

## **Nitric Oxide Inhibitory Activity of Xanthones from the Green Fruits of *Cratoxylum formosum* ssp. *pruniflorum***

*Nawong Boonnak,<sup>A,B</sup> Achjana Khamthip,<sup>A</sup> Chatchanok Karalai,<sup>A,B,H</sup> Suchada Chantrapromma,<sup>A</sup> Chanita Ponglimanont,<sup>B</sup> Akkharawit Kanjana-Opas,<sup>C</sup> Supinya Tewtrakul,<sup>D</sup> Kan Chantrapromma,<sup>E</sup> Hoong-Kun Fun,<sup>F</sup> and Shigeru Kato<sup>G</sup>*

<sup>A</sup>Crystal Materials Research Unit, Department of Chemistry, Faculty of Science, Prince of Songkla University, Hat-Yai, Songkhla 90112, Thailand.

<sup>B</sup>Department of Chemistry and Center for Innovation in Chemistry, Faculty of Science, Prince of Songkla University, Hat-Yai, Songkhla 90112, Thailand.

<sup>C</sup>Department of Industrial Biotechnology, Faculty of Agro-Industry, Prince of Songkla University, Hat-Yai, Songkhla 90112, Thailand.

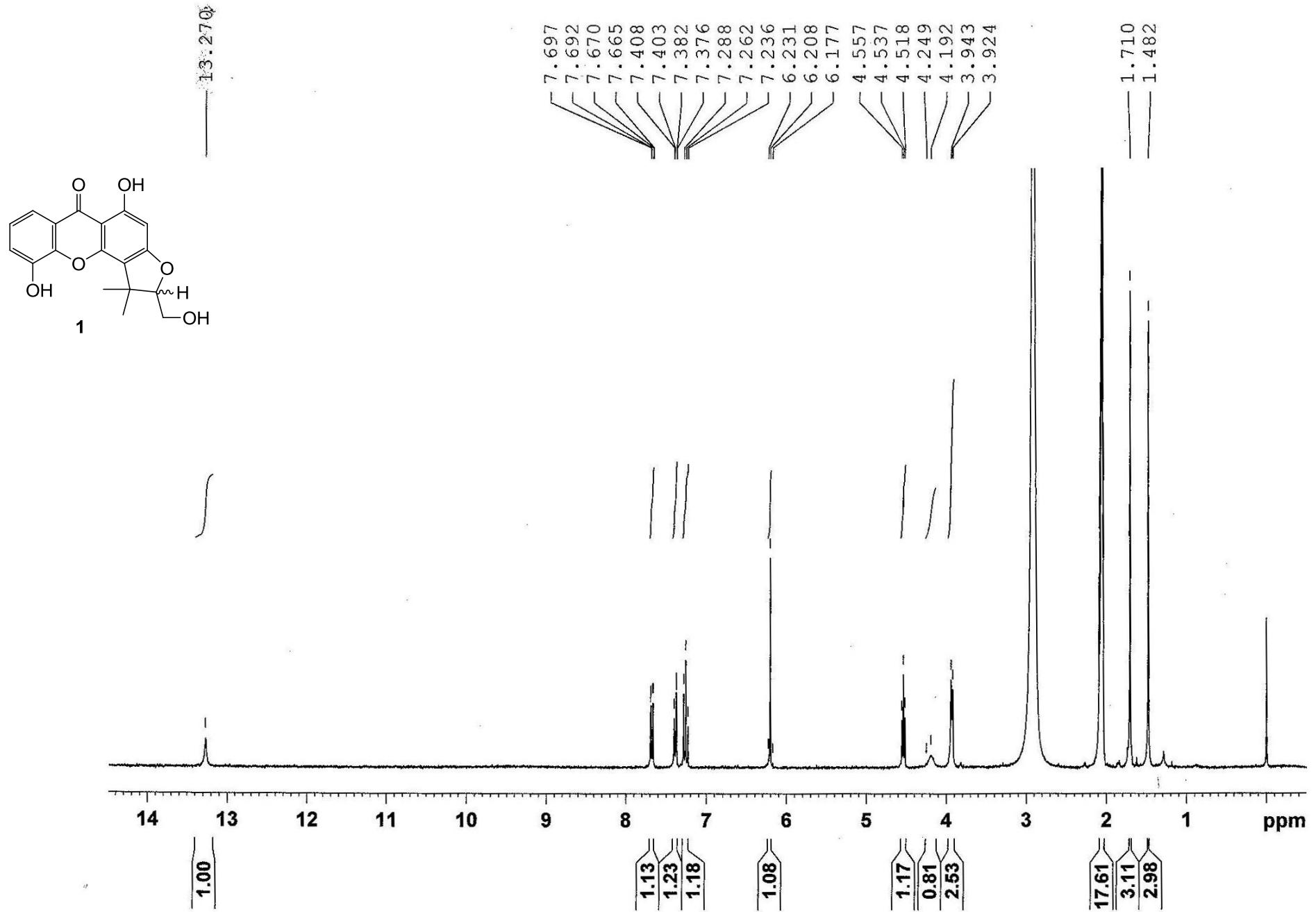
<sup>D</sup>Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Hat-Yai, Songkhla 90112, Thailand.

<sup>E</sup>Research Unit of Natural Products Utilization, Walailak University, Thasala, Nakhon Si Thammarat, 80160, Thailand.

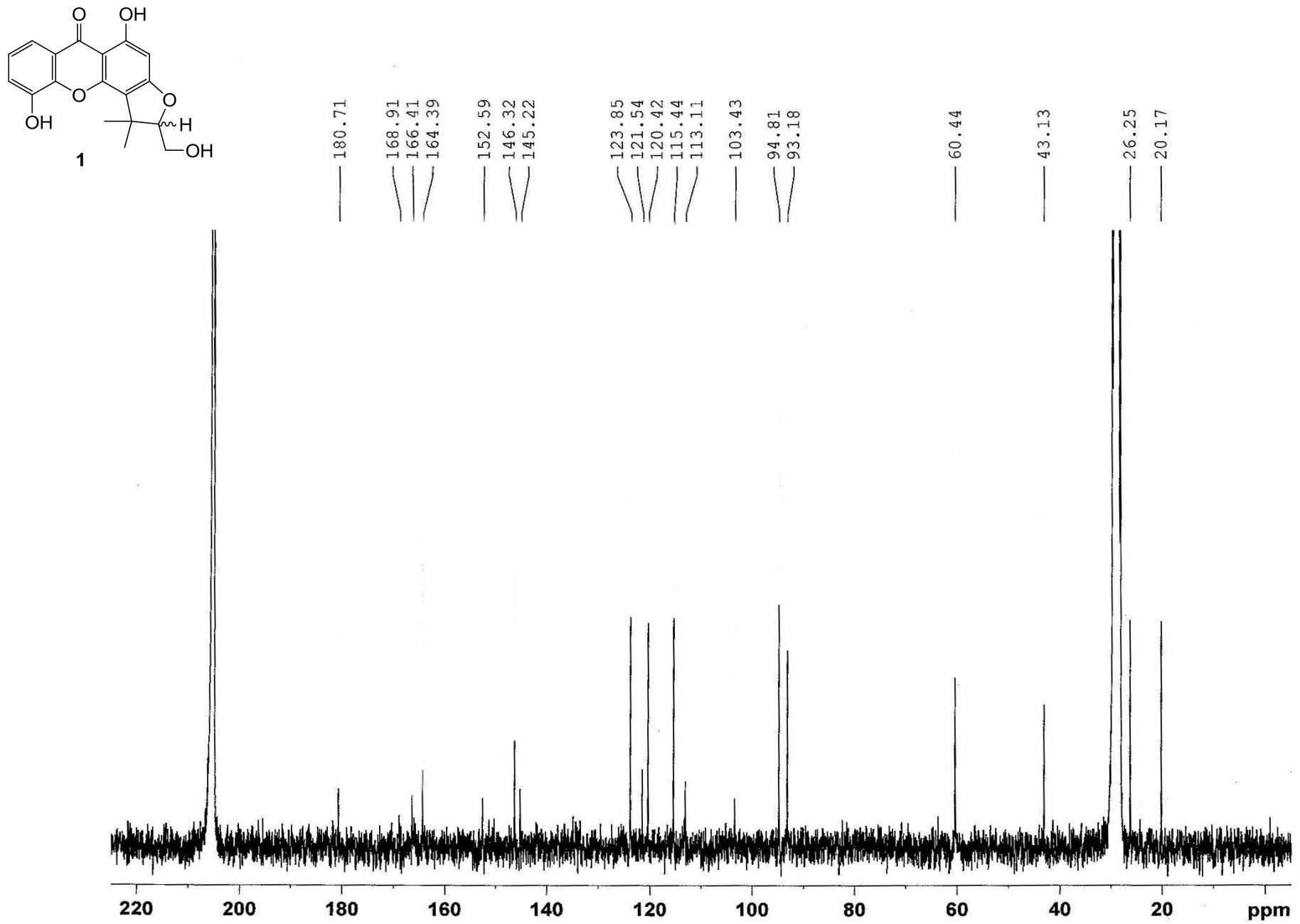
<sup>F</sup>X-ray Crystallography Unit, School of Physics, Universiti Sains Malaysia 11800 USM, Penang, Malaysia.

<sup>G</sup>Department of Materials and Life Science, Seikei University, Tokyo 180 8633, Japan.

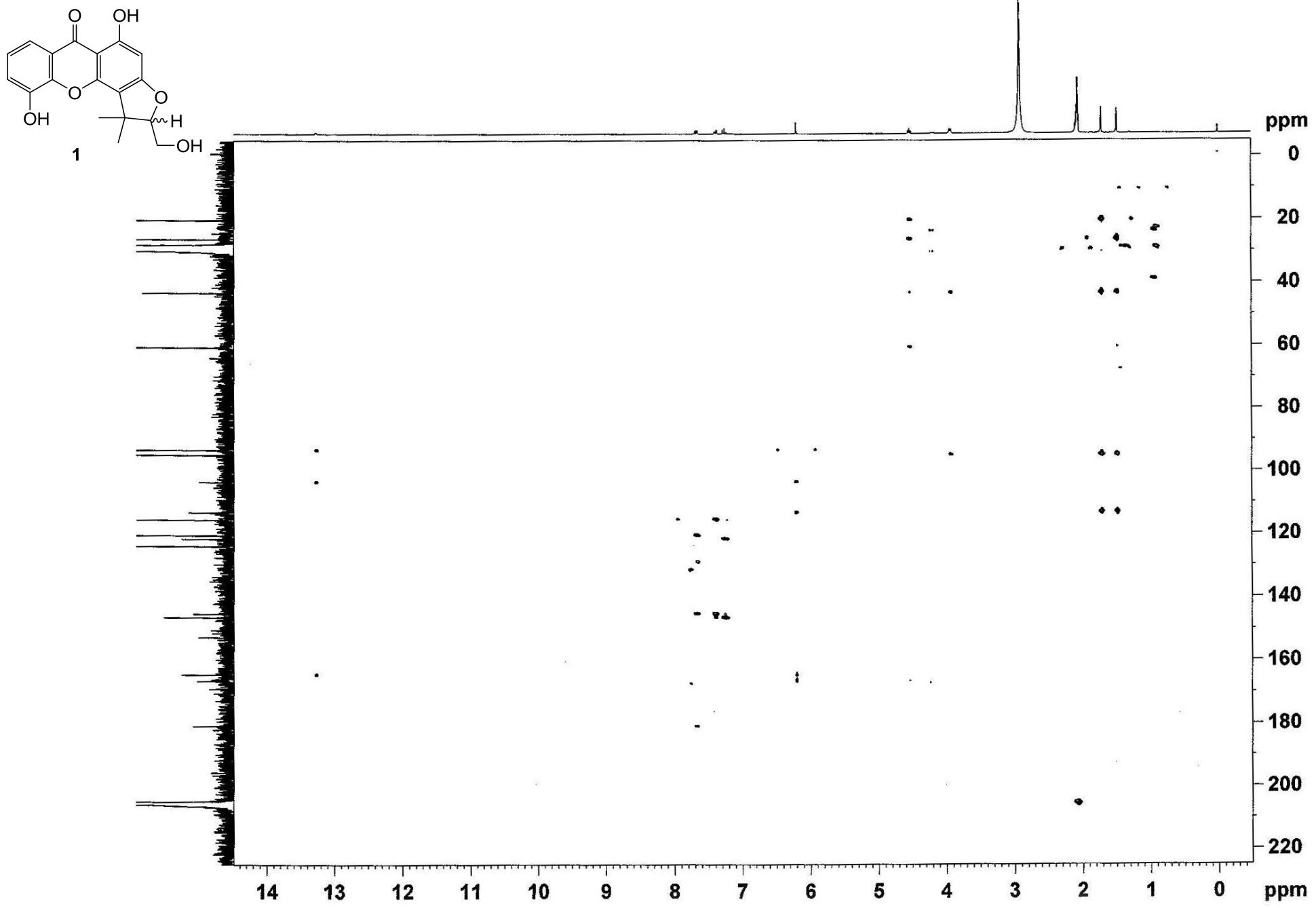
<sup>H</sup>Corresponding author. Email: [chatchanok.k@psu.ac.th](mailto:chatchanok.k@psu.ac.th)

