

**Supplementary Material****Steroid Alkaloids from *Holarrhena africana* with strong activity against *Trypanosoma brucei rhodesiense*****Charles O. Nnadi<sup>1,2</sup>, Ngozi J. Nwodo<sup>2</sup>, Marcel Kaiser<sup>3,4</sup>, Reto Brun<sup>3,4</sup> and Thomas J. Schmidt<sup>1,\*</sup>**

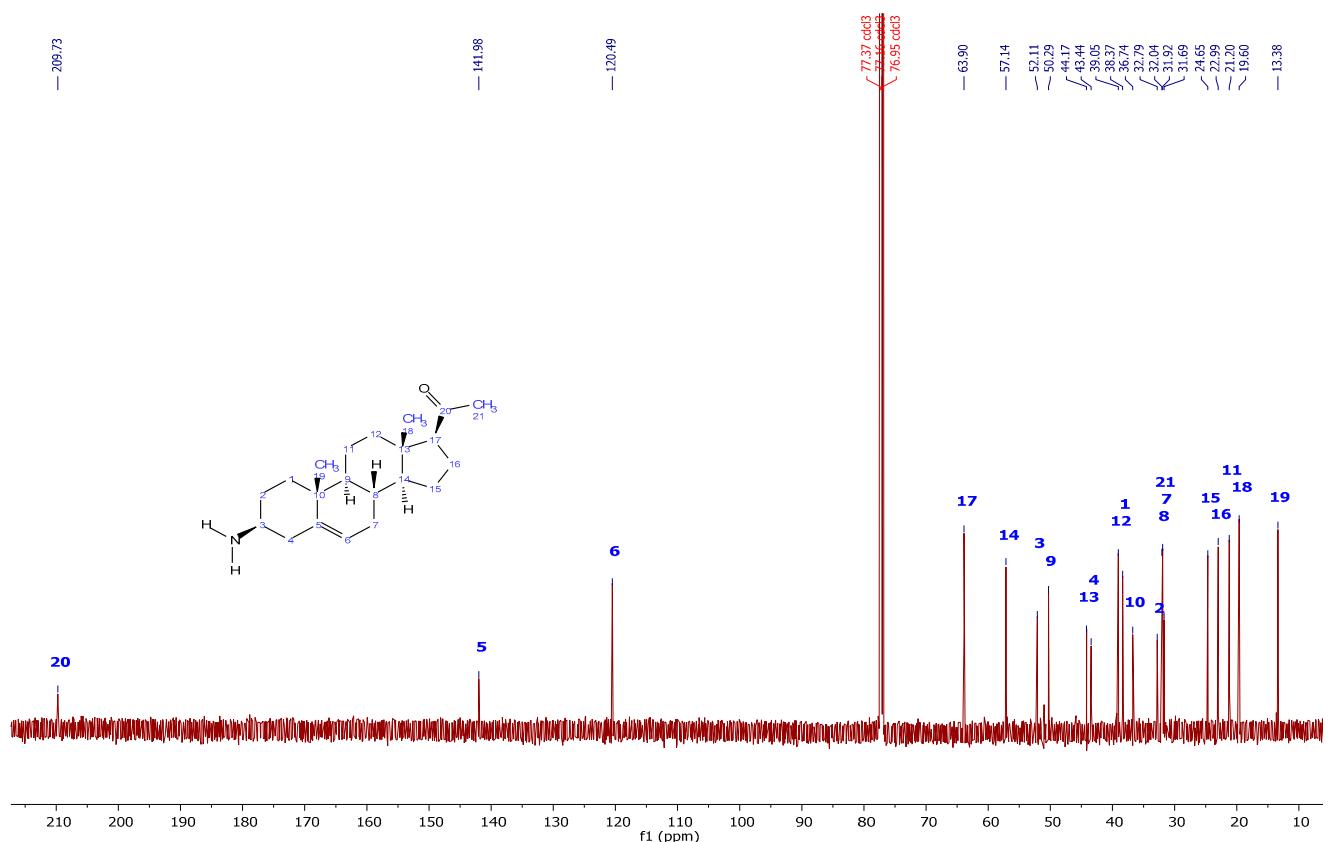
<sup>1</sup> Institute of Pharmaceutical Biology and Phytochemistry (IPBP), University of Münster, PharmaCampus Corrensstraße 48, Münster D-48149, Germany; E-mail: [charles.nnadi@unn.edu.ng](mailto:charles.nnadi@unn.edu.ng) (CON); [thomschm@uni-muenster.de](mailto:thomschm@uni-muenster.de) (TJS)

<sup>2</sup> Department of Pharmaceutical and Medicinal Chemistry, Faculty of Pharmaceutical Sciences, University of Nigeria Nsukka, 410001 Enugu State Nigeria; E-mail: [ngozi.nwodo@unn.edu.ng](mailto:ngozi.nwodo@unn.edu.ng) (NJJN)

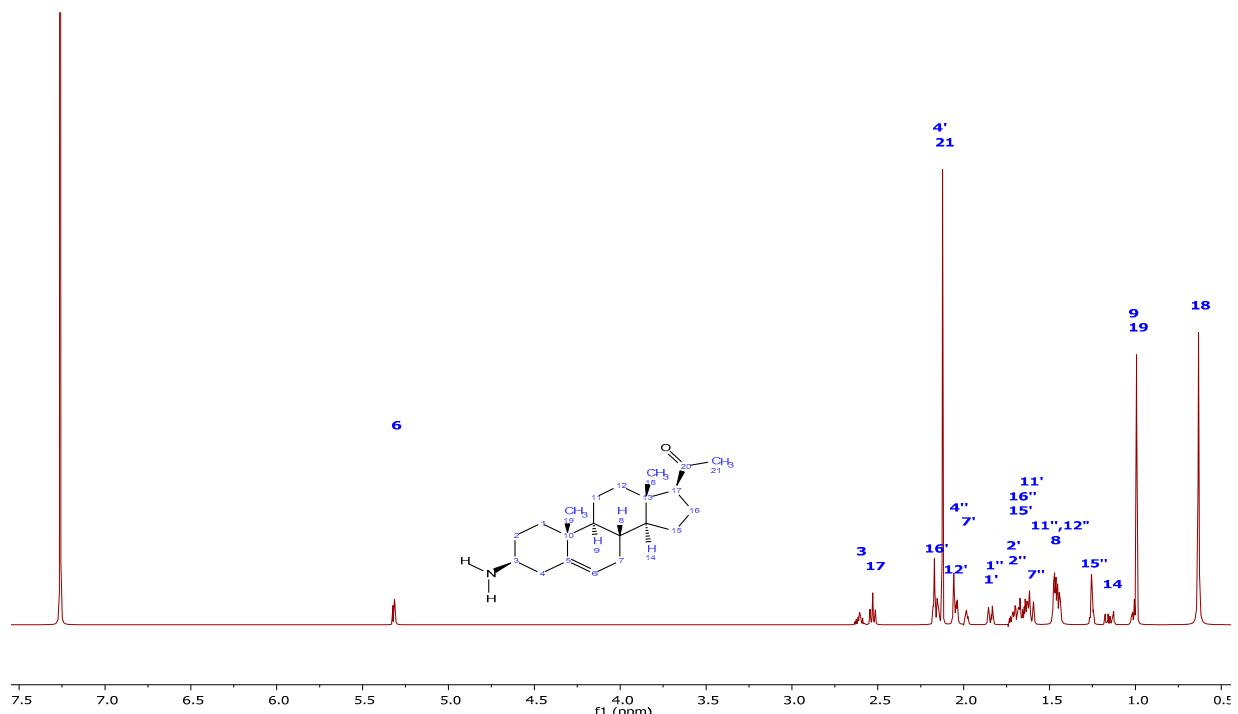
<sup>3</sup> Swiss Tropical and Public Health institute (Swiss TPH), Socinstr. 57, Basel CH-4051, Switzerland; Email: [marcel.kaiser@unibas.ch](mailto:marcel.kaiser@unibas.ch) (MK); [reto.brun@unibas.ch](mailto:reto.brun@unibas.ch) (RB)

<sup>4</sup> University of Basel, Petersplatz 1, Basel CH-4003, Switzerland

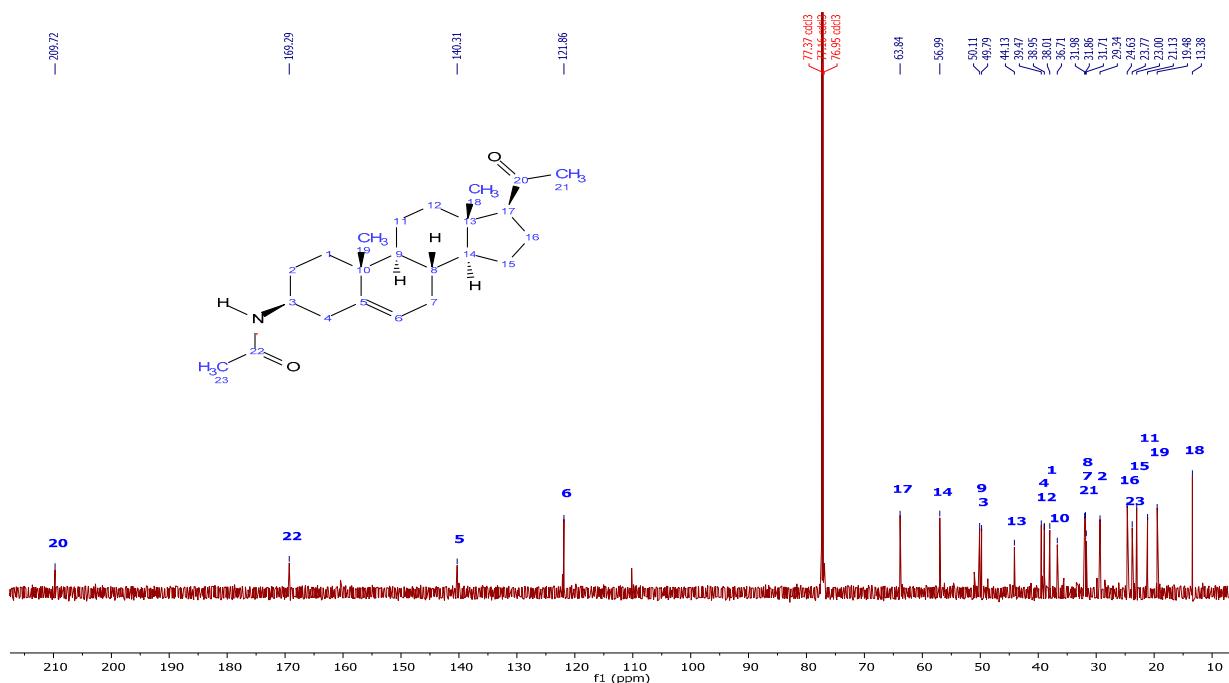
\*Correspondence: [thomschm@uni-muenster.de](mailto:thomschm@uni-muenster.de); Tel.: +49-251-83-33378



