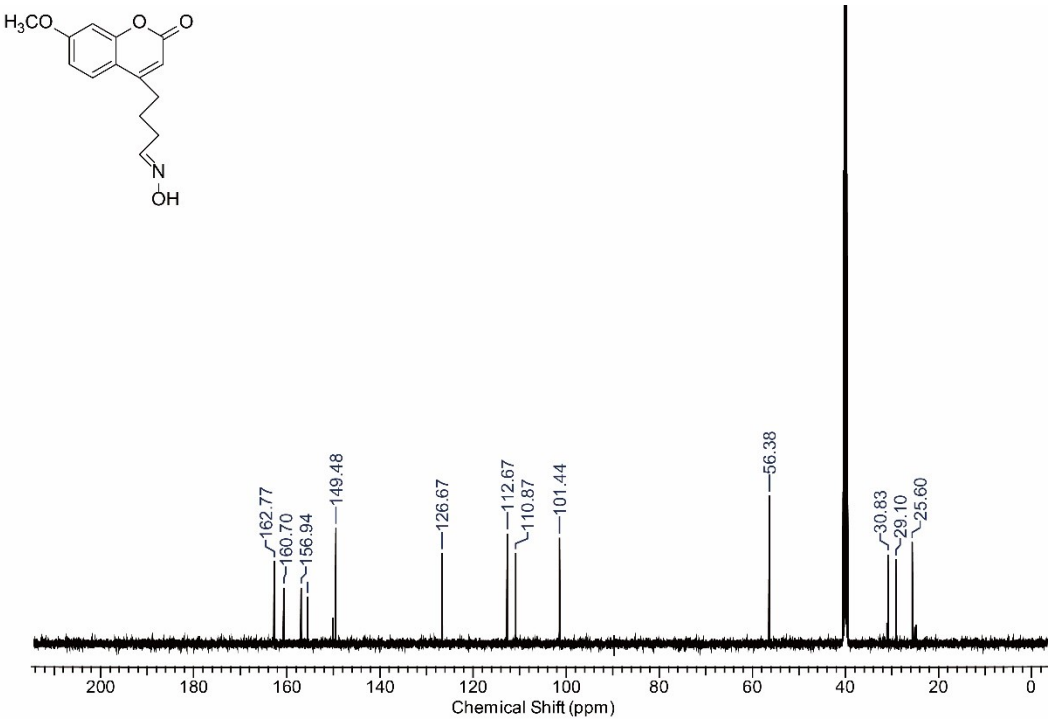

Fig. S22 ^{13}C NMR spectrum of compound **10b** (125 MHz, DMSO-*d*6).