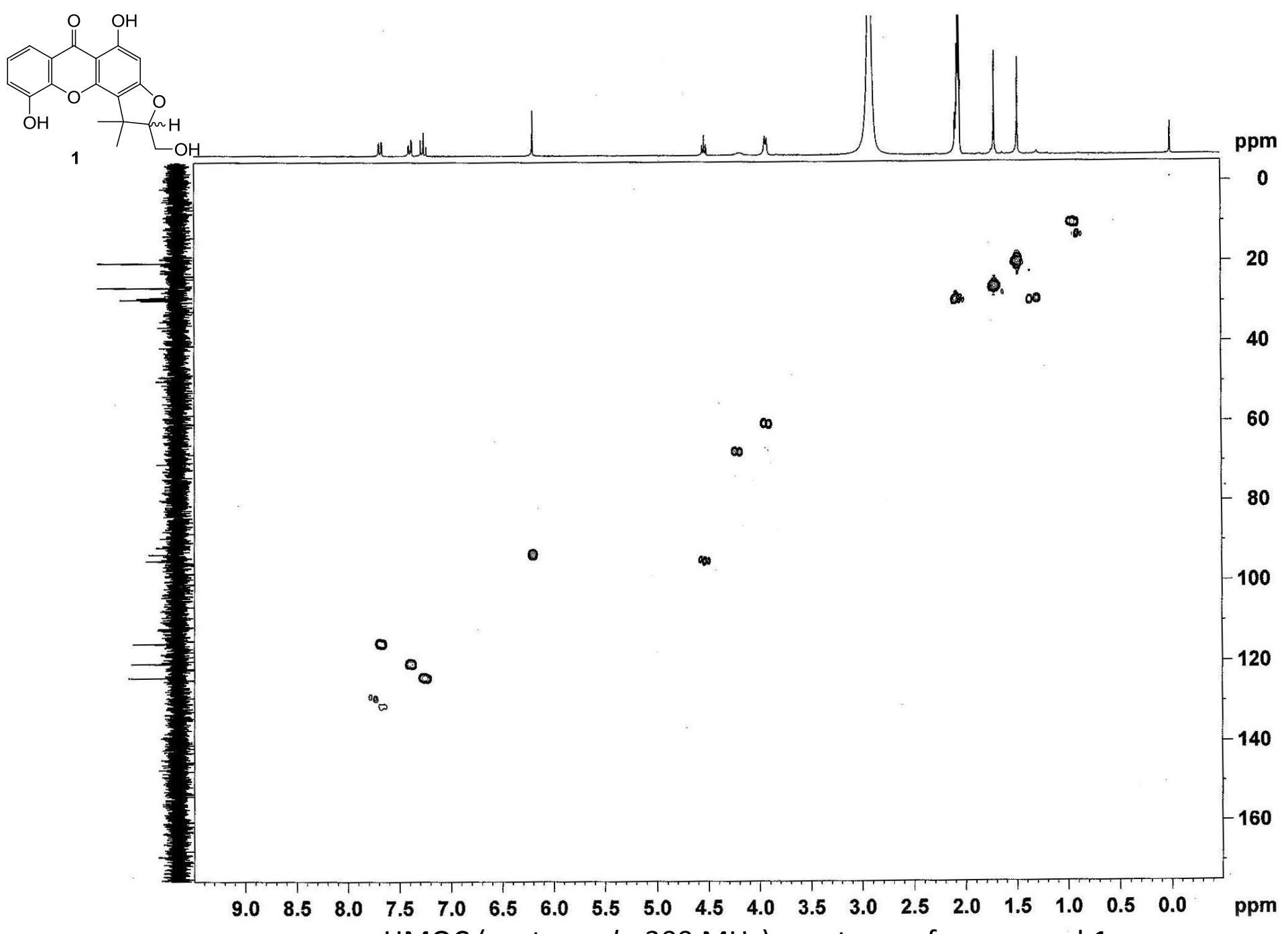


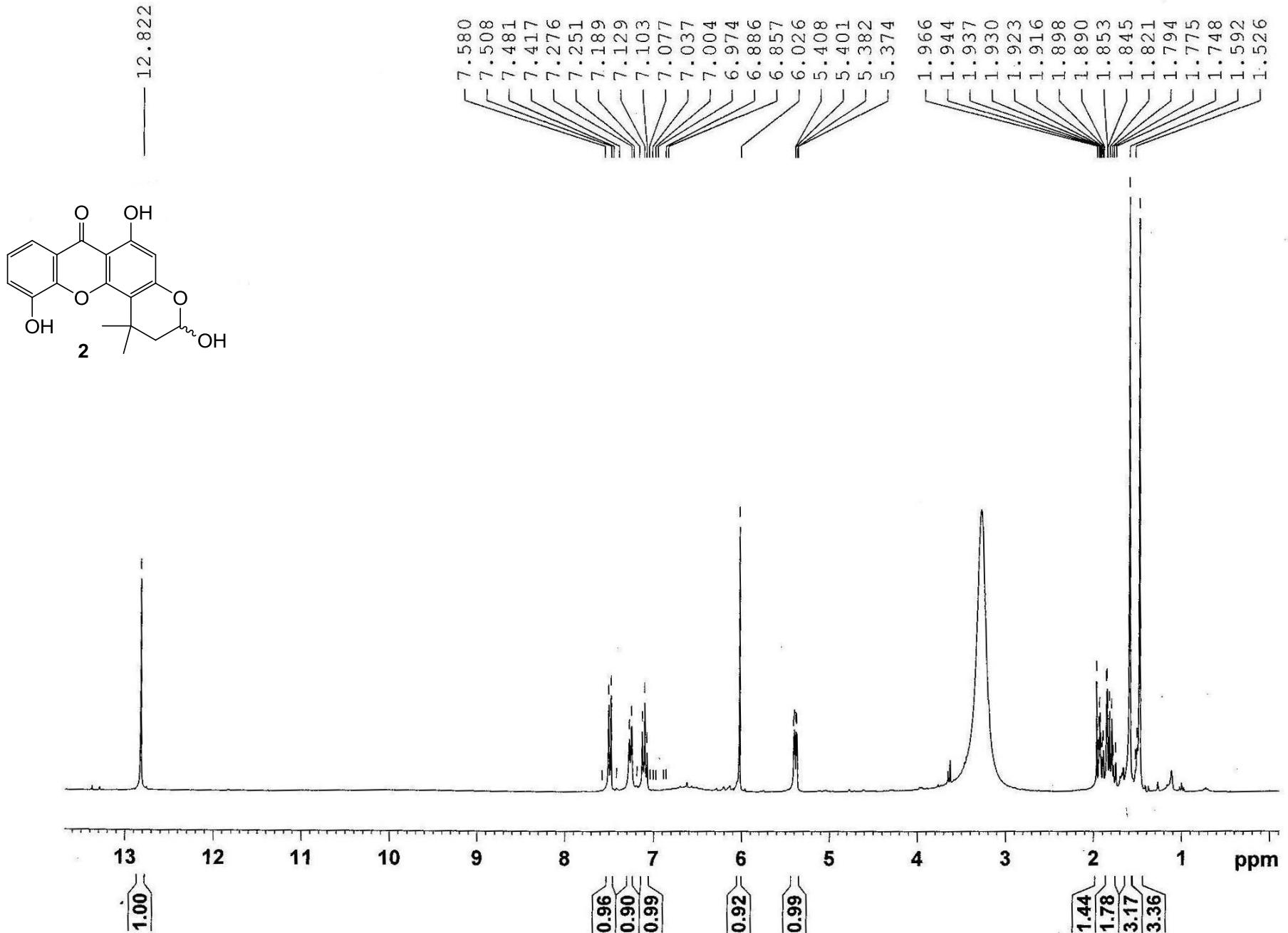
$^1\text{H}$  NMR (acetone- $d_6$ , 300 MHz) spectrum of compound 1