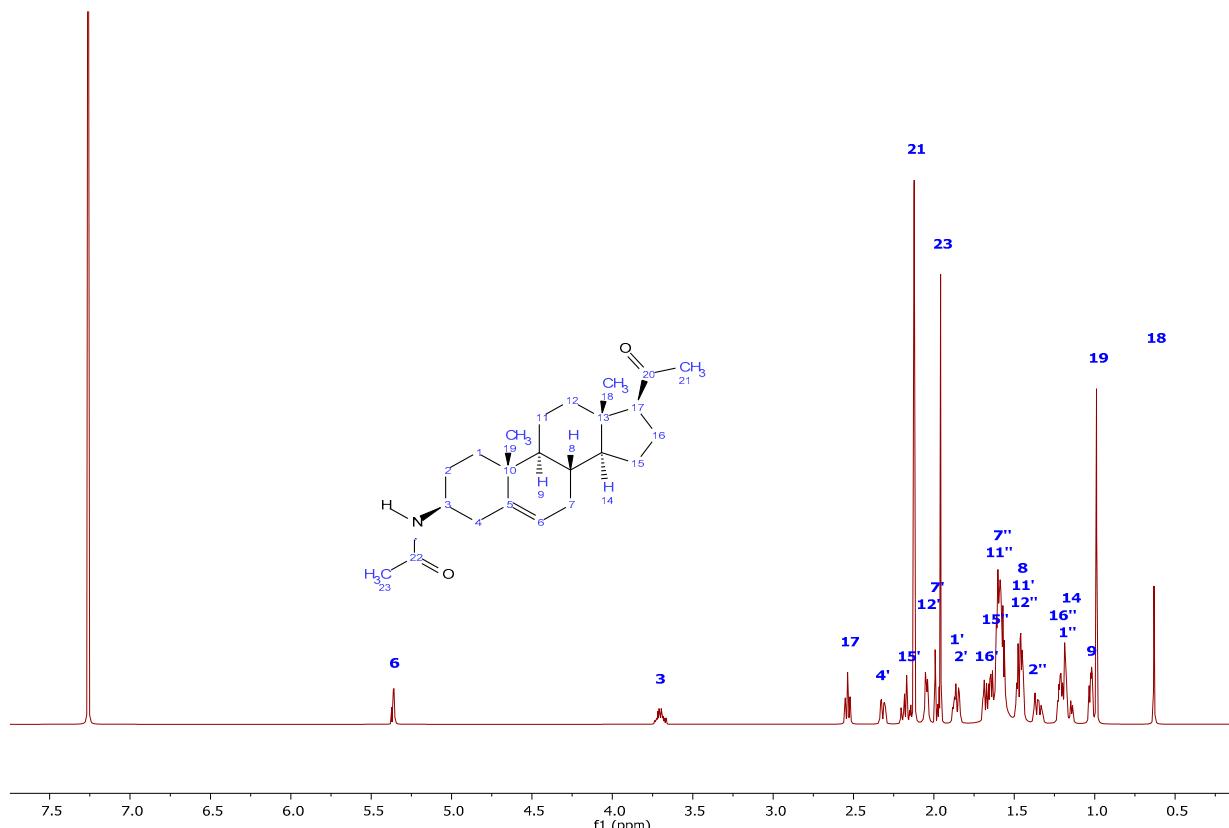
**Figure S1:**  $^{13}\text{C}$  NMR spectrum of compound 1 ( $\text{CDCl}_3$ , 600 MHz)



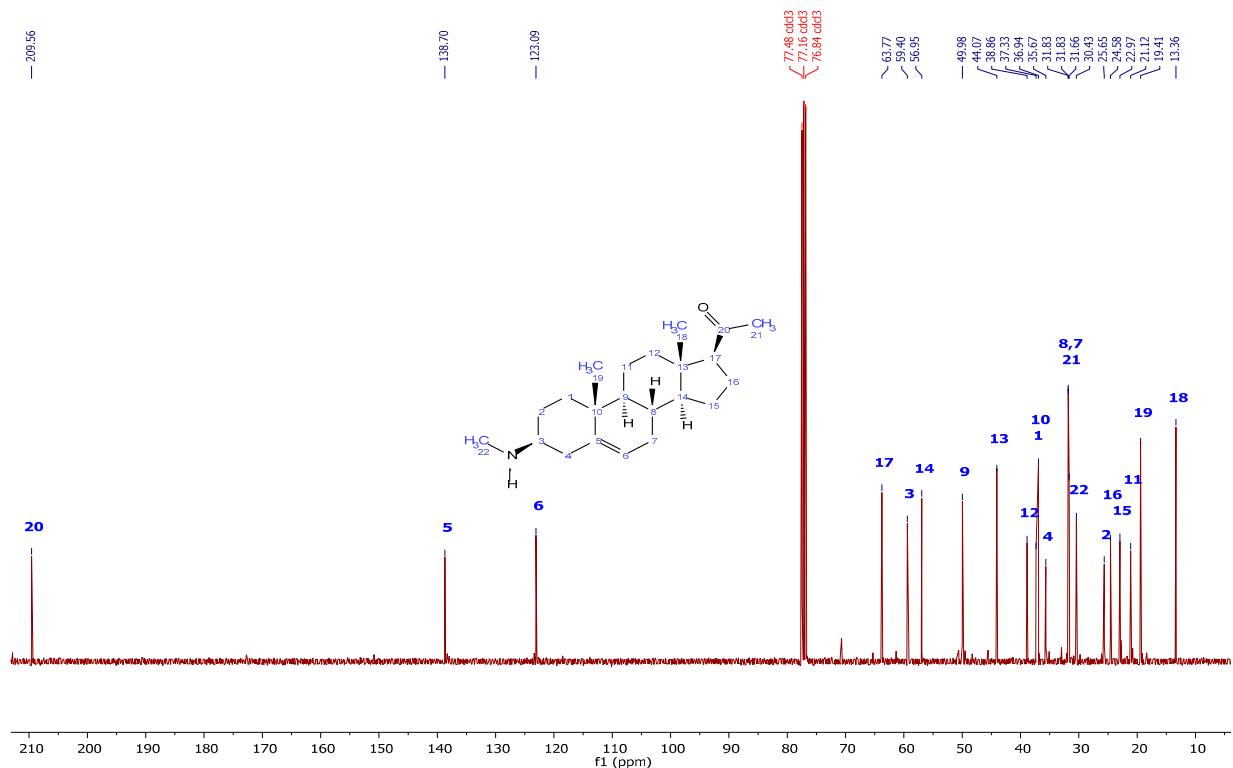
**Figure S2:**  $^1\text{H}$  NMR spectrum of compound 1 ( $\text{CDCl}_3$ , 600 MHz)



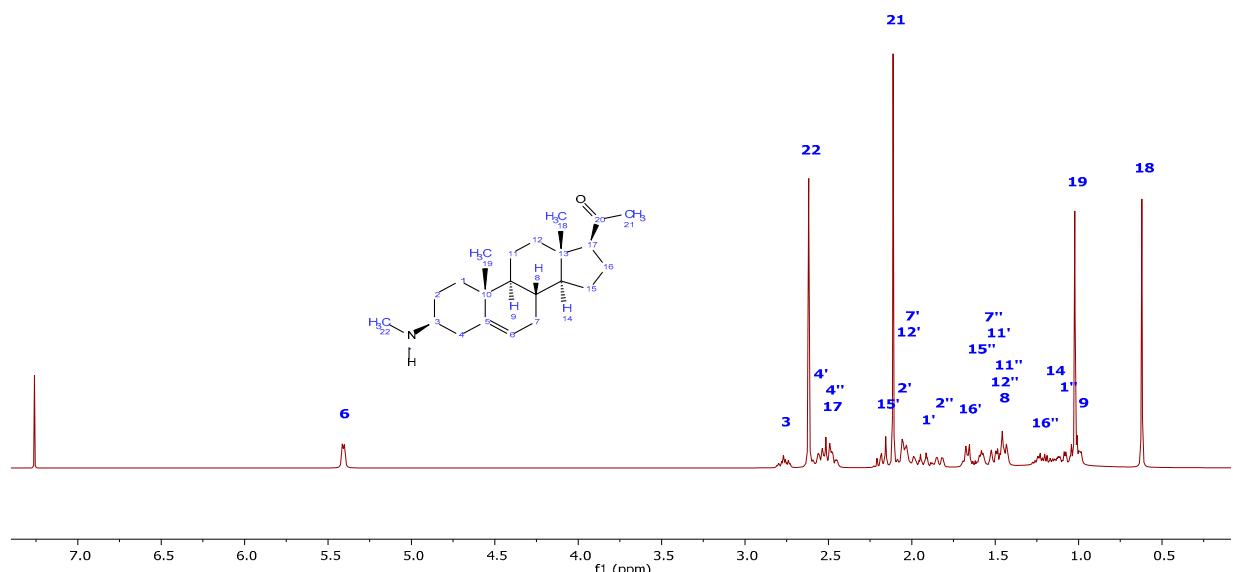
**Figure S3:**  $^{13}\text{C}$  NMR spectrum of compound 2 ( $\text{CDCl}_3$ , 600 MHz)



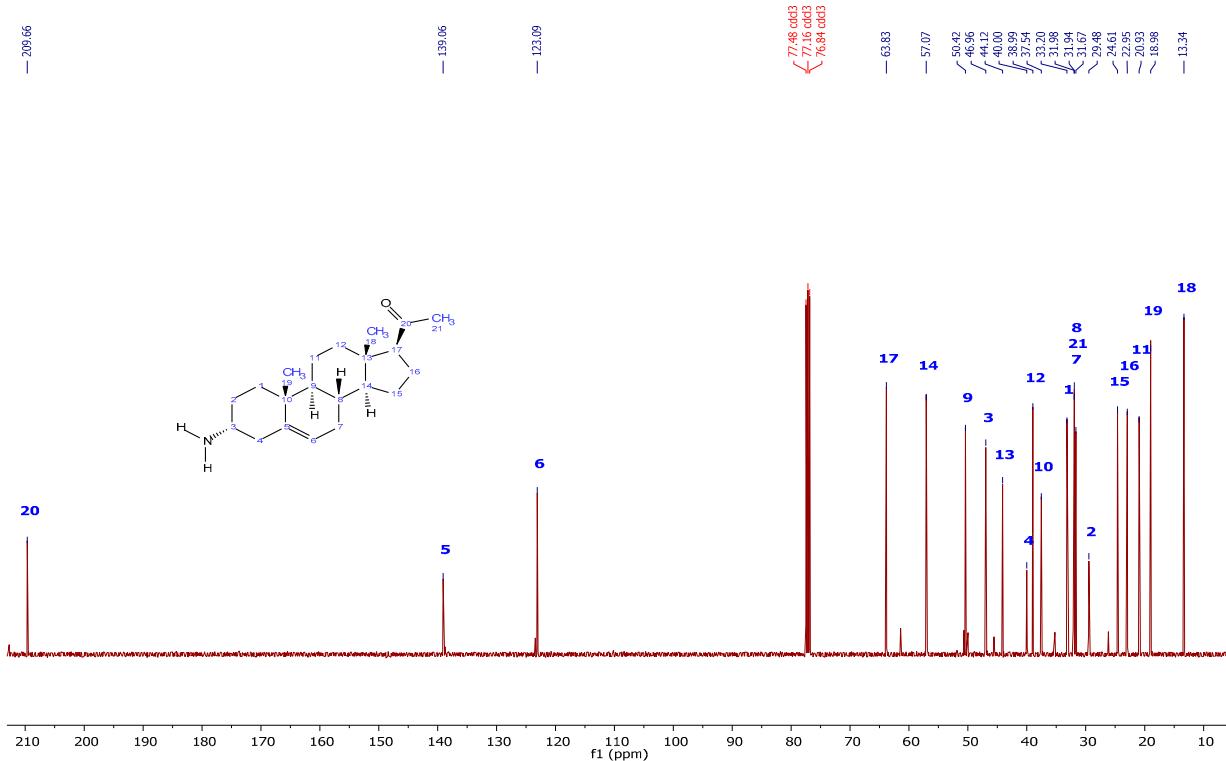
**Figure S4:**  $^1\text{H}$  NMR spectrum of compound 2 ( $\text{CDCl}_3$ , 600 MHz)



