

# Homoisoflavonoids from the Fibrous Roots of *Polygonatum odoratum* with Glucose Uptake- Stimulatory Activity in 3T3-L1 Adipocytes

Hong Zhang,<sup>†</sup> Fan Yang,<sup>†</sup> Jin Qi,<sup>†</sup> Xiao-Chen Song,<sup>†</sup> Zheng-Fang Hu,<sup>†</sup> Dan-Ni Zhu,<sup>†</sup> and Bo-Yang Yu<sup>\*, †</sup>

*Department of Complex TCM, China Pharmaceutical University, 639 Long Mian Road, Nanjing 211198, People's  
Republic of China*

\* Corresponding author: Tel: +86-25-86185157. Fax: +86-25-83313080. E-mail: boyangyu59@163.com

†China Pharmaceutical University, Nanjing

List of Supporting Information

**Figure S1.** CD spectra of **1**

**Figure S2.** HRESIMS spectrum of **1**

**Figure S3.** IR (KBr, disc) spectrum of **1**

**Figure S4.**  $^1\text{H}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**

**Figure S5.** Enlarged  $^1\text{H}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**

**Figure S6.**  $^{13}\text{C}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 125 MHz) of **1**

**Figure S7.** DEPT NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 125 MHz) of **1**

**Figure S8.** HSQC NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz, 125 MHz) of **1**

**Figure S9.** HMBC NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz, 125 MHz) of **1**

**Figure S10.** NOSEY NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**

**Figure S11.** HPLC-UV/ALP chromatogram of **1**

**Figure S12.** CD spectra of **2**

**Figure S13.** HRESIMS spectrum of **2**

**Figure S14.** IR (KBr, disc) spectrum of **2**

**Figure S15.**  $^1\text{H}$  NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz) of **2**

**Figure S16.**  $^{13}\text{C}$  NMR spectrum ( $\text{CD}_3\text{OD}$ , 125 MHz) of **2**

**Figure S17.** DEPT NMR spectrum ( $\text{CD}_3\text{OD}$ , 125 MHz) of **2**

**Figure S18.** HSQC NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz, 125 MHz) of **2**

**Figure S19.** HMBC NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz, 125 MHz) of **2**

**Figure S20.** NOSEY NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz) of **2**

**Figure S21.** HRESIMS spectrum of **3**

**Figure S22.** IR (KBr, disc) spectrum of **3**

**Figure S23.**  $^1\text{H}$  NMR spectrum ( $\text{DMSO}-d_6$ , 500 MHz) of **3**

**Figure S24.**  $^{13}\text{C}$  NMR spectrum ( $\text{DMSO}-d_6$ , 125 MHz) of **3**

**Figure S25.** DEPT NMR spectrum ( $\text{DMSO}-d_6$ , 125MHz) of **3**

**Figure S26.** HSQC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **3**

**Figure S27.** HMBC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **3**

**Figure S28.** HRESIMS spectrum of **4**

**Figure S29.** IR (KBr, disc) spectrum of **4**

**Figure S30.** <sup>1</sup>H NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz) of **4**

**Figure S31.** <sup>13</sup>C NMR spectrum (DMSO-*d*<sub>6</sub>, 125 MHz) of **4**

**Figure S32.** DEPT NMR spectrum (DMSO-*d*<sub>6</sub>, 125 MHz) of **4**

**Figure S33.** HSQC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **4**

**Figure S34.** HMBC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **4**

**Figure S35.** CD spectra of **5**

**Figure S36.** CD spectra of **6**

**Figure S37.** CD spectra of **7**

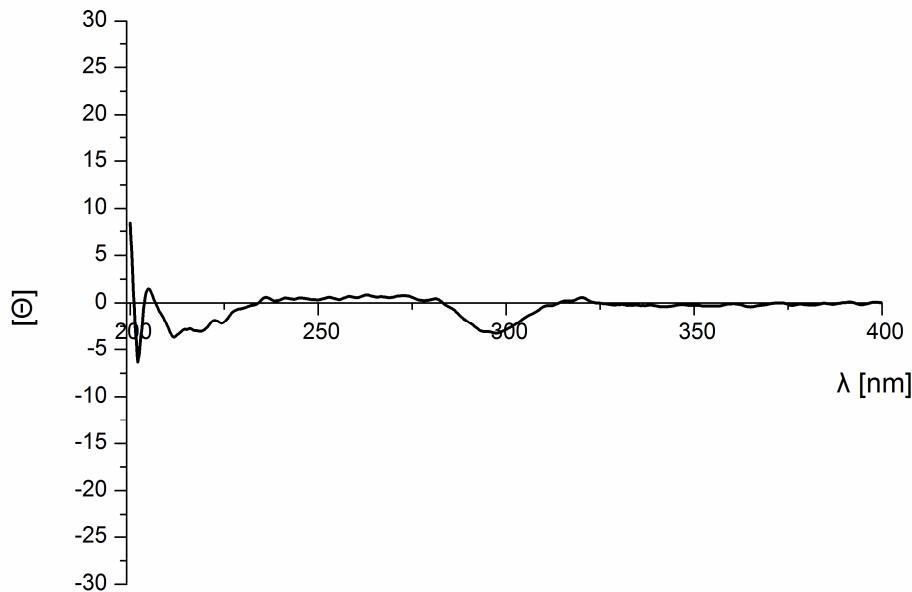
**Figure S38.** CD spectra of **8**

**Figure S39.** CD spectra of **9**

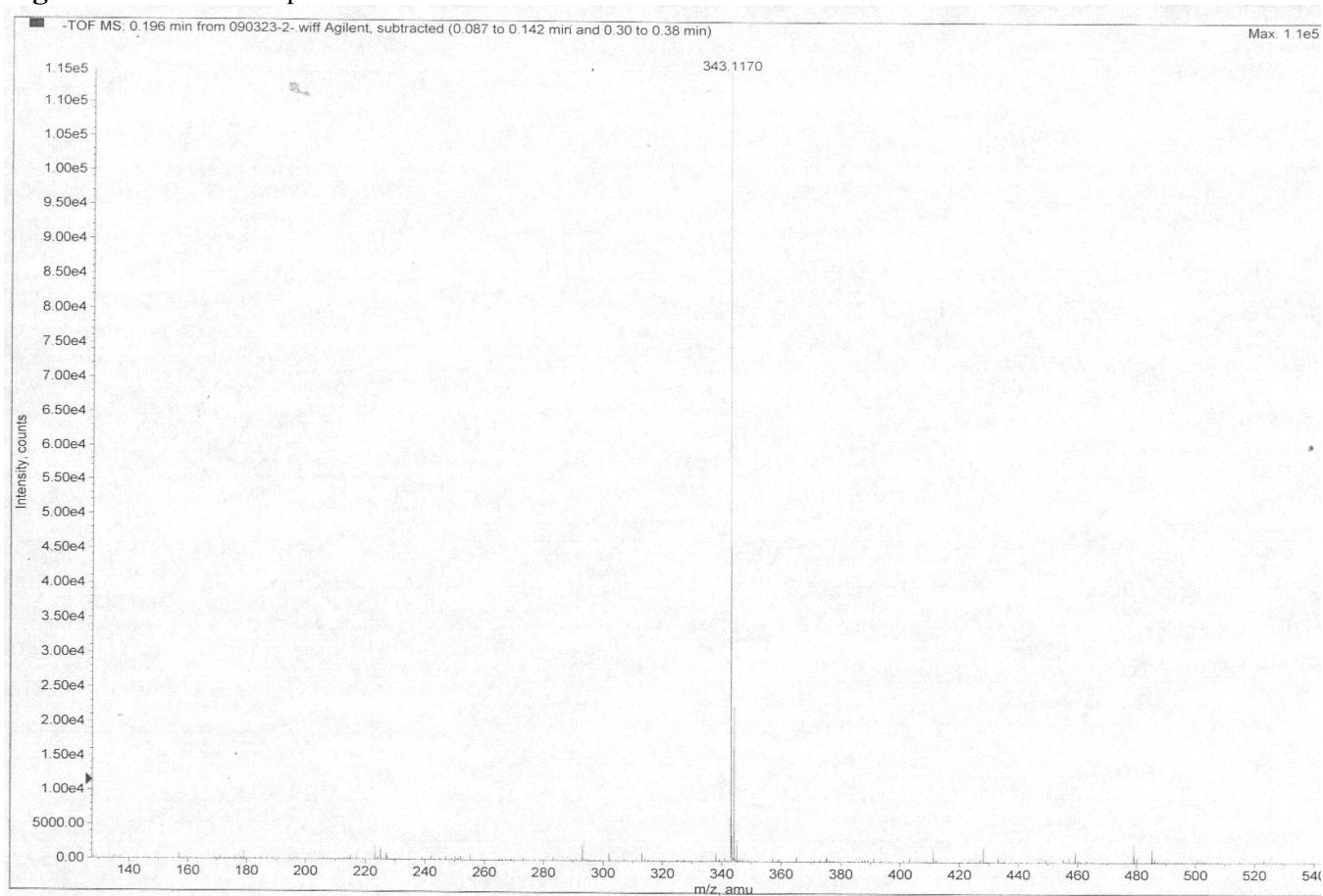
**Figure S40.** Key correlations observed in the HMBC (→) and NOESY (↔) NMR spectra of **1**

**Figure S41.** Key correlations observed in the HMBC (→) NMR spectrum of **4**

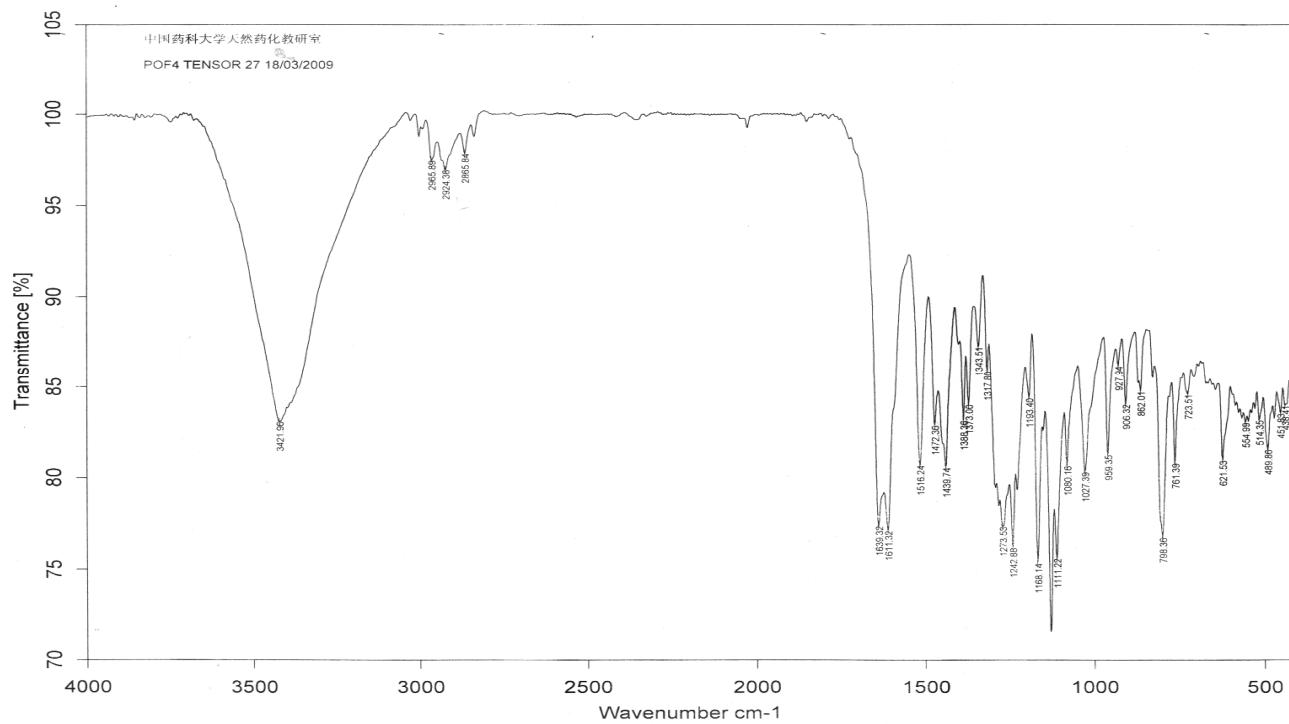
**Figure S1.** CD spectra of **1**



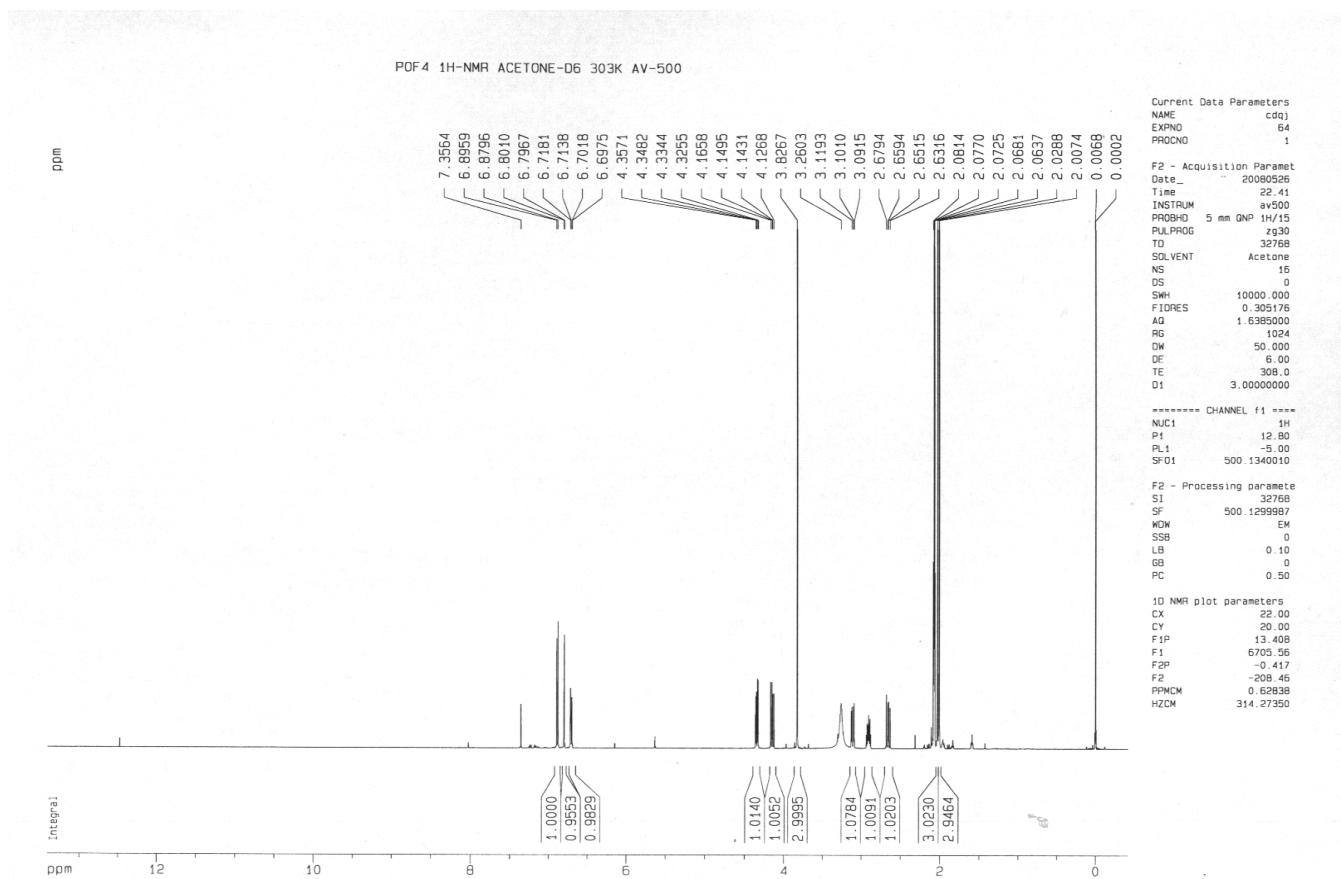
**Figure S2.** HRESIMS spectrum of **1**