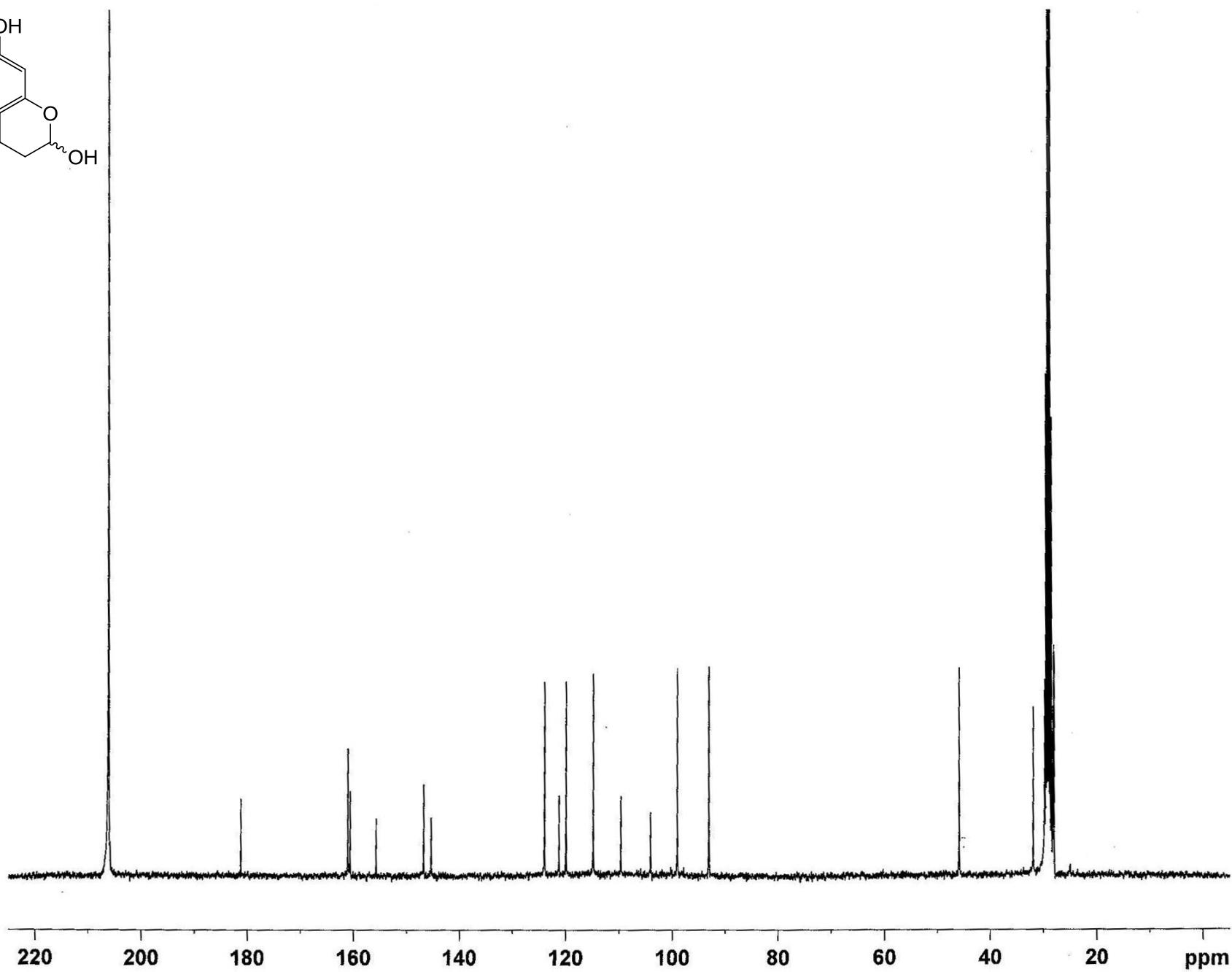
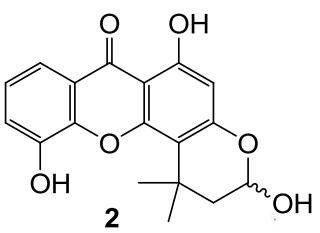
$^{13}\text{C}$  NMR (acetone- $d_6$ , 75 MHz) spectrum of compound **1**



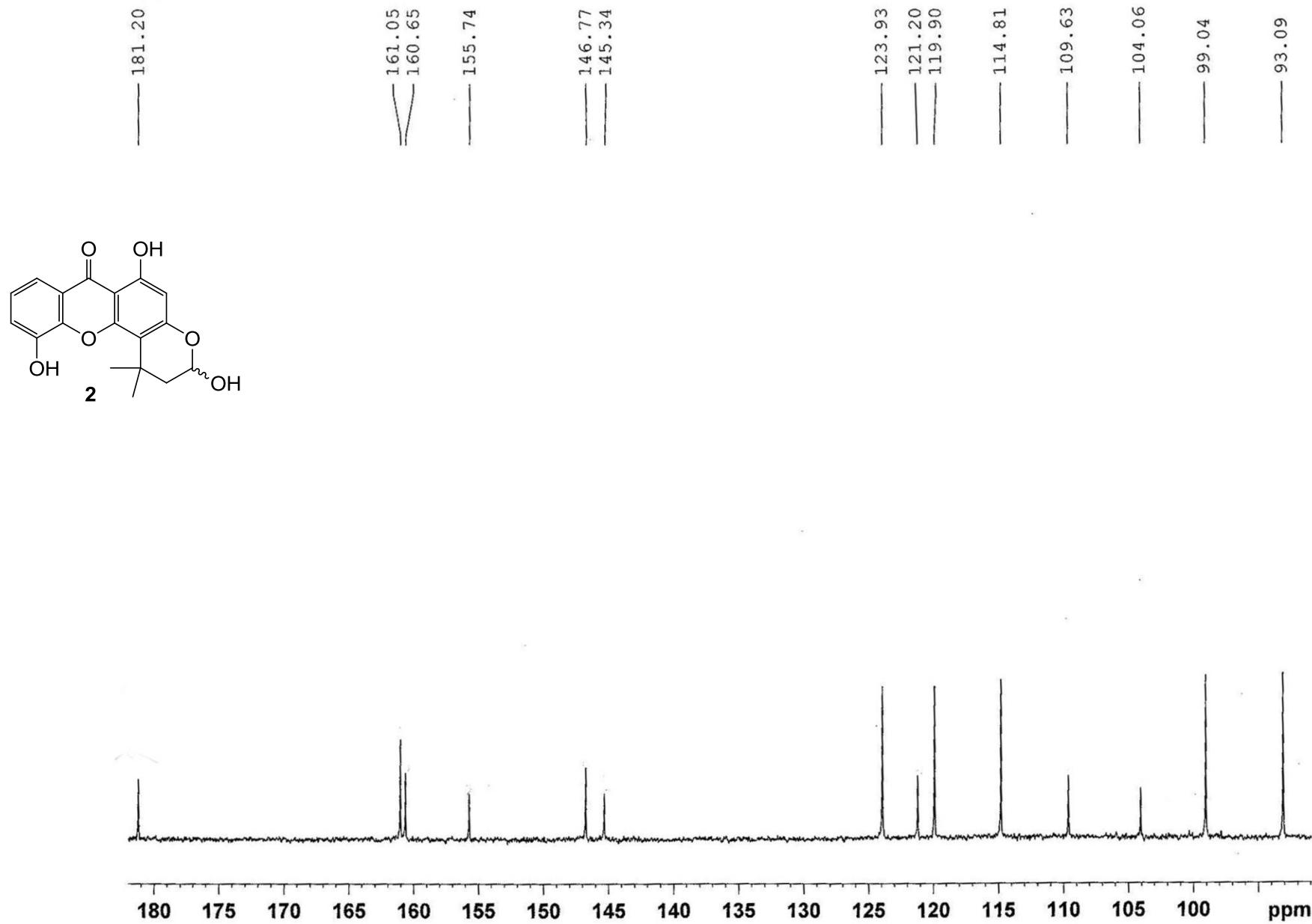




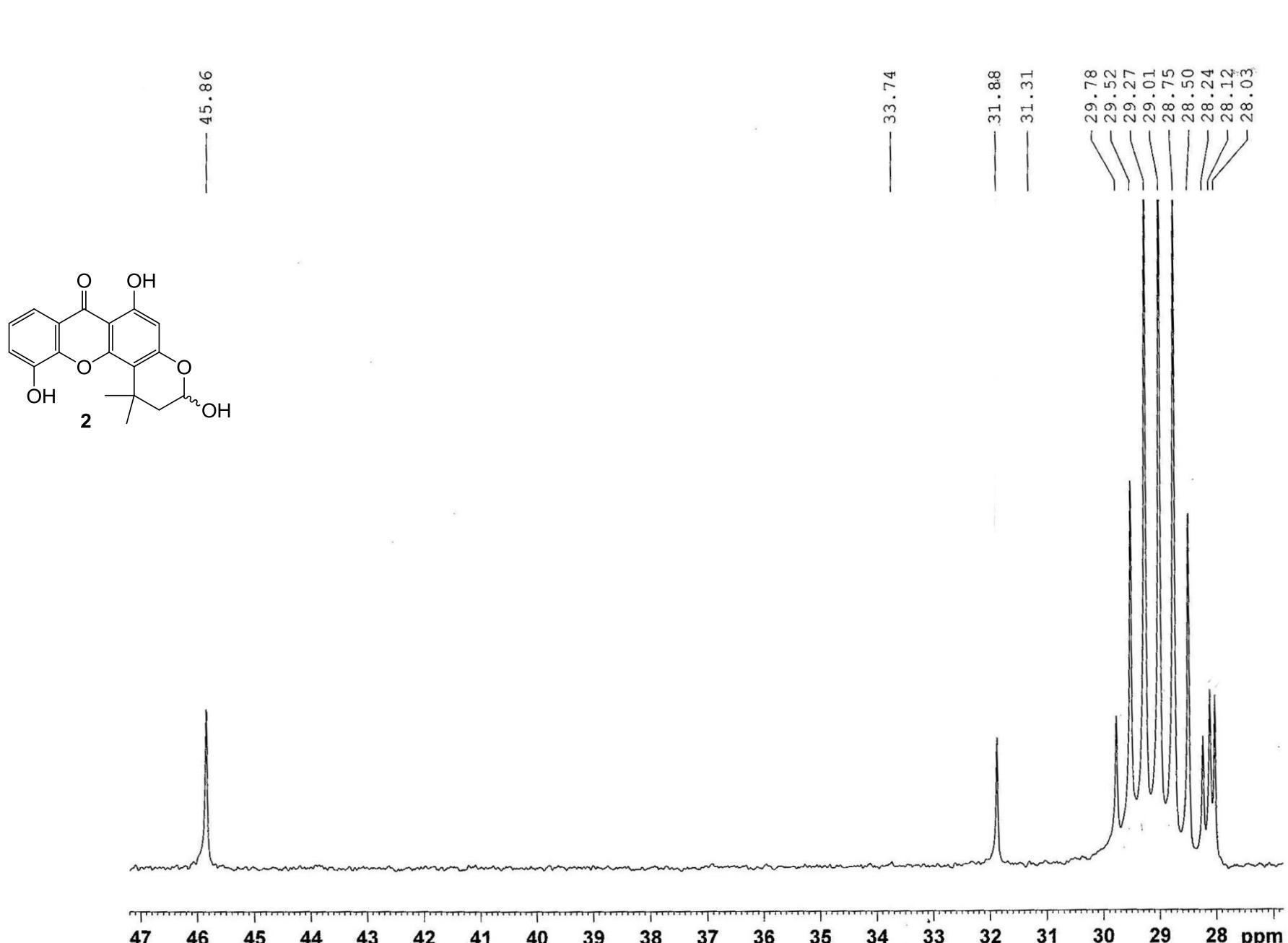
$^1\text{H}$  NMR (acetone- $d_6$ , 300 MHz) spectrum of compound **2**



