SUPPLEMENTARY MATERIAL

Triple negative breast cancer suppressive activities, antioxidants and pharmacophore model of new acylated rhamnopyranoses from *Premna odorata*

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Abstract

Phytochemical investigation of *Premna odorata* Blanco, ″Lamiaceae‟ young stems afforded four new acylated rhamnopyranoses **1-4**, along with fourteen known compounds **5-19**. The structures of new compounds were confirmed using extensive 1D, 2D NMR, and HRESIMS analysis. The isolated compounds were tested for their cell proliferation and migration inhibition activities against the invasive human triple-negative breast cancer cells MDA-MB-231 and MCF-7, and the normal human breast cell line MCF-10A. In addition the free radical scavenging activities using 2,2′-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity was carried out. Compound **1** was the most active as antiproliferative, showed high to moderate antiproliferative effect with an IC_{50} value of 4.95 and 17.7μM against MCF-7 and MDA-MB-231, respectively. The antiproliferative activities of compound 1-5 against the normal breast cell line MCF-10A was moderate to low with IC50 values 13.91 to 27.70 μM. On the other hand compounds **1** and **10** suppressed MDA-MB-231 cell migration in the wound-healing assay at 10μM concentration. Meanwhile, compounds **1-5** exhibited the highest value of DPPH radical scavenging activities with an IC_{50} value range of 17.5-20.43 ± 0.5μg/mL. The pharmacophore model was generated using Molecular Operating Environment (MOE) for compounds **1-5** showed three hydrogen bond acceptor (HBAs), one hydrogen bond donor (HBDs), one ring aromatic (Aro), and one hydrophobic (Hyd.) group. The central HBAs feature lies at a distance of 4.36 ˚A and 6.38 ˚A from the remaining two HBAs features. Also, the HBDs feature maintains a distance of 2.74 ˚A from the aromatic feature. Acylated rhamnopyranoses can be considered as a good scaffolds for developing new anti-breast cancer and antioxidant compounds.

Keywords: *Premna*; acylated rhamnopyranoses; antiproliferative; migration; antioxidants; pharmacophore.

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Figure S1. IR spectrum of compound **1** measured in KOH

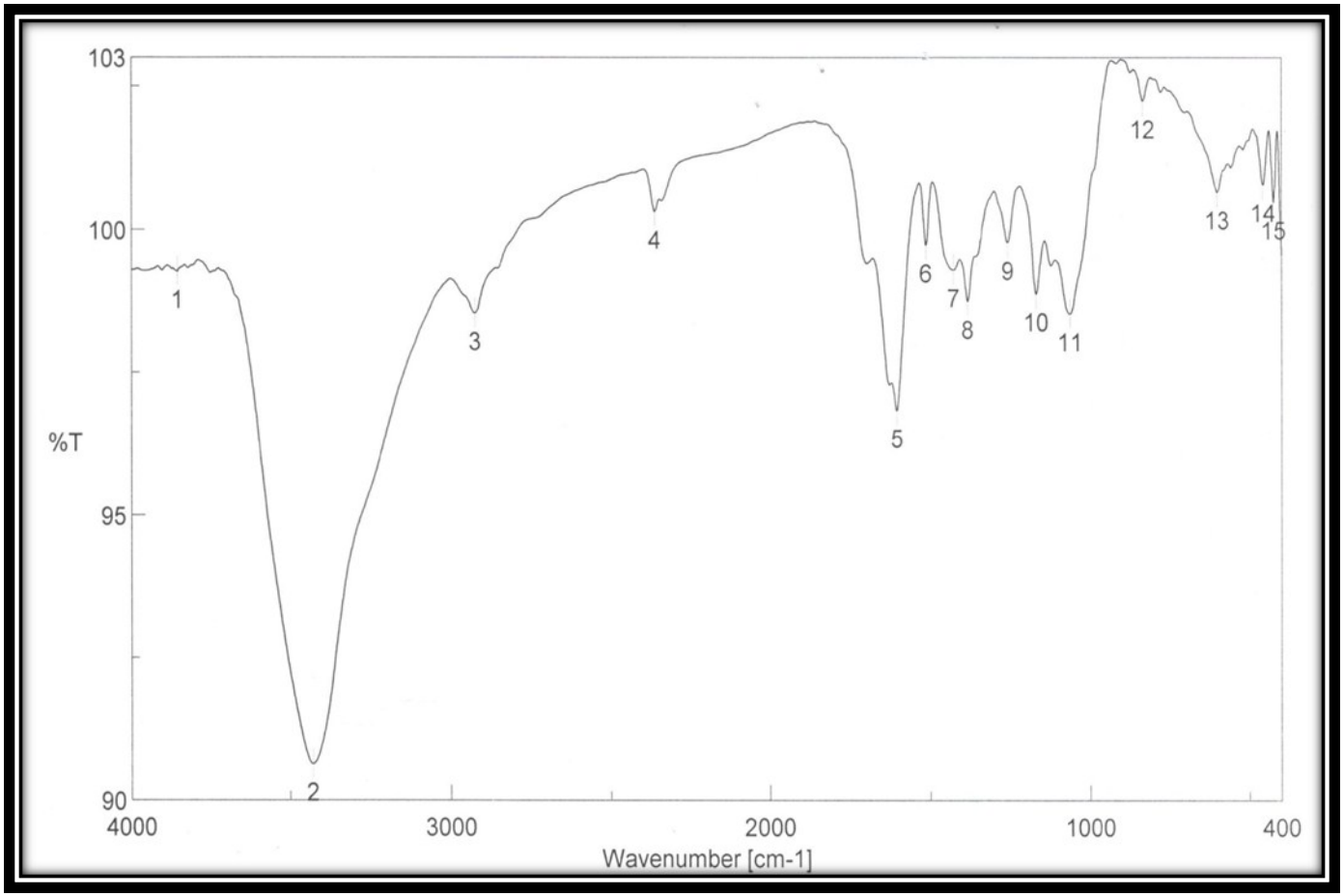

Figure S2. 1H NMR spectrum of compound **1** measured in CD_3OD at 400 MHz

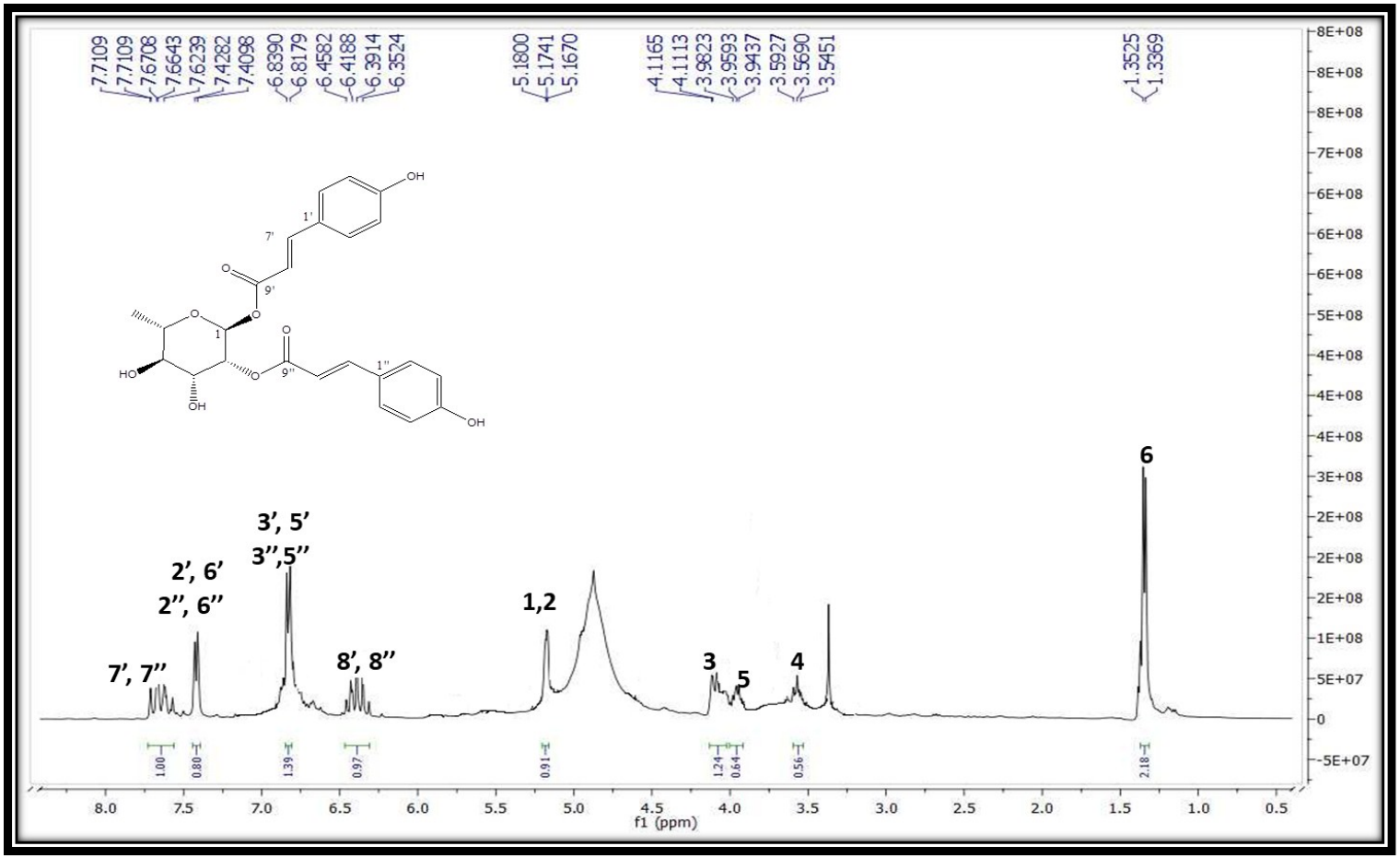

Figure S3. DEPT-Q NMR spectrum of compound **1** measured in CD_3OD at 100 MHz.