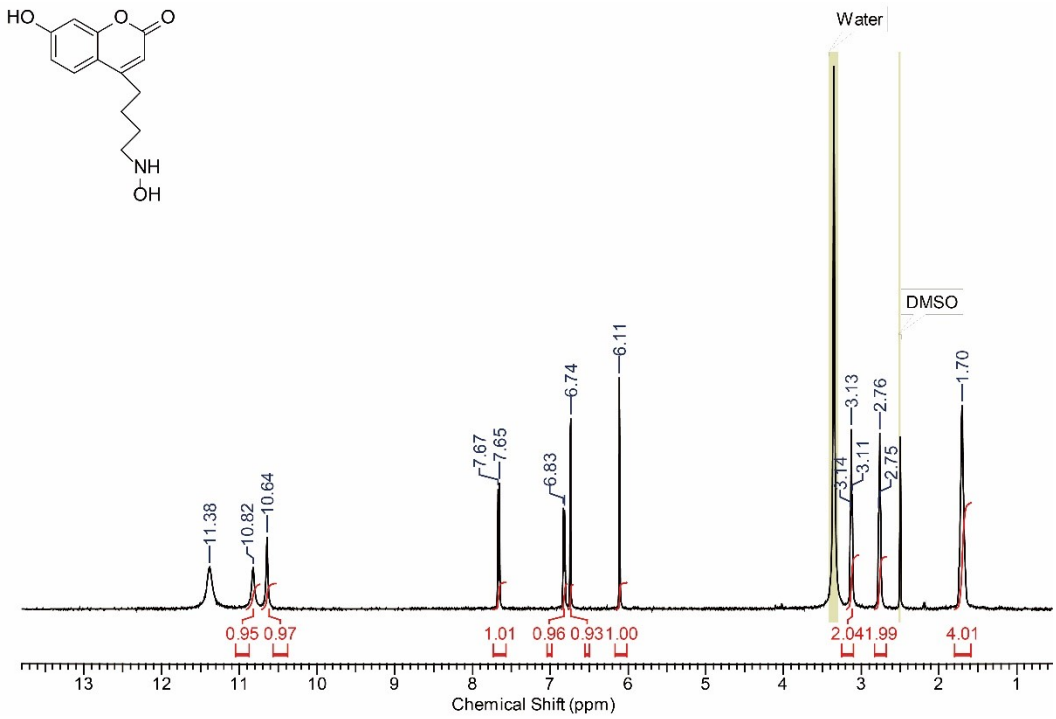

Fig. S23 ^{1}H NMR spectrum of compound **1a** (500 MHz, DMSO-*d*6)

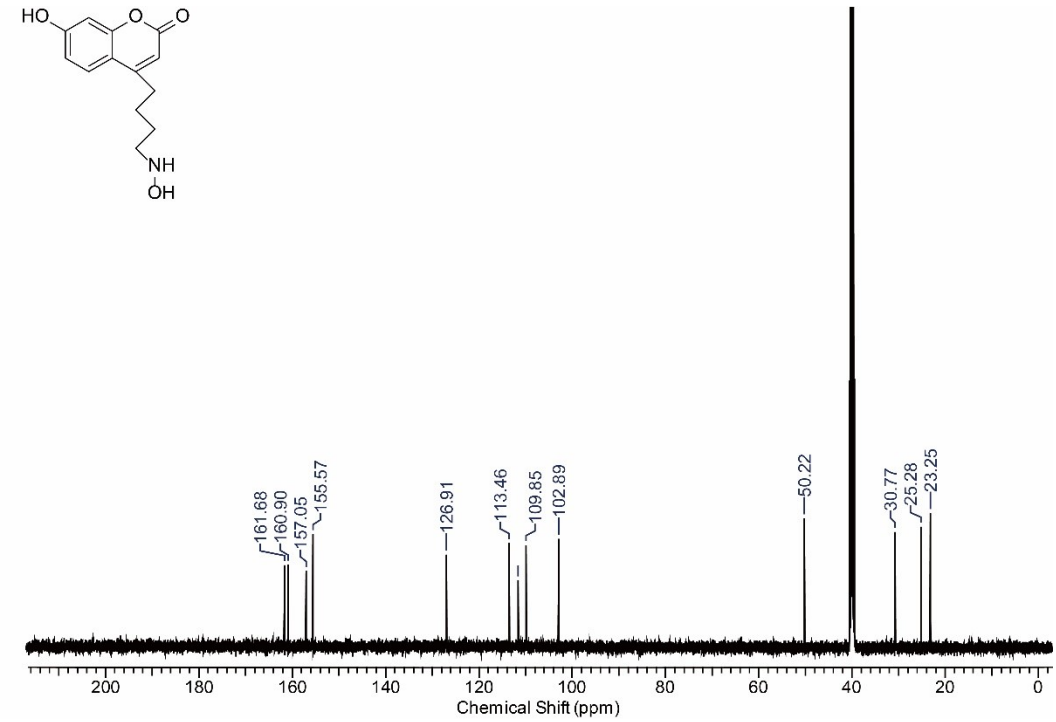

Fig. S24 ^{13}C NMR spectrum of compound **1a** (125 MHz, DMSO-*d*6).