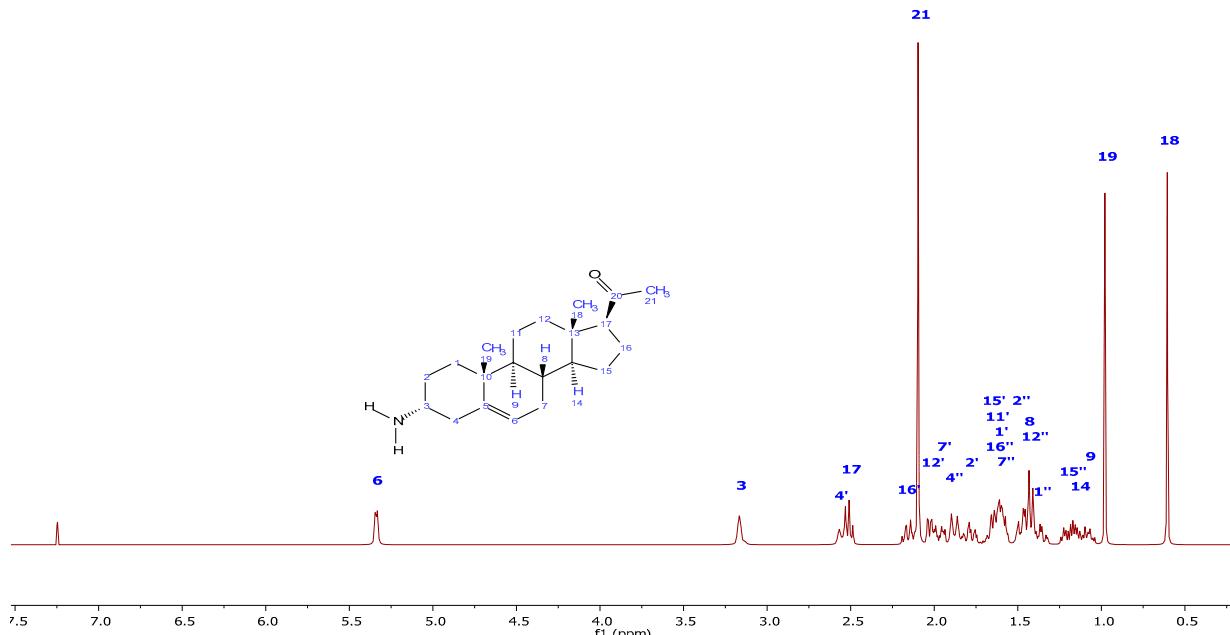
**Figure S5:**  $^{13}\text{C}$  NMR spectrum of compound 3 ( $\text{CDCl}_3$ , 600 MHz)



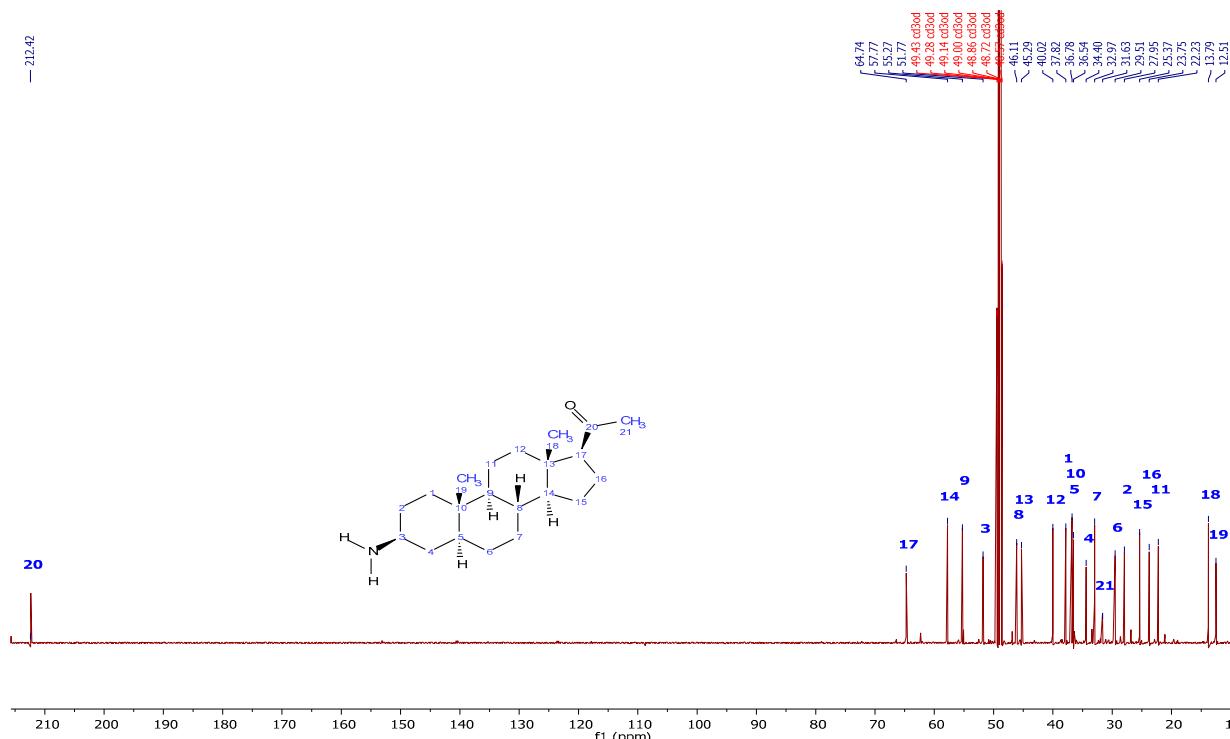
**Figure S6:**  $^1\text{H}$  NMR spectrum of compound 3 ( $\text{CDCl}_3$ , 600 MHz)



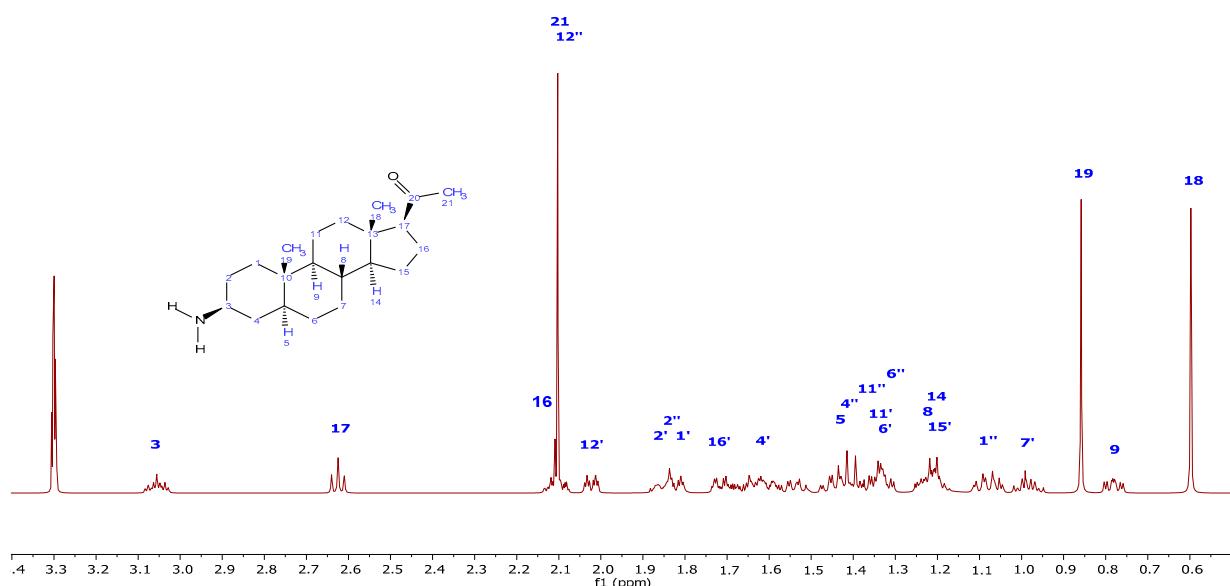
**Figure S7:**  $^{13}\text{C}$  NMR spectrum of compound 4 ( $\text{CDCl}_3$ , 600 MHz)



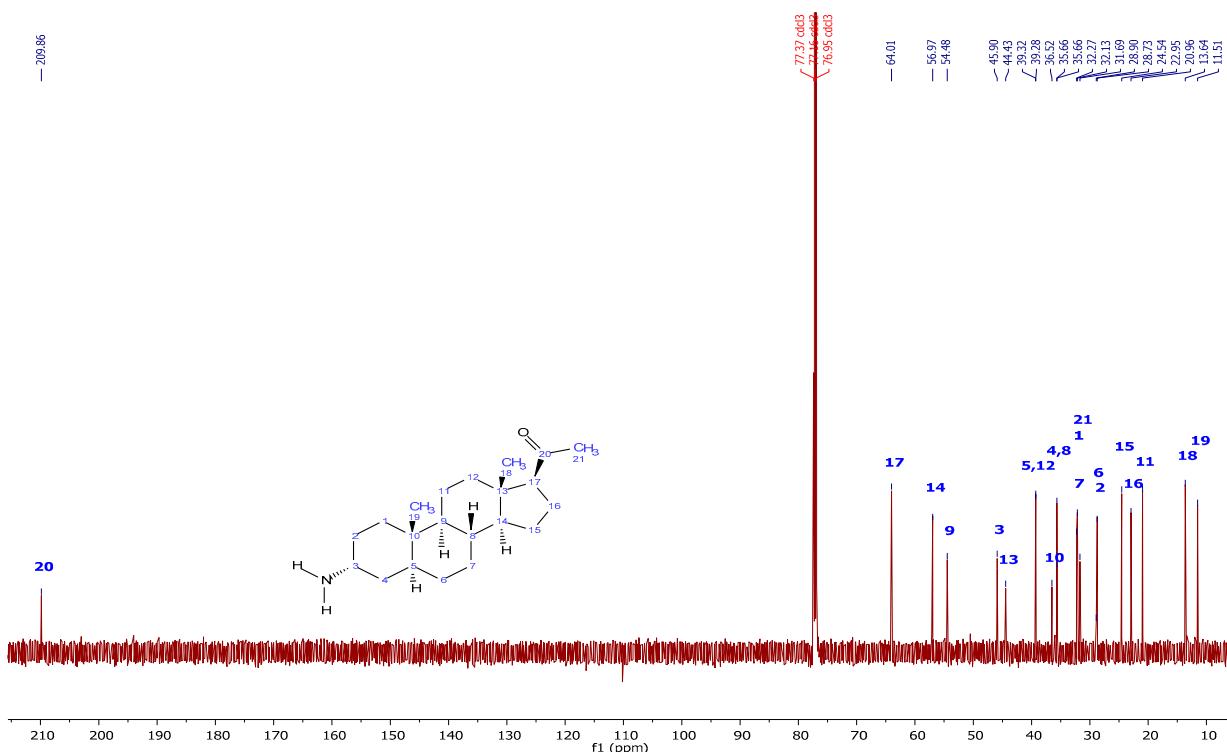
**Figure S8:**  $^1\text{H}$  NMR spectrum of compound 4 ( $\text{CDCl}_3$ , 600 MHz)