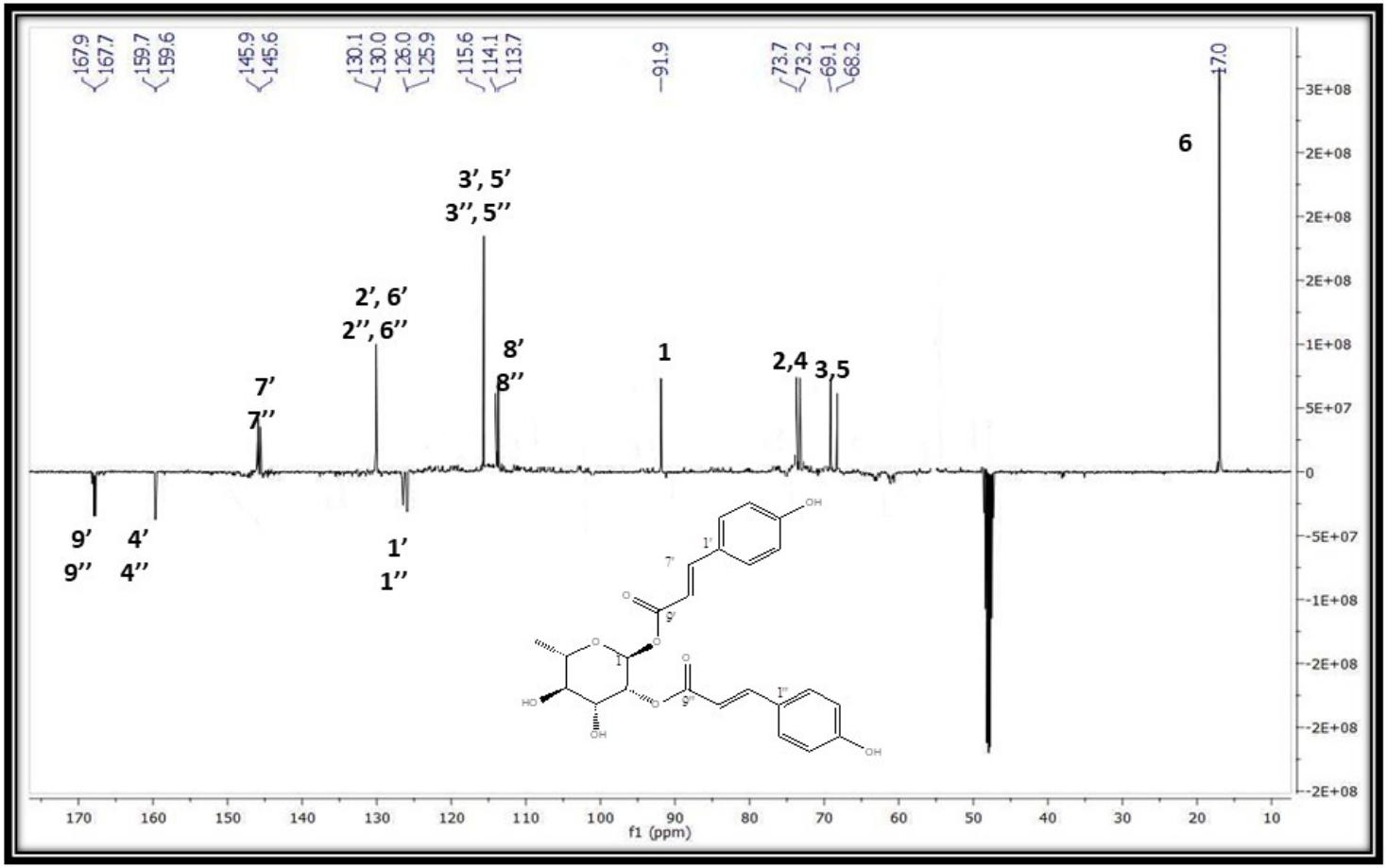

Figure S4. HSQC spectrum of compound **1** measured in CD_3OD

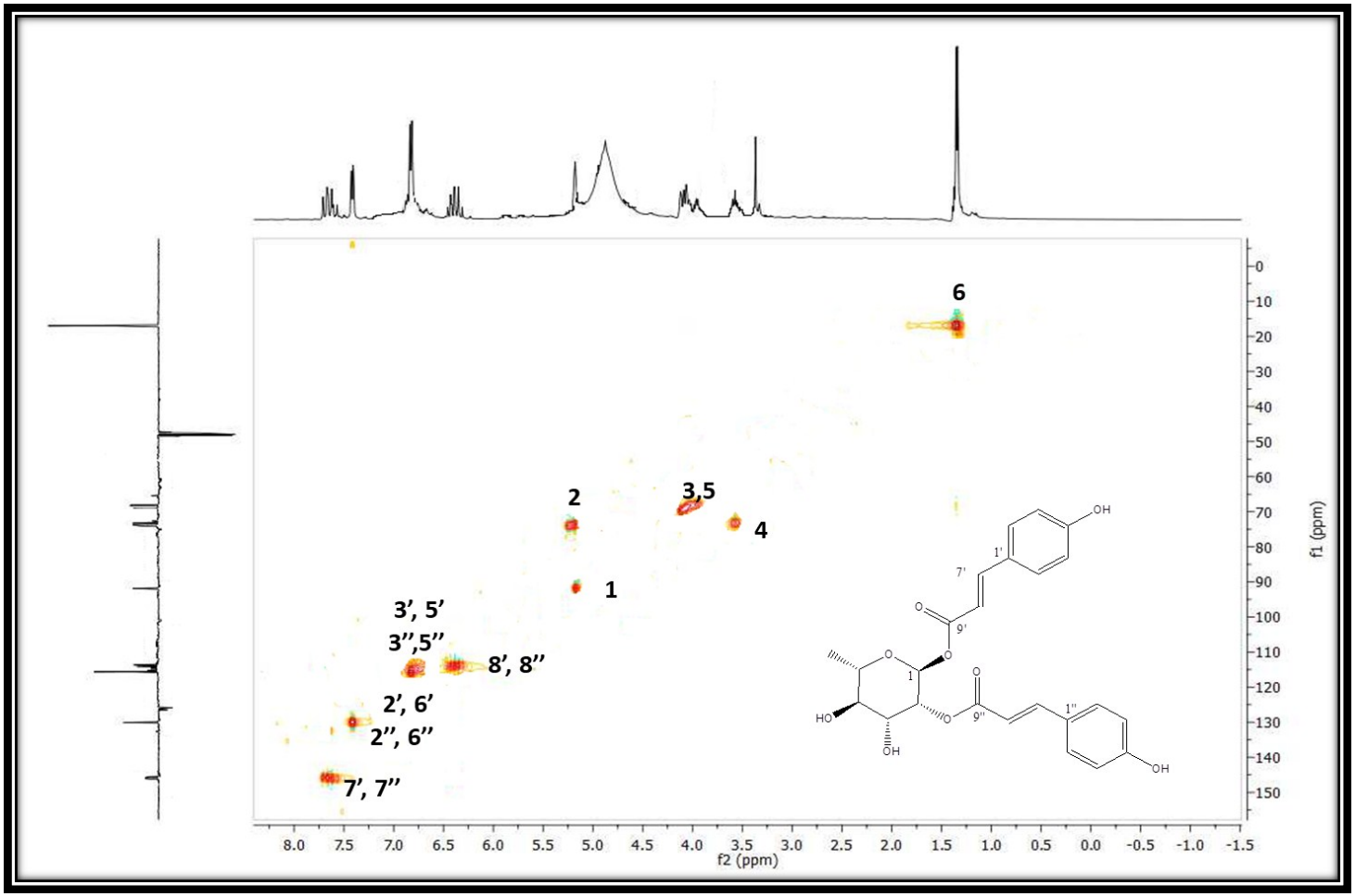

Figure S5. HMBC spectrum of compound **1** measured in CD_3OD

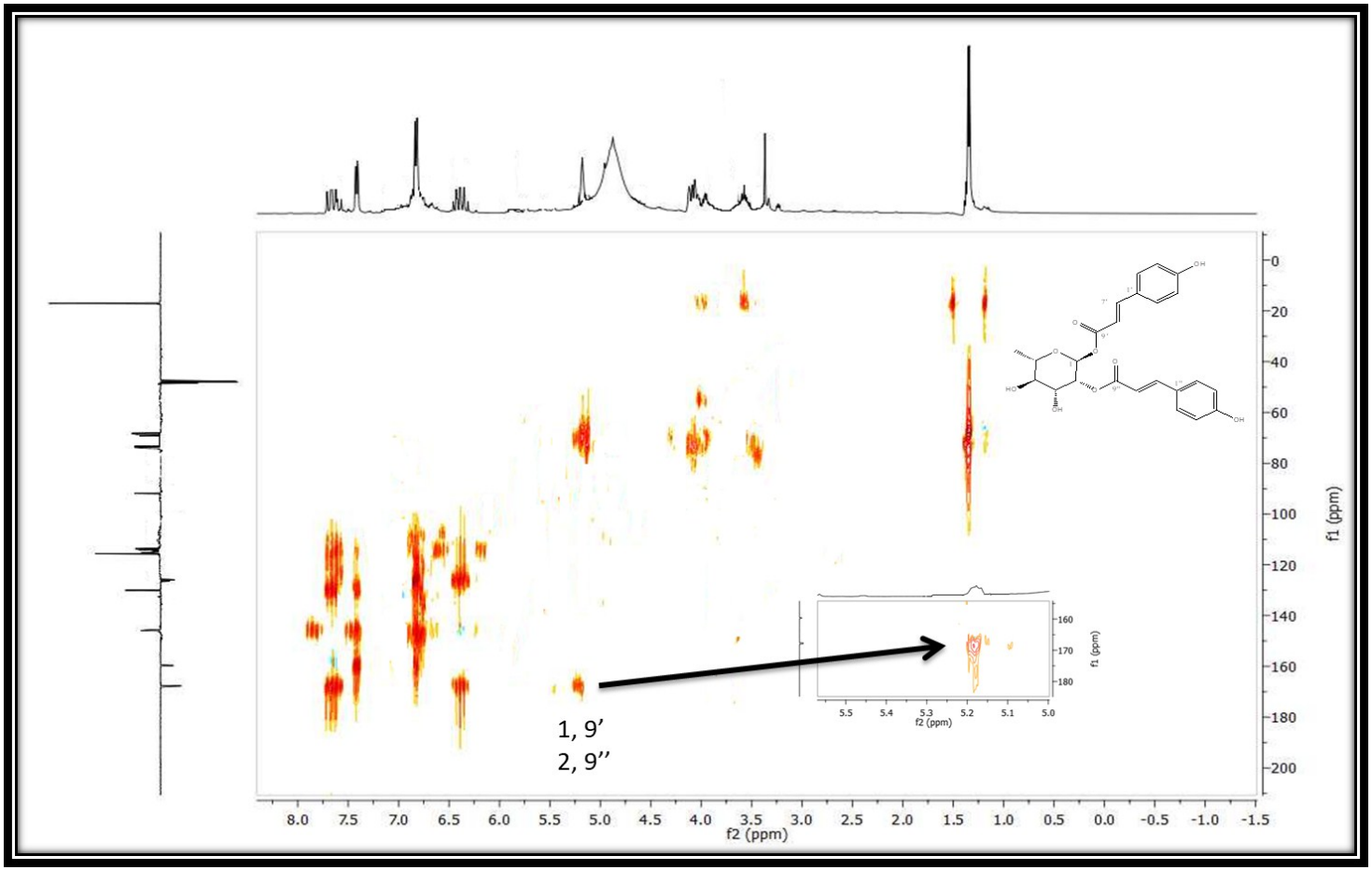

Figure S6. HRESIMS spectrum of compound **1**.