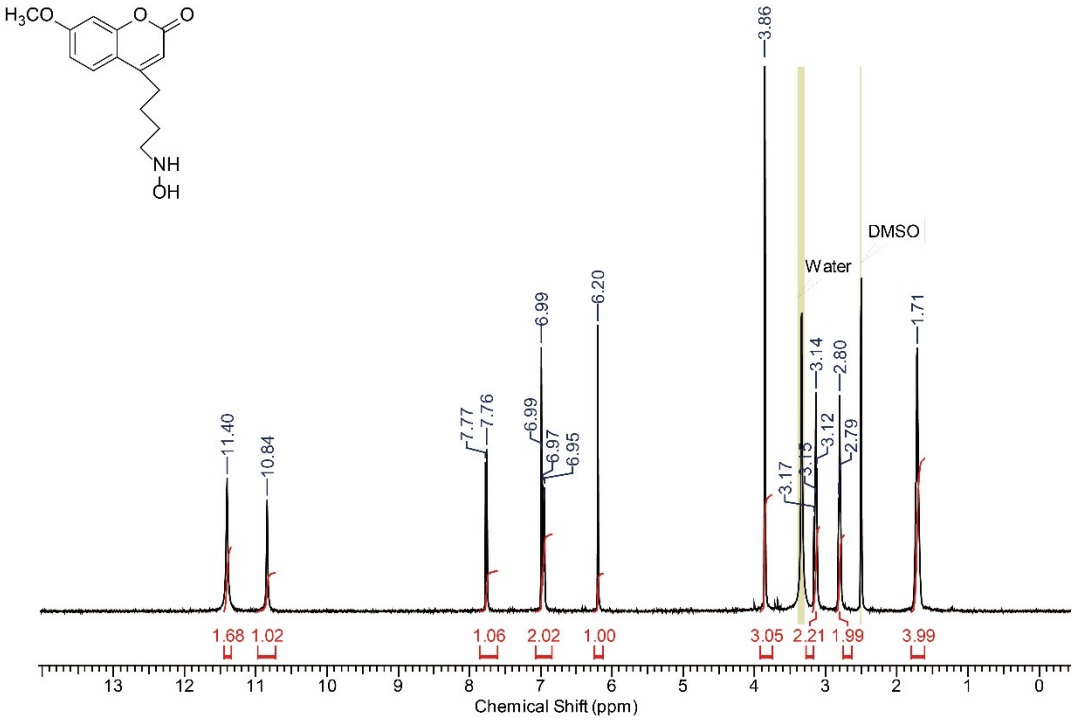

Fig. S25 ^{1}H NMR spectrum of compound **1b** (500 MHz, DMSO-*d*6).