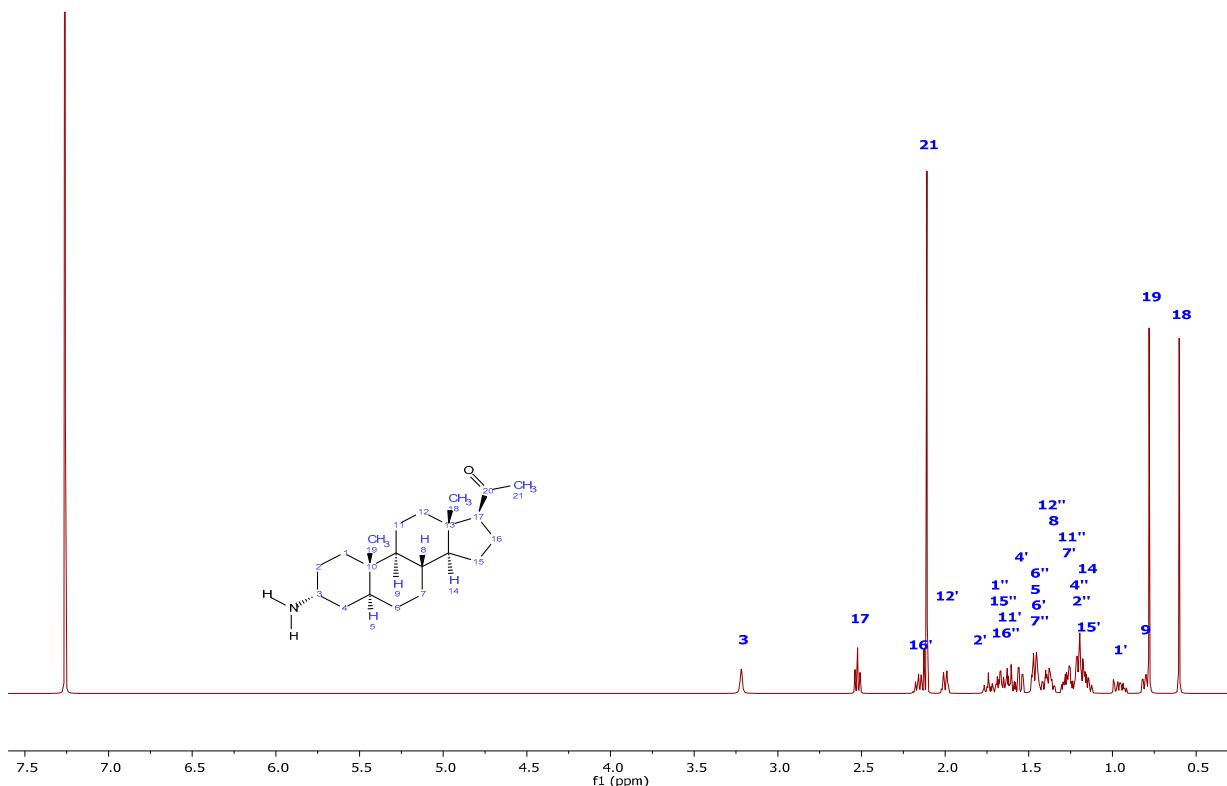
**Figure S9:**  $^{13}\text{C}$  NMR spectrum of compound **5** ( $\text{CD}_3\text{OD}$ , 600 MHz)



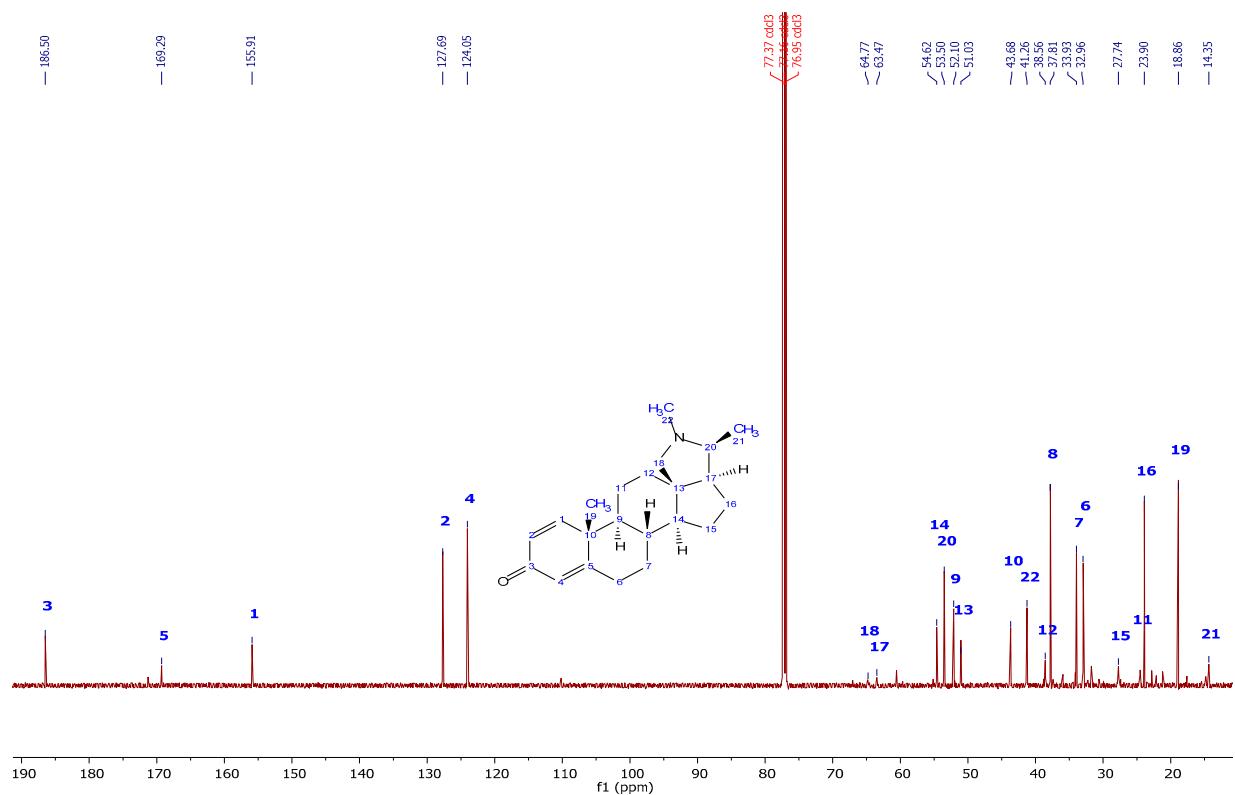
**Figure S10:**  $^1\text{H}$  NMR spectrum of compound **5** ( $\text{CD}_3\text{OD}$ , 600 MHz)



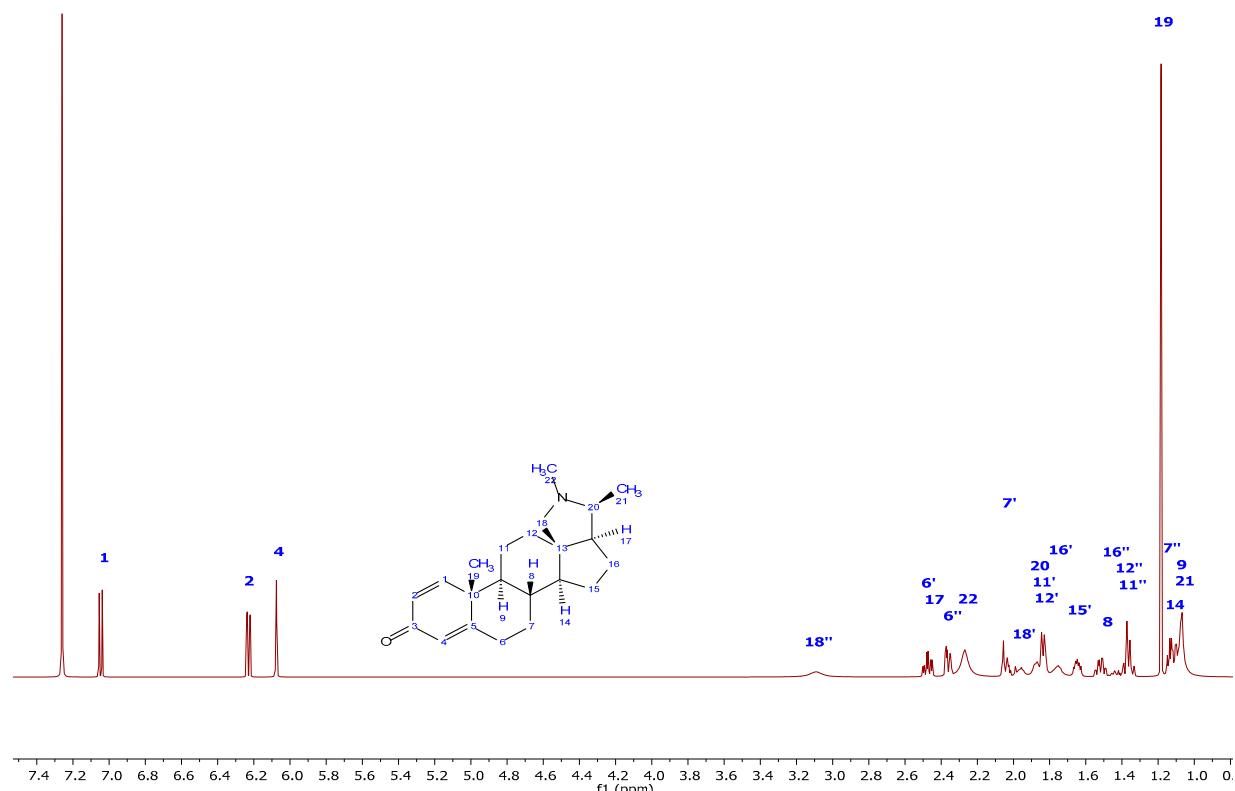
**Figure S11:**  $^{13}\text{C}$  NMR spectrum of compound 6 ( $\text{CDCl}_3$ , 600 MHz)



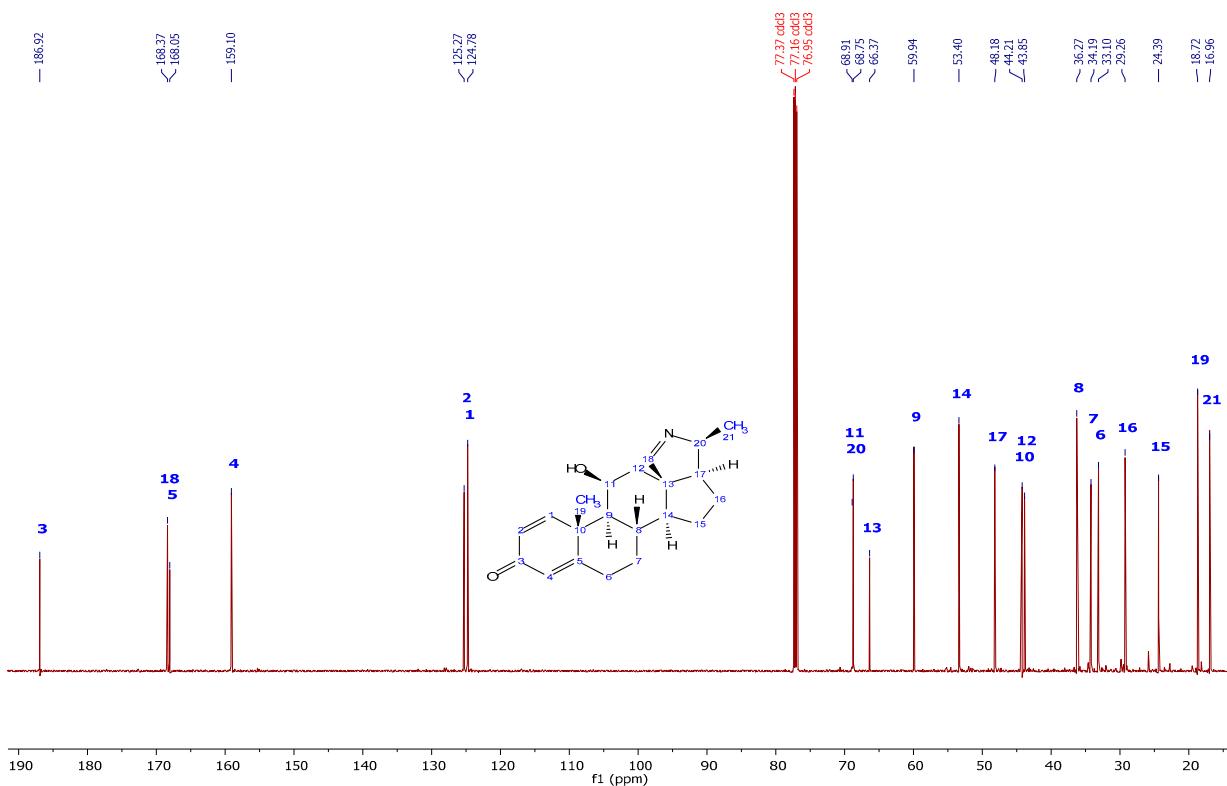
**Figure S12:**  $^1\text{H}$  NMR spectrum of compound 6 ( $\text{CDCl}_3$ , 600 MHz)