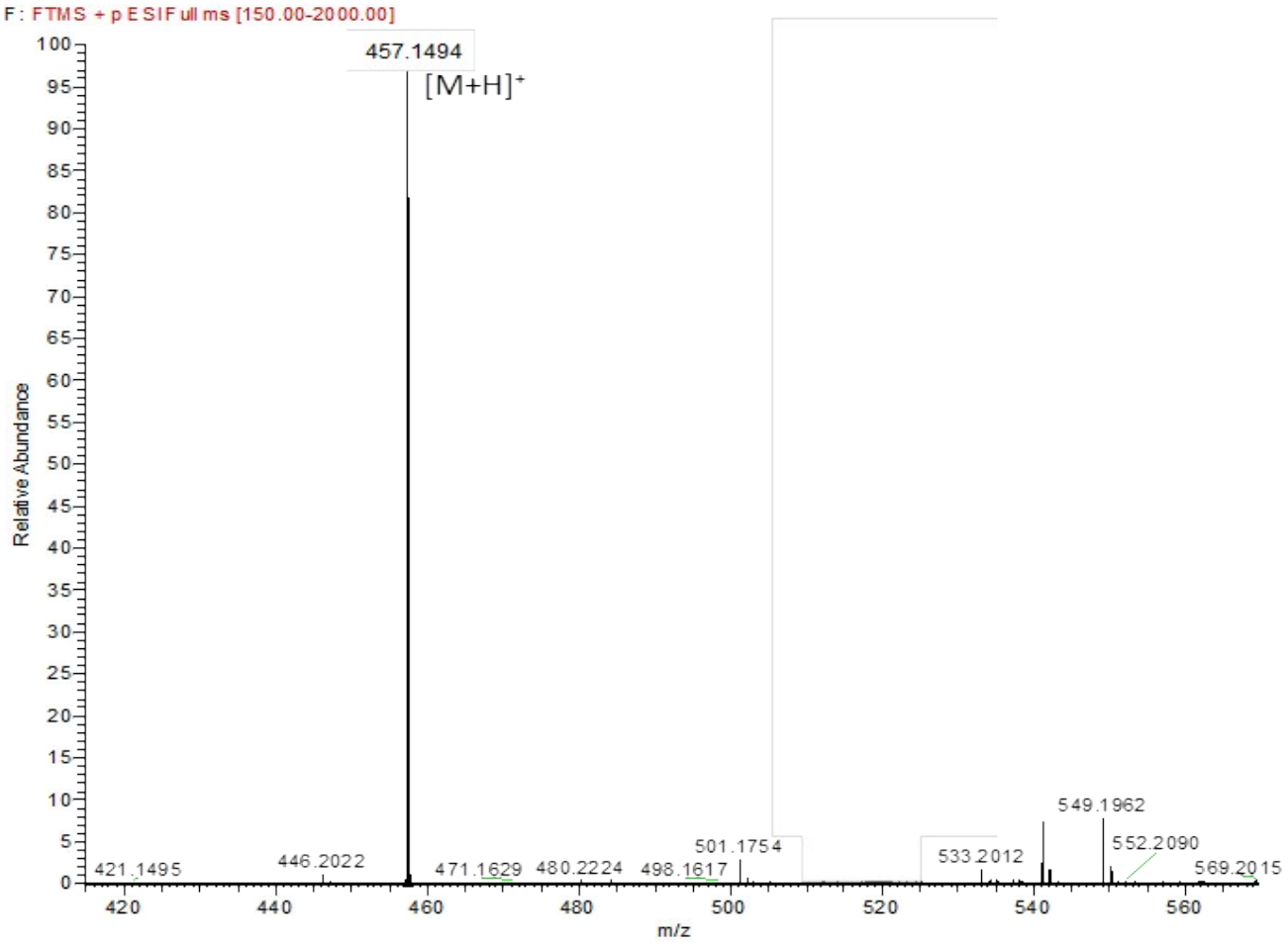

Figure S7. IR spectrum of compound **2** measured in KOH

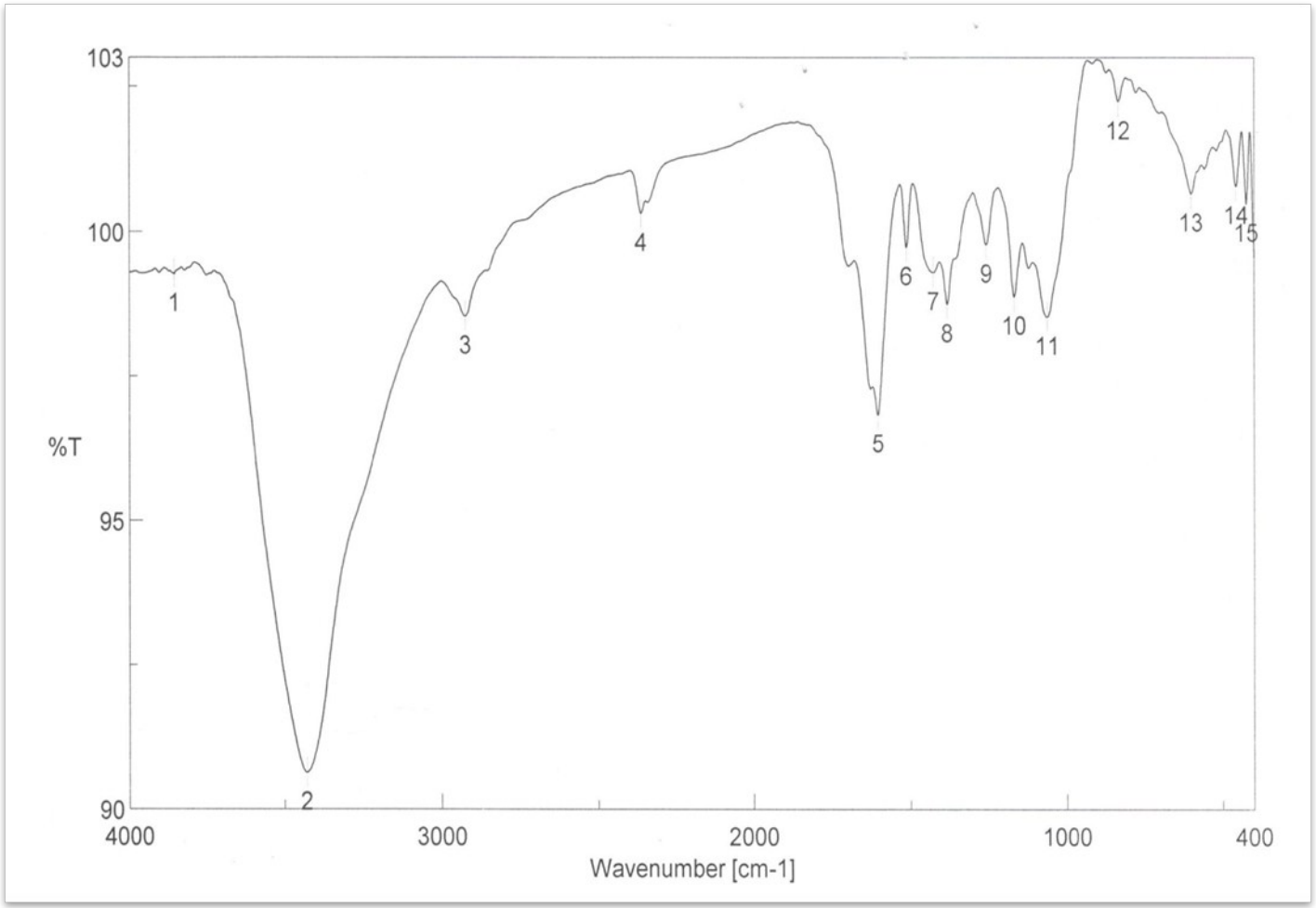

Figure S8. 1H NMR spectrum of compound **2** measured in CD_3OD at 400MHz.

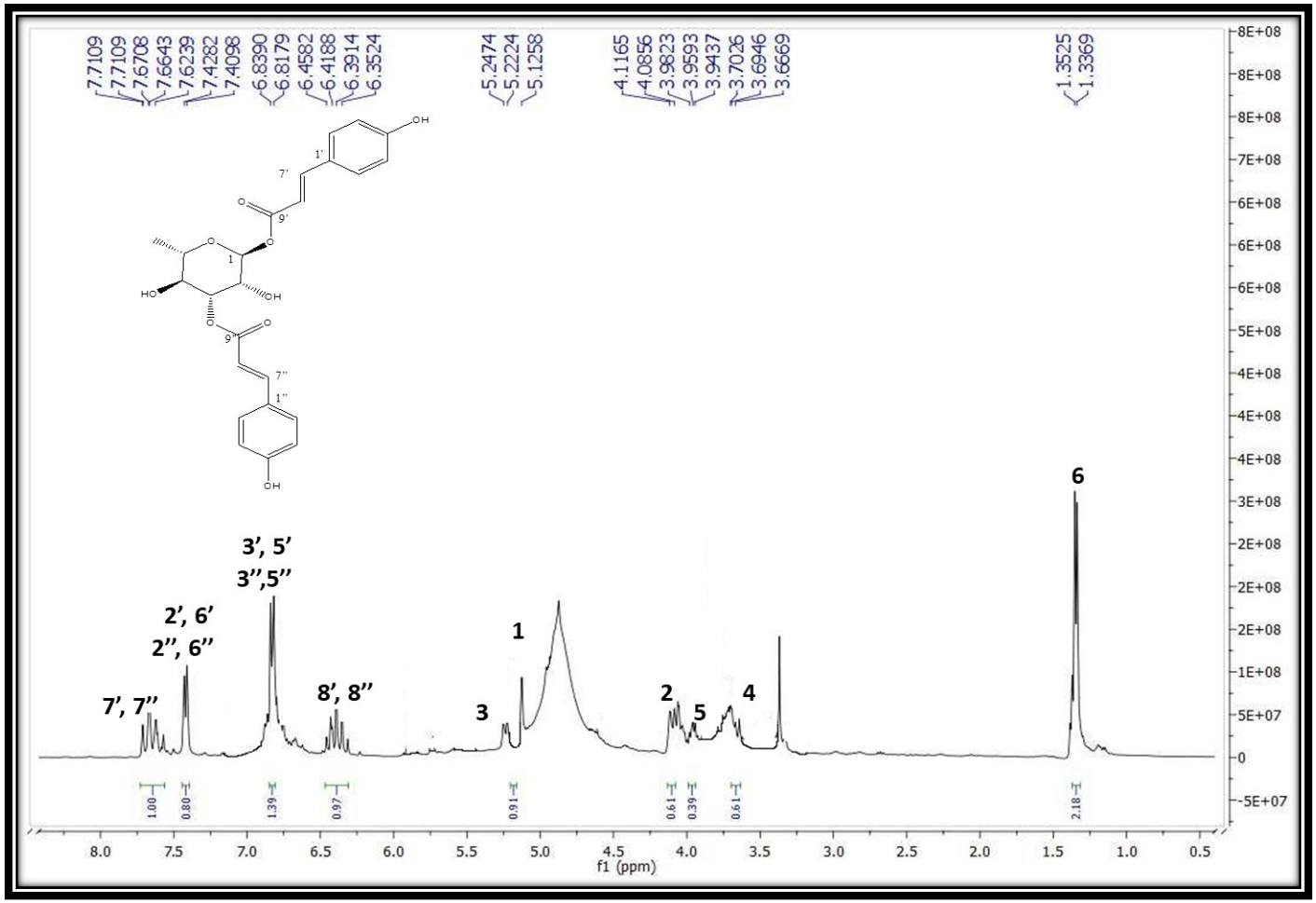

Figure S9. DEPT-Q NMR spectrum of compound **2** measured in CD_3OD at 100 MHz.