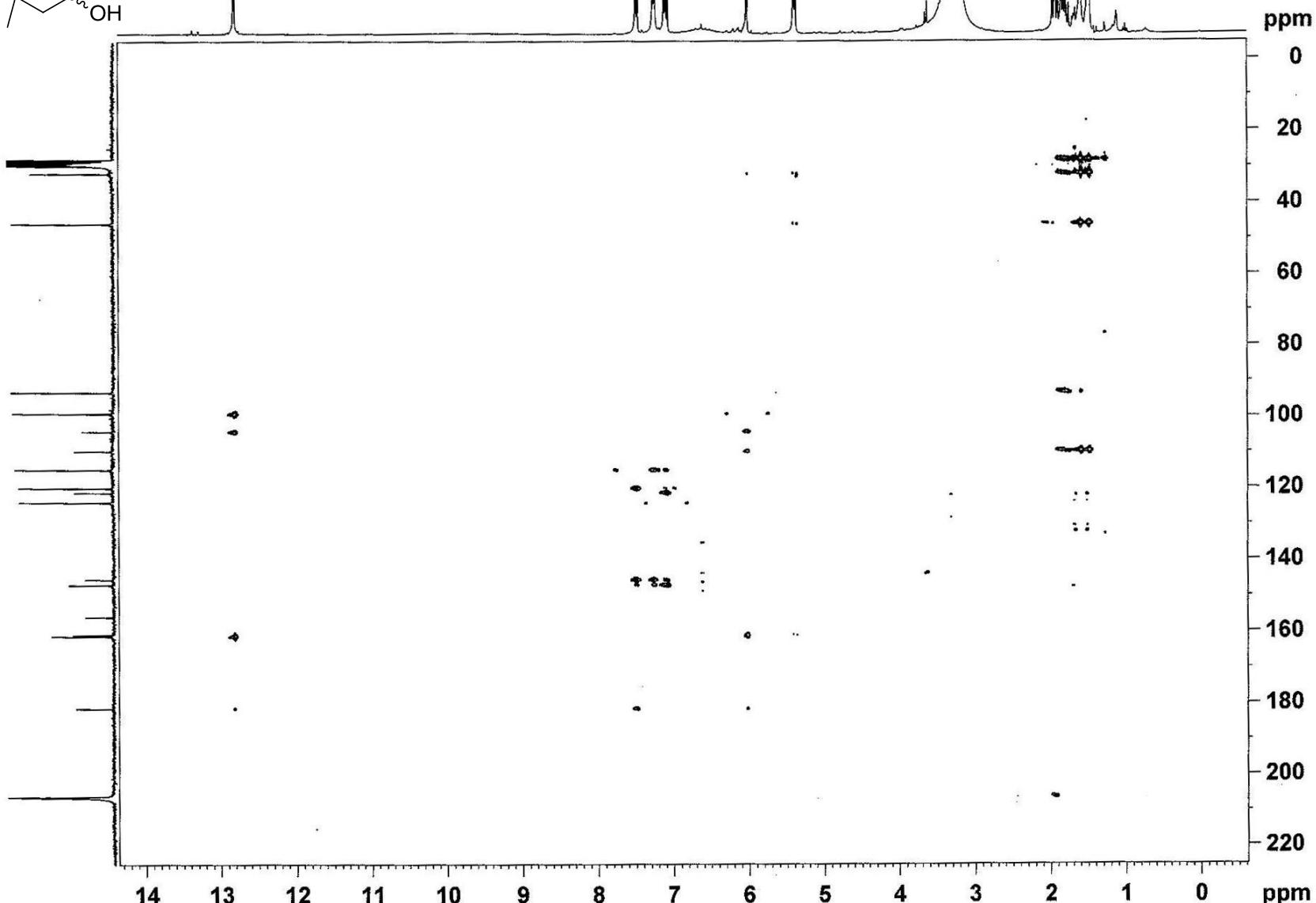
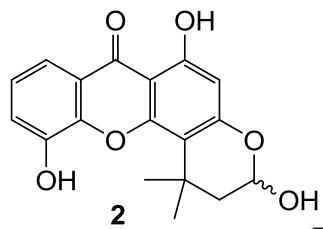
$^{13}\text{C}$  NMR ( $\text{acetone}-d_6$ , 75 MHz) spectrum of compound **2**



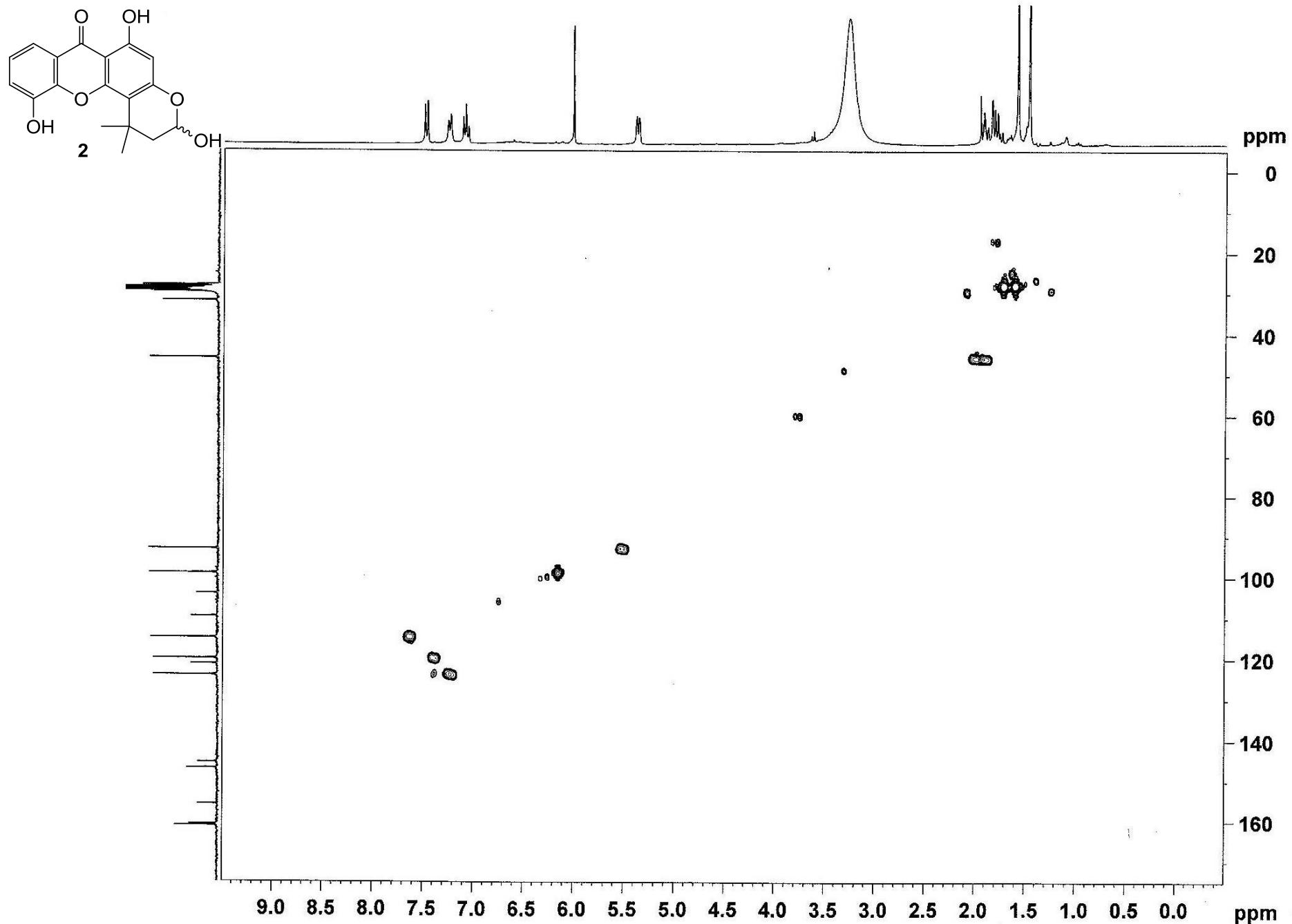
$^{13}\text{C}$  NMR (acetone- $d_6$ , 75 MHz) spectrum of compound **2**



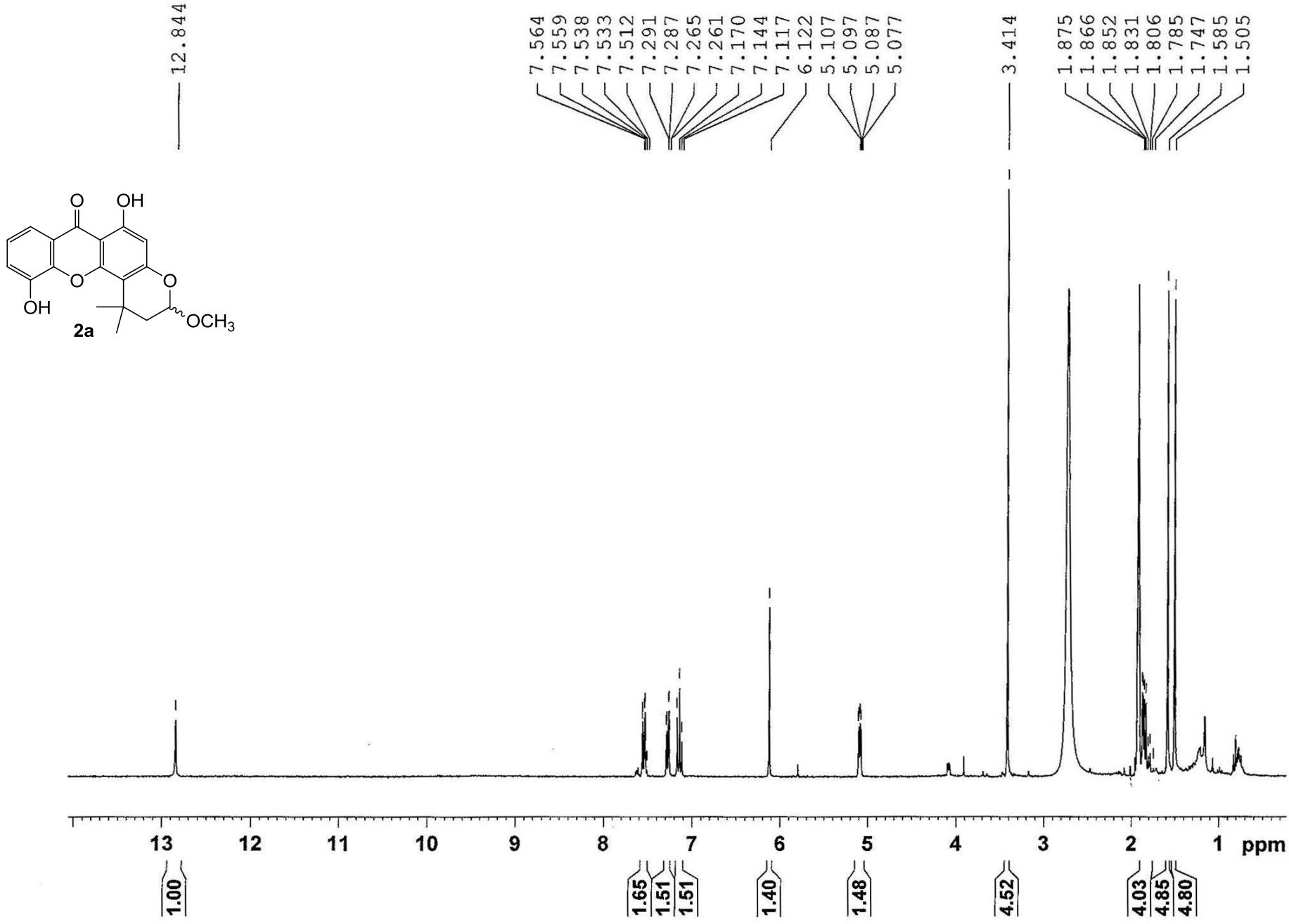
<sup>13</sup>C NMR (acetone-*d*<sub>6</sub>, 75 MHz) spectrum of compound 2