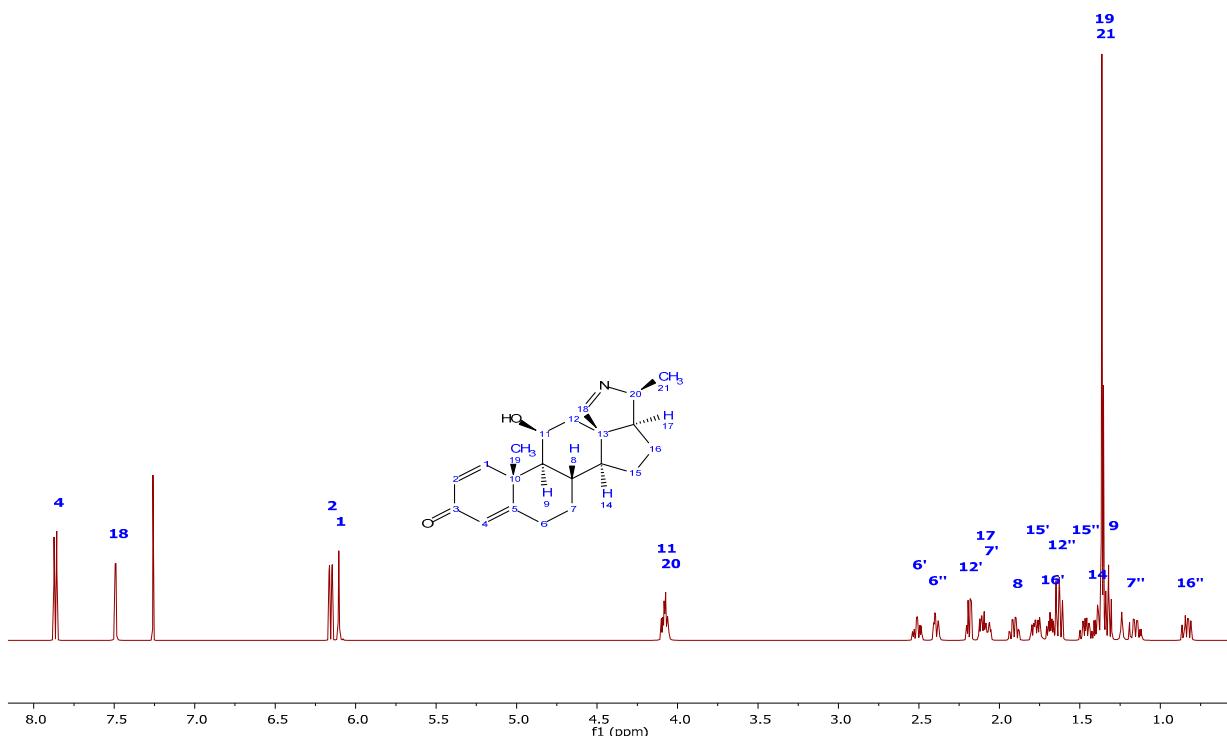
**Figure S13:**  $^{13}\text{C}$  NMR spectrum of compound 7 ( $\text{CDCl}_3$ , 600 MHz)



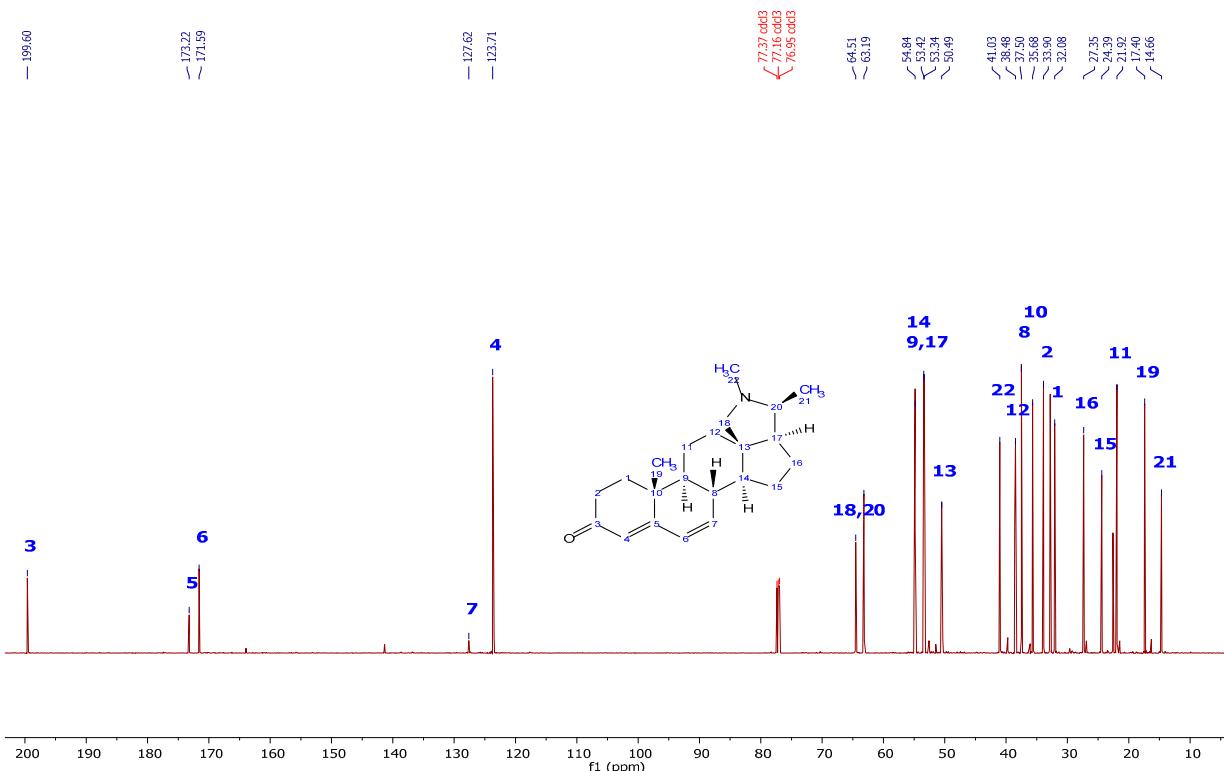
**Figure S14:**  $^1\text{H}$  NMR spectrum of compound 7 ( $\text{CDCl}_3$ , 600 MHz)



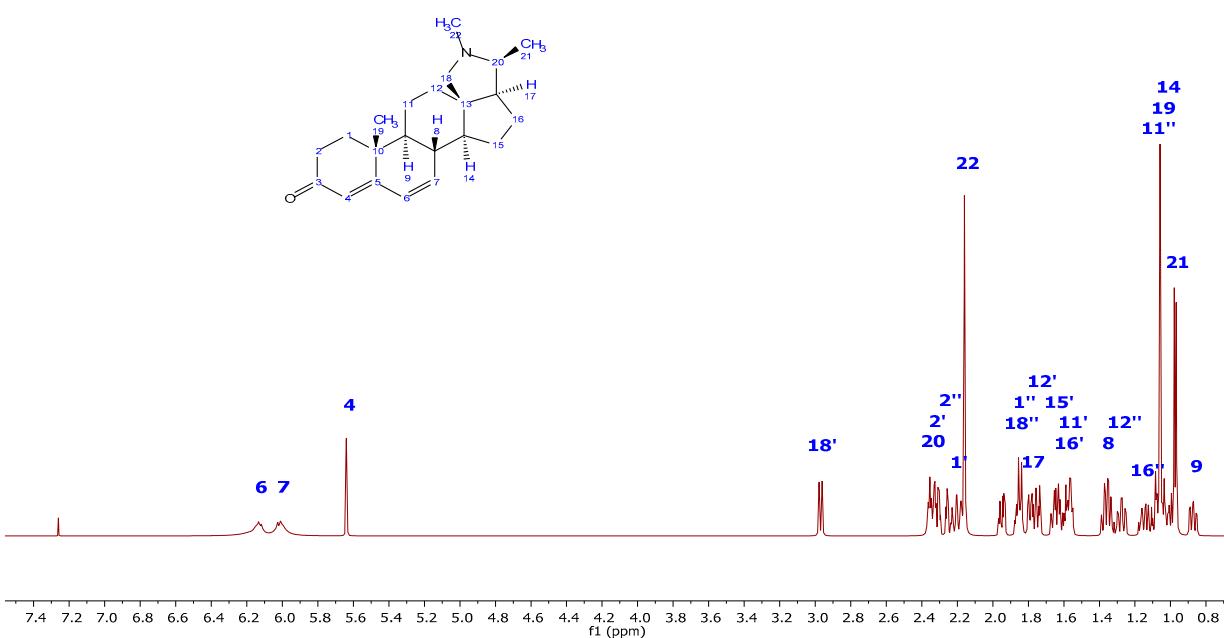
**Figure S15:**  $^{13}\text{C}$  NMR spectrum of compound 8 ( $\text{CDCl}_3$ , 600 MHz)