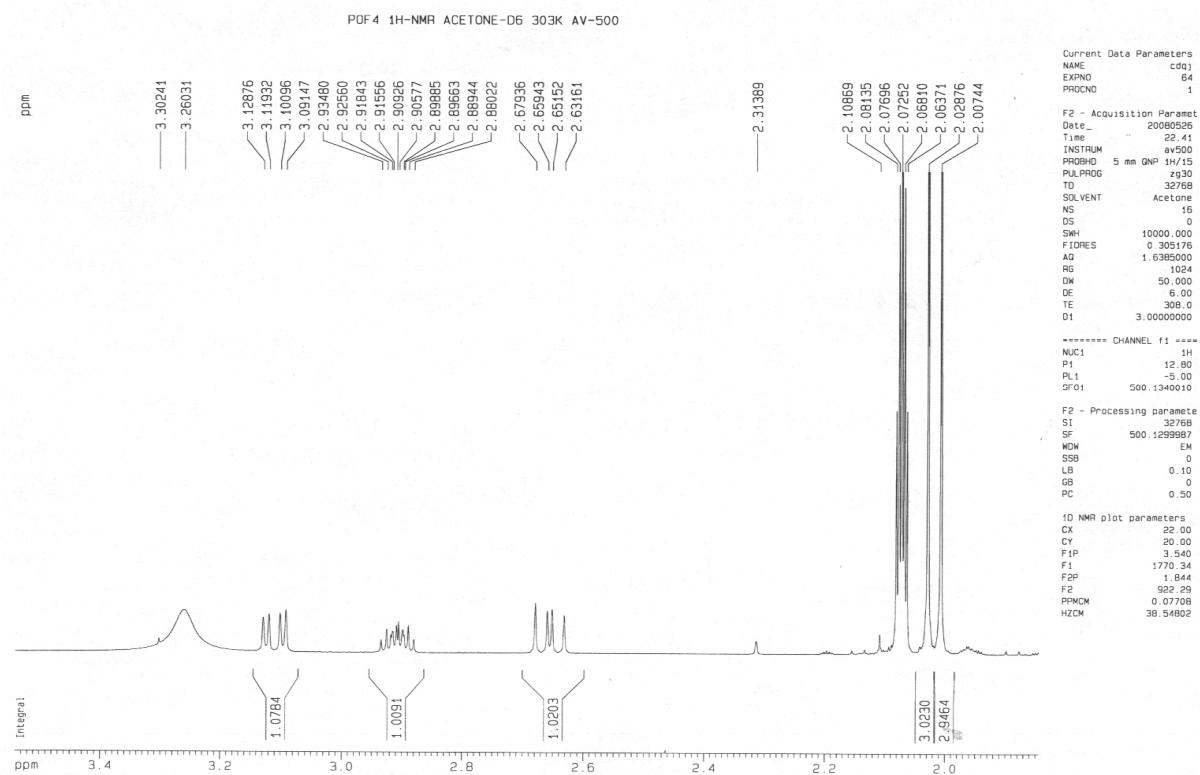
**Figure S3.** IR (KBr, disc) spectrum of **1**



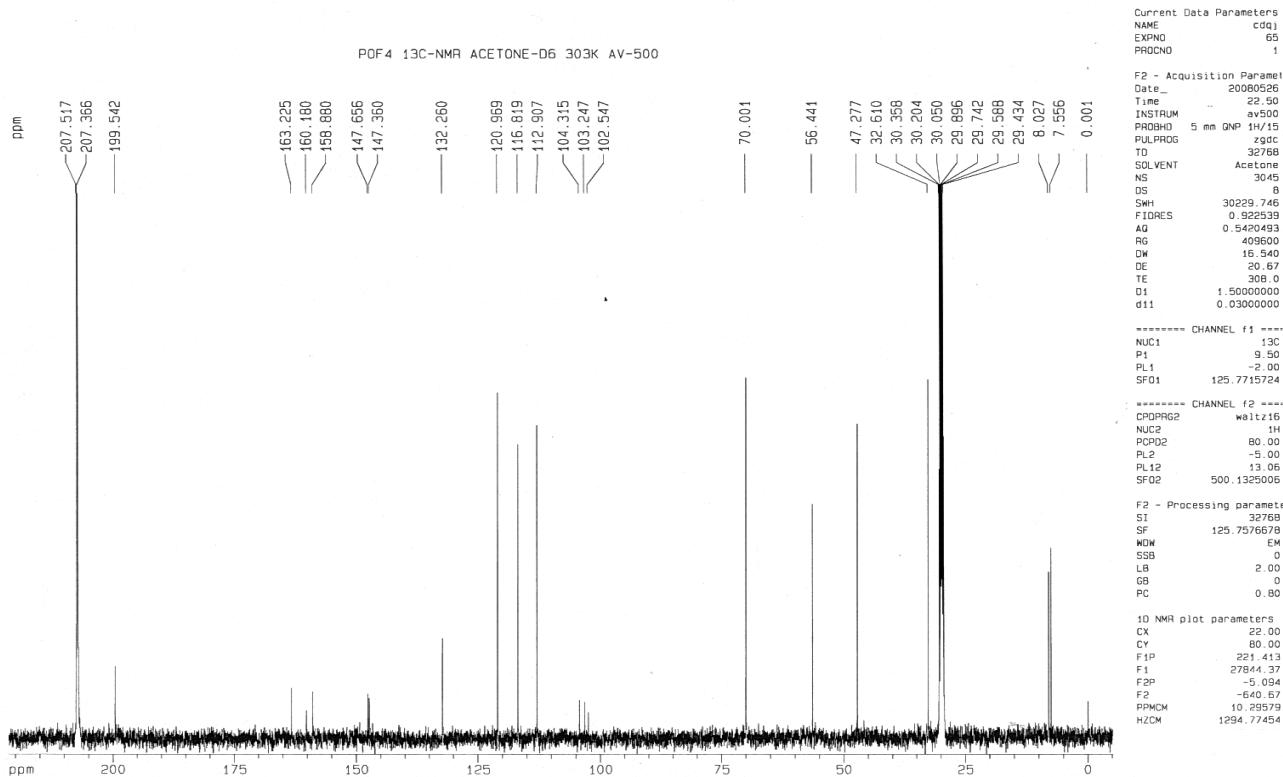
**Figure S4.**  $^1\text{H}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**



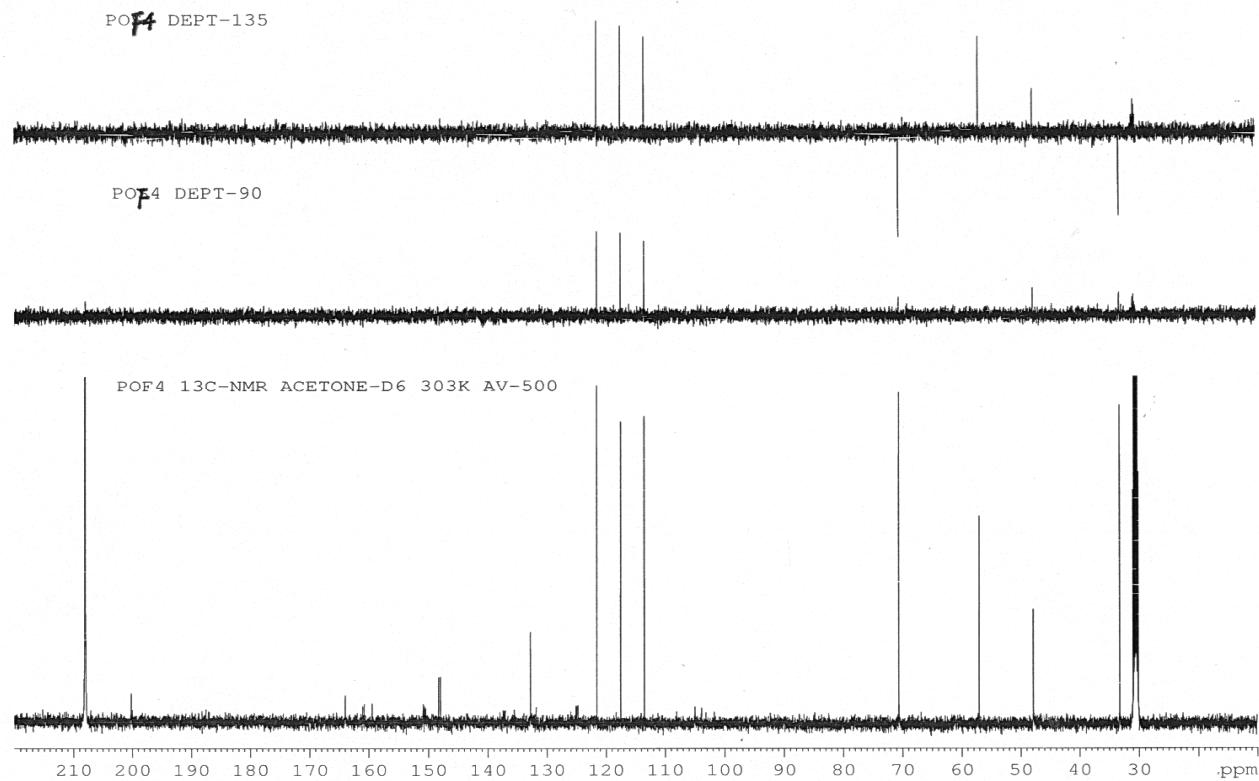
**Figure S5.** Enlarged  $^1\text{H}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**



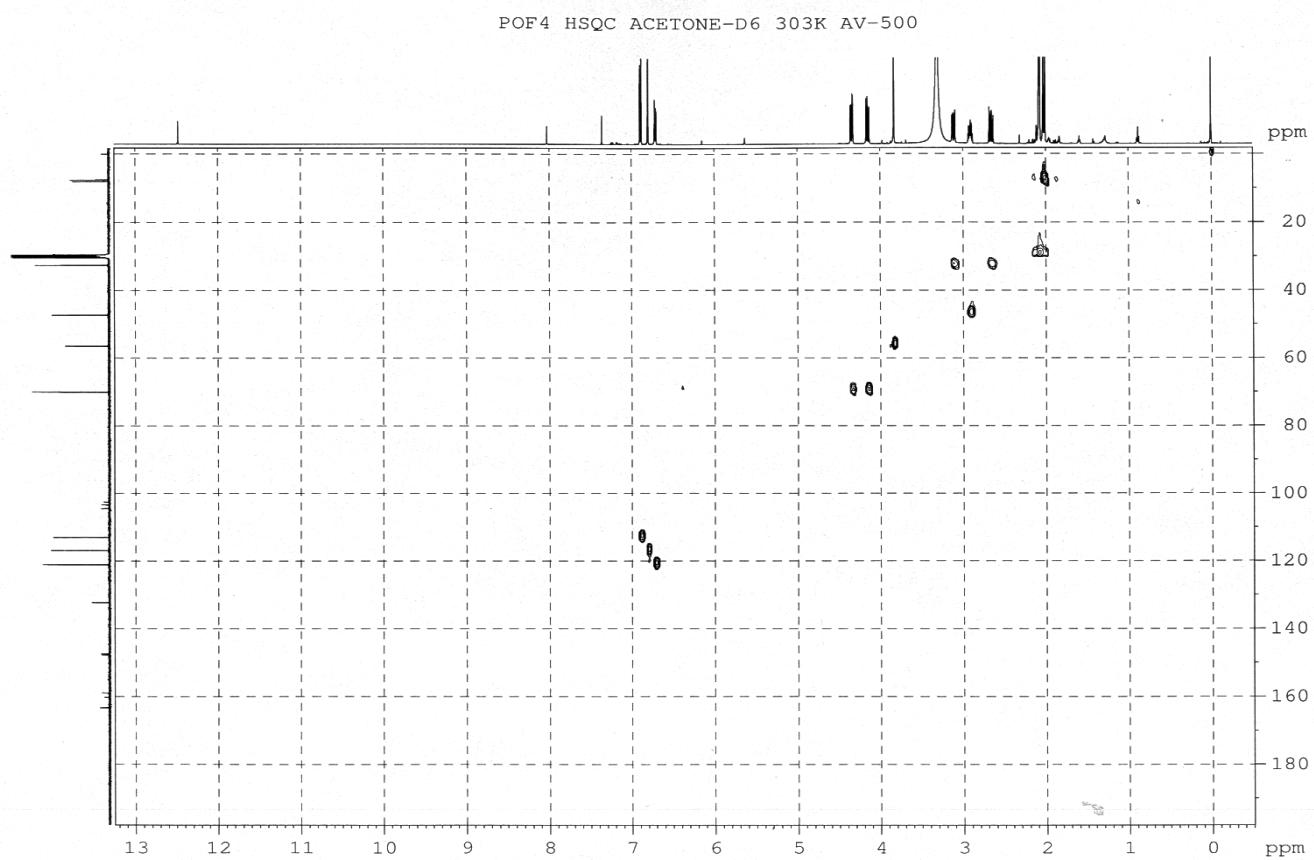
**Figure S6.**  $^{13}\text{C}$  NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 125 MHz) of **1**



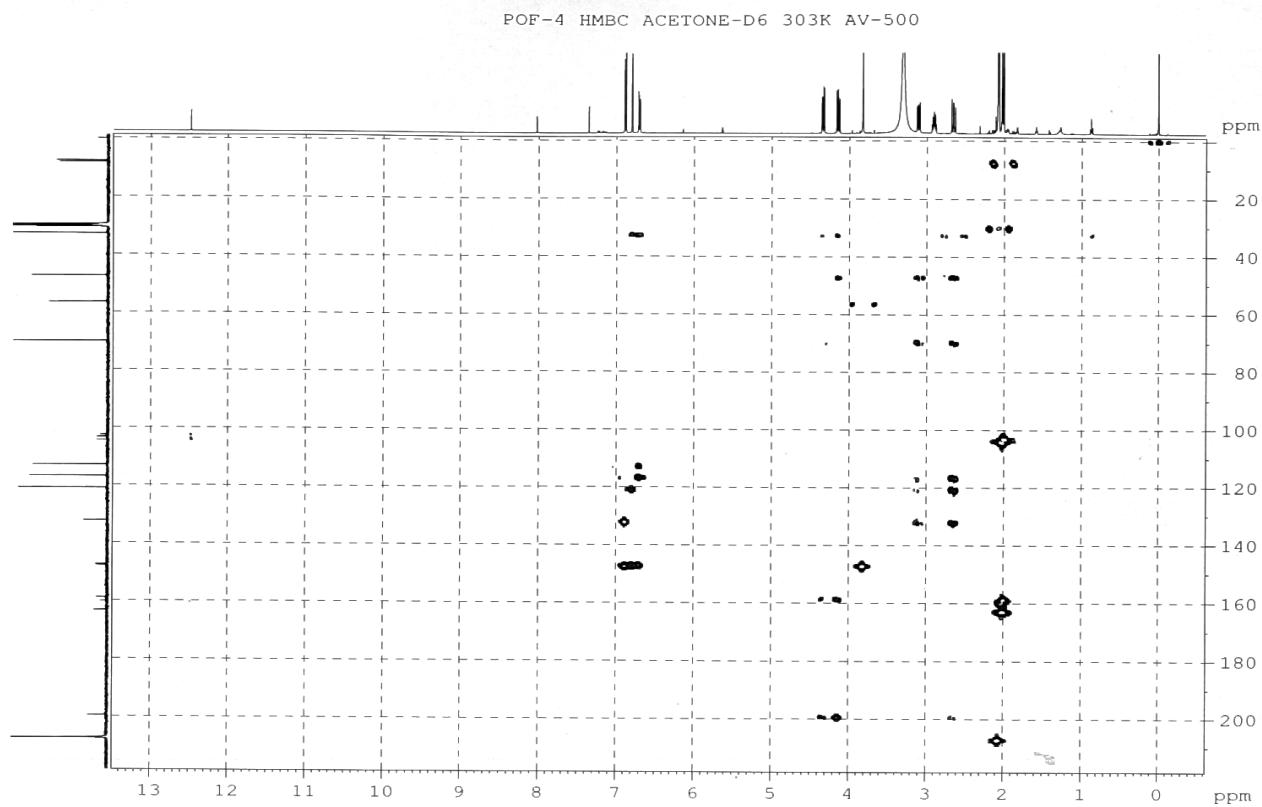
**Figure S7.** DEPT NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 125 MHz) of **1**