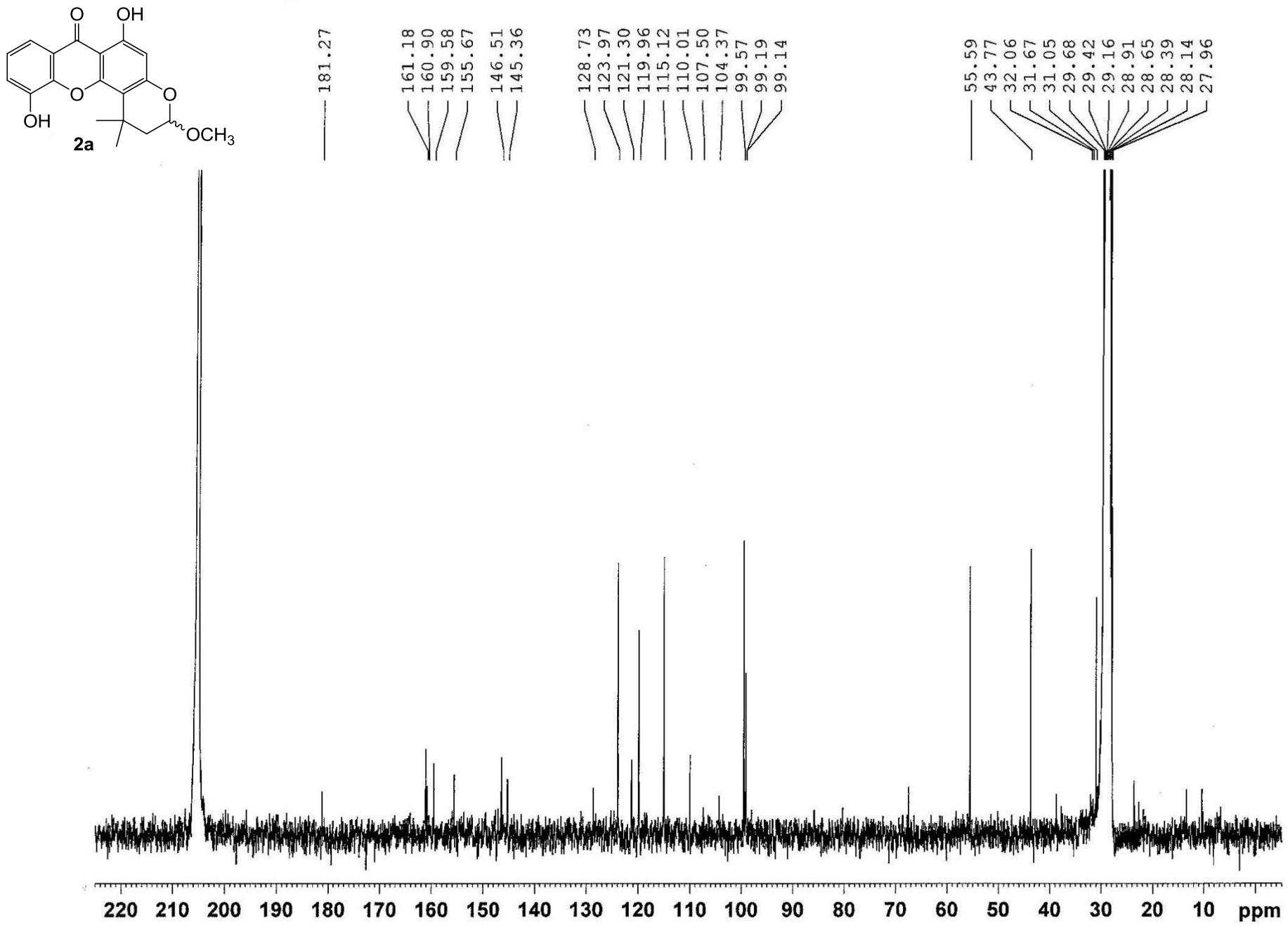


HMBC (acetone- $d_6$ , 300 MHz) spectrum of compound 2

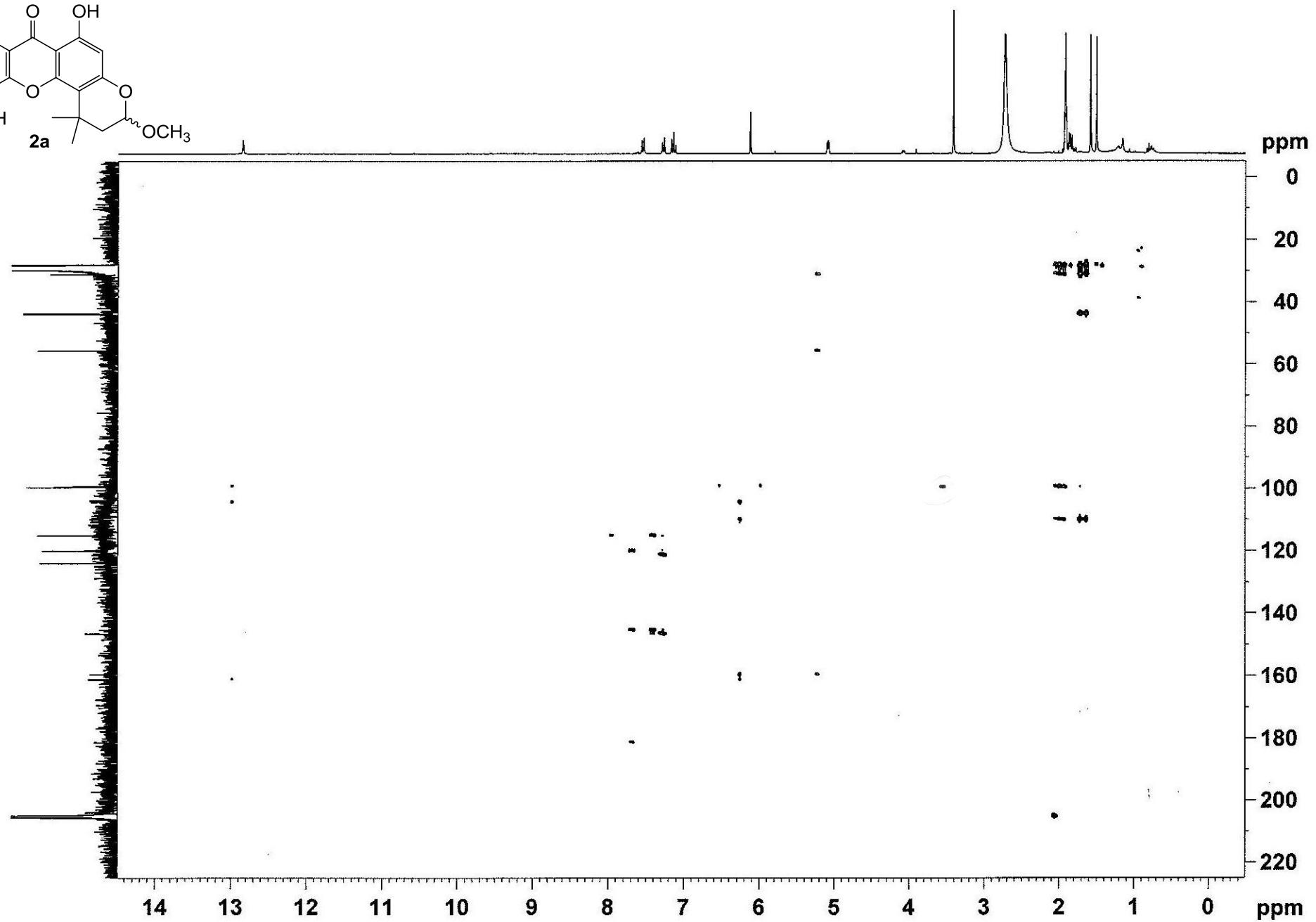
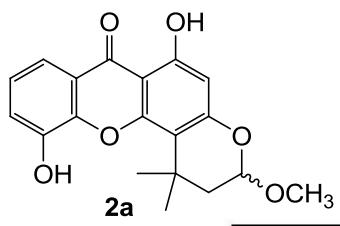


HMQC (acetone-*d*<sub>6</sub>, 300 MHz) spectrum of compound **2**

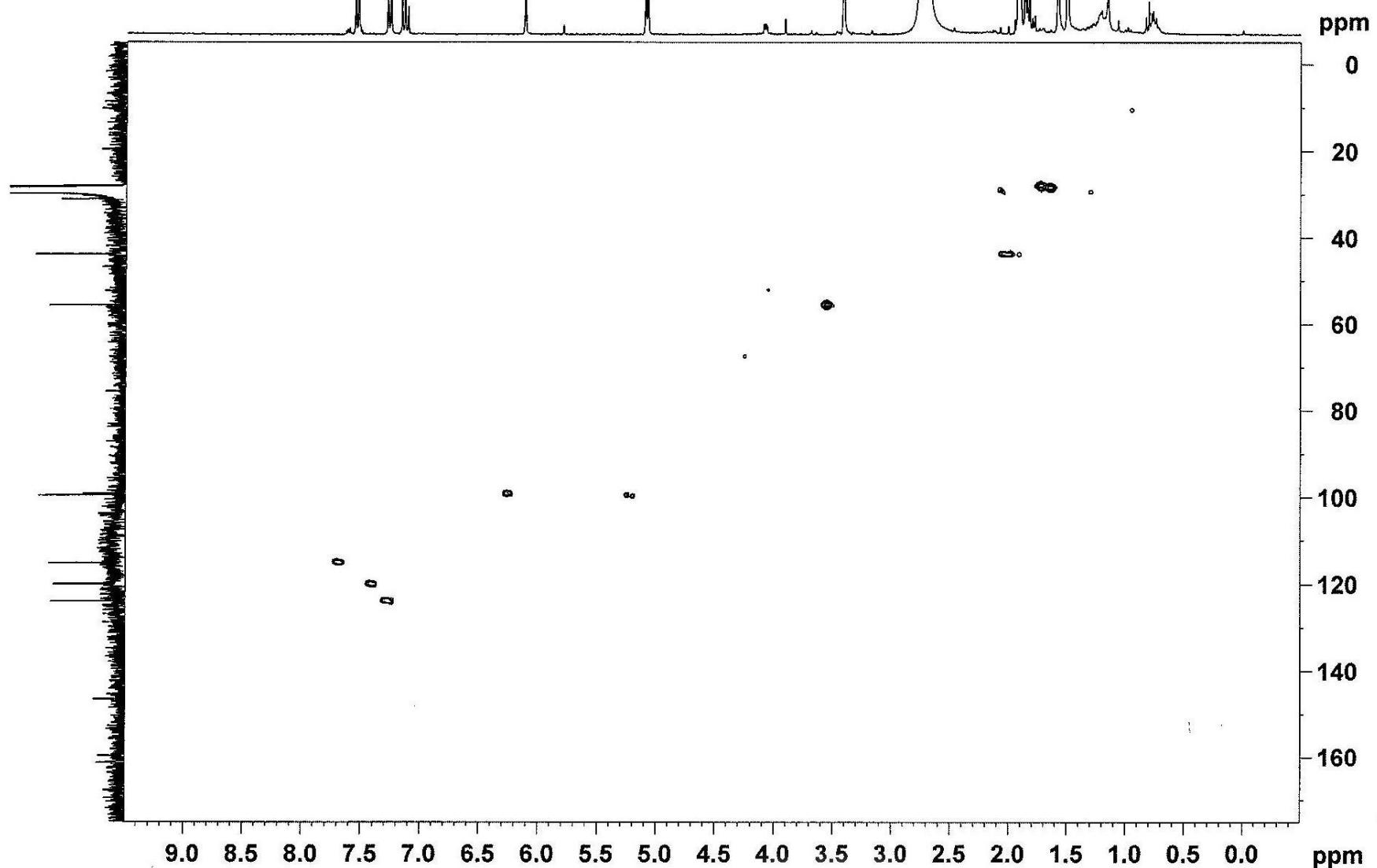
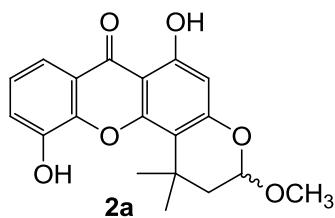