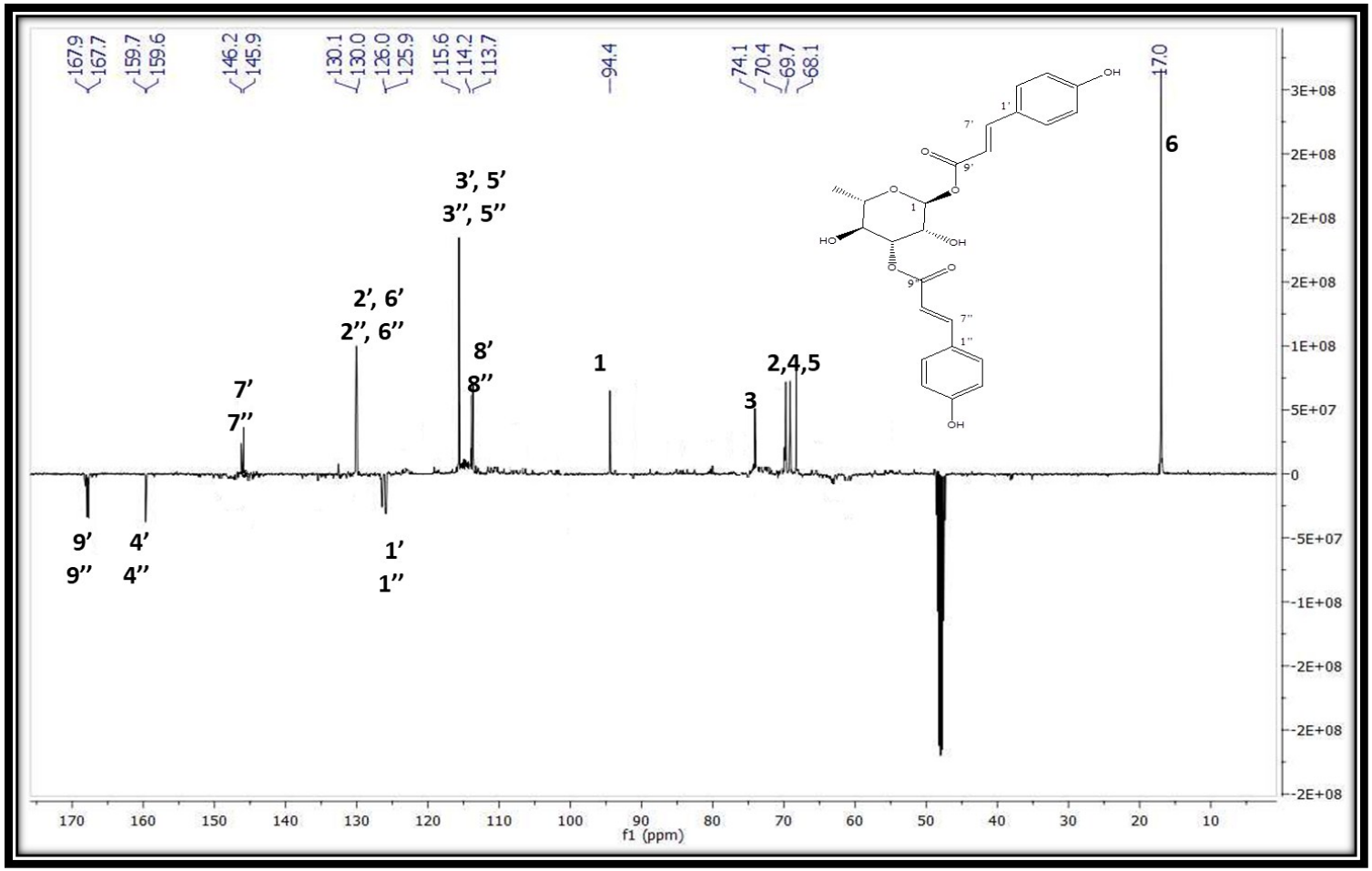

Figure S10. HSQC spectrum of compound **2** measured in CD_3OD

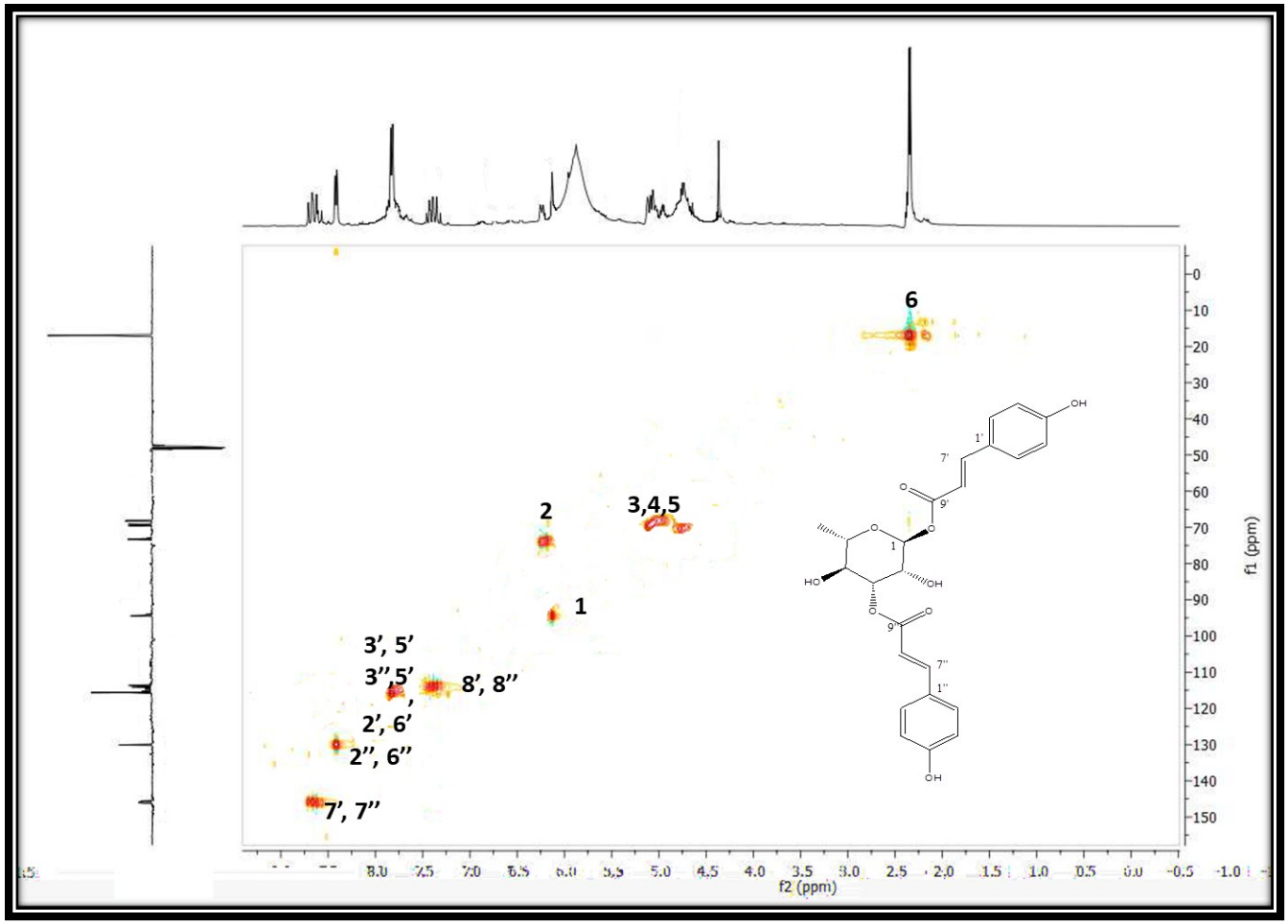

Figure S11. HMBC spectrum of compound **2** measured in CD_3OD

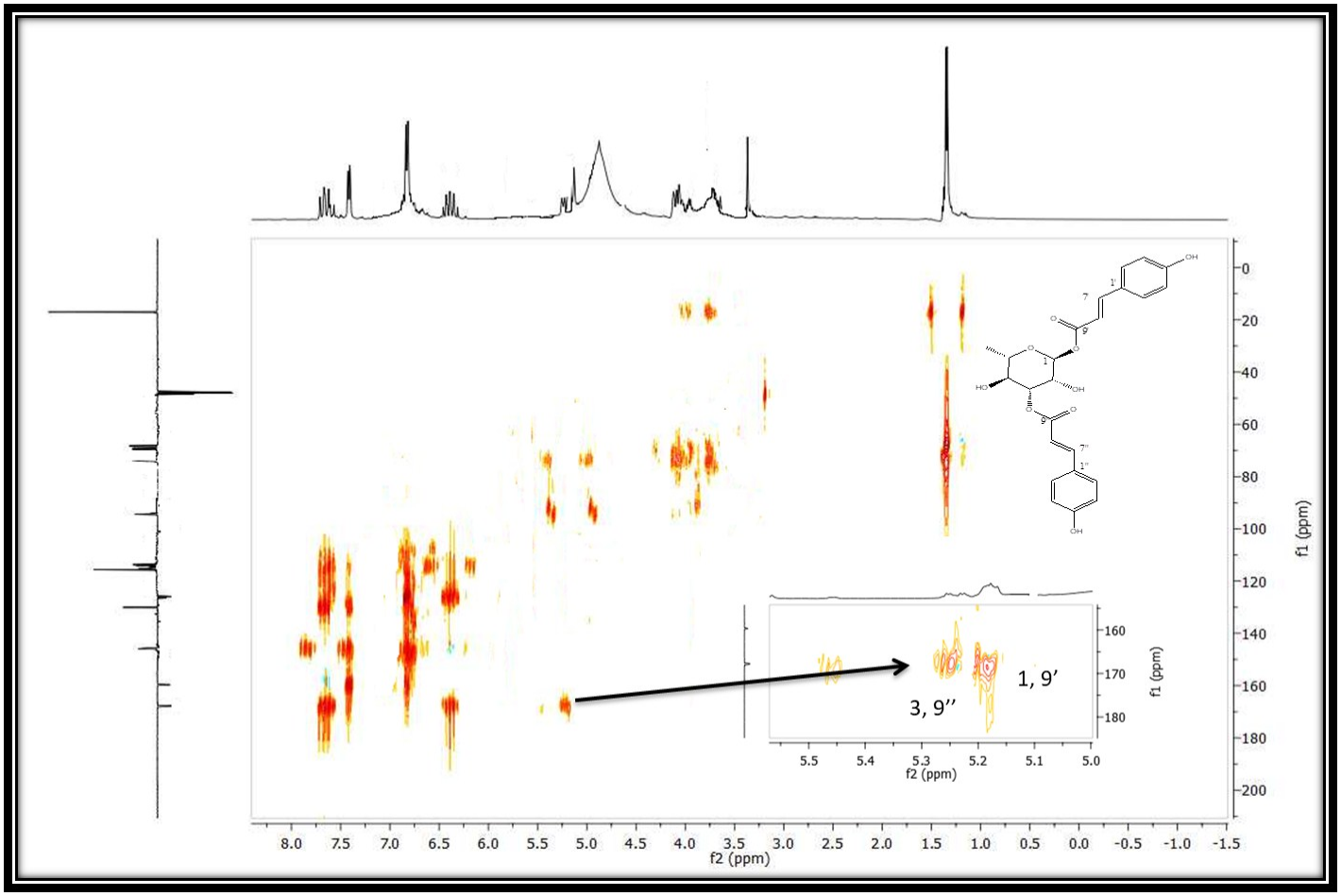

Figure S12. HRESIMS spectrum of compound **2**