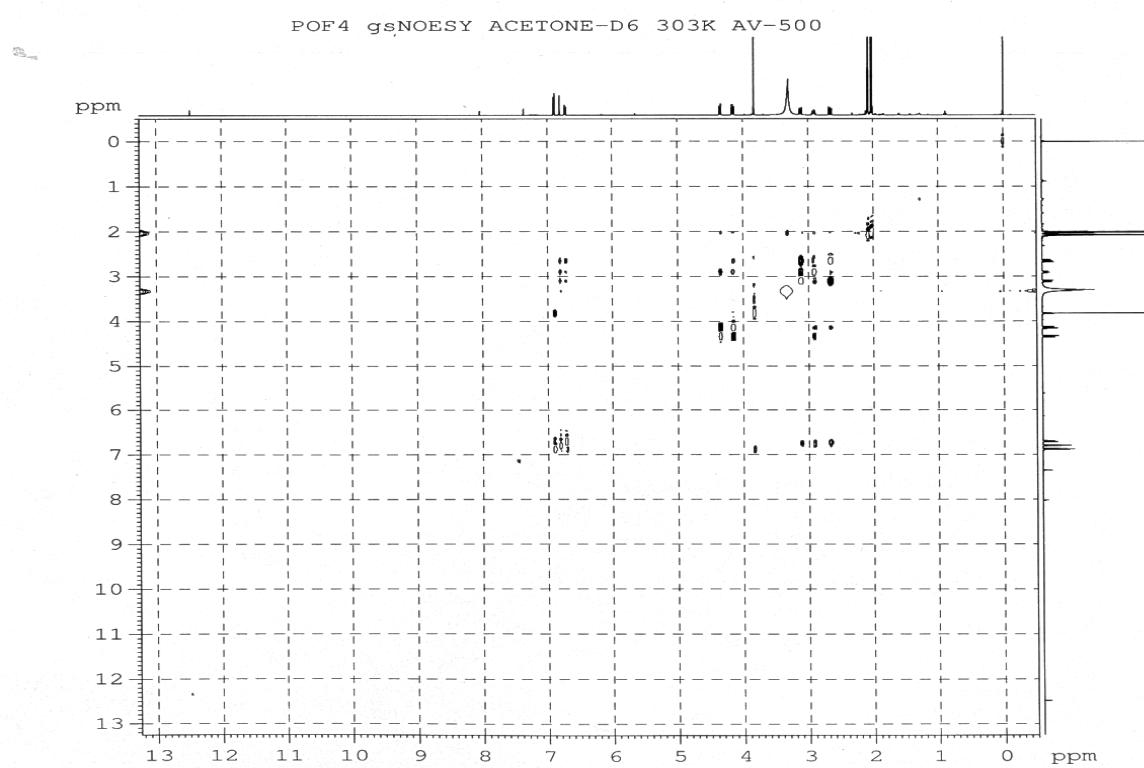
**Figure S8.** HSQC NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz, 125 MHz) of **1**



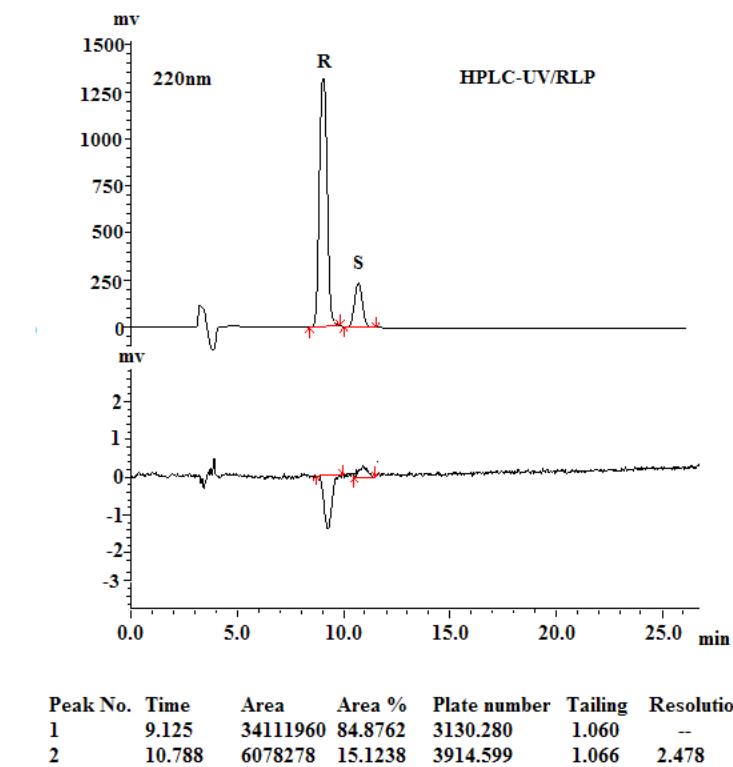
**Figure S9.** HMBC NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz, 125 MHz) of **1**



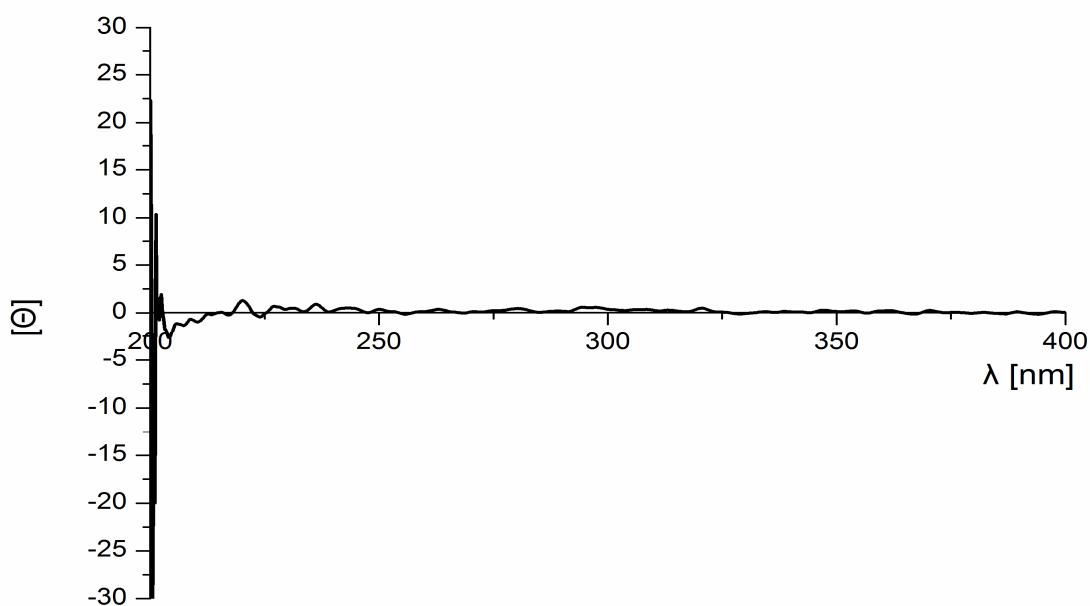
**Figure S10.** NOSEY NMR spectrum ( $\text{Me}_2\text{CO}-d_6$ , 500 MHz) of **1**



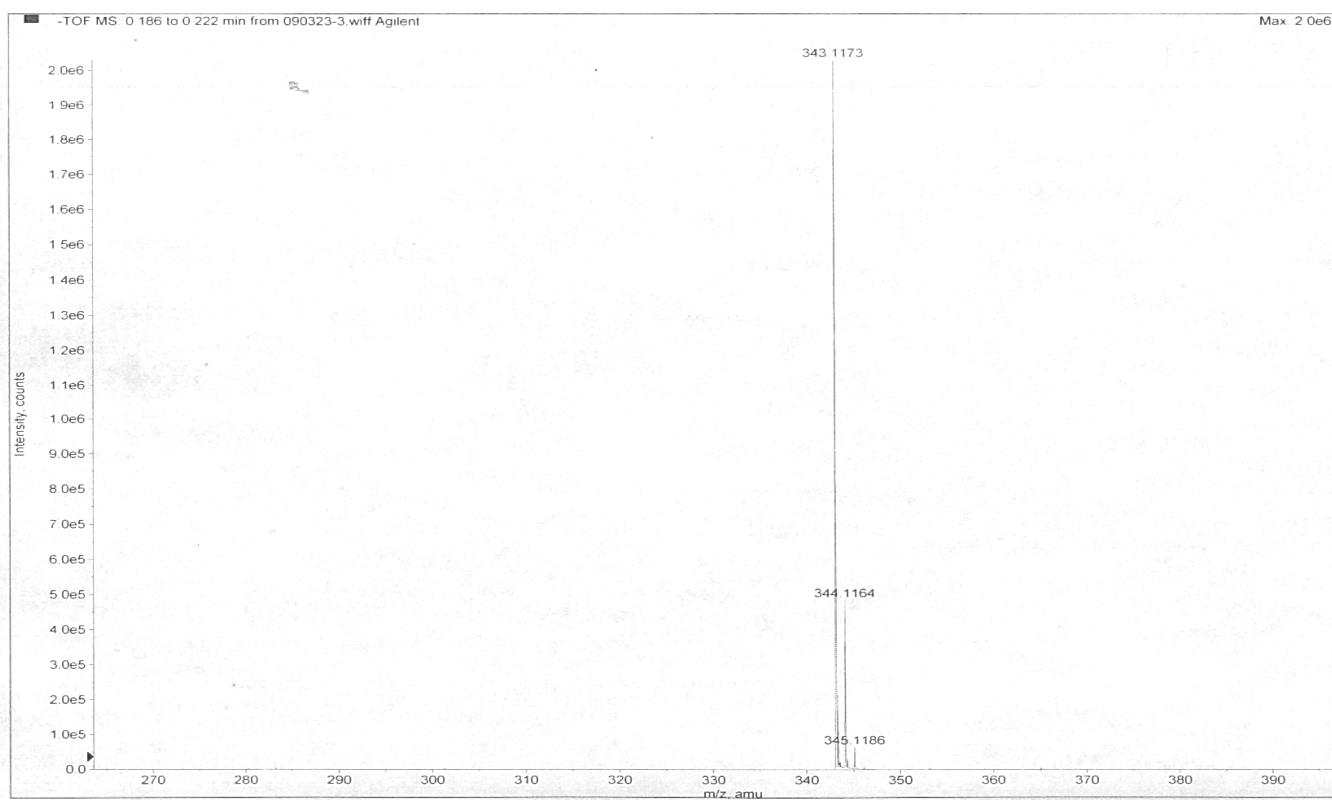
**Figure S11.** HPLC-UV/ALP chromatogram of **1**



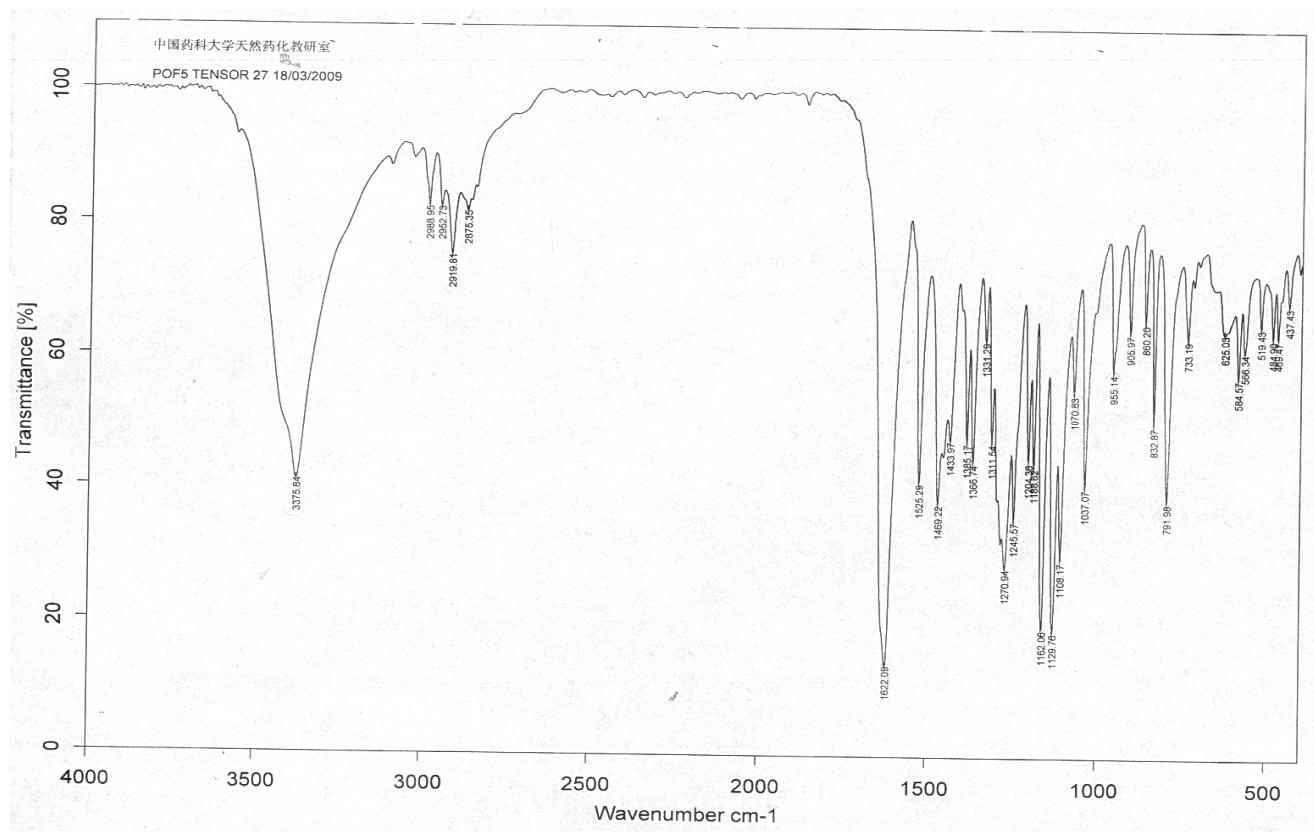
**Figure S12.** CD spectra of **2**



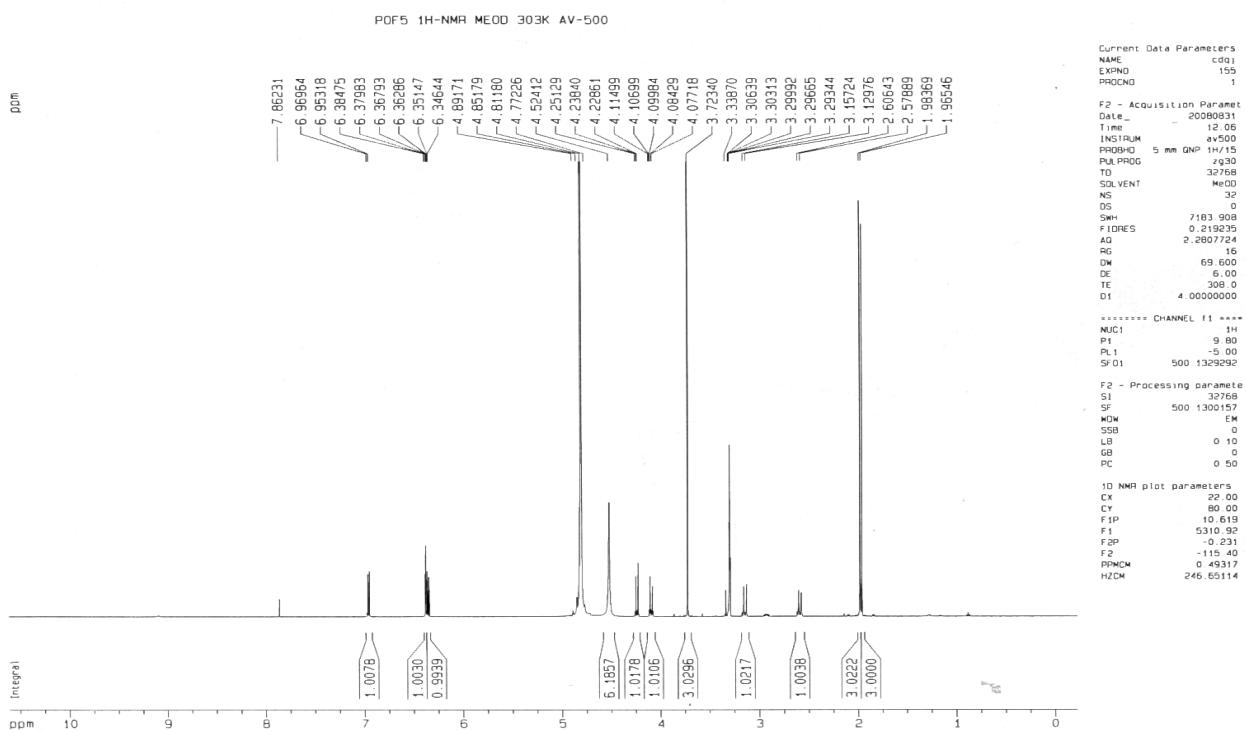
**Figure S13.** HRESIMS spectrum of **2**