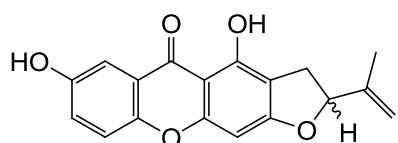
$^{13}\text{C}$  NMR (acetone- $d_6$ , 75 MHz) spectrum of compound **2a**



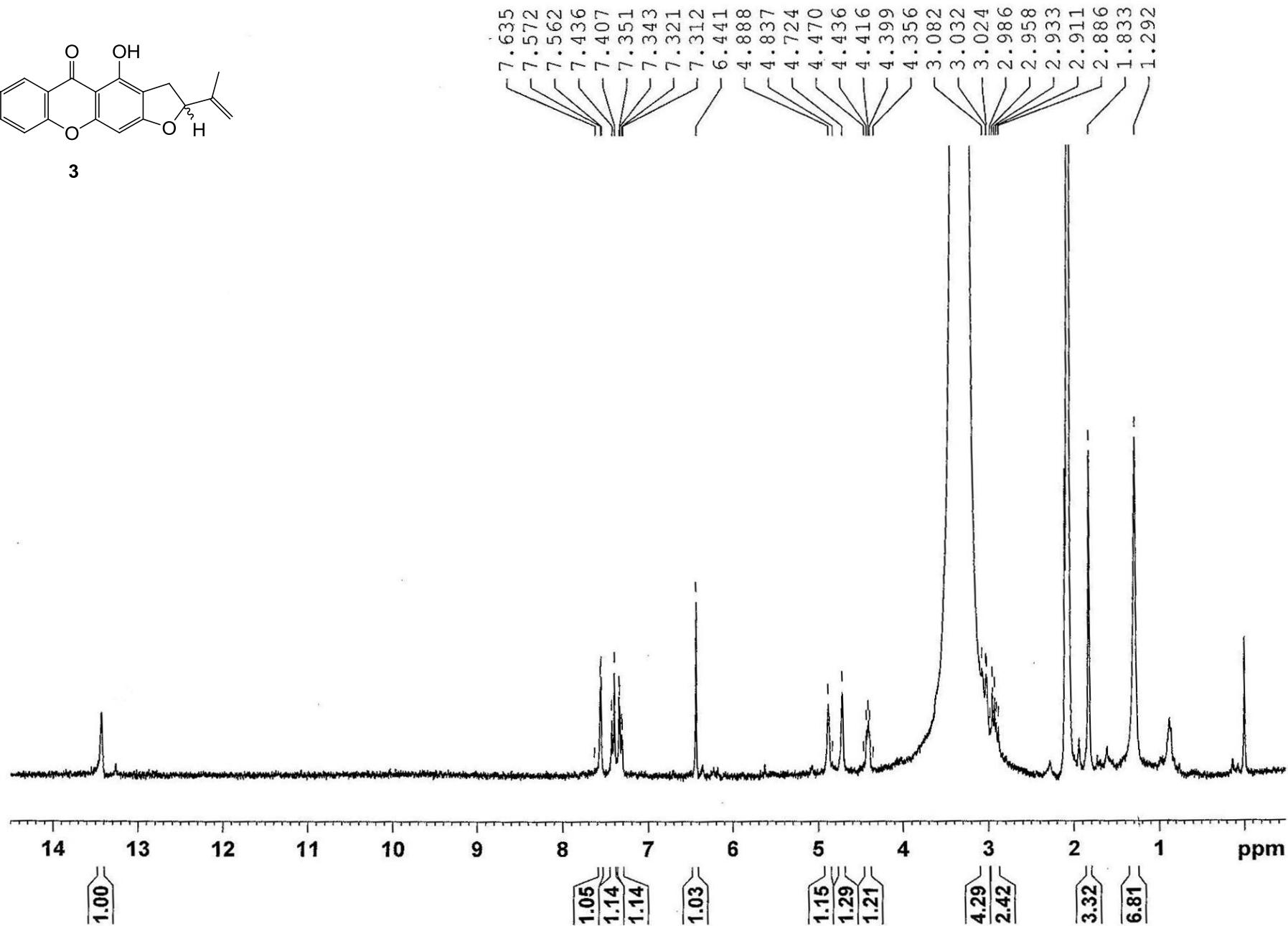
HMBC (acetone-*d*<sub>6</sub>, 300 MHz) spectrum of compound **2a**



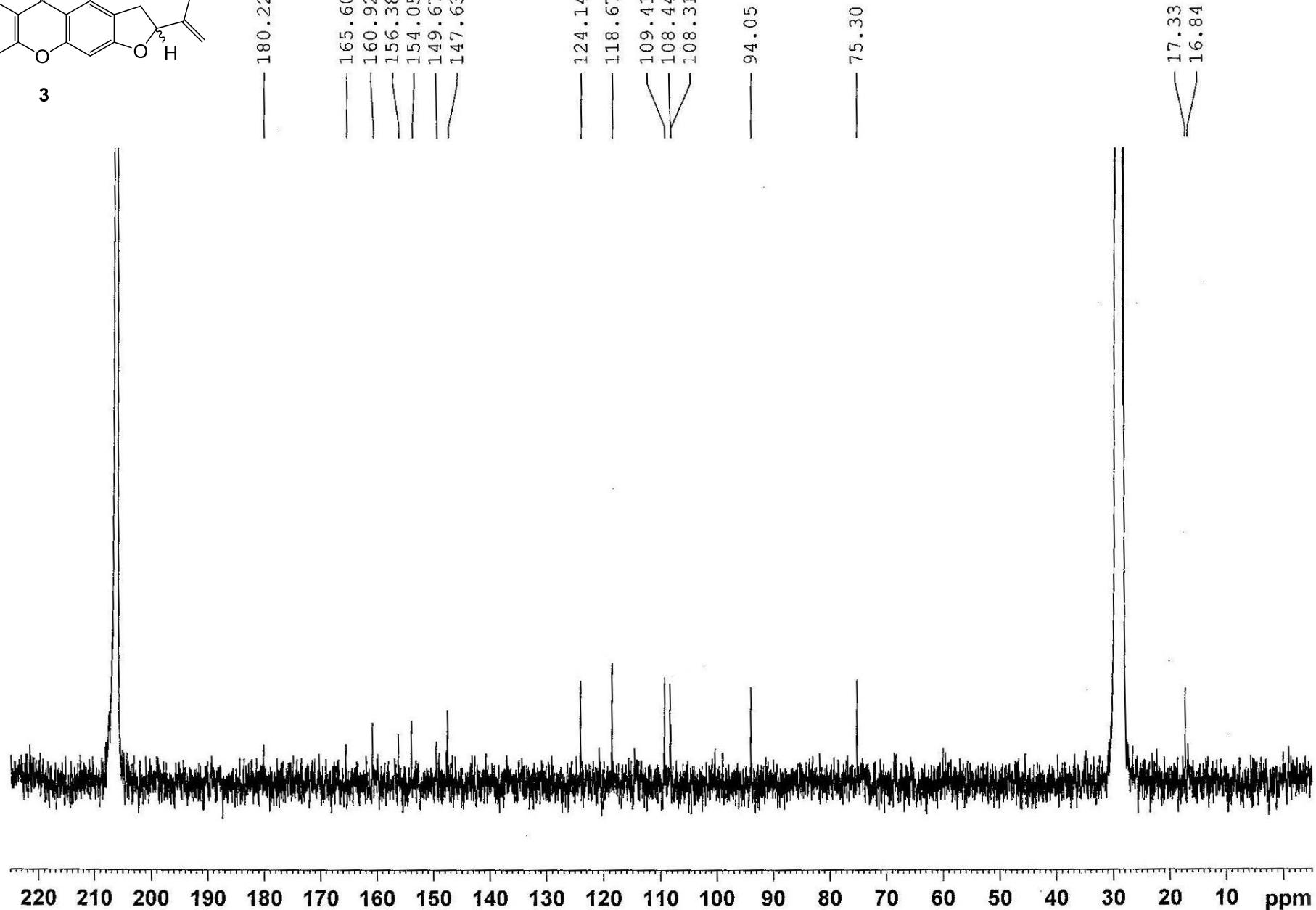
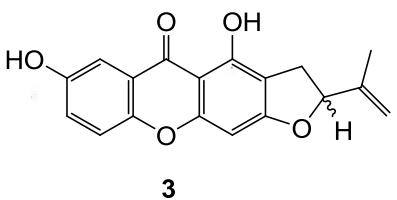
HMQC (acetone- $d_6$ , 300 MHz) spectrum of compound **2a**



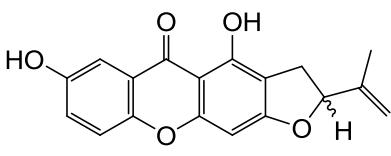
3



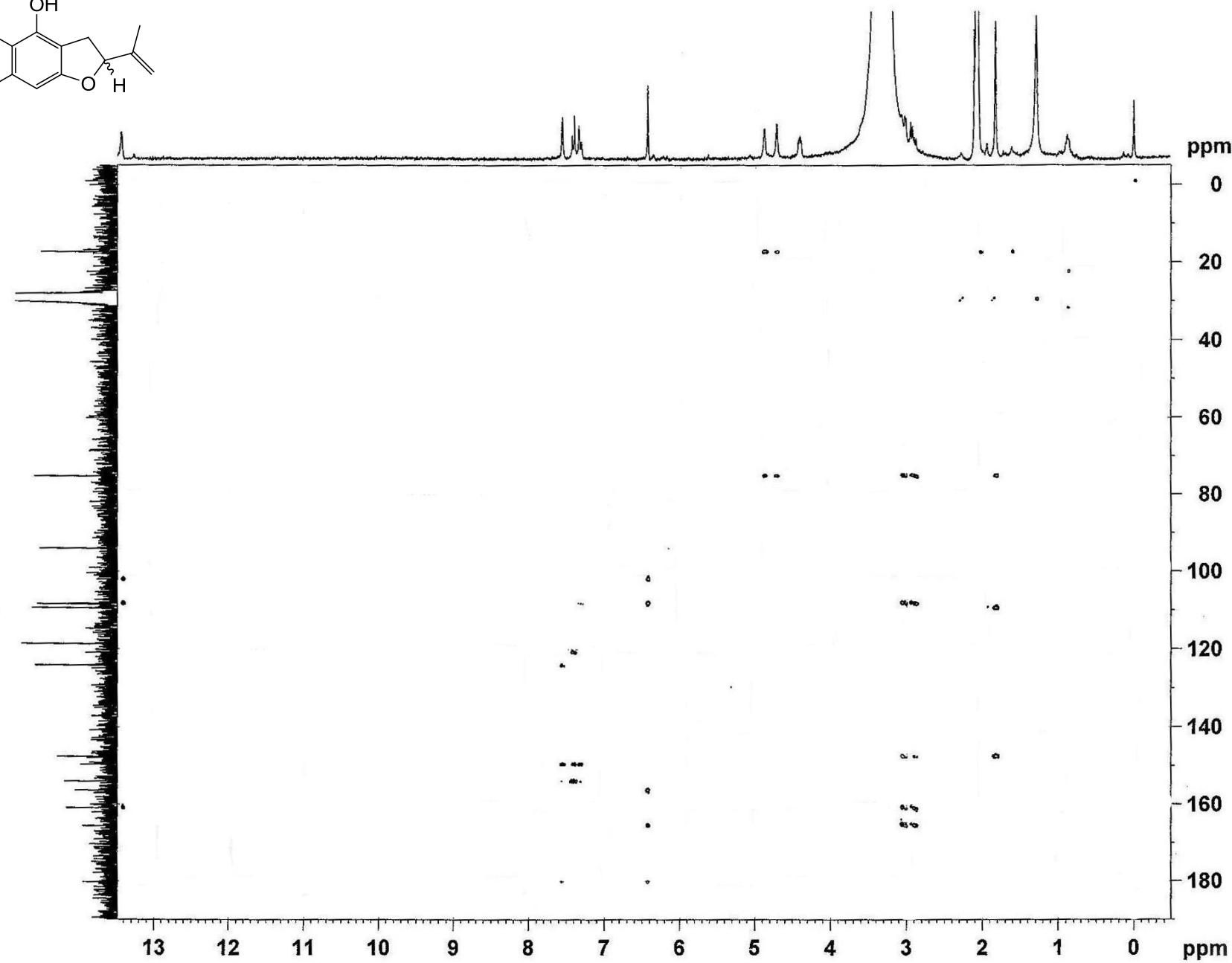
<sup>1</sup>H NMR (acetone-*d*<sub>6</sub>, 300 MHz) spectrum of compound **3**