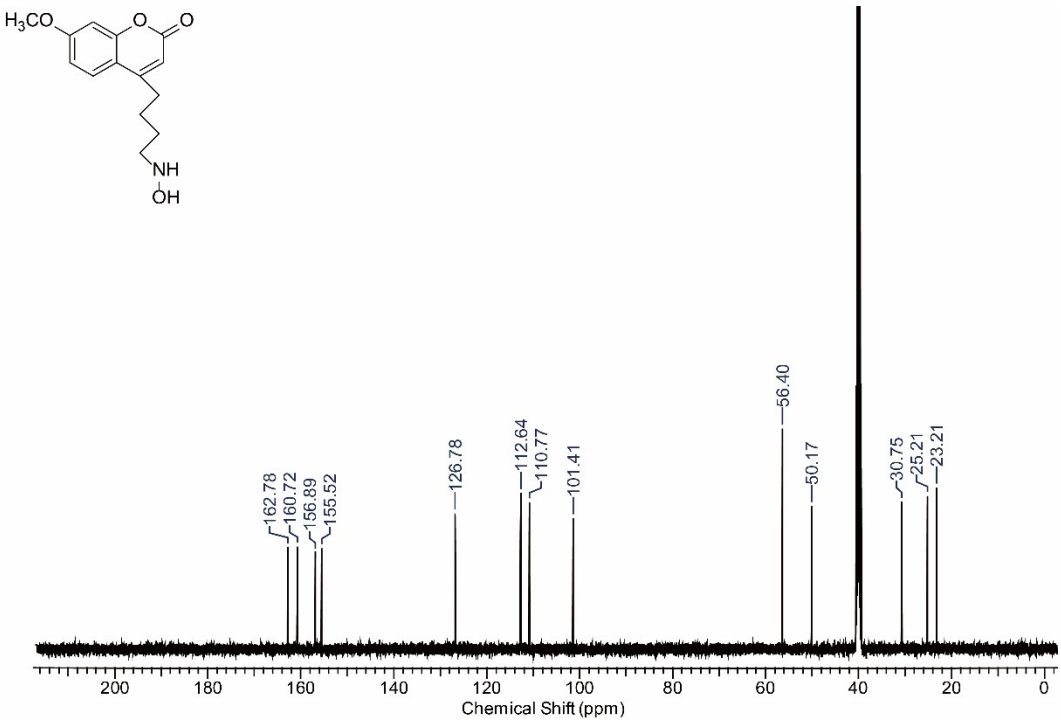

Fig. S26 ^{13}C NMR spectrum of compound **1b** (125 MHz, DMSO-*d*6).

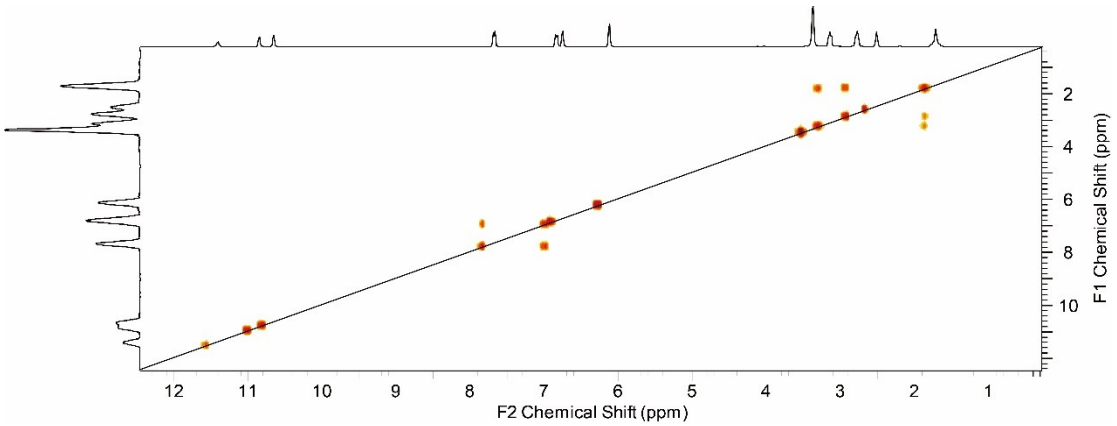

Fig. S27 ^{1}H-^{1}H COSY spectrum compound **1a** (500 MHz, DMSO-*d*6).

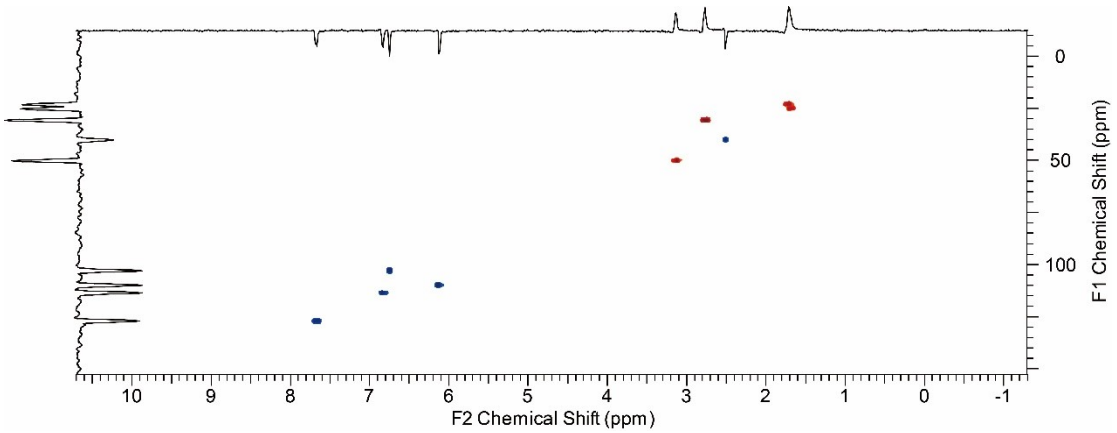

Fig. S28 ^{1}H-^{13}C HSQC spectrum compound **1a** (500 MHz, DMSO-*d*6).