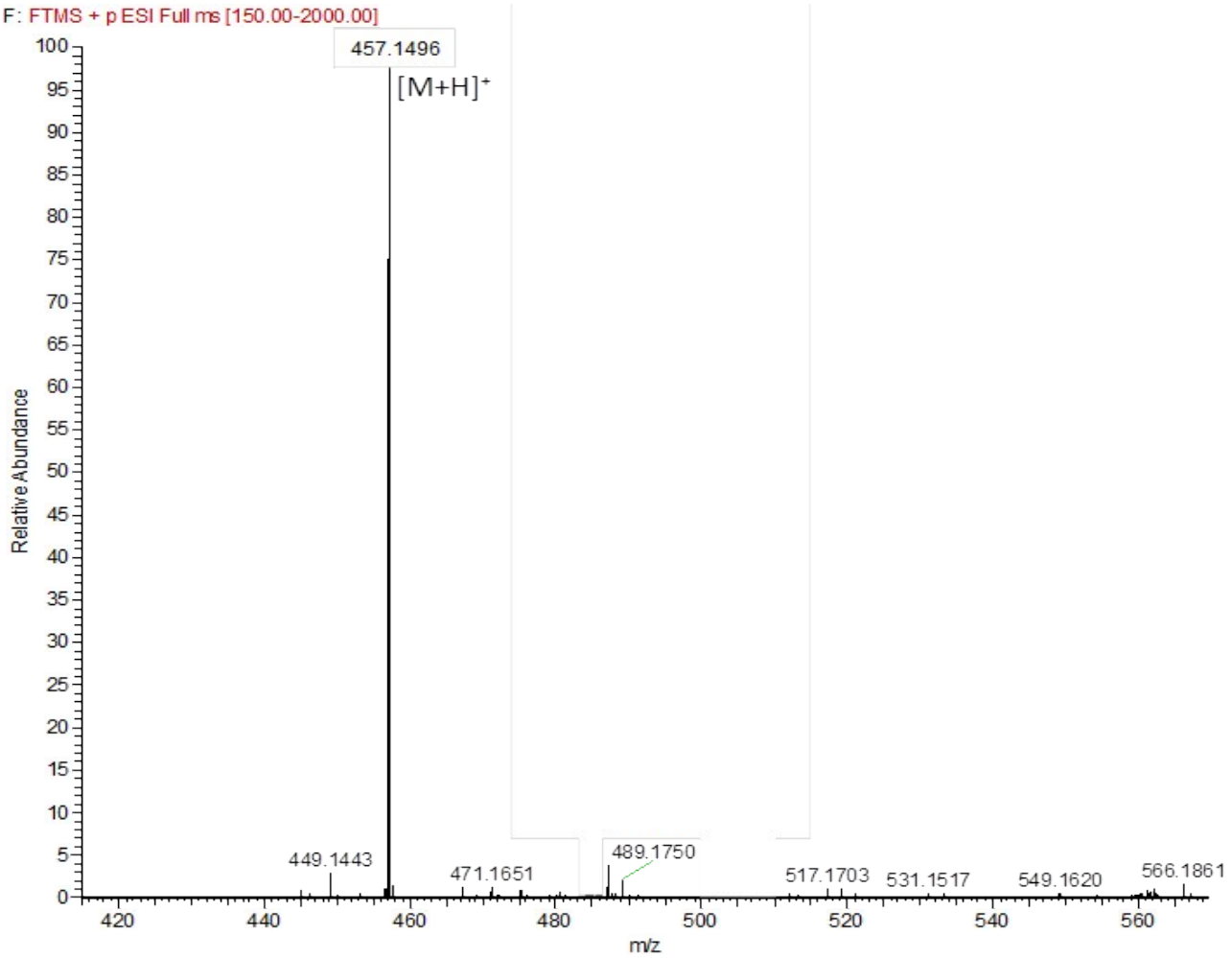

Figure S13. IR spectrum of compound **3** measured in KOH

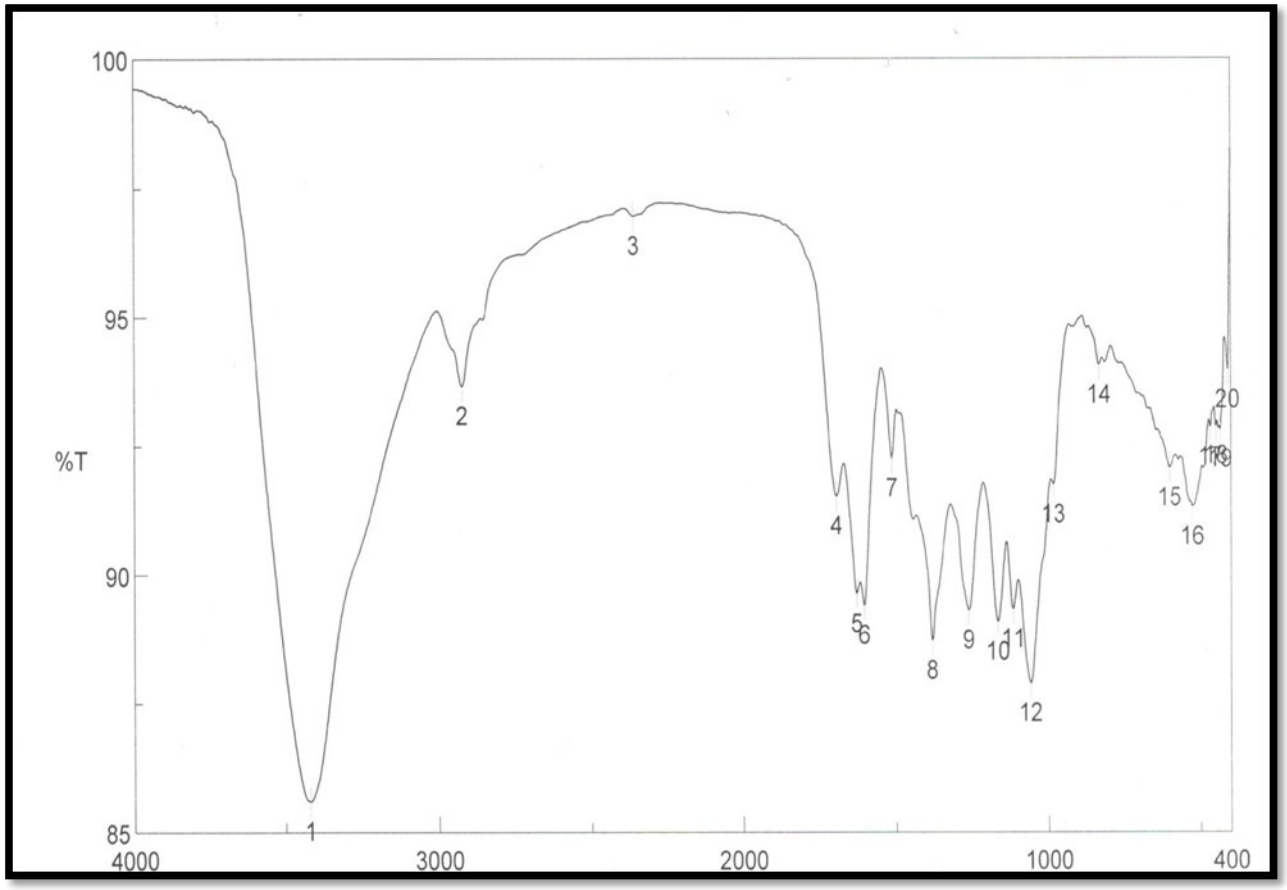

Figure S14. 1H NMR spectrum of compound **3** measured in CD_3OD at 400 MHZ

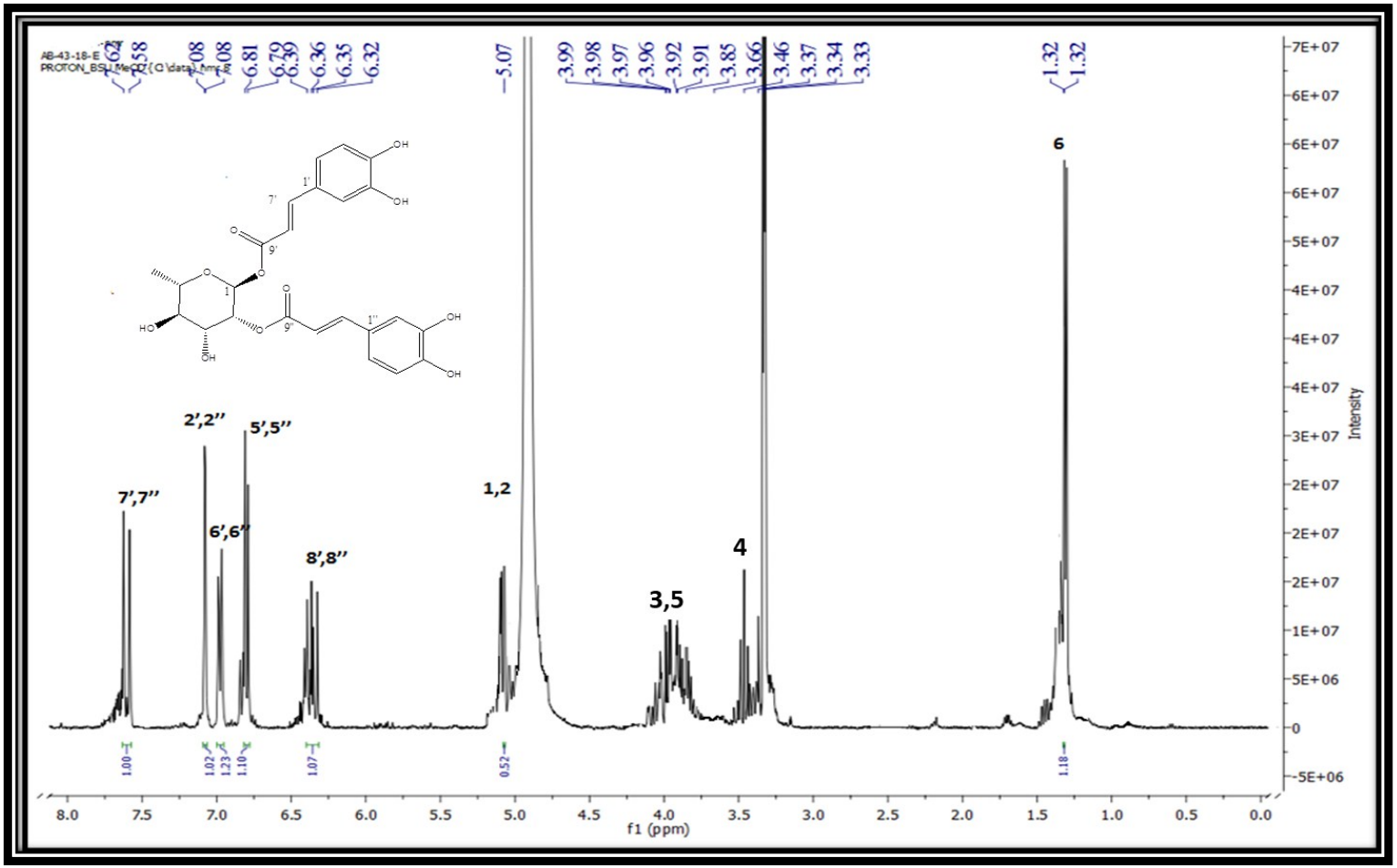

Figure S15. DEPT-Q NMR spectrum of compound **3** measured in CD_3OD at 100 MHz