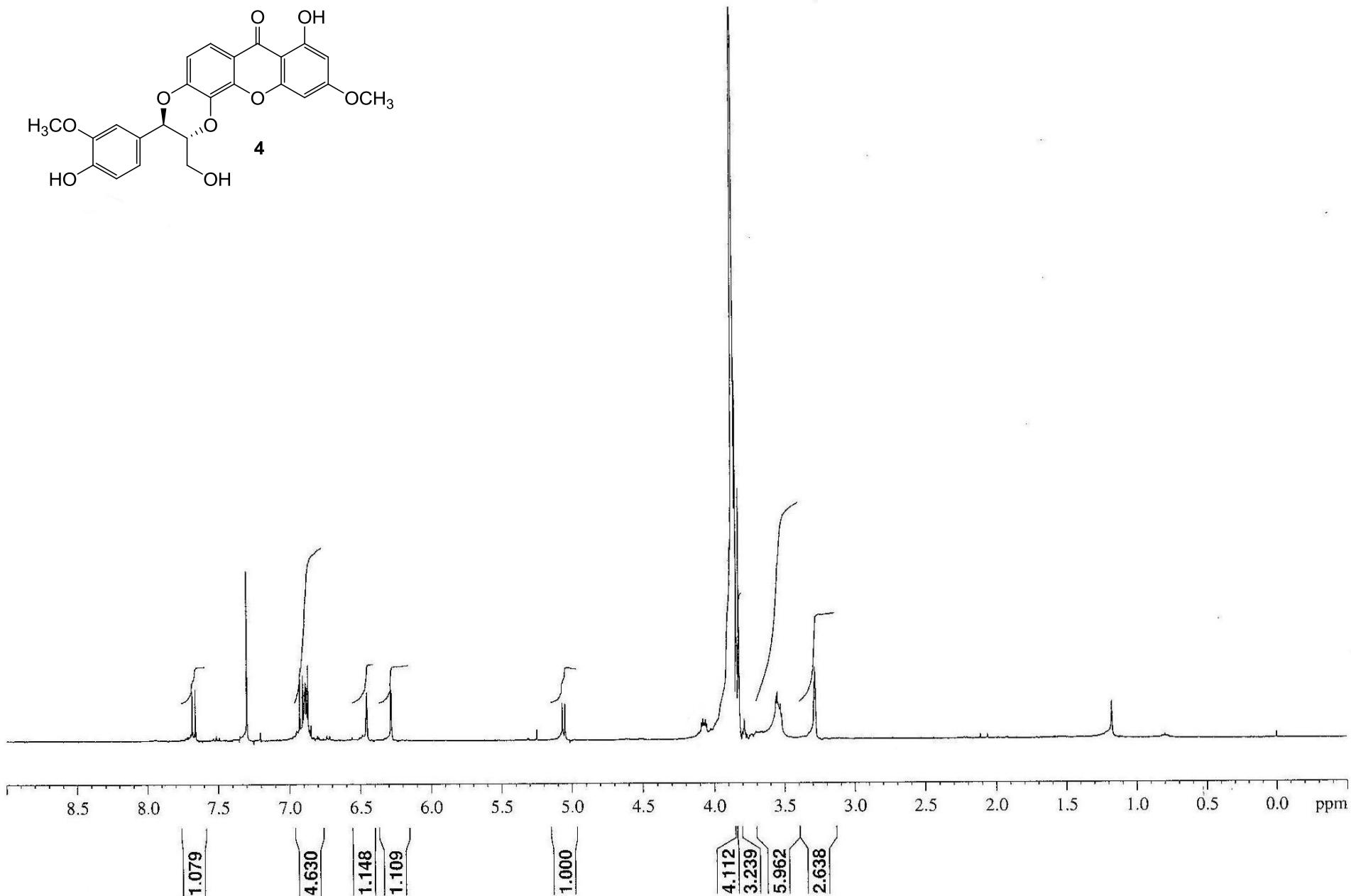
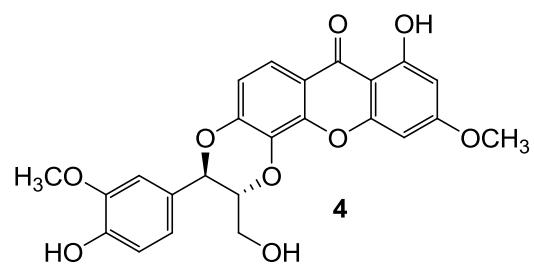
<sup>13</sup>C NMR (acetone-*d*<sub>6</sub>, 75 MHz) spectrum of compound **3**