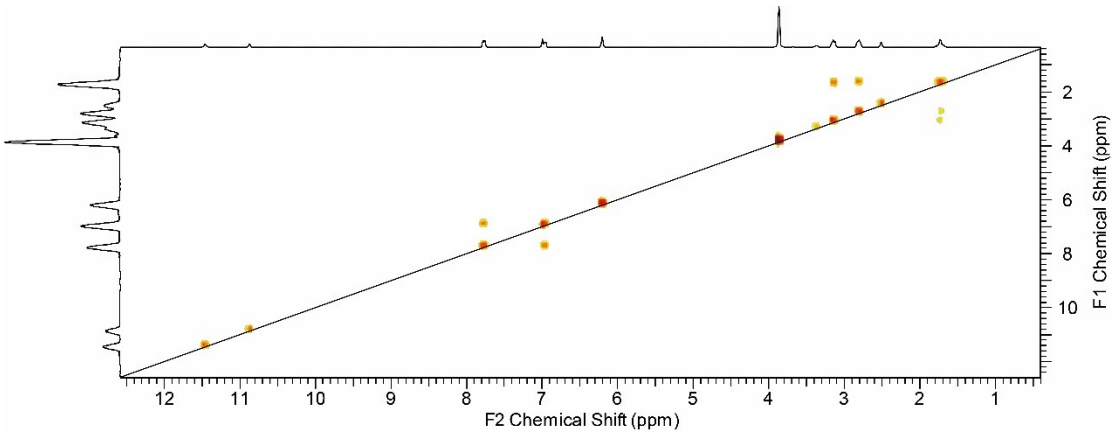

Fig. S29 ^{1}H-^{1}H COSY spectrum compound **1b** (500 MHz, DMSO-*d*6).

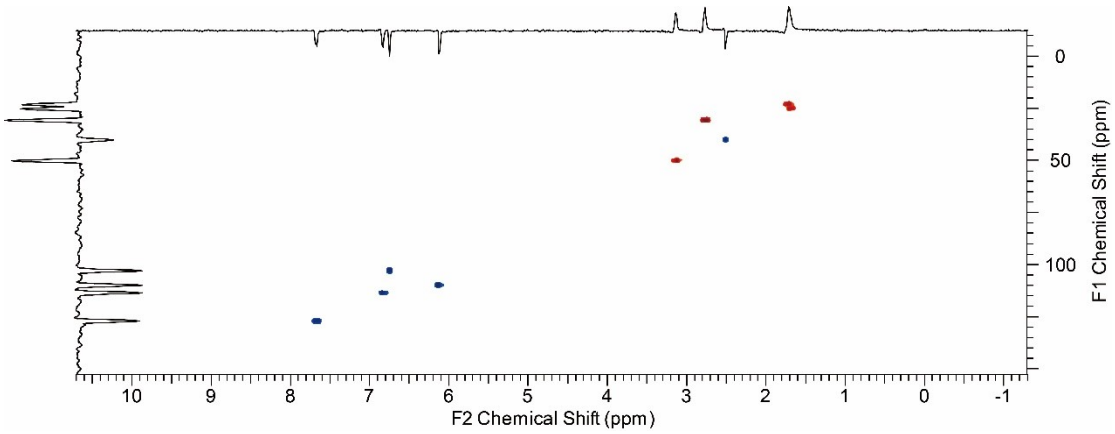

Fig. S30 ^{1}H-^{13}C HSQC spectrum compound **1b** (500 MHz, DMSO-*d*6).