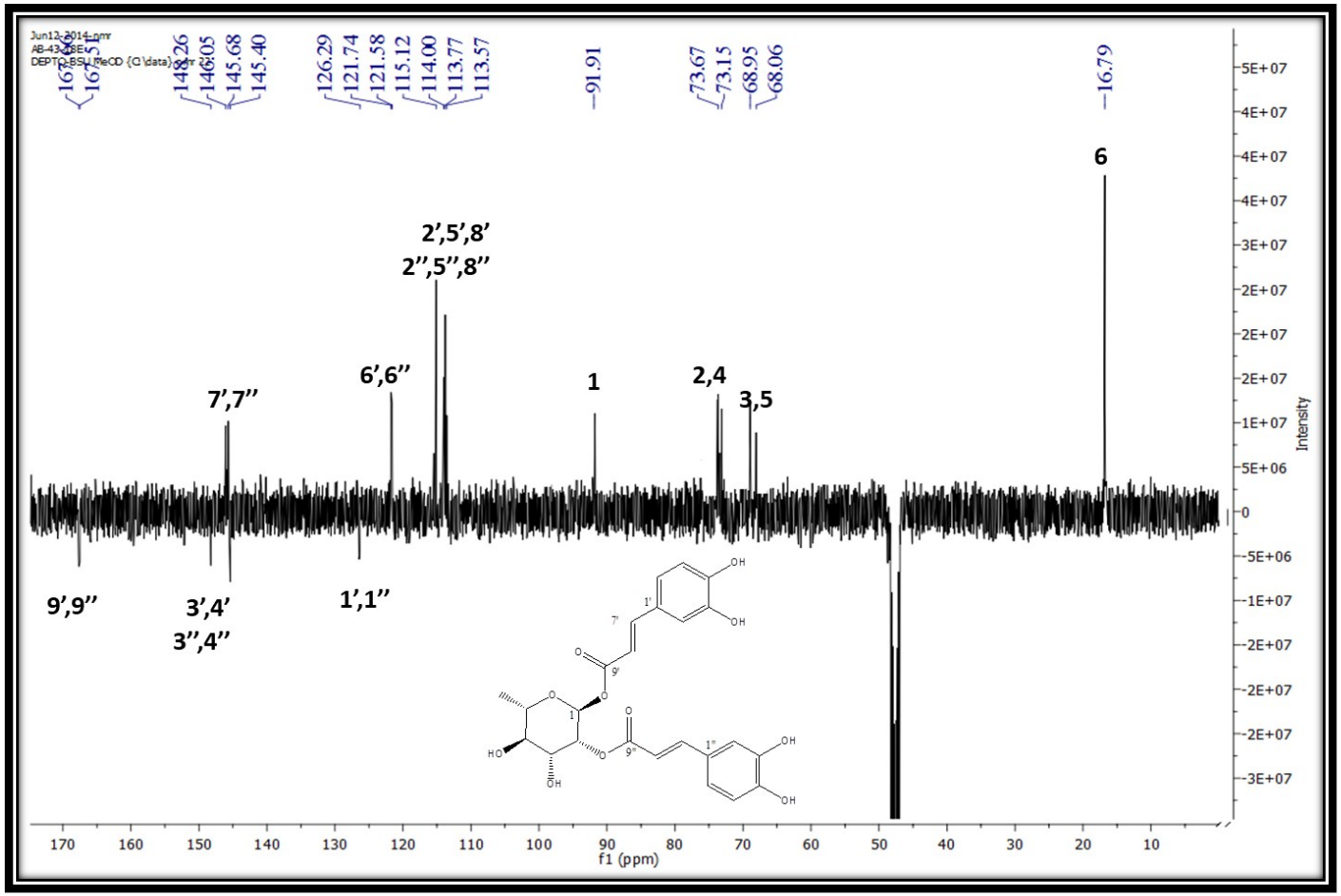

Figure S16. HRESIMS spectrum of compound **3**

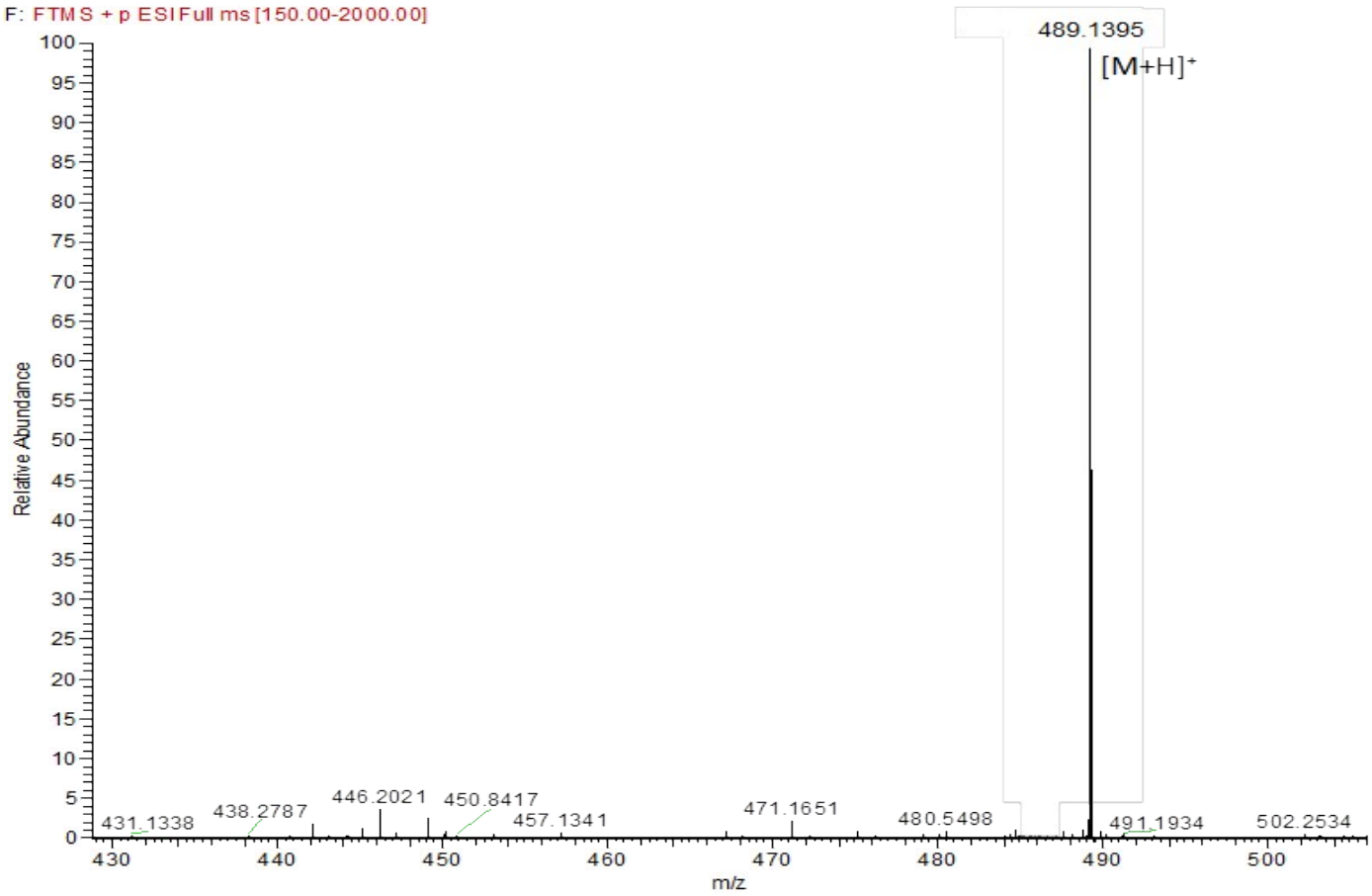

Figure S17. IR spectrum of compound **4** measured in KOH

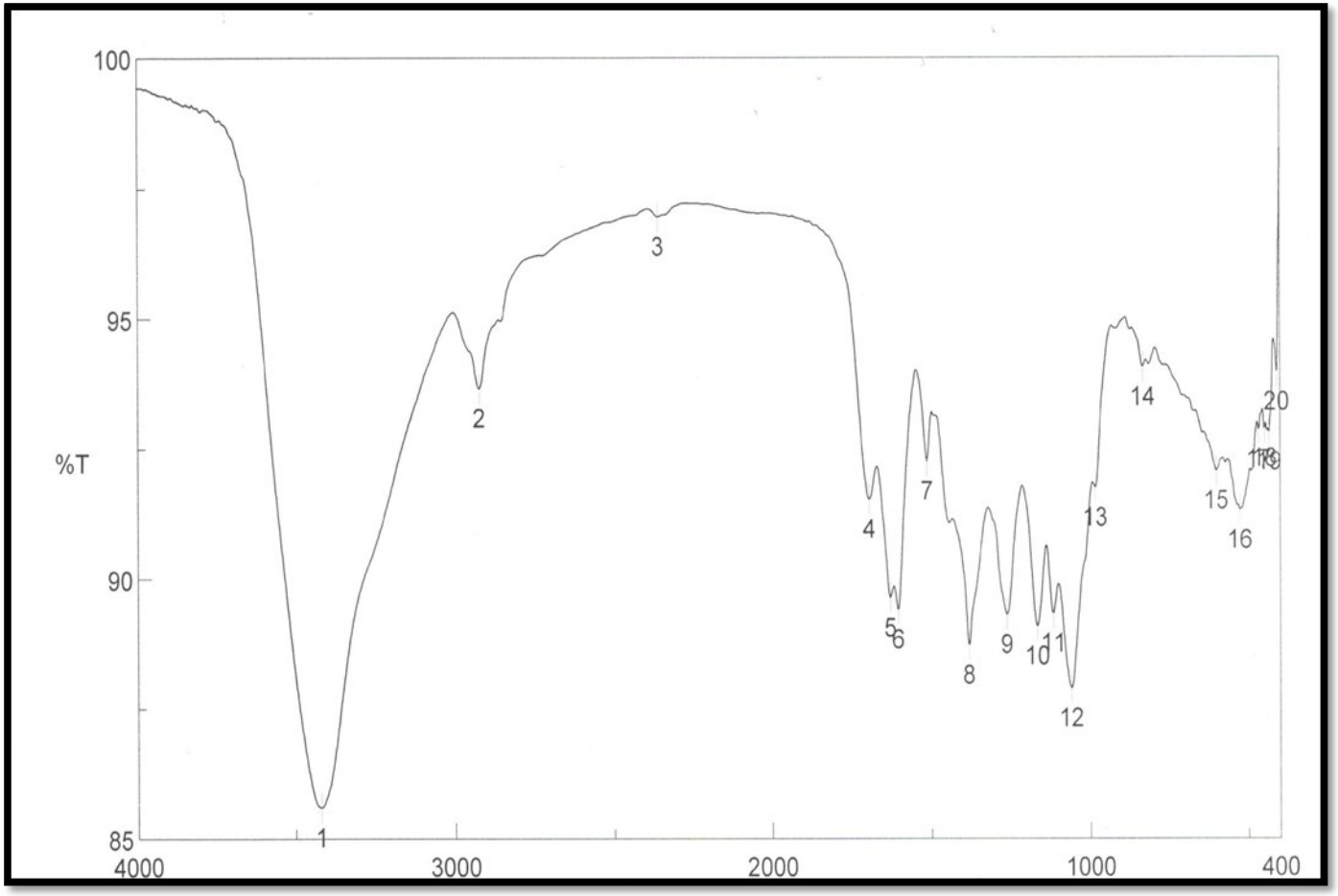

Figure S18. 1H NMR spectrum of compound **4** measured in CD_3OD at 400 MHZ