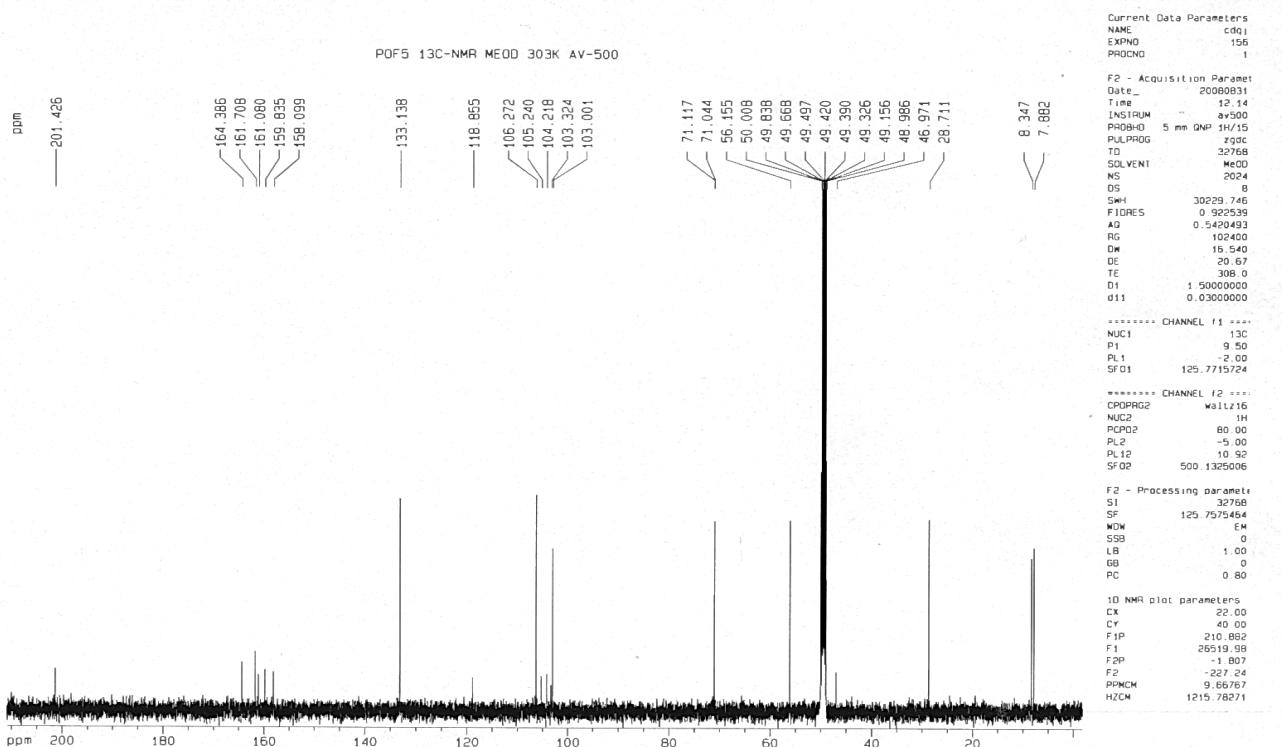
**Figure S14.** IR (KBr, disc) spectrum of **2**



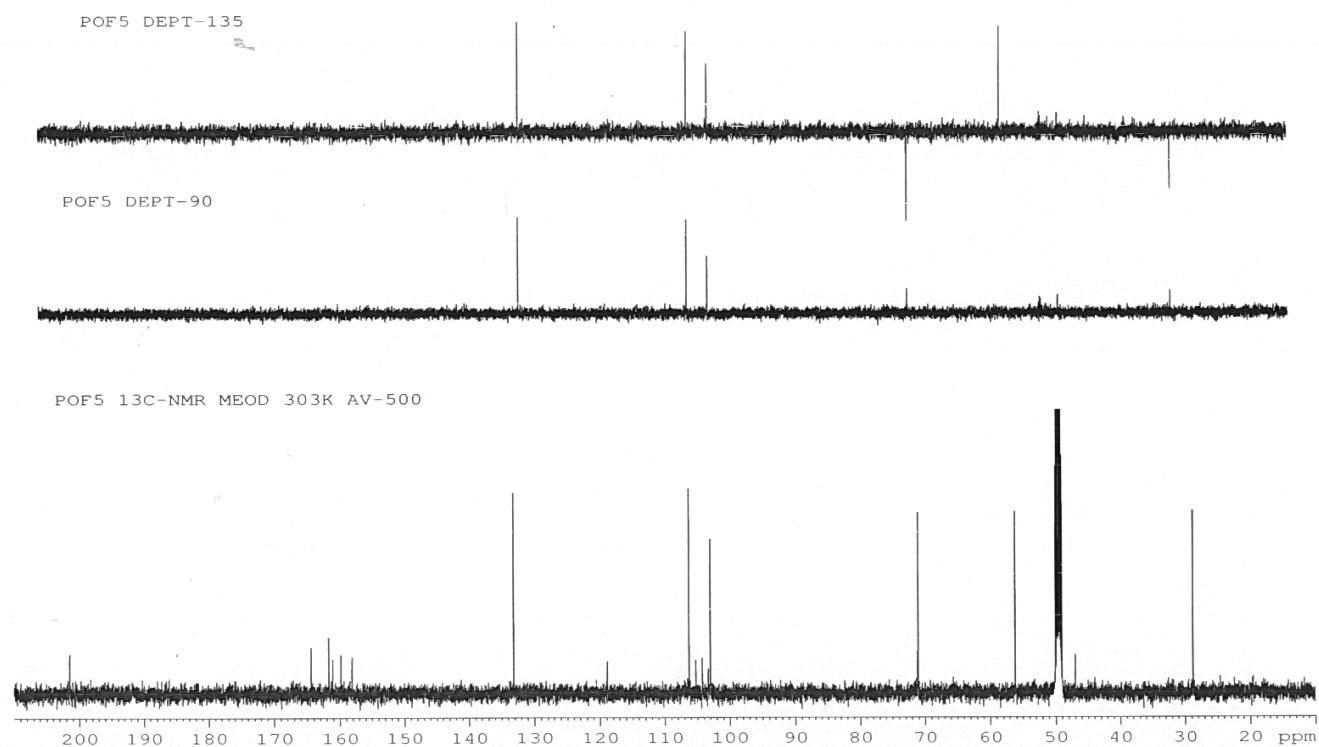
**Figure S15.**  $^1\text{H}$  NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz) of **2**



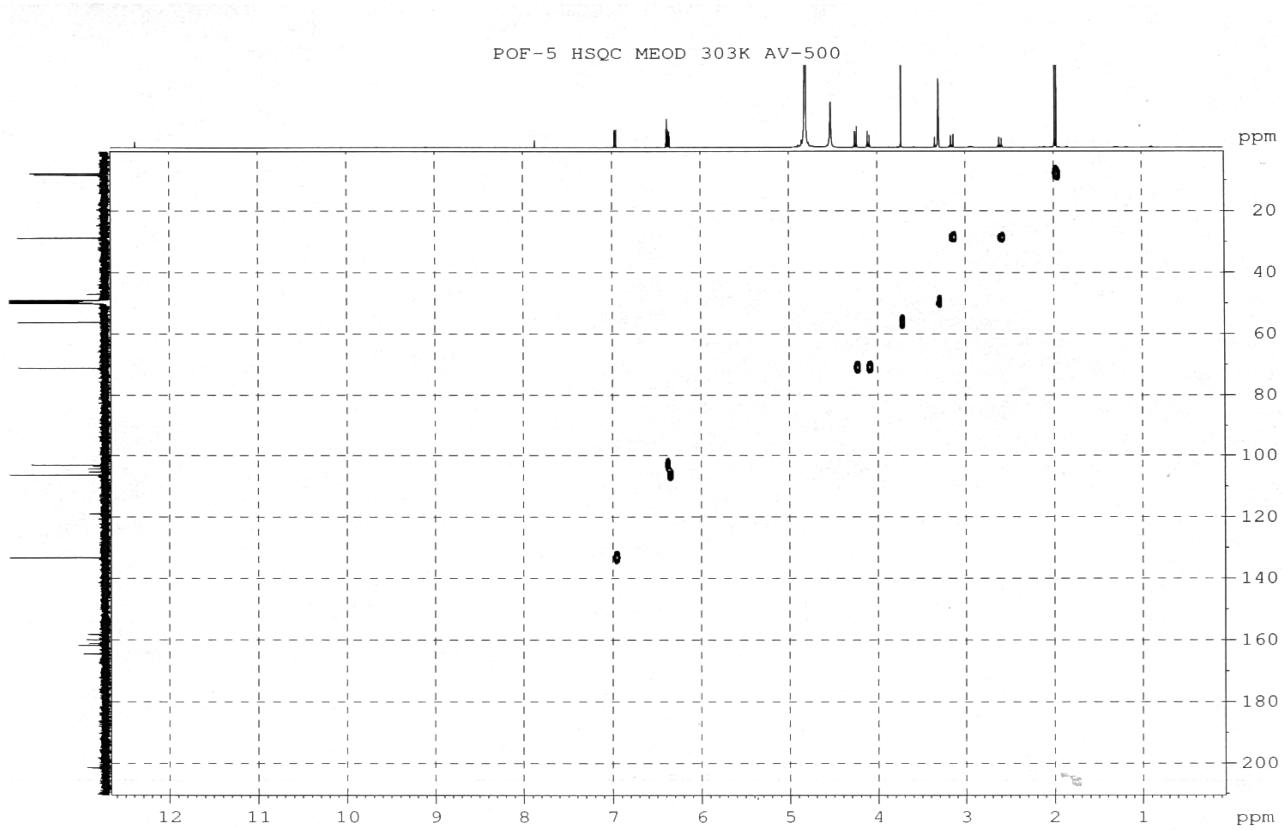
**Figure S16.**  $^{13}\text{C}$  NMR spectrum ( $\text{CD}_3\text{OD}$ , 125 MHz) of **2**



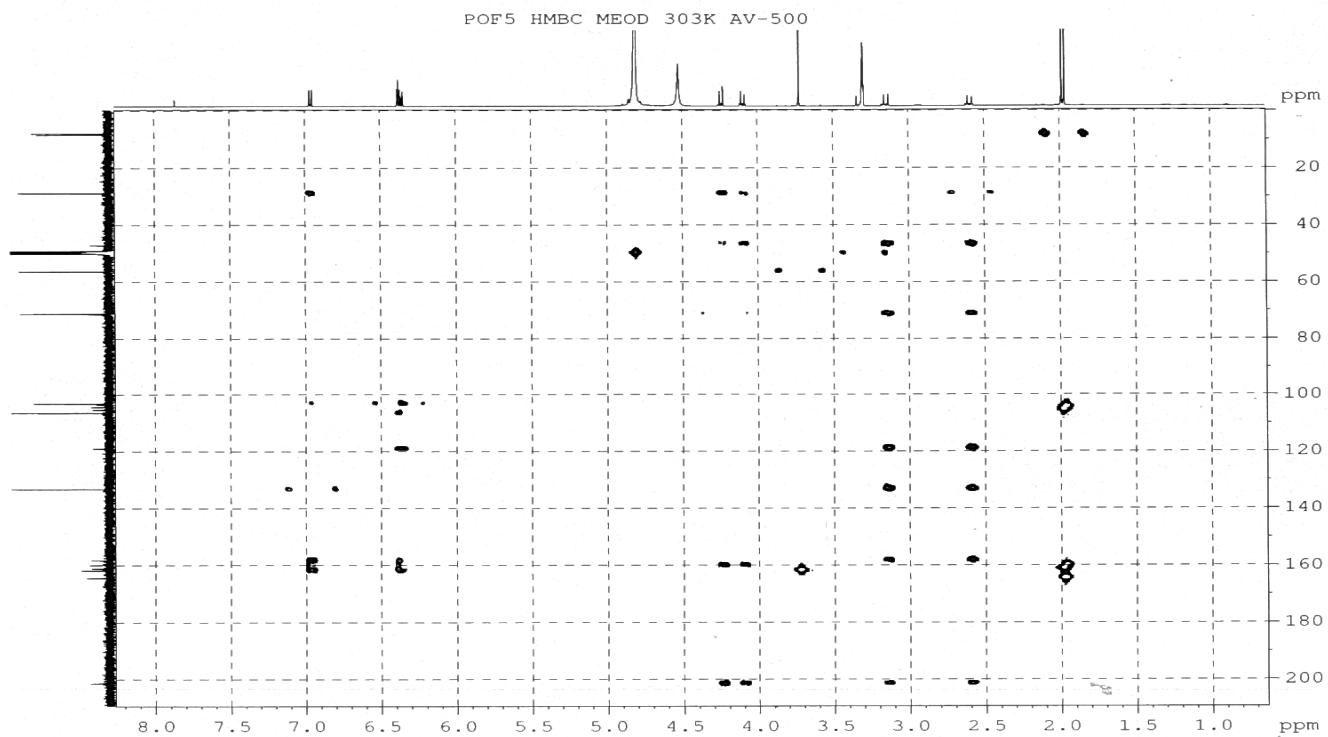
**Figure S17.** DEPT NMR spectrum ( $\text{CD}_3\text{OD}$ , 125 MHz) of **2**