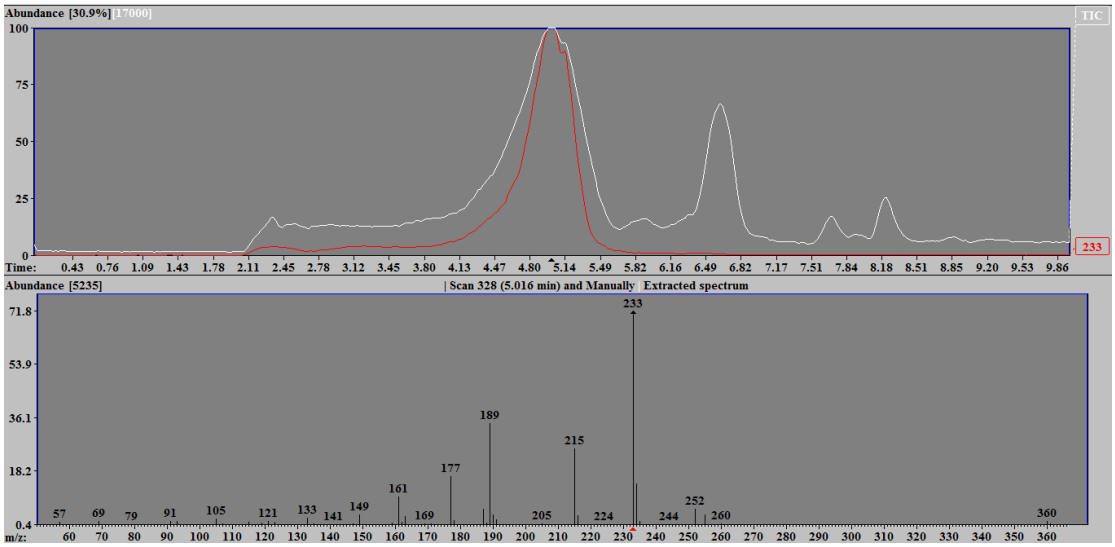

Fig. S31 LC-MS spectrum of compound **9a**, MW = 232, M/Z = 233, $[M+H]^+$.

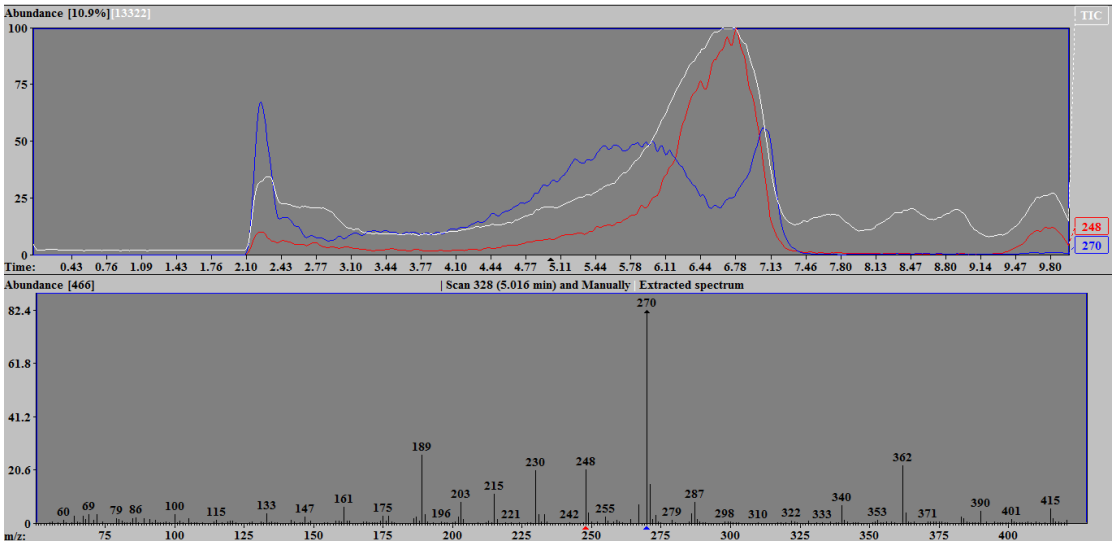

Fig. S32 LC-MS spectrum of compound **10a**, MW = 247, M/Z = 248, $[M+H]^+$; M/Z = 270, $[M+Na]^+$.