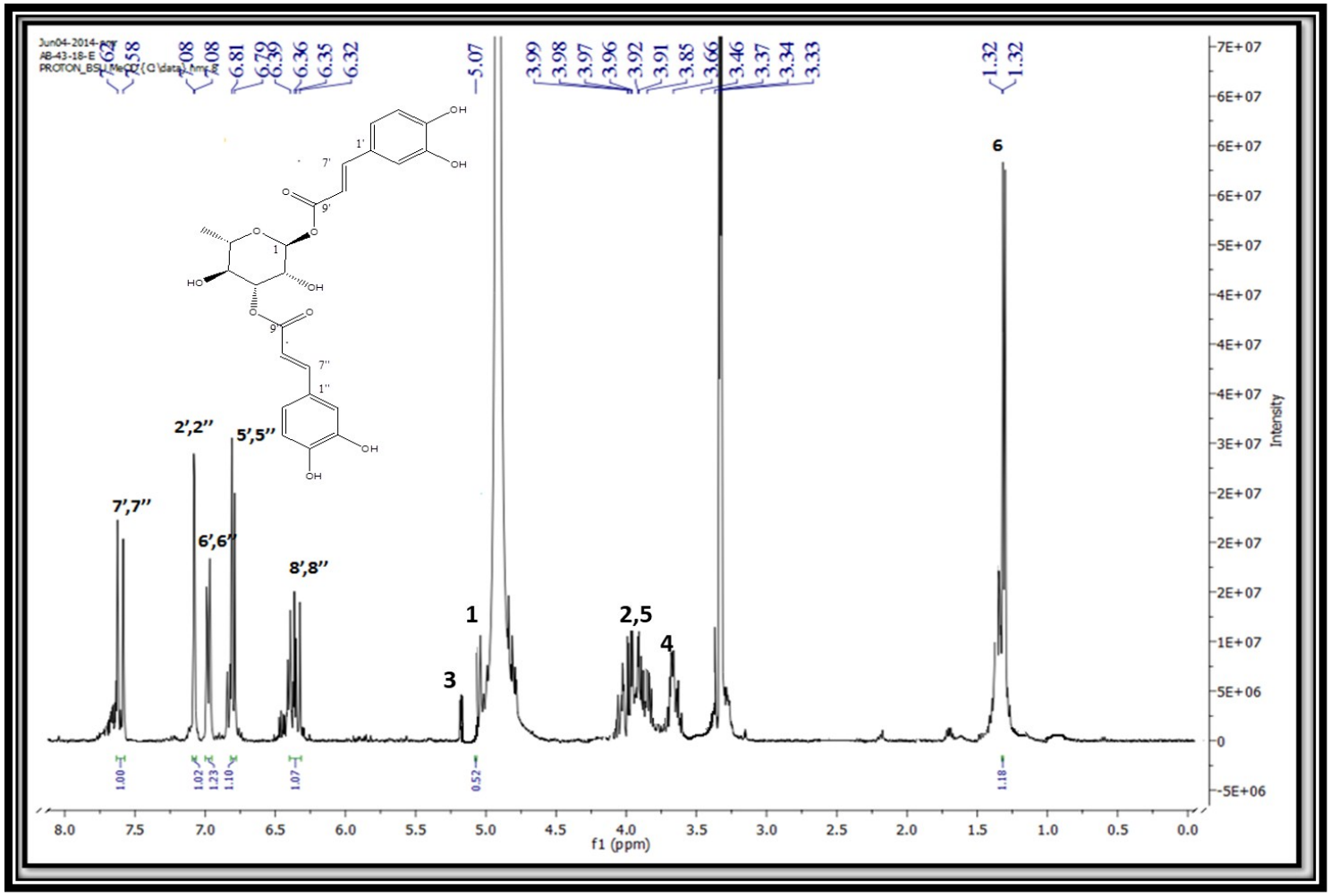

Figure S19. DEPT-Q NMR spectrum of compound **4** measured in CD_3OD at 100MHz

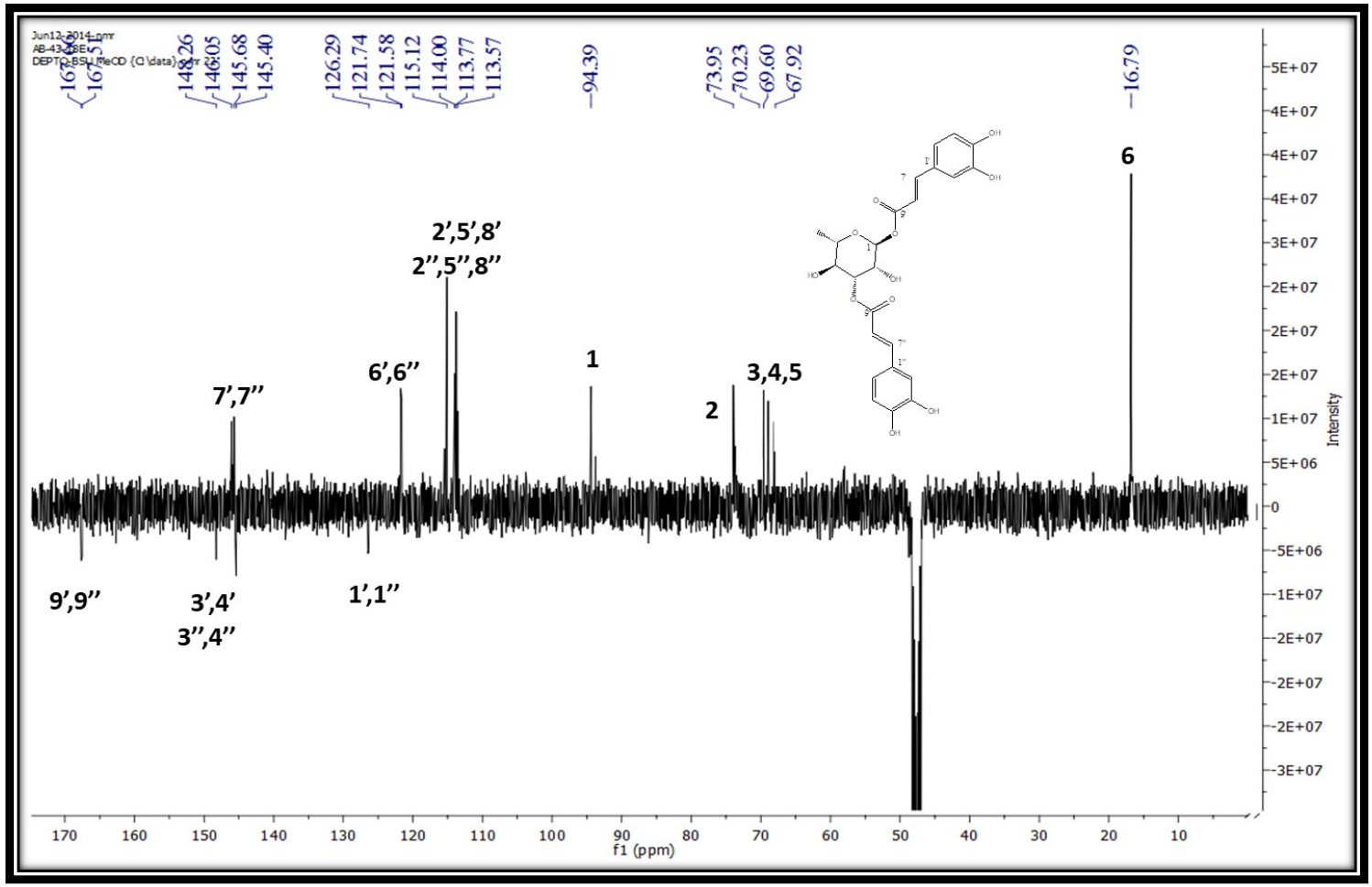

Figure S20. HRESIMS spectrum of compound **4**

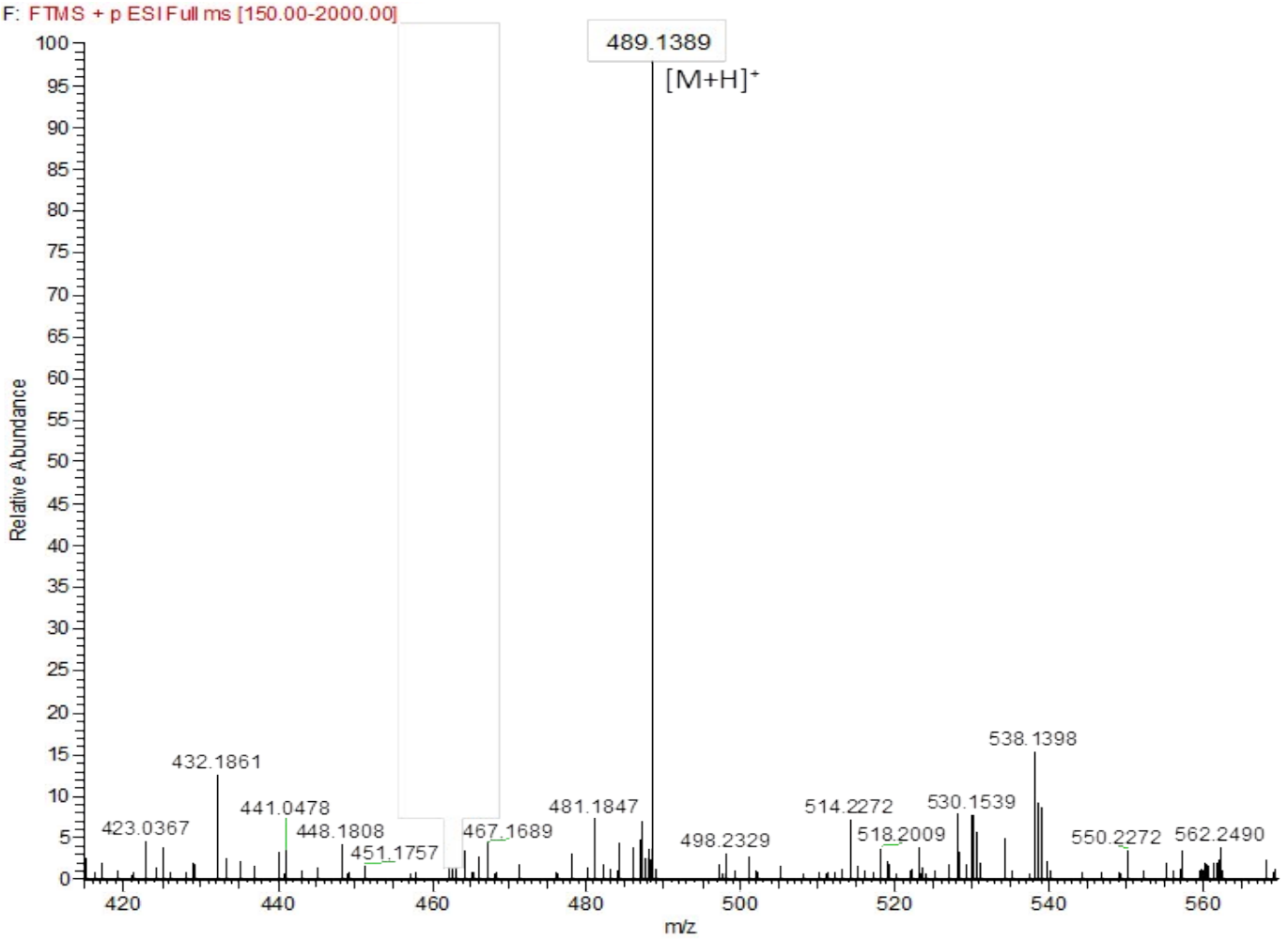

Figure S21. Impurity chart for compound **1**

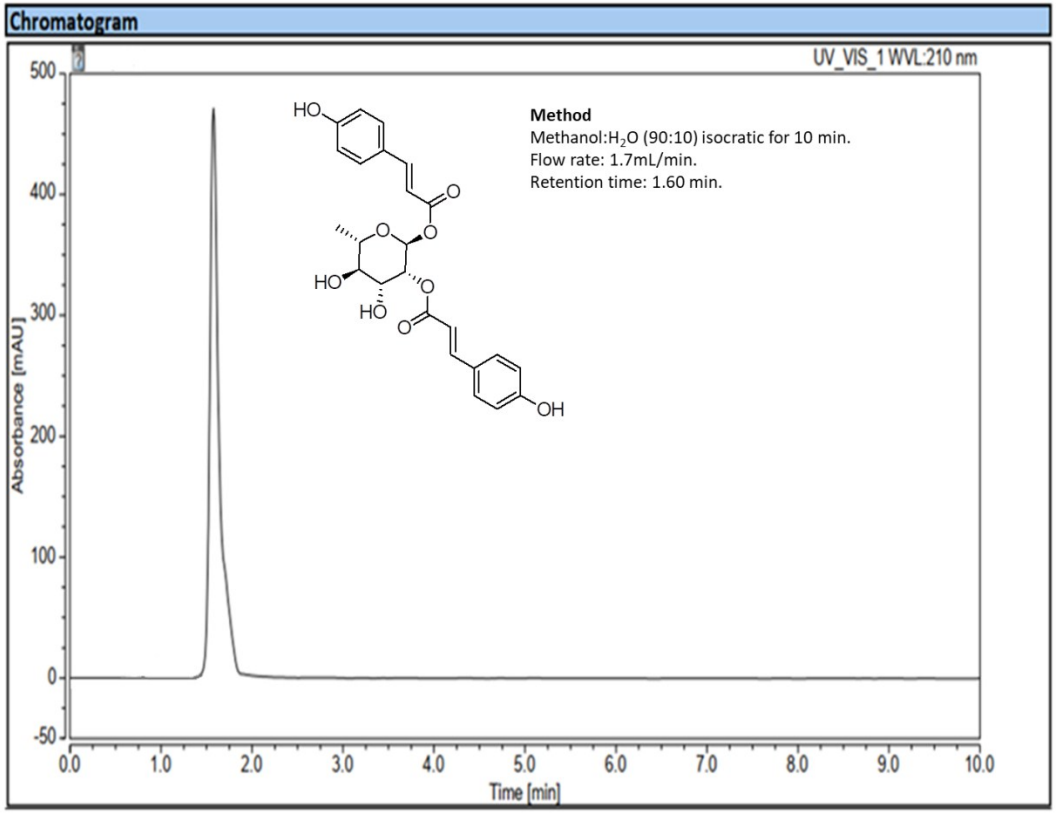