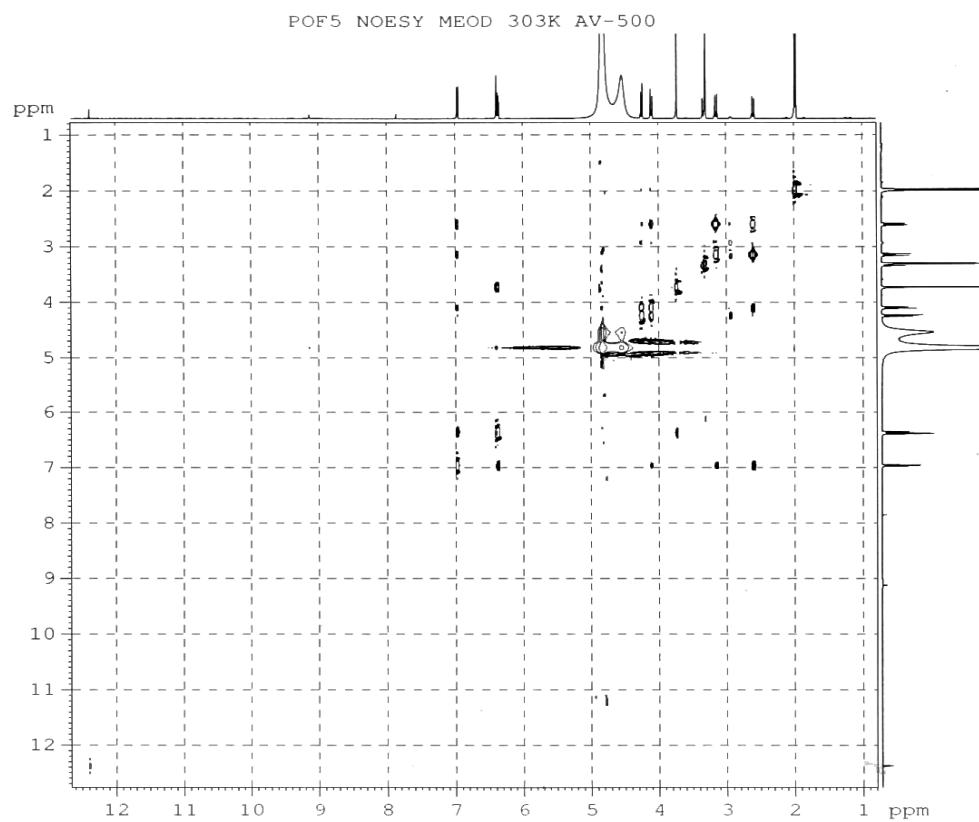
**Figure S18.** HSQC NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz, 125 MHz) of **2**



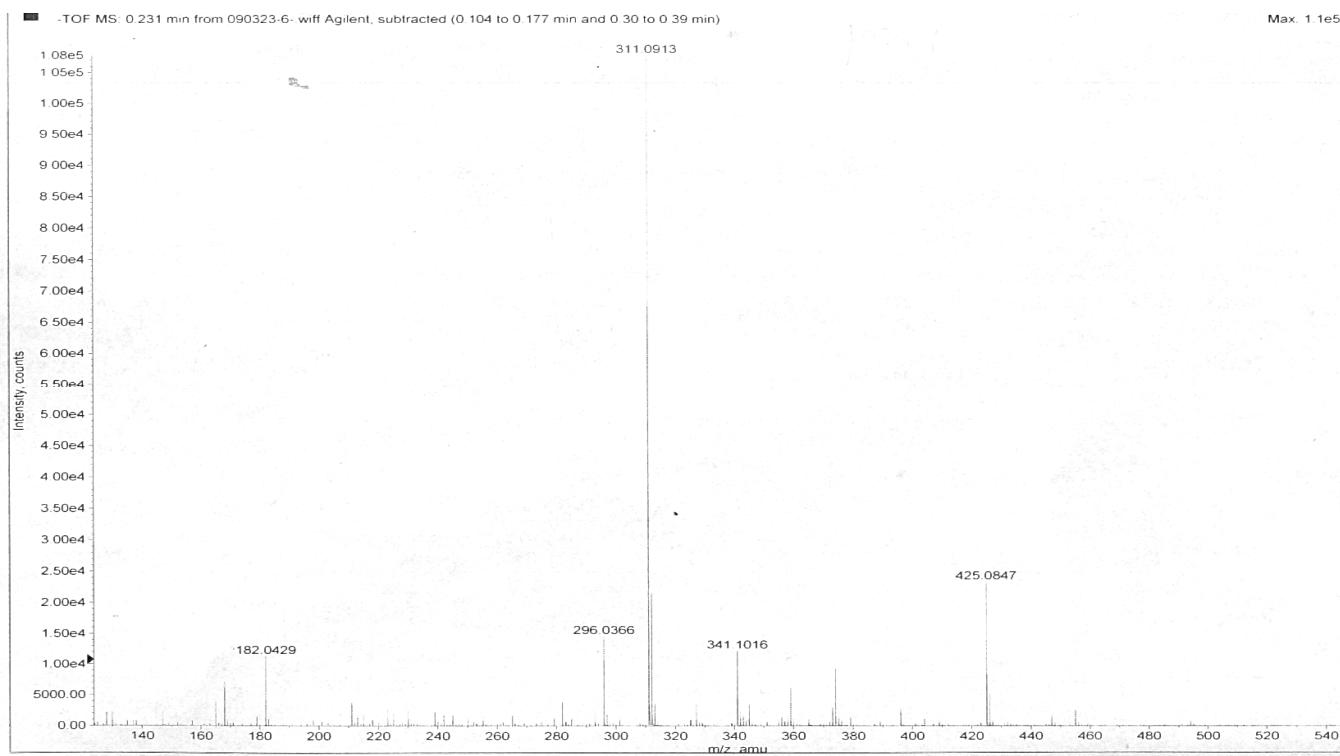
**Figure S19.** HMBC NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz, 125 MHz) of **2**



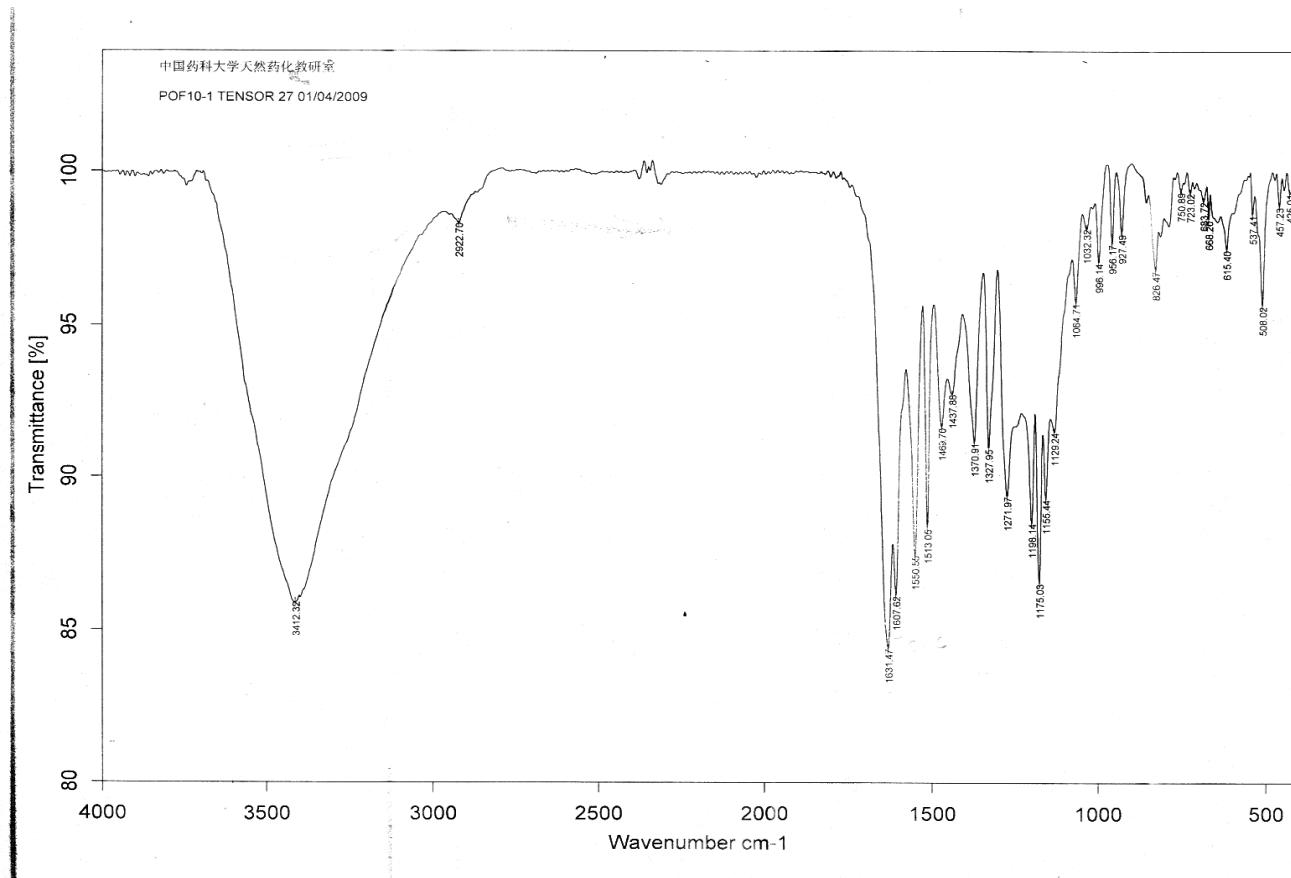
**Figure S20.** NOSEY NMR spectrum ( $\text{CD}_3\text{OD}$ , 500 MHz) of **2**



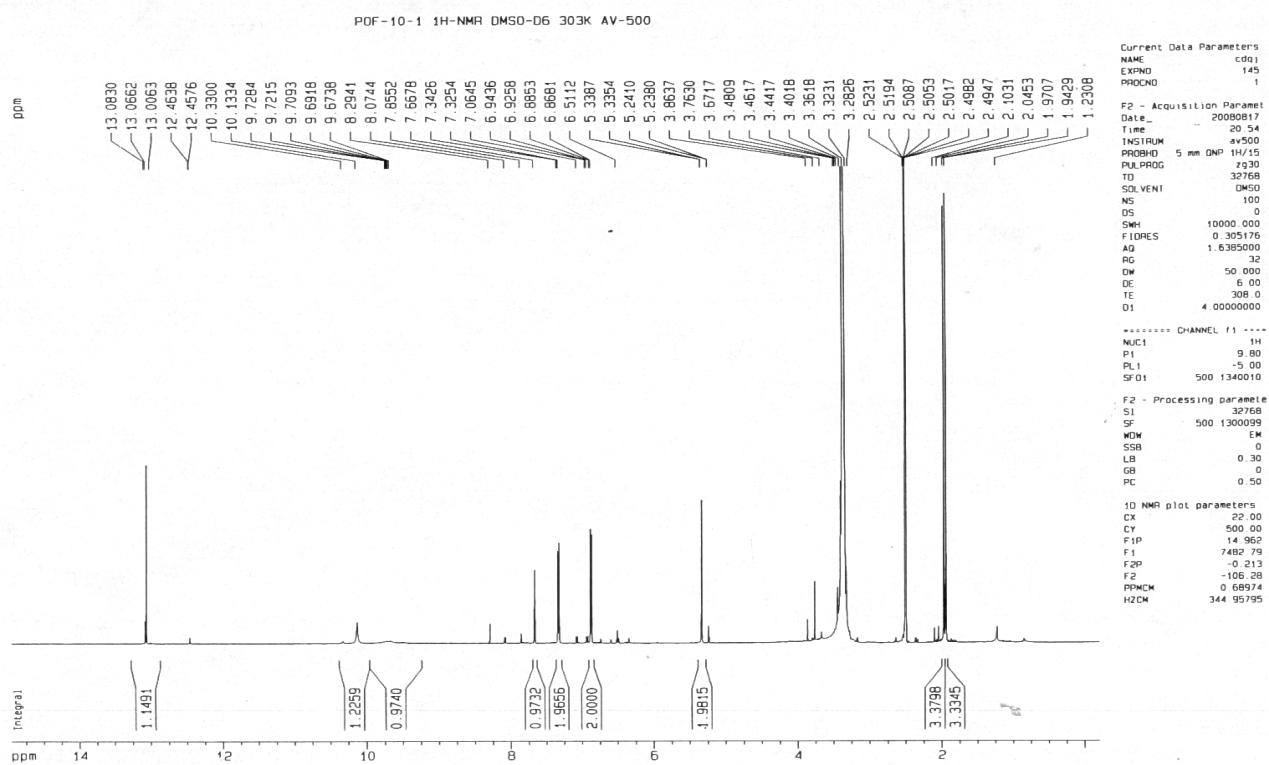
**Figure S21.** HRESIMS spectrum of **3**



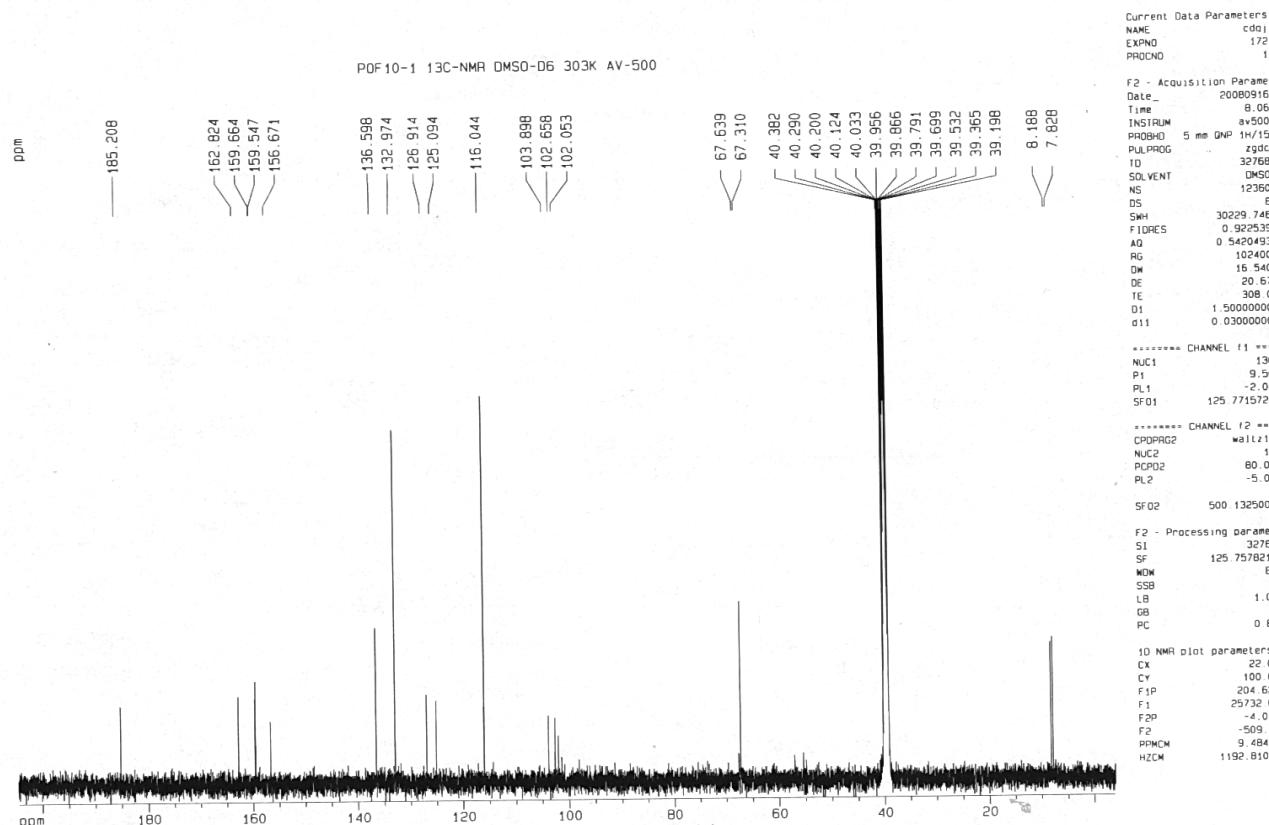
**Figure S22.** IR (KBr, disc) spectrum of **3**