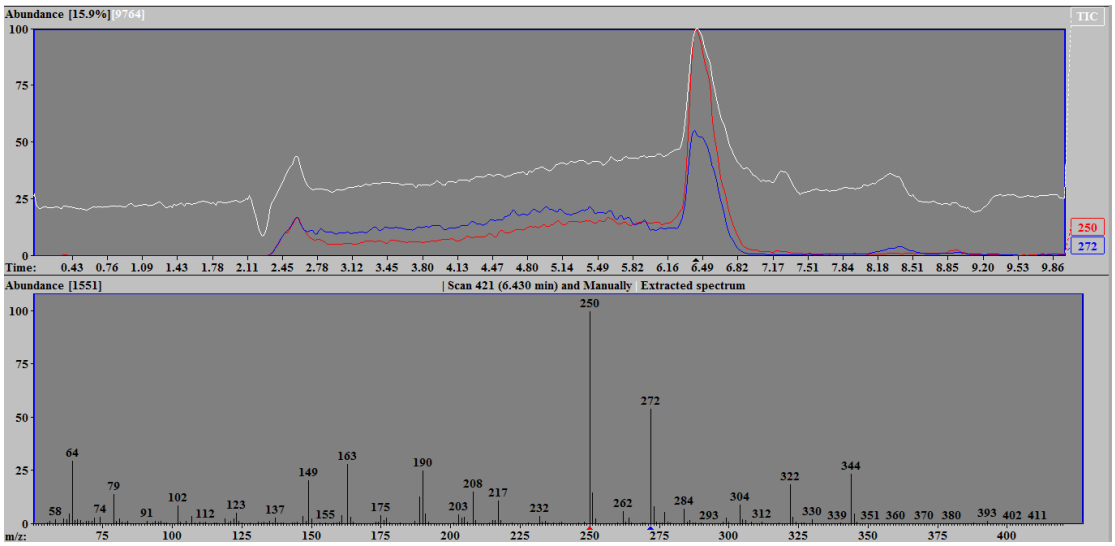

Fig. S33 LC-MS spectrum of compound **1a**, MW = 249, M/Z = 250, $[M+H]^+$; M/Z = 272, $[M+Na]^+$.

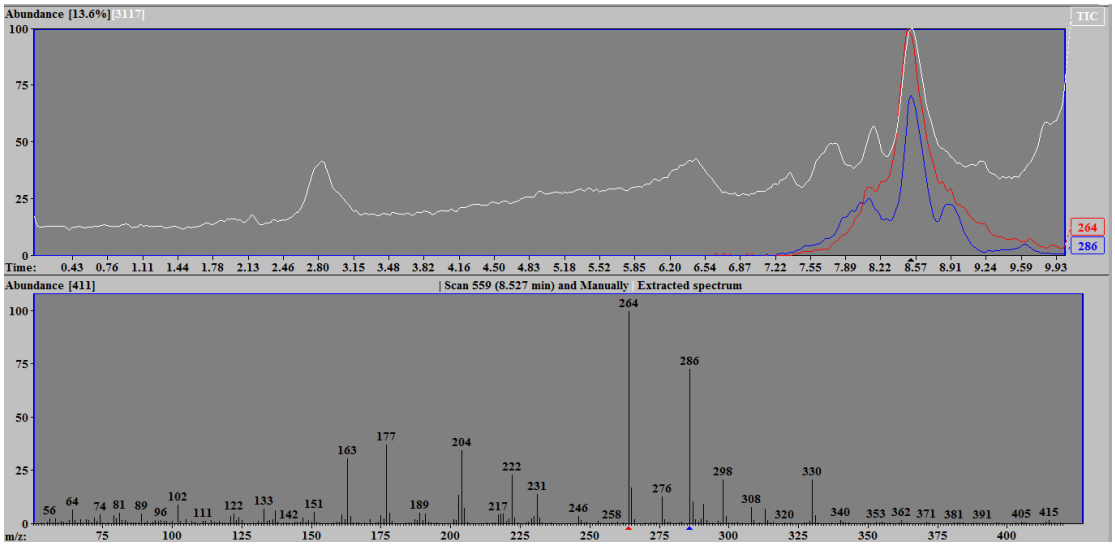

Fig. S34 LC-MS spectrum of compound **1b**, MW = 263, M/Z = 264, $[M+H]^+$; M/Z = 286, $[M+Na]^+$.