Figure S22. Impurity chart for compound **2**

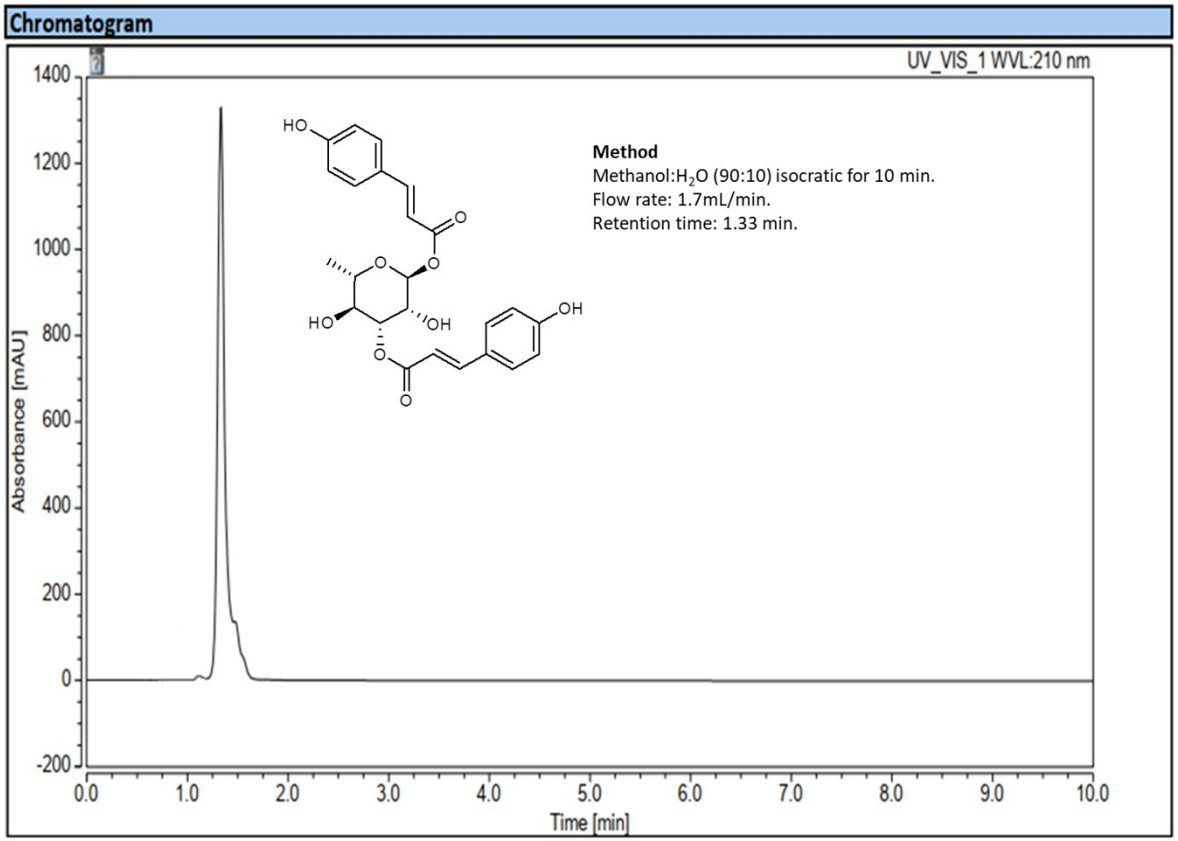

Figure S23. Impurity chart for compound **3**

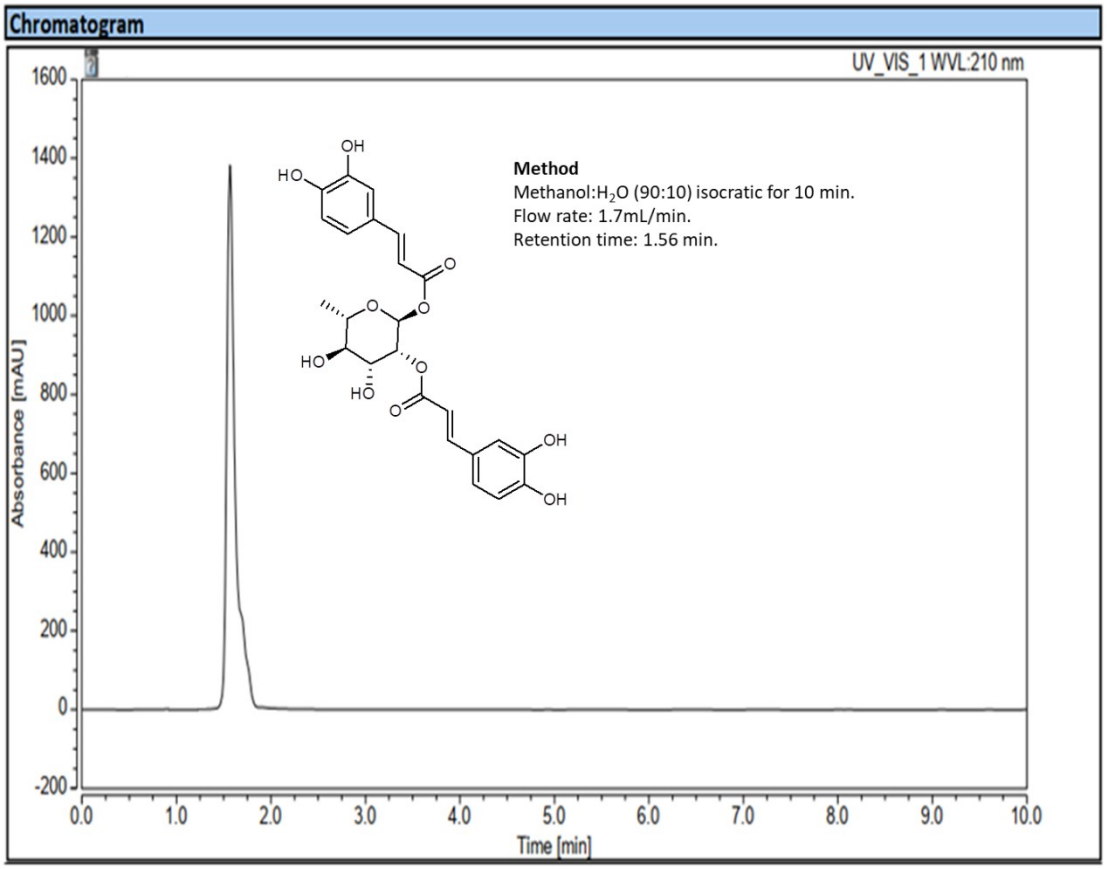

Figure S24. Impurity chart for compound **4**

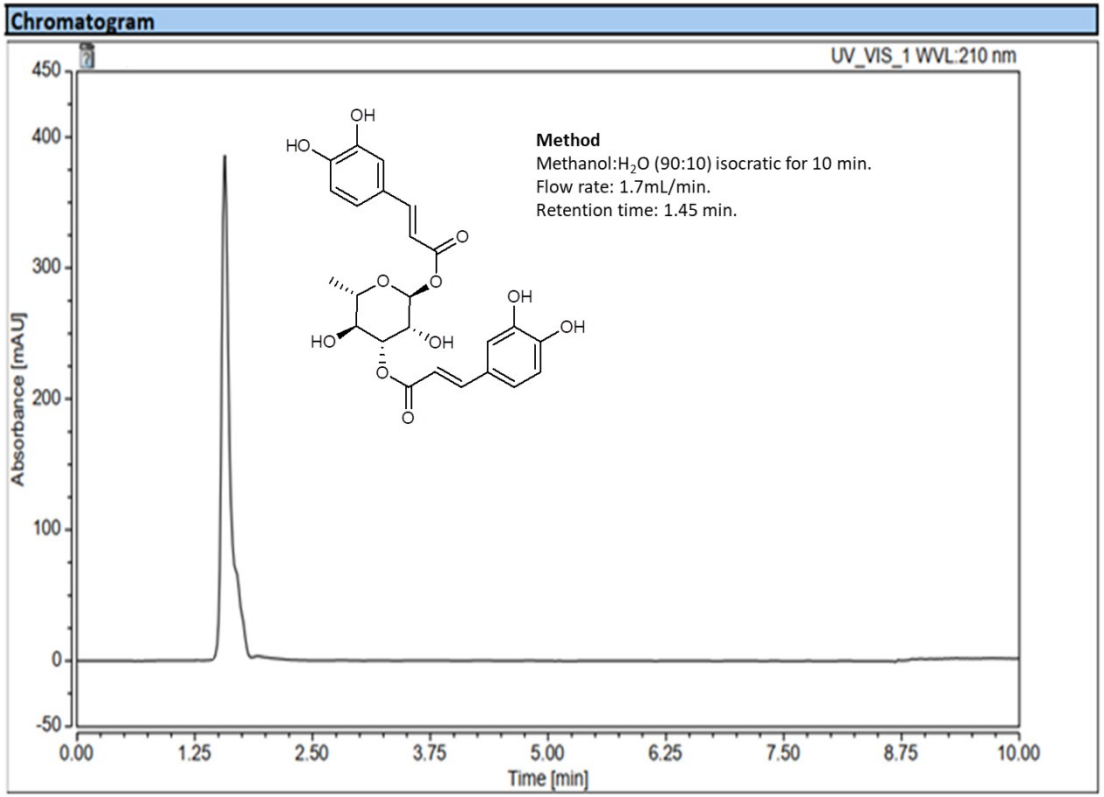

Figure S25. Impurity chart for compound **5**