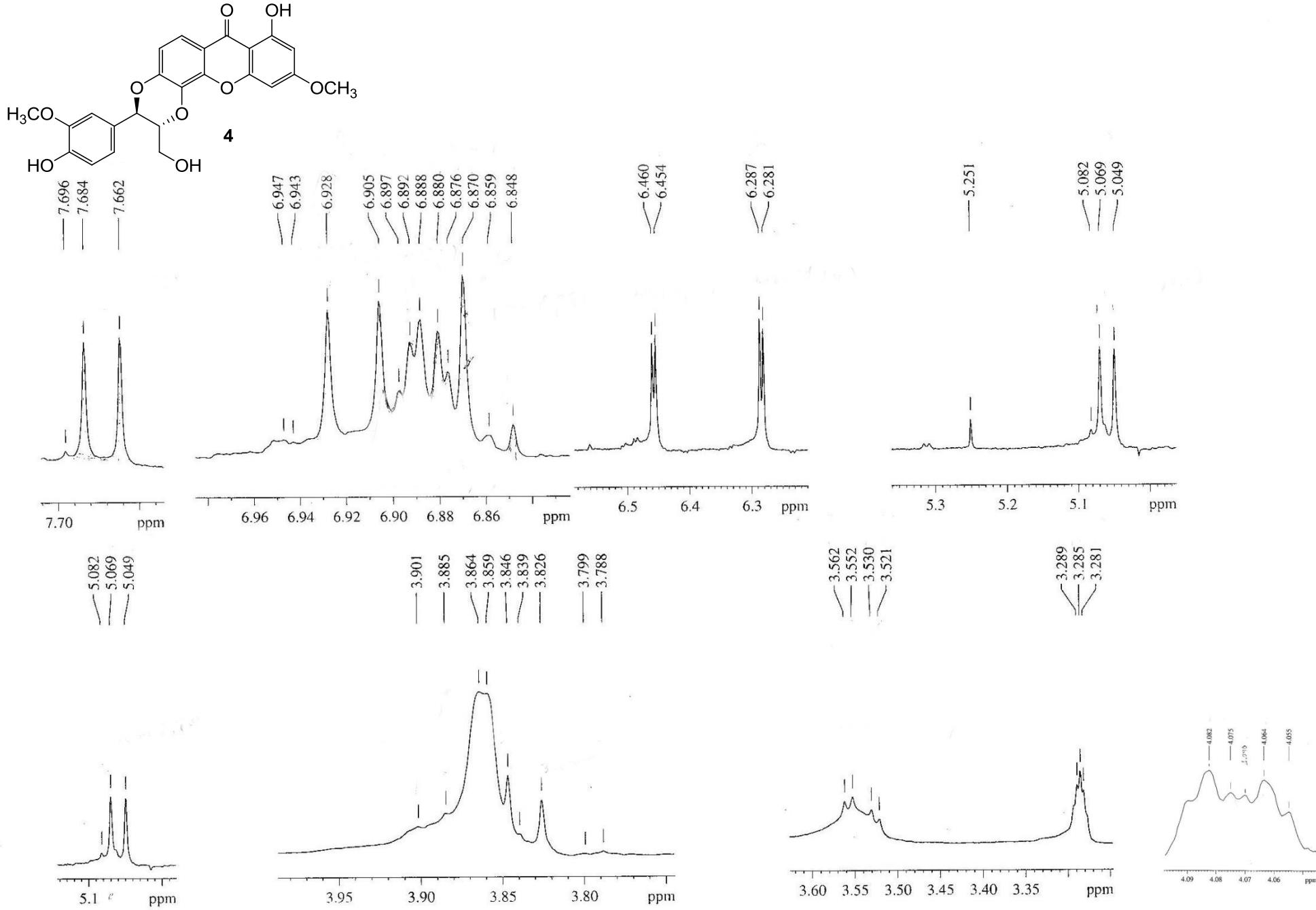
3



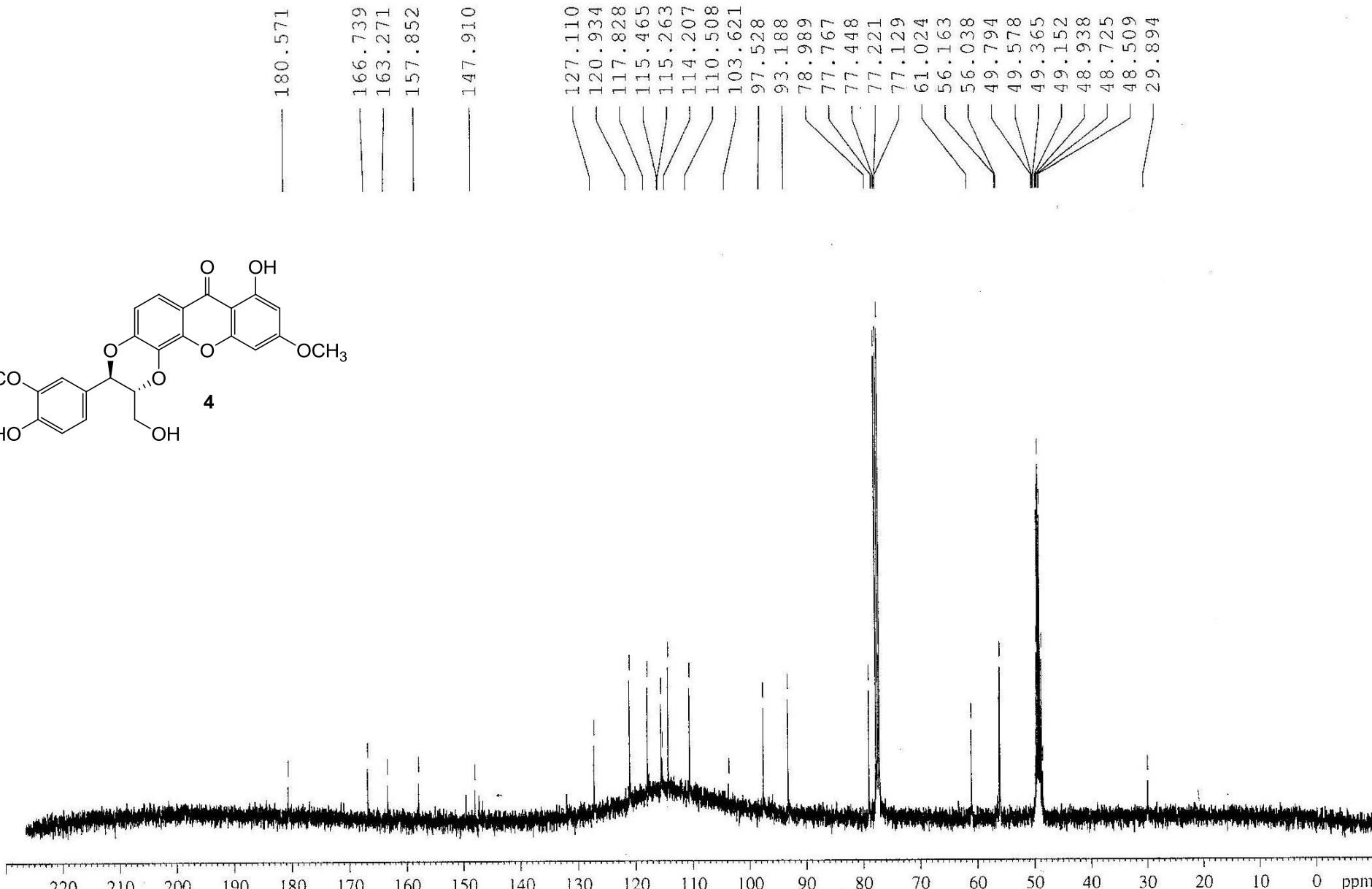
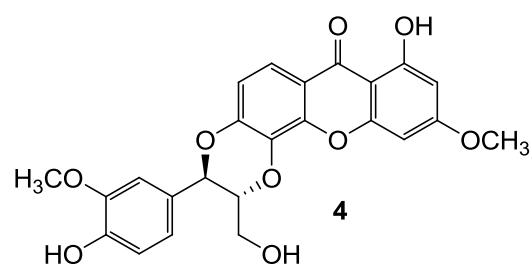
HMBC (acetone-*d*<sub>6</sub>, 300 MHz) spectrum of compound 3



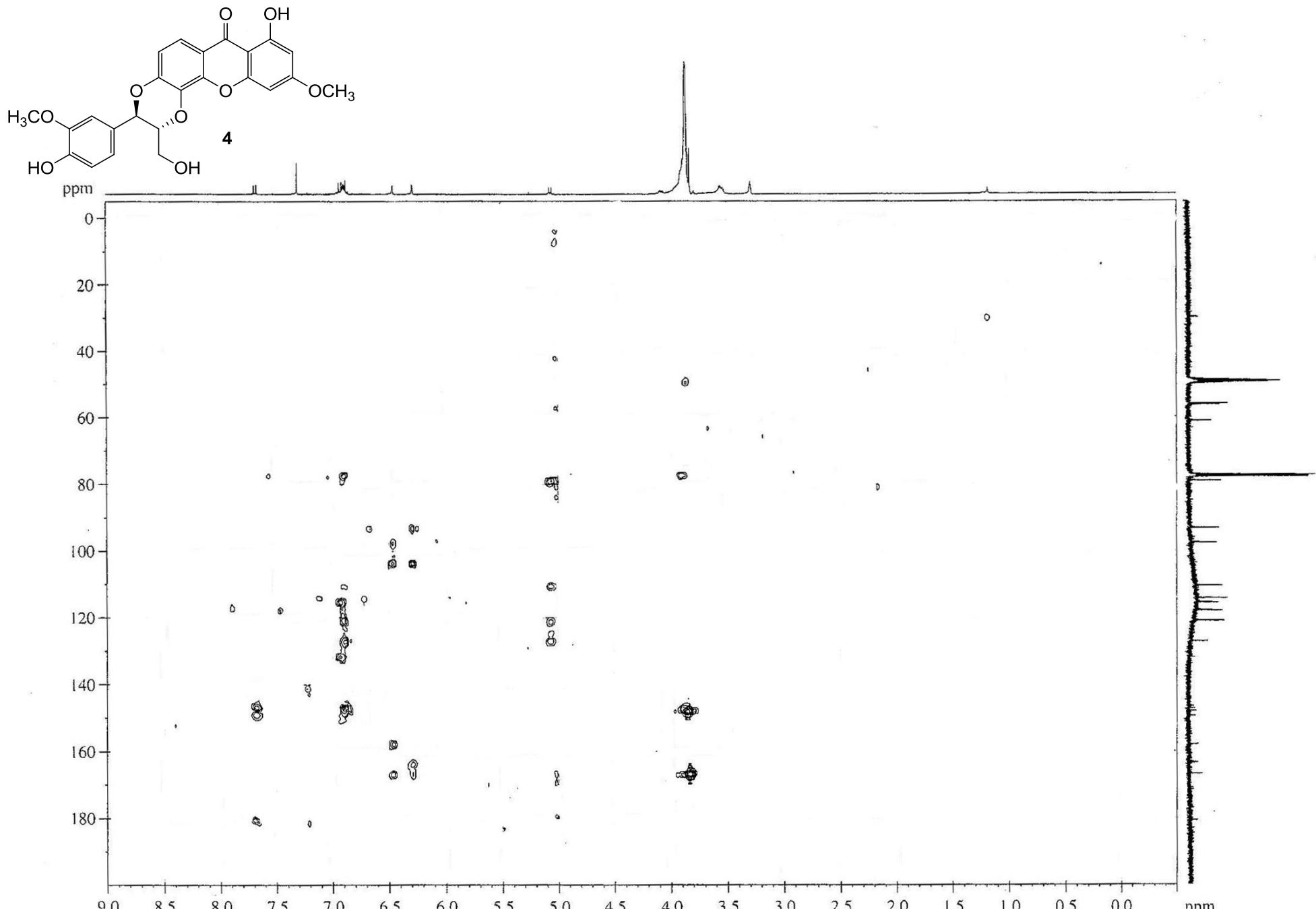
$^1\text{H}$  NMR ( $\text{CDCl}_3\text{-CD}_3\text{OD}$ , 400 MHz) spectrum of compound **4**

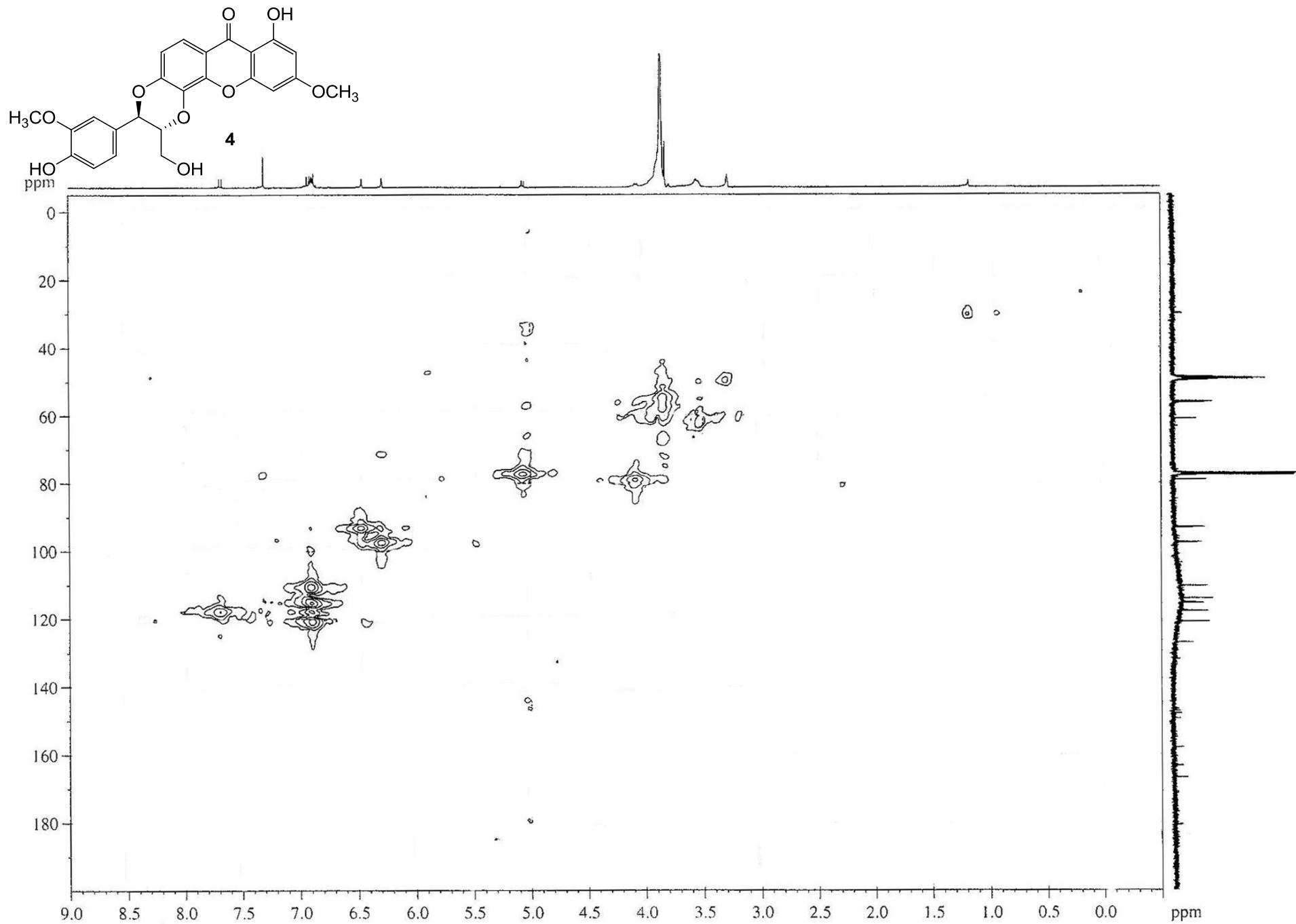


$^1\text{H}$  NMR (CDCl<sub>3</sub>-CD<sub>3</sub>OD, 400 MHz) spectrum of compound 4



<sup>13</sup>C NMR ( $\text{CDCl}_3\text{-CD}_3\text{OD}$ , 100 MHz) spectrum of compound **4**





HMQC ( $\text{CDCl}_3\text{-CD}_3\text{OD}$ , 400 MHz) spectrum of compound **4**