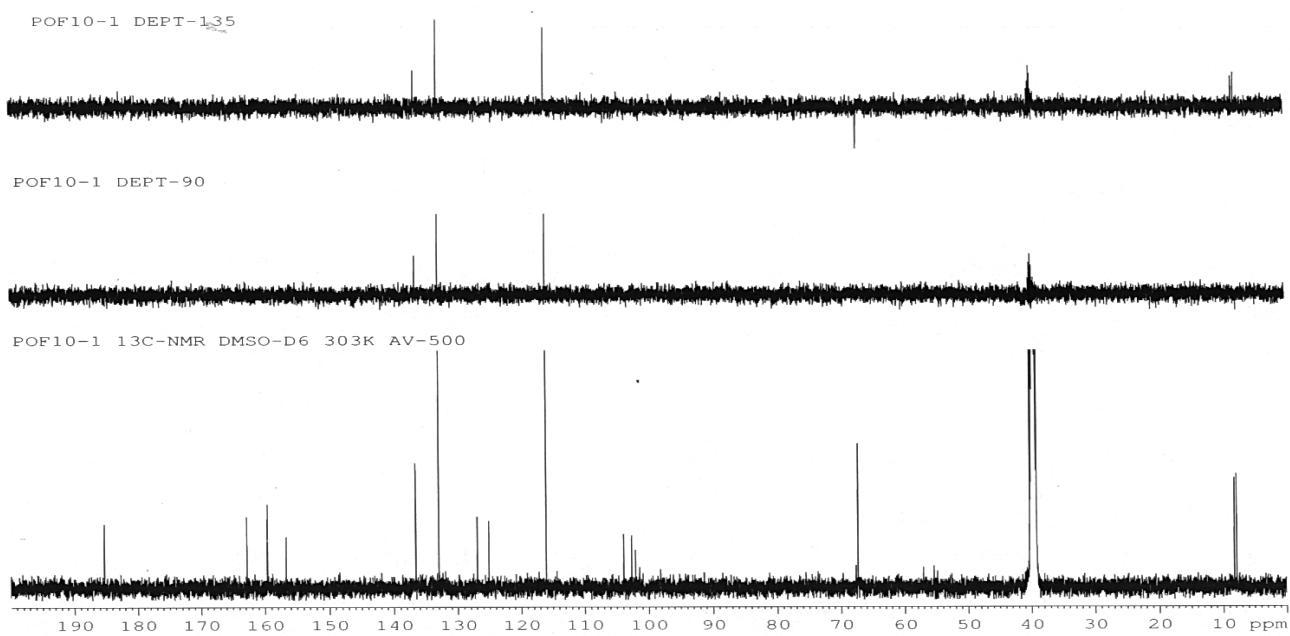
**Figure S23.**  $^1\text{H}$  NMR spectrum (DMSO- $d_6$ , 500 MHz) of **3**



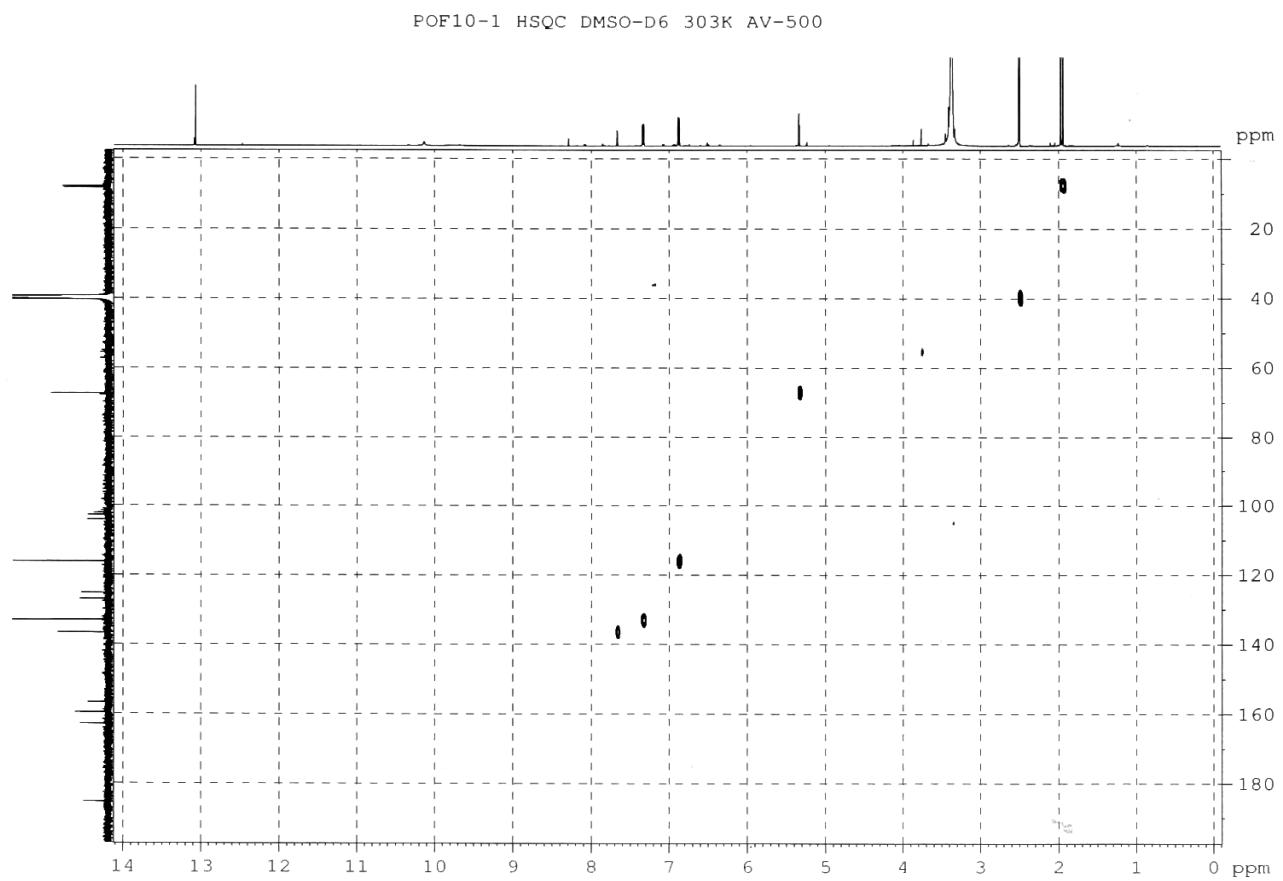
**Figure S24.**  $^{13}\text{C}$  NMR spectrum (DMSO- $d_6$ , 125 MHz) of **3**



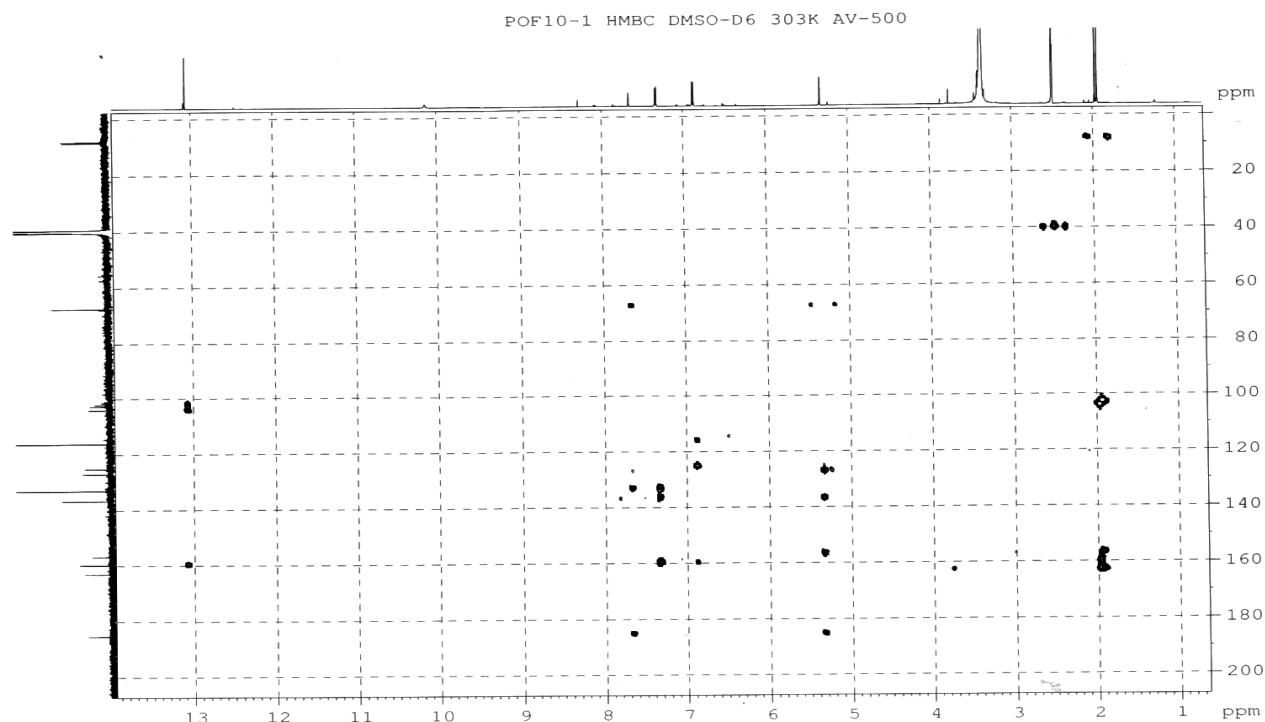
**Figure S25.** DEPT NMR spectrum (DMSO-*d*<sub>6</sub>, 125 MHz) of **3**



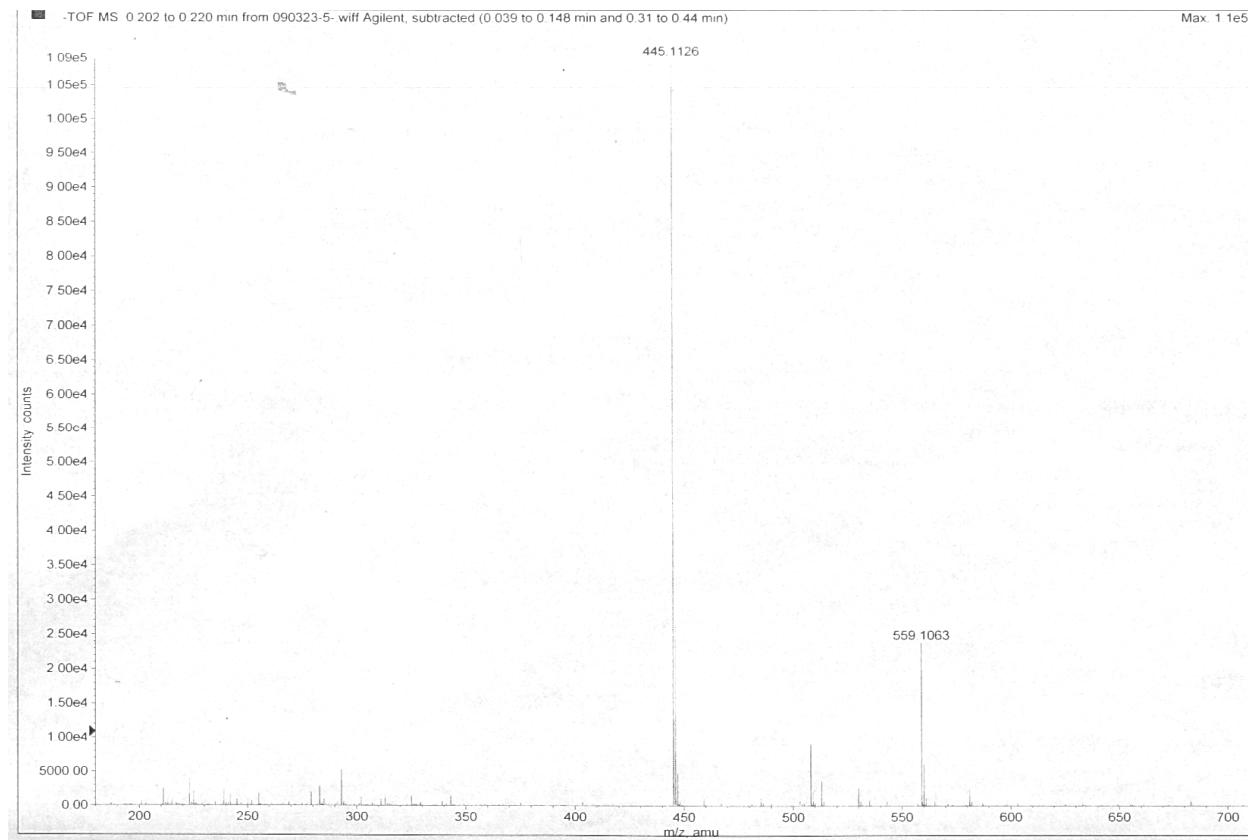
**Figure S26.** HSQC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **3**



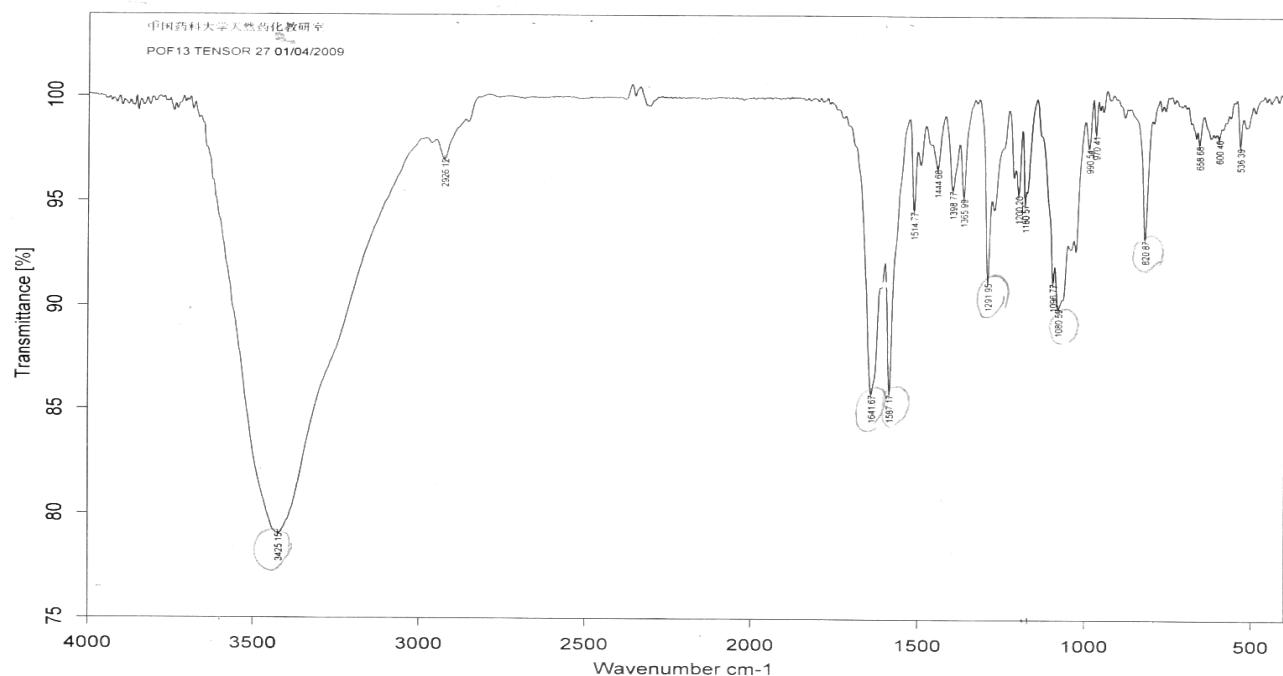
**Figure S27.** HMBC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **3**