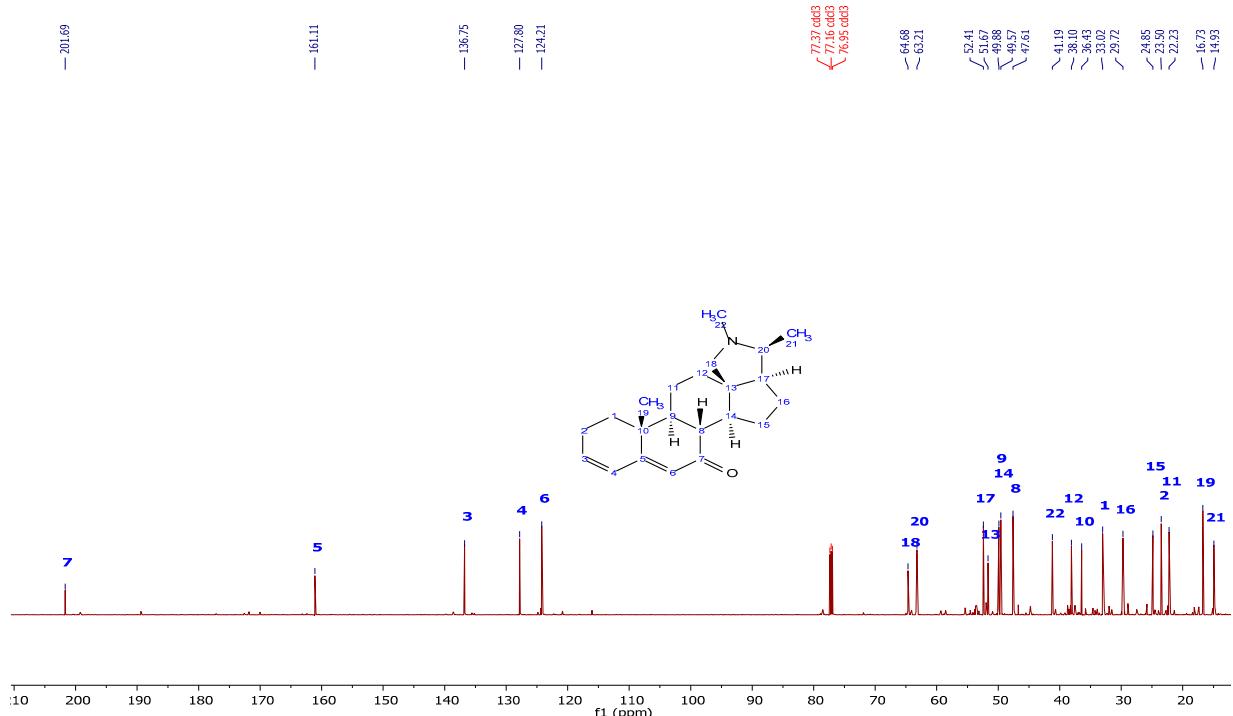
**Figure S16:**  $^1\text{H}$  NMR spectrum of compound 8 ( $\text{CDCl}_3$ , 600 MHz)



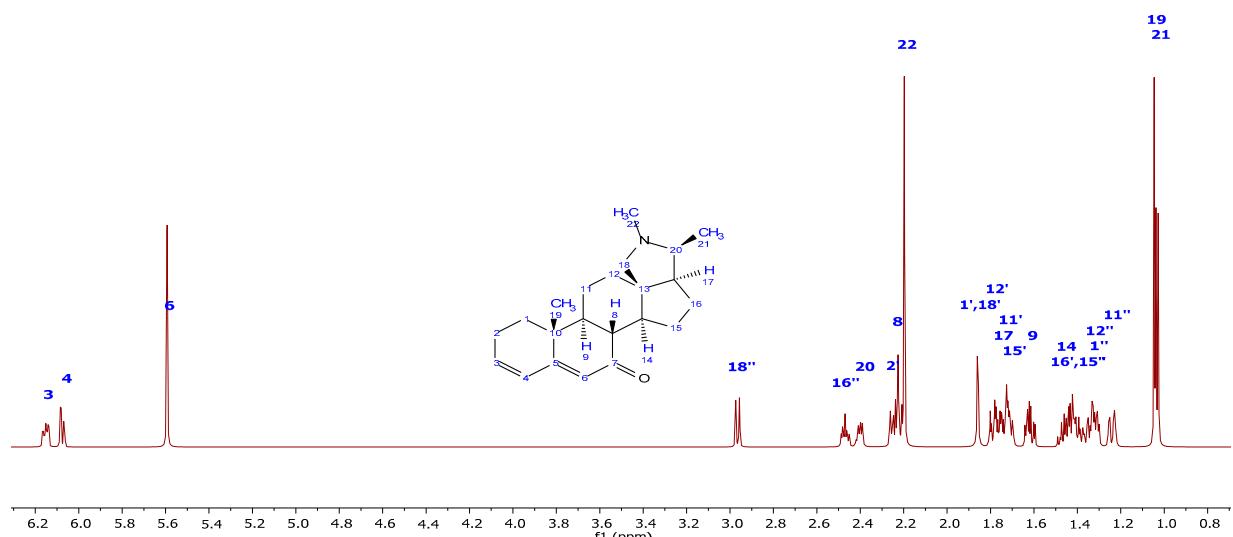
**Figure S17:**  $^{13}\text{C}$  NMR spectrum of compound **9** ( $\text{CDCl}_3$ , 600 MHz)



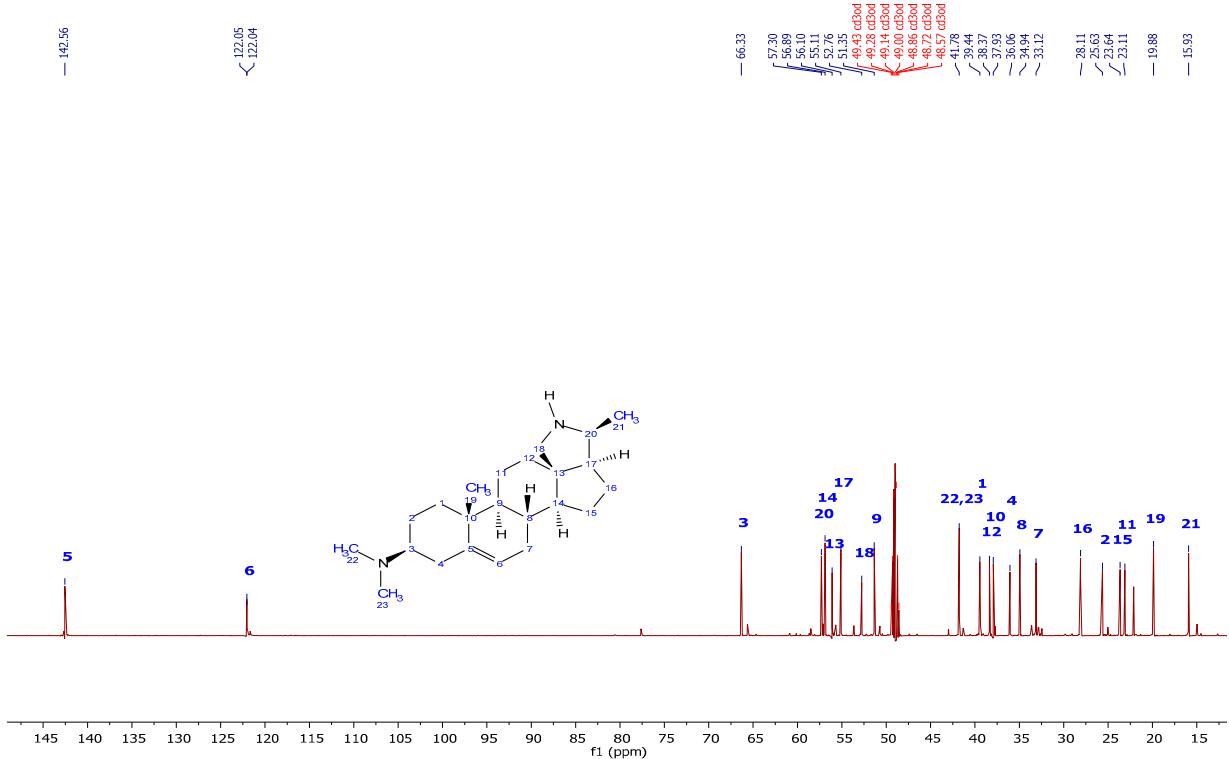
**Figure S18:**  $^1\text{H}$  NMR spectrum of compound **9** ( $\text{CDCl}_3$ , 600 MHz)



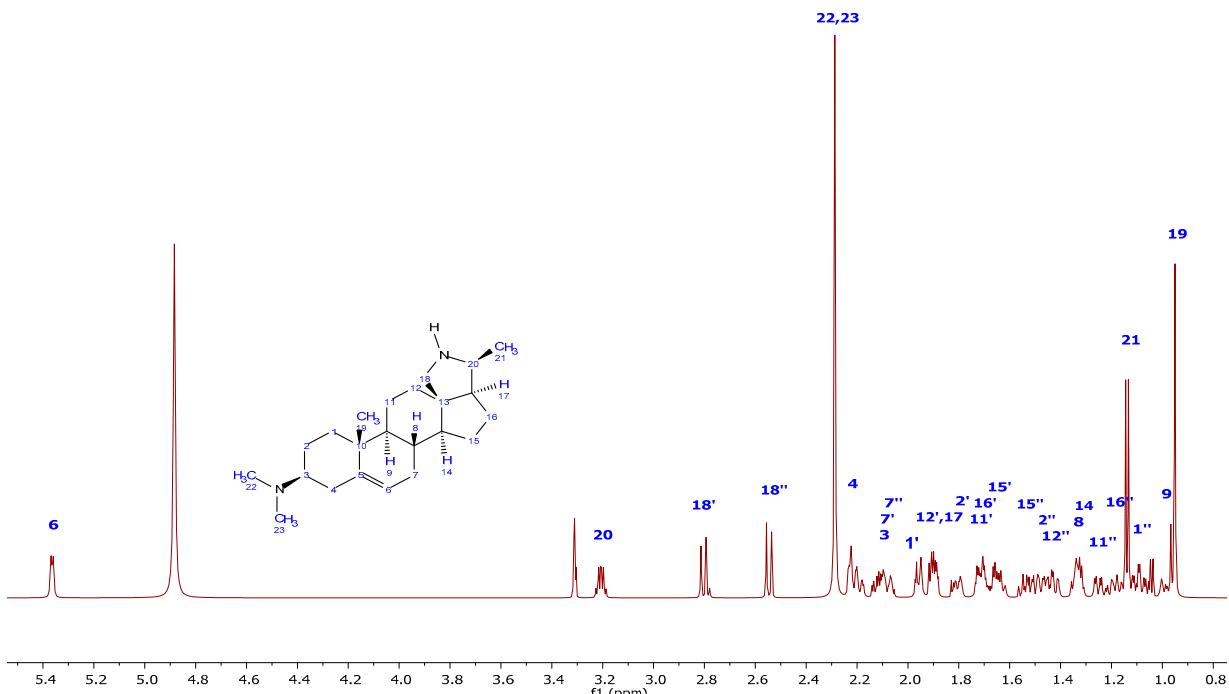
**Figure S19:**  $^{13}\text{C}$  NMR spectrum of compound **10** ( $\text{CDCl}_3$ , 600 MHz)



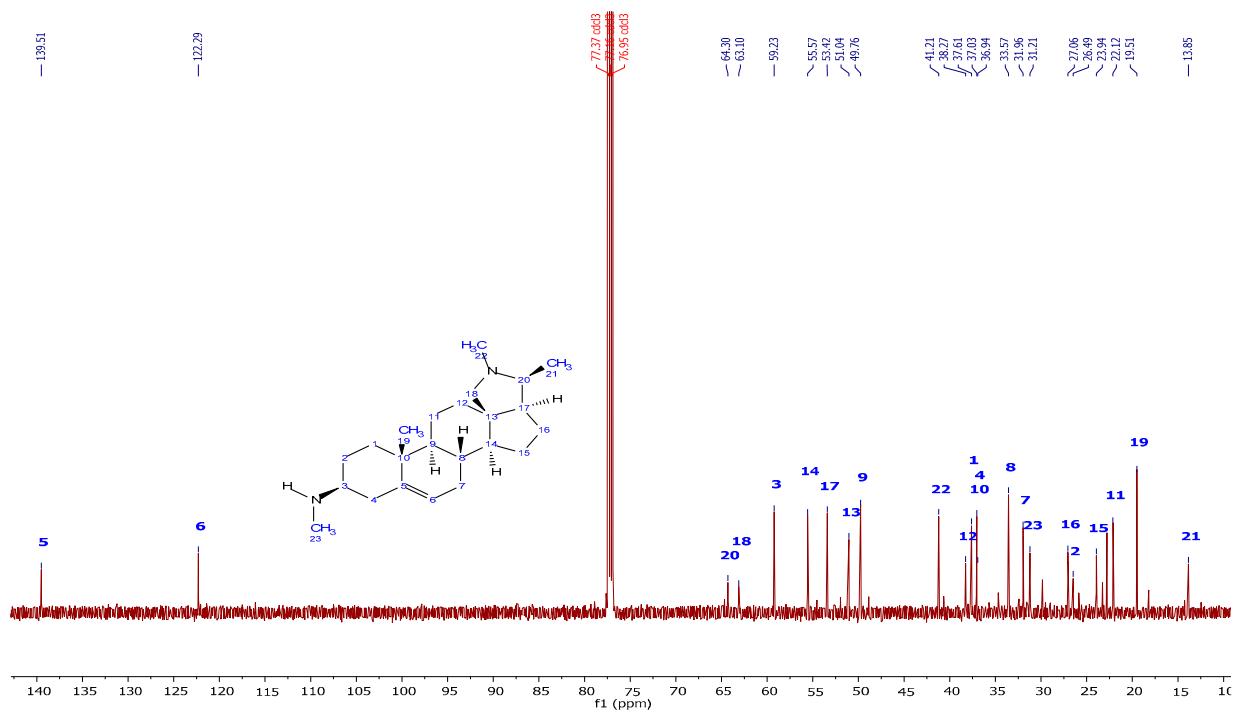
**Figure S20:**  $^1\text{H}$  NMR spectrum of compound **10** ( $\text{CDCl}_3$ , 600 MHz)



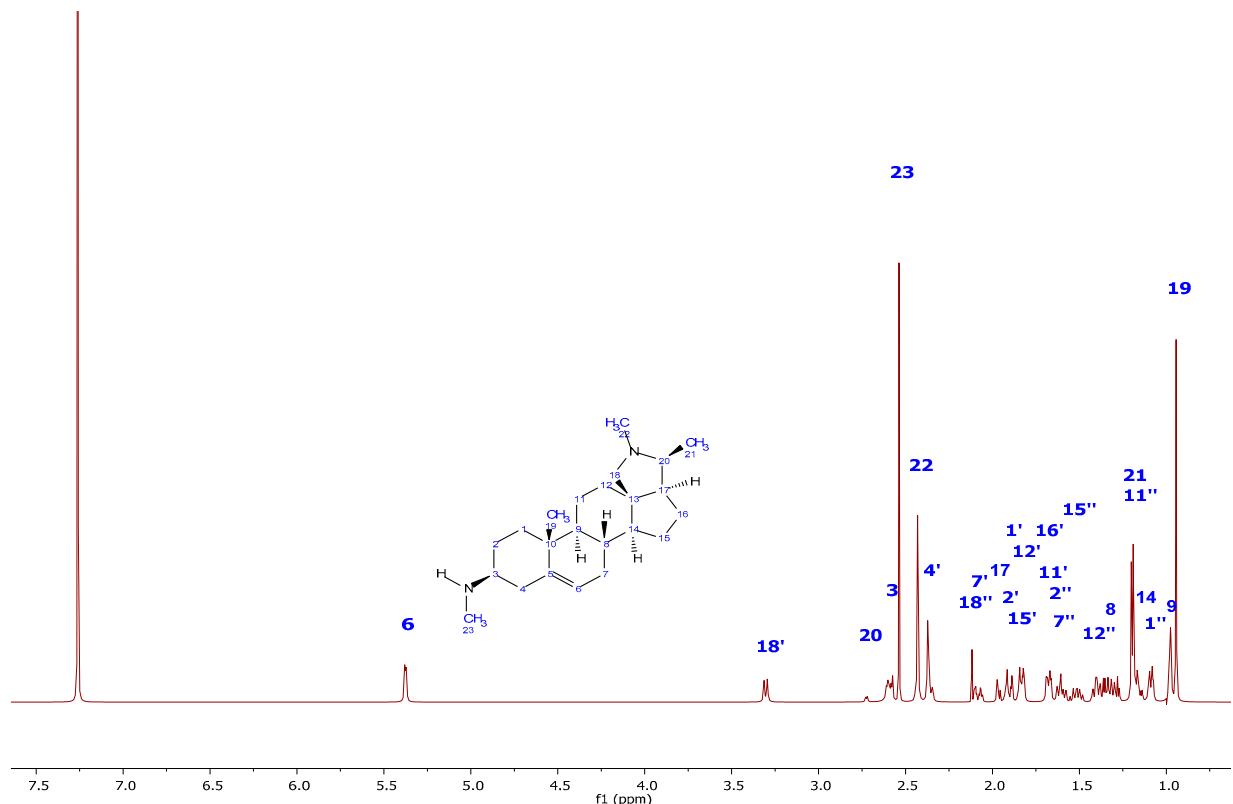
**Figure S21:**  $^{13}\text{C}$  NMR spectrum of compound 11(CD<sub>3</sub>OD, 600 MHz)



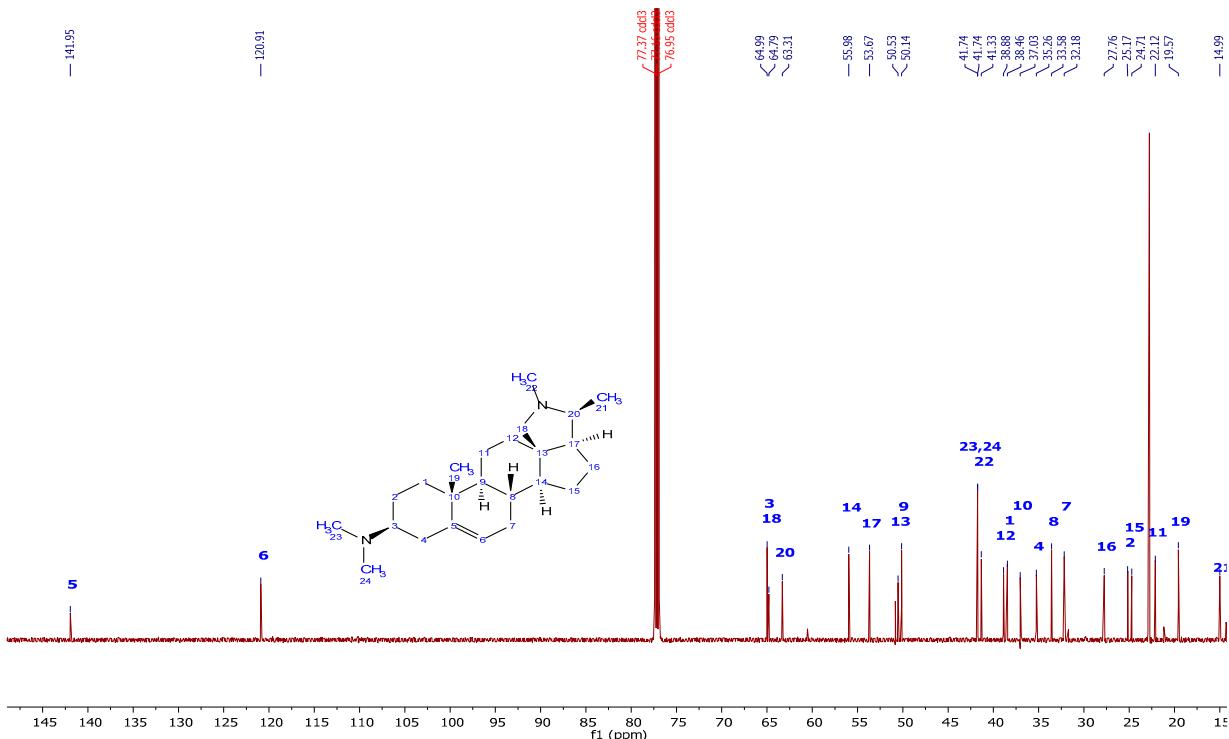
**Figure S22:**  $^1\text{H}$  NMR spectrum of compound **11** ( $\text{CDCl}_3$ , 600 MHz)



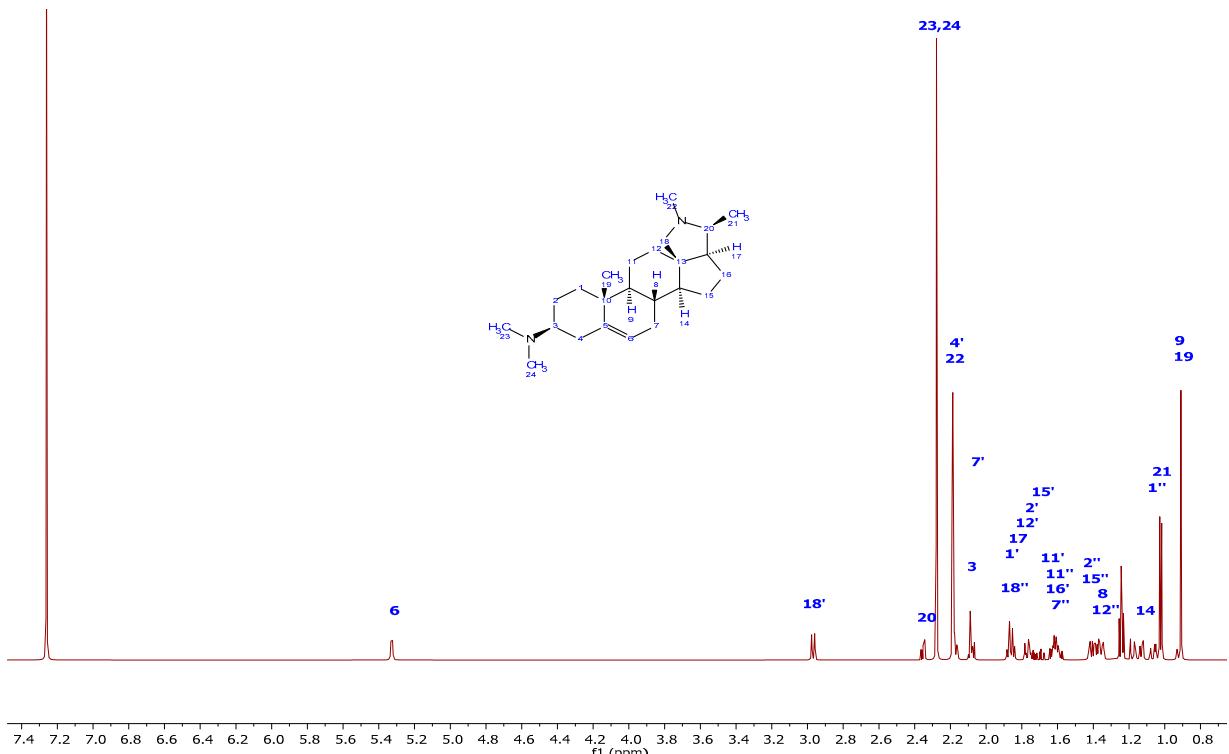
**Figure S23:**  $^{13}\text{C}$  NMR spectrum of compound **12** ( $\text{CDCl}_3$ , 600 MHz)



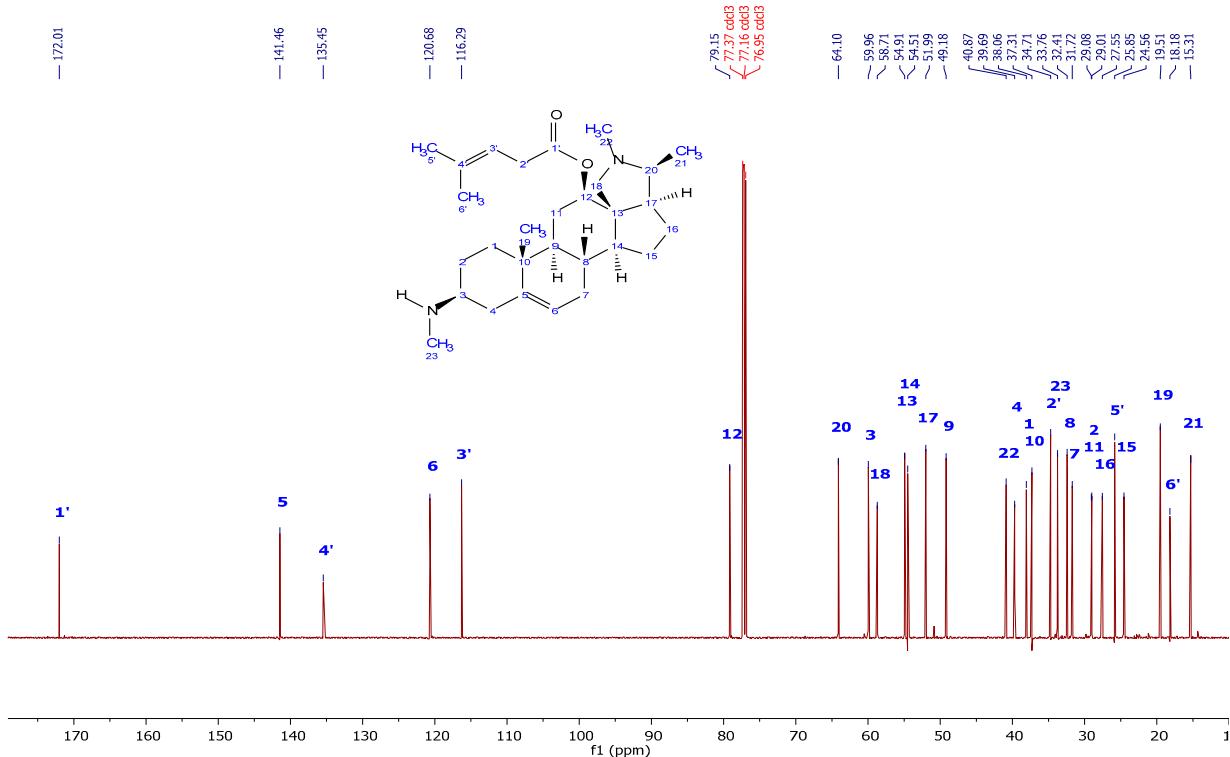
**Figure S24:**  $^1\text{H}$  NMR spectrum of compound **12** ( $\text{CDCl}_3$ , 600 MHz)



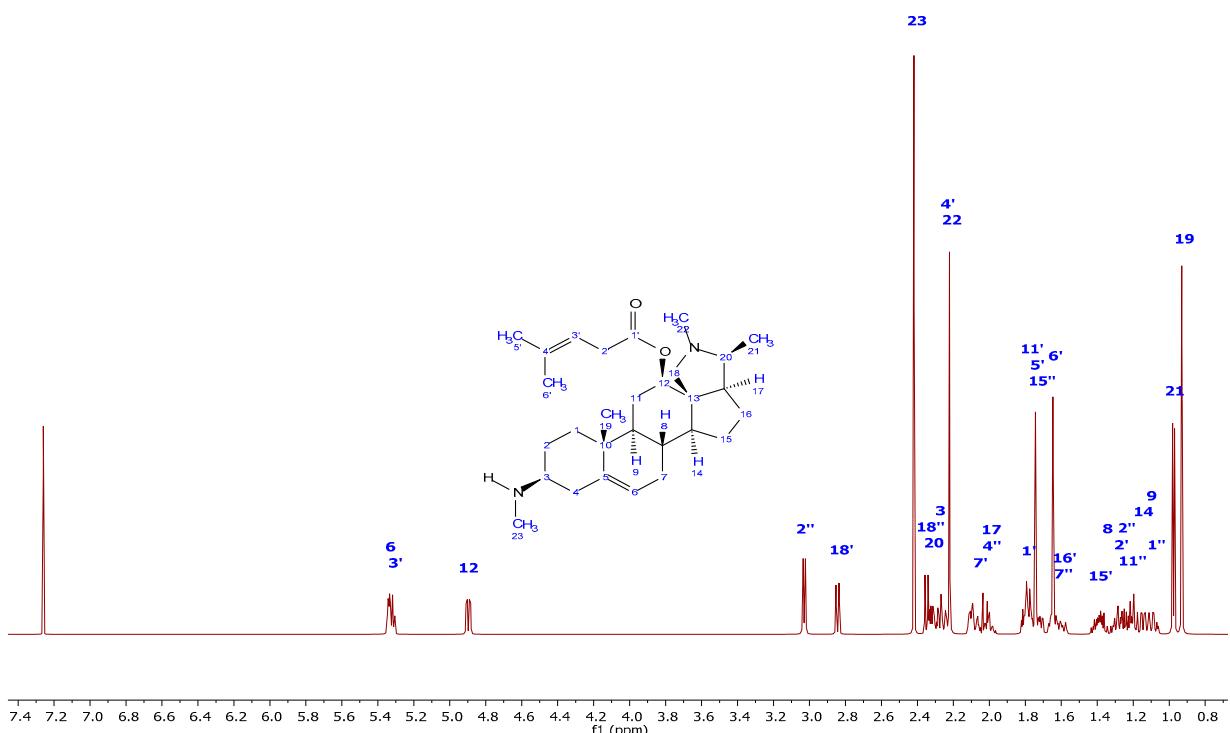
**Figure S25:**  $^{13}\text{C}$  NMR spectrum of compound 13 ( $\text{CDCl}_3$ , 600 MHz)



**Figure S26:**  $^1\text{H}$  NMR spectrum of compound **13** ( $\text{CDCl}_3$ , 600 MHz)



**Figure S27:**  $^{13}\text{C}$  NMR spectrum of compound 14 ( $\text{CDCl}_3$ , 600 MHz)



**Figure S28:**  $^1\text{H}$  NMR spectrum of compound 14 ( $\text{CDCl}_3$ , 600 MHz)

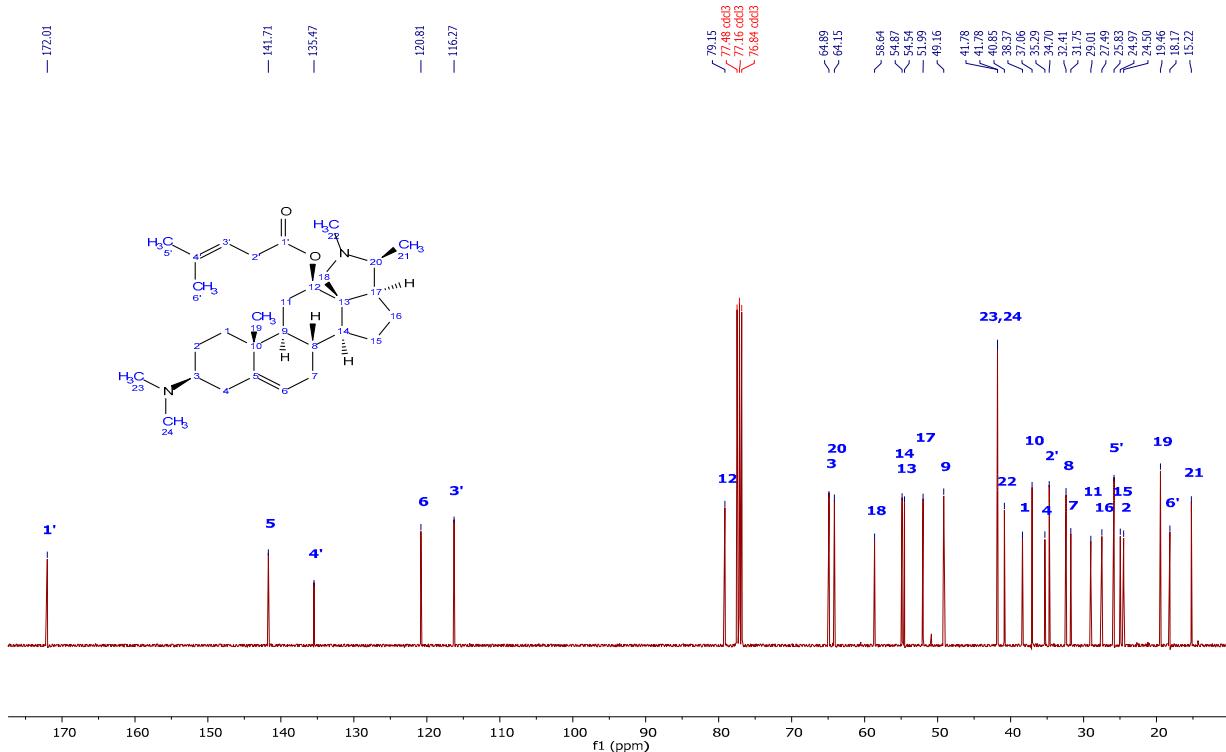


Figure S29: <sup>13</sup>C NMR spectrum of compound 15 (CDCl<sub>3</sub>, 600 MHz)

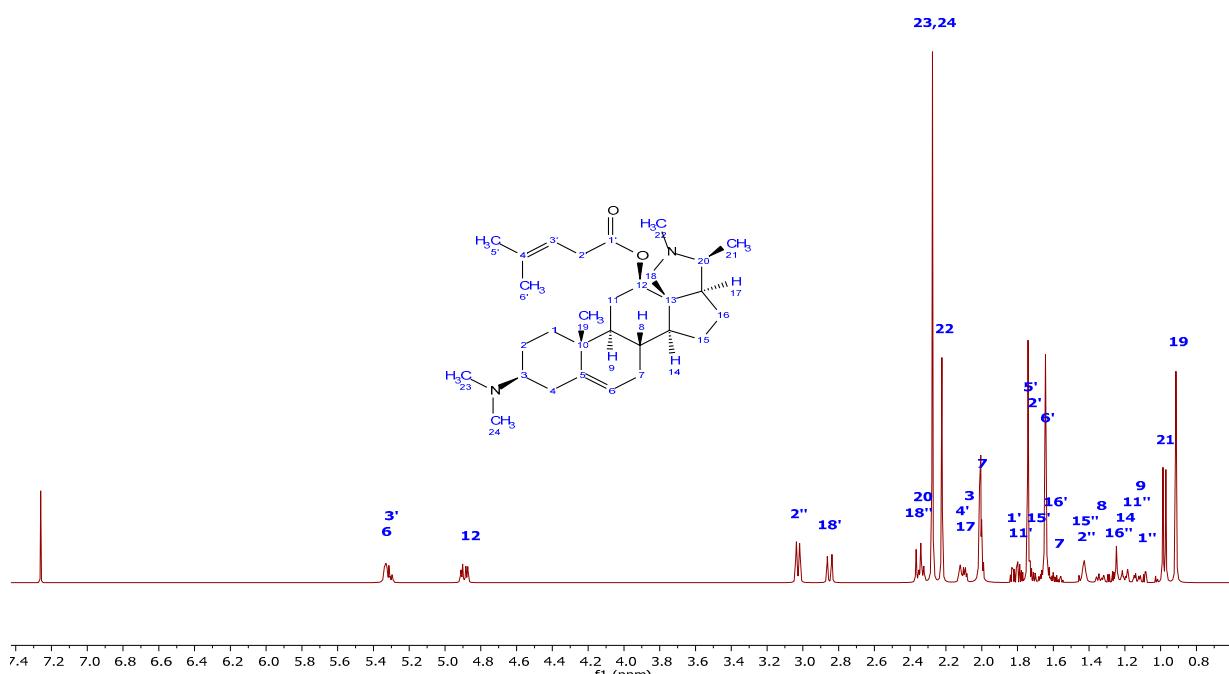