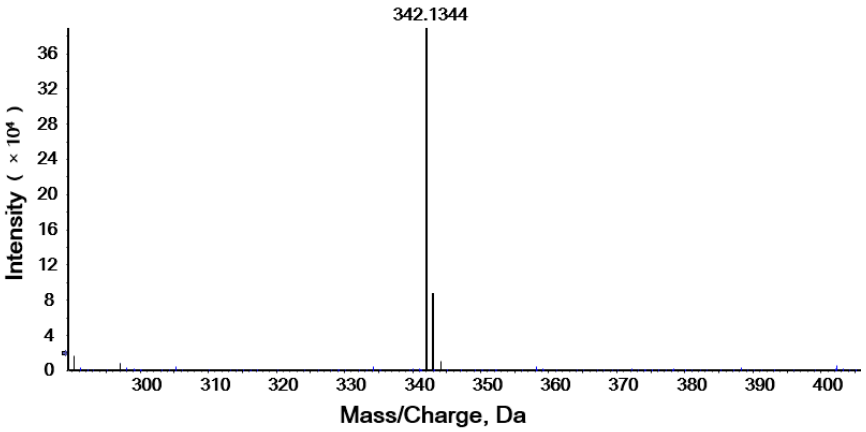

Fig. S35 Mass spectrum of the nitrone derivative which was generated from the reaction between 5-methylfurfural and compound **1a**.

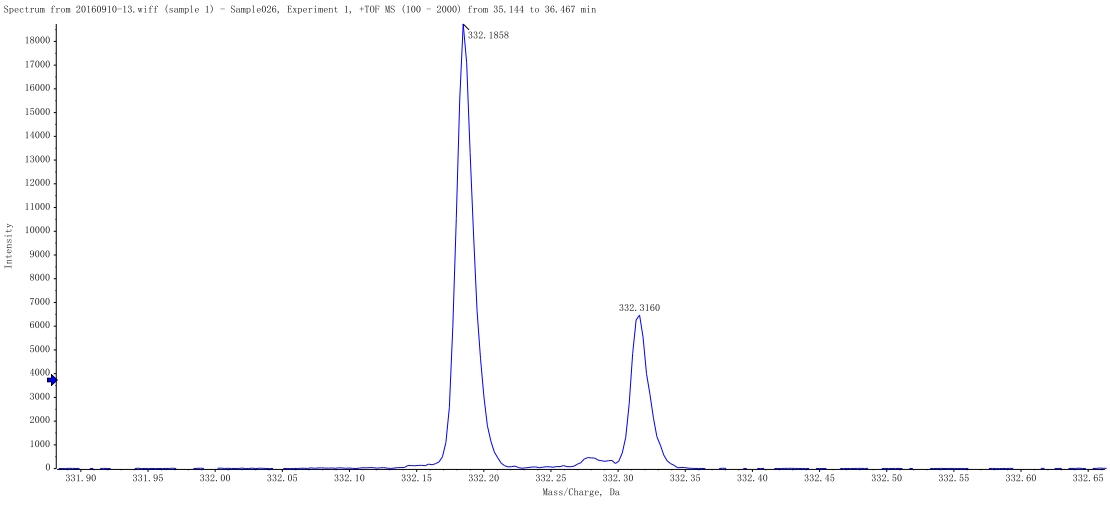

Fig. S36 Mass spectrum of the nitrone derivative which was generated from the reaction between hexanal and compound **1a**.

Table S1 Linear calibration range, regression equation, detection limit and reproducibility of furfural after nitrone formation

Analyte	Dynamic Range (nM)	Linearity		LOD[a] (nM)	RSD[b]
		Regression equation[c]	R		
Furfural	8-1600	$Y=6.77\times10^{3}X+4.32\times10^{4}$	0.9965	1.6	7.23 %

[a]S/N = 3, per 20 μL injection volume.

[b]n=6.

[c]X: furfural concentration (nM), Y: peak area (mV • min)