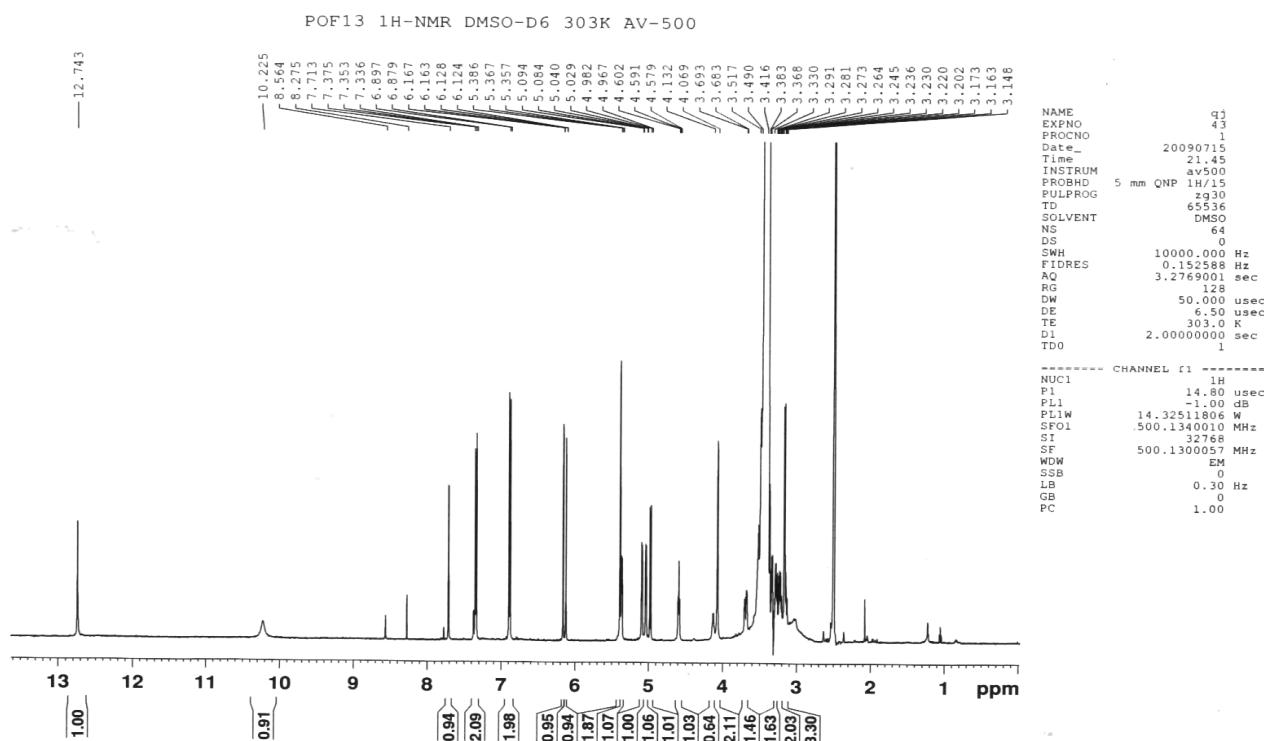
**Figure S28.** HRESIMS spectrum of **4**



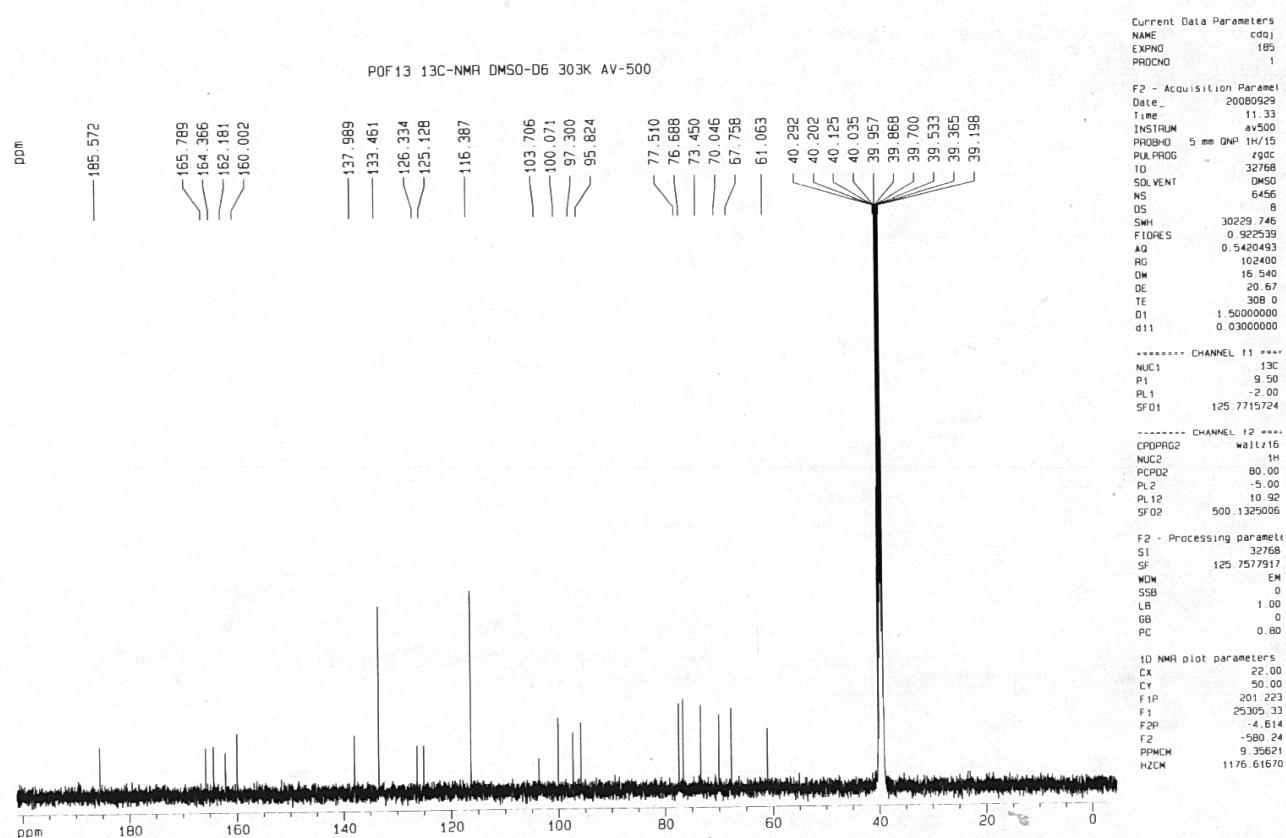
**Figure S29.** IR (KBr, disc) spectrum of 4



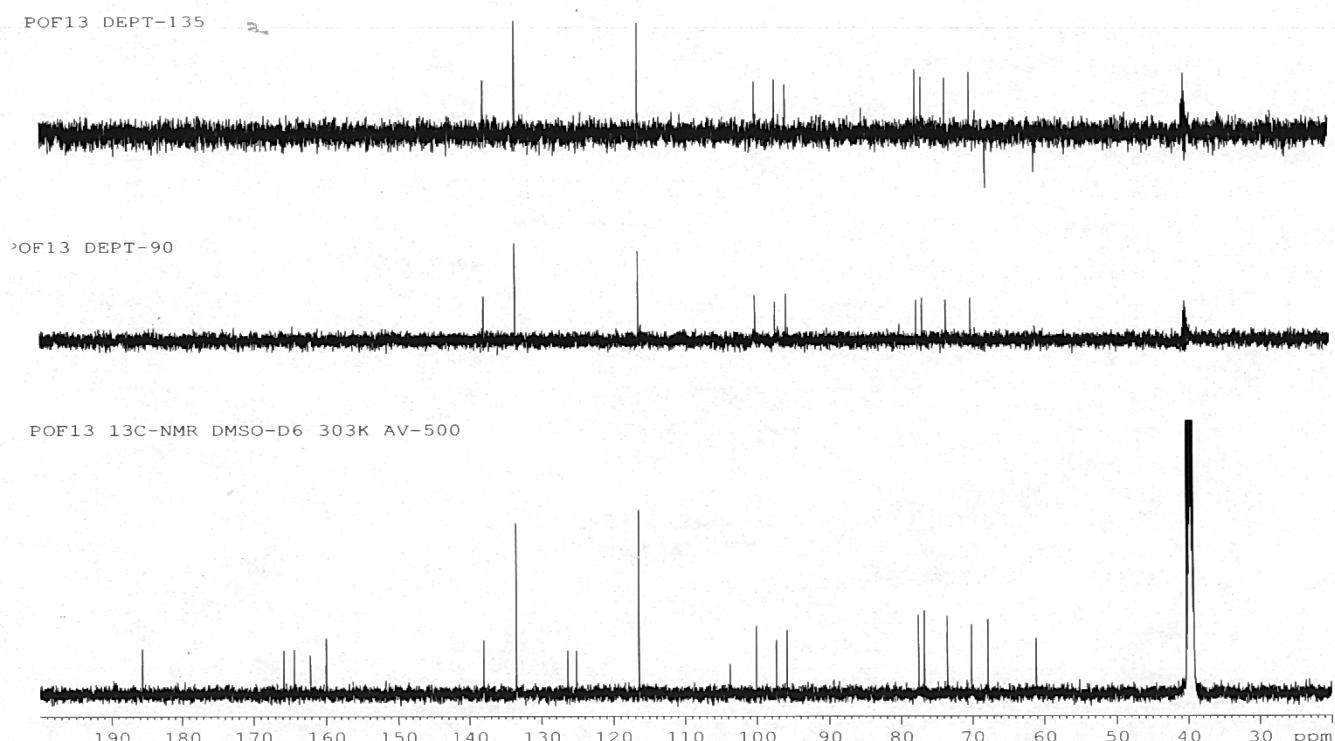
**Figure S30.**  $^1\text{H}$  NMR spectrum (DMSO- $d_6$ , 500 MHz) of **4**



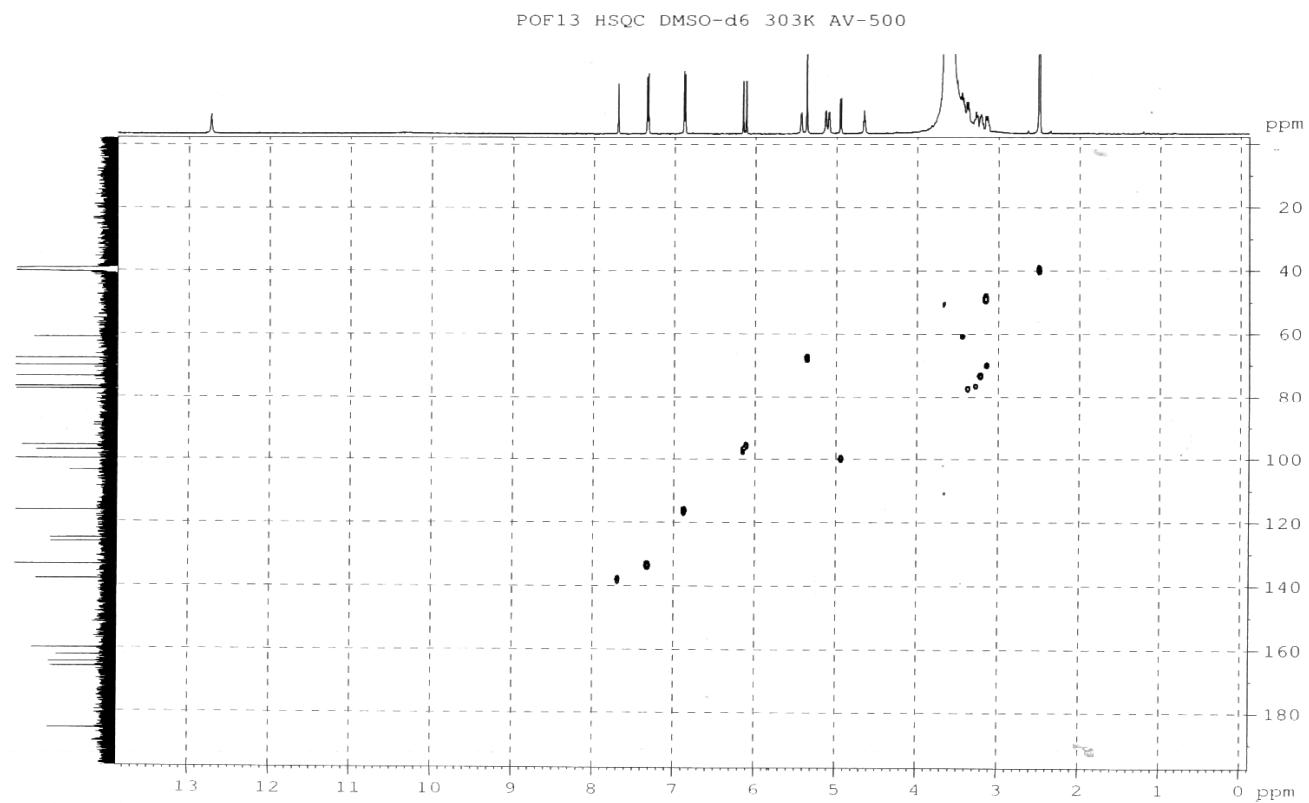
**Figure S31.**  $^{13}\text{C}$  NMR spectrum (DMSO- $d_6$ , 125 MHz) of **4**



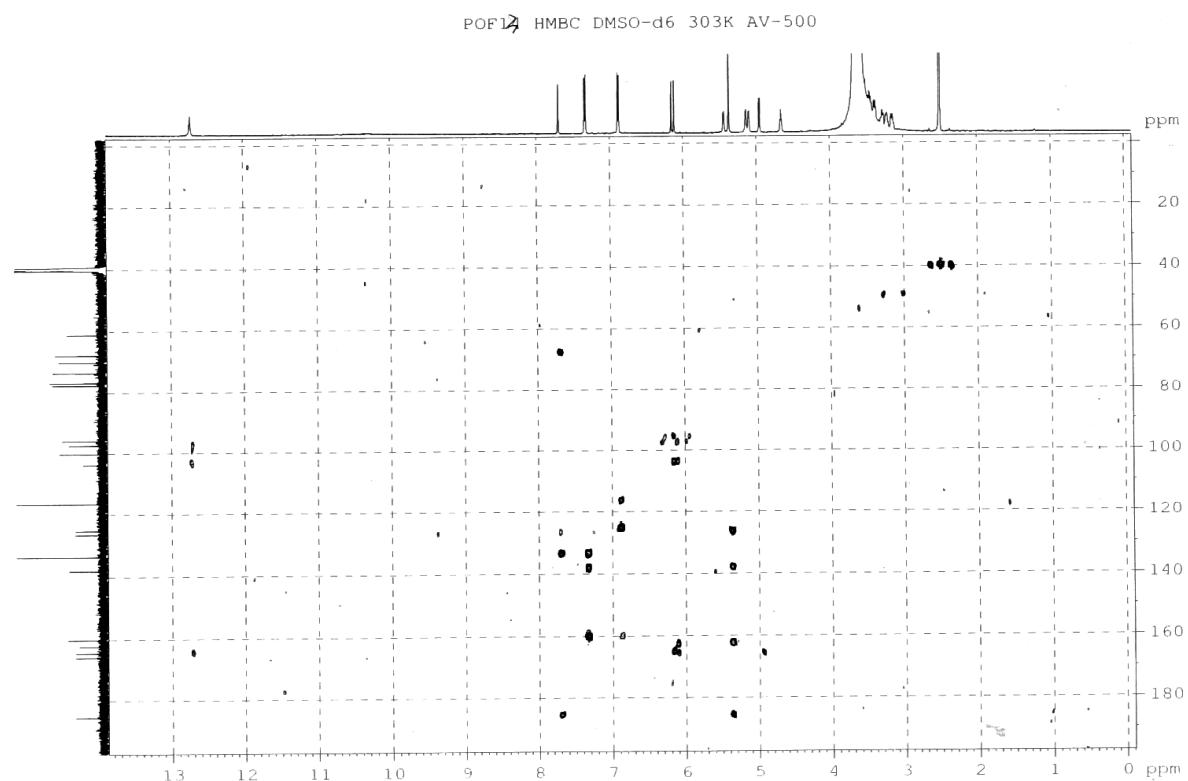
**Figure S32.** DEPT NMR spectrum (DMSO- $d_6$ , 125 MHz) of **4**



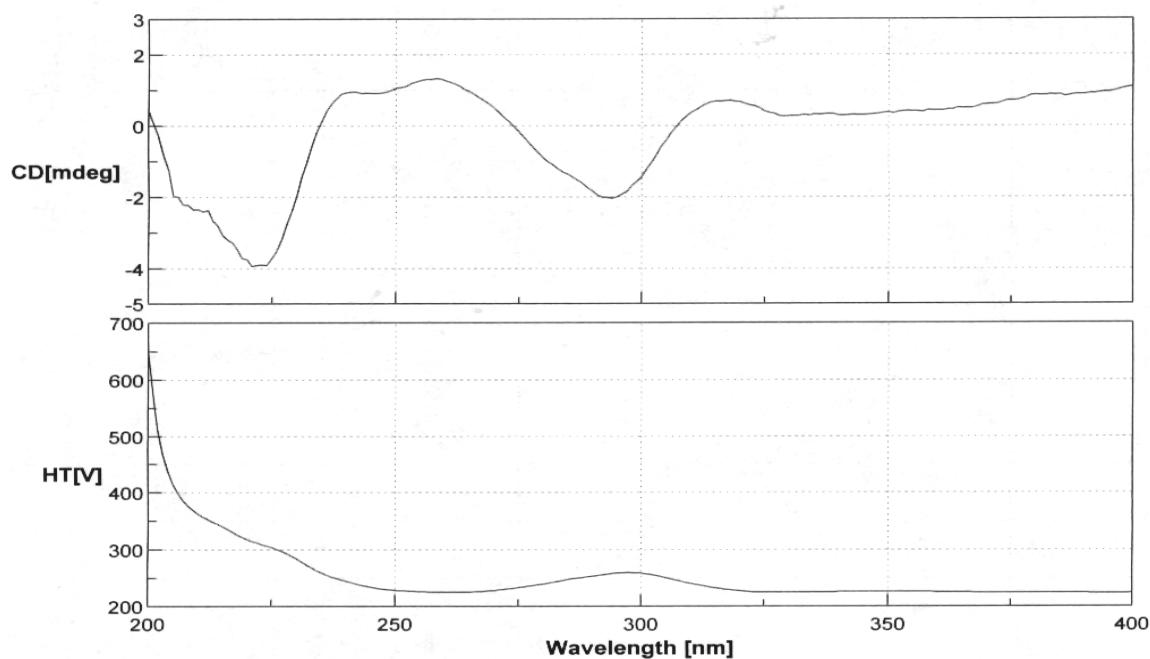
**Figure S33.** HSQC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **4**



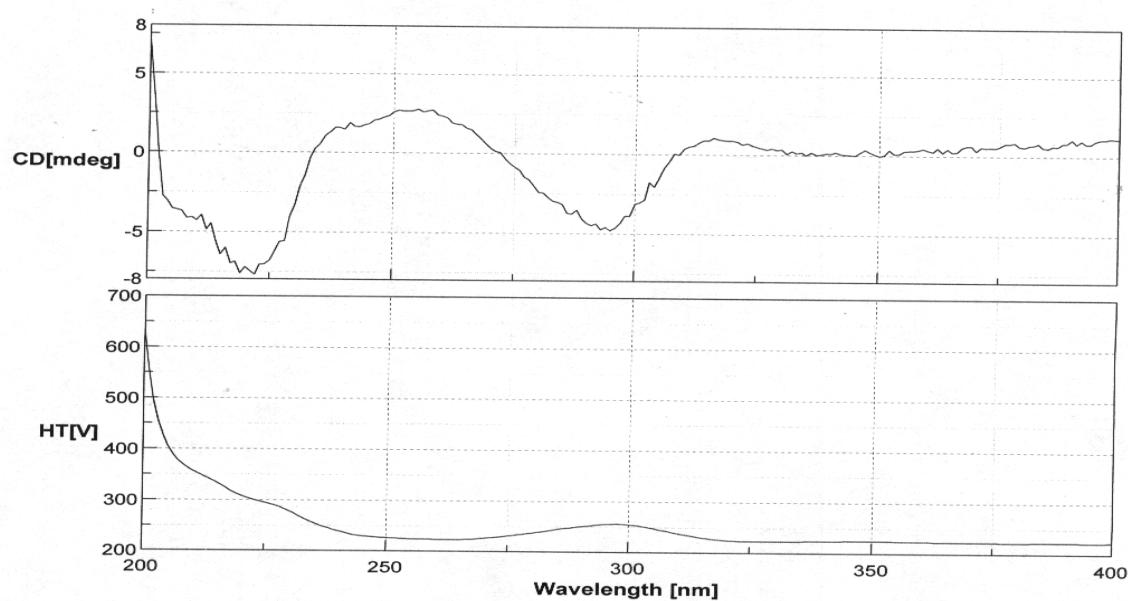
**Figure S34.** HMBC NMR spectrum (DMSO-*d*<sub>6</sub>, 500 MHz, 125 MHz) of **4**



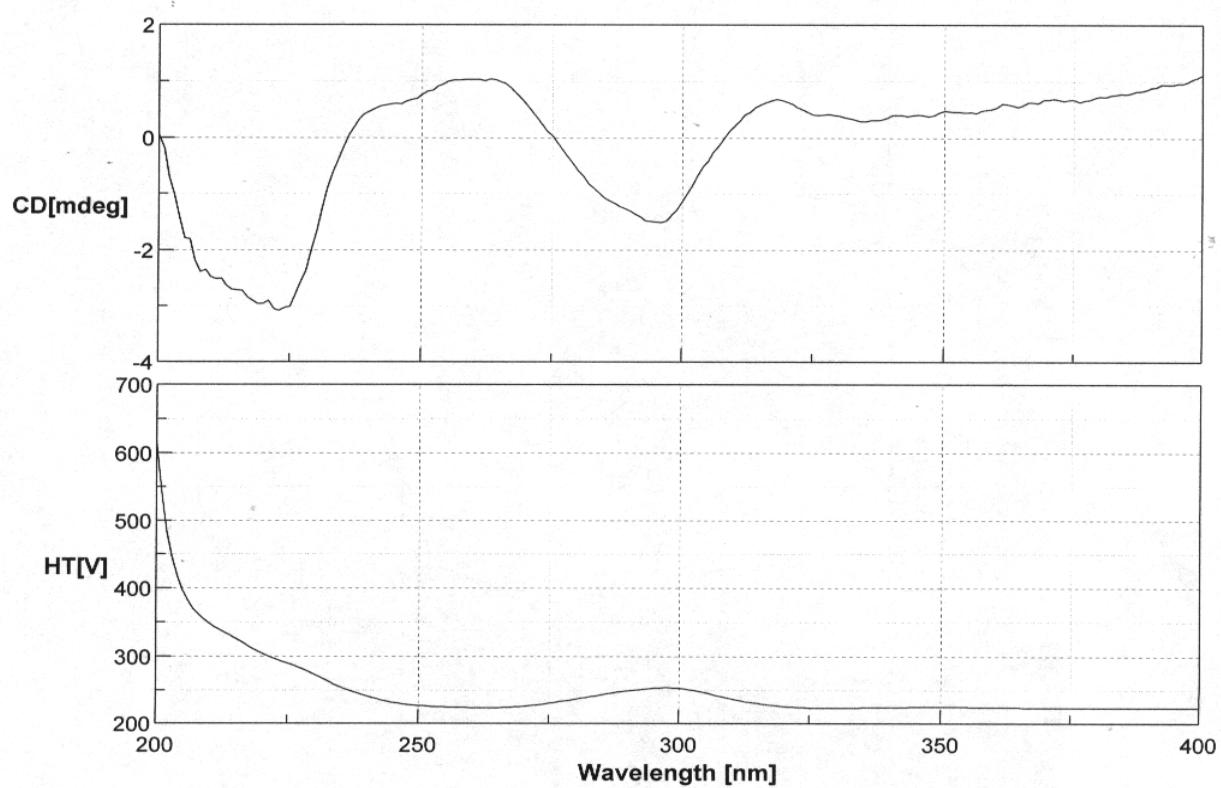
**Figure S35.** CD spectra of **5**



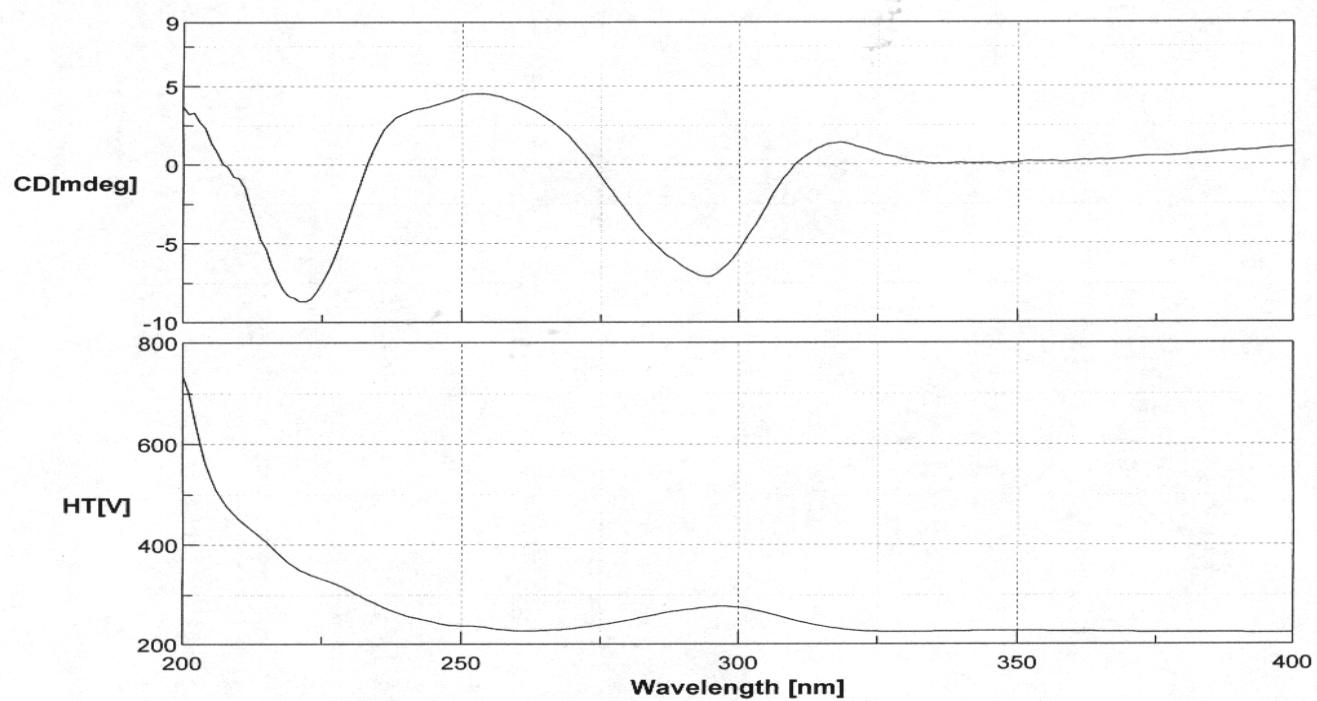
**Figure S36.** CD spectra of **6**



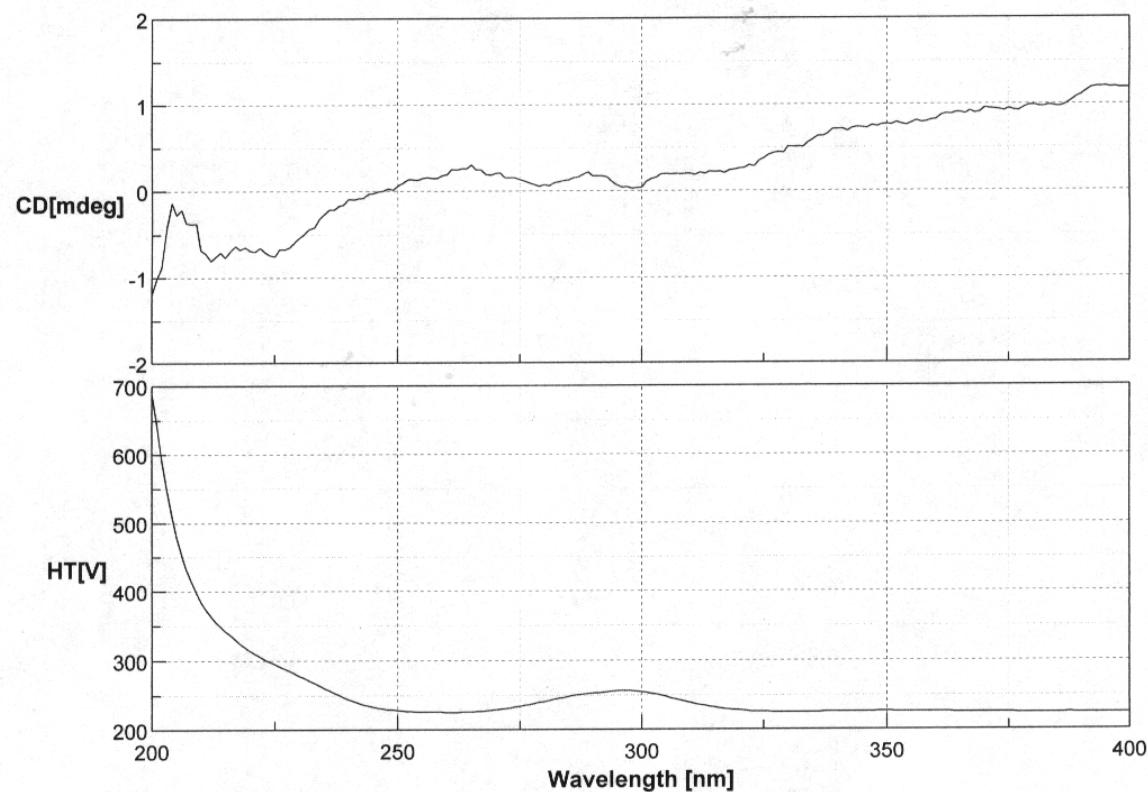
**Figure S37.** CD spectra of **7**



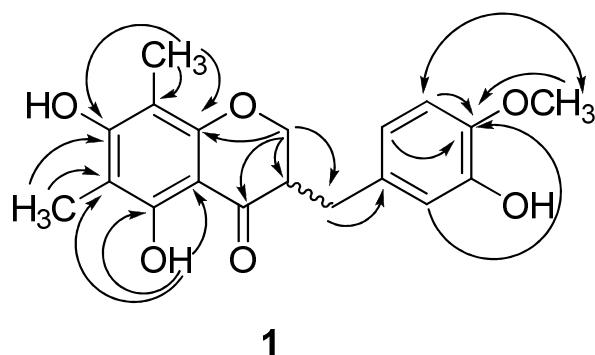
**Figure S38.** CD spectra of **8**



**Figure S39.** CD spectra of **9**



**Figure S40.** Key correlations observed in the HMBC ( $\rightarrow$ ) and NOESY ( $\leftrightarrow$ ) NMR spectra of **1**.



**1**

**Figure S41.** Key correlations observed in the HMBC ( $\rightarrow$ ) NMR spectrum of **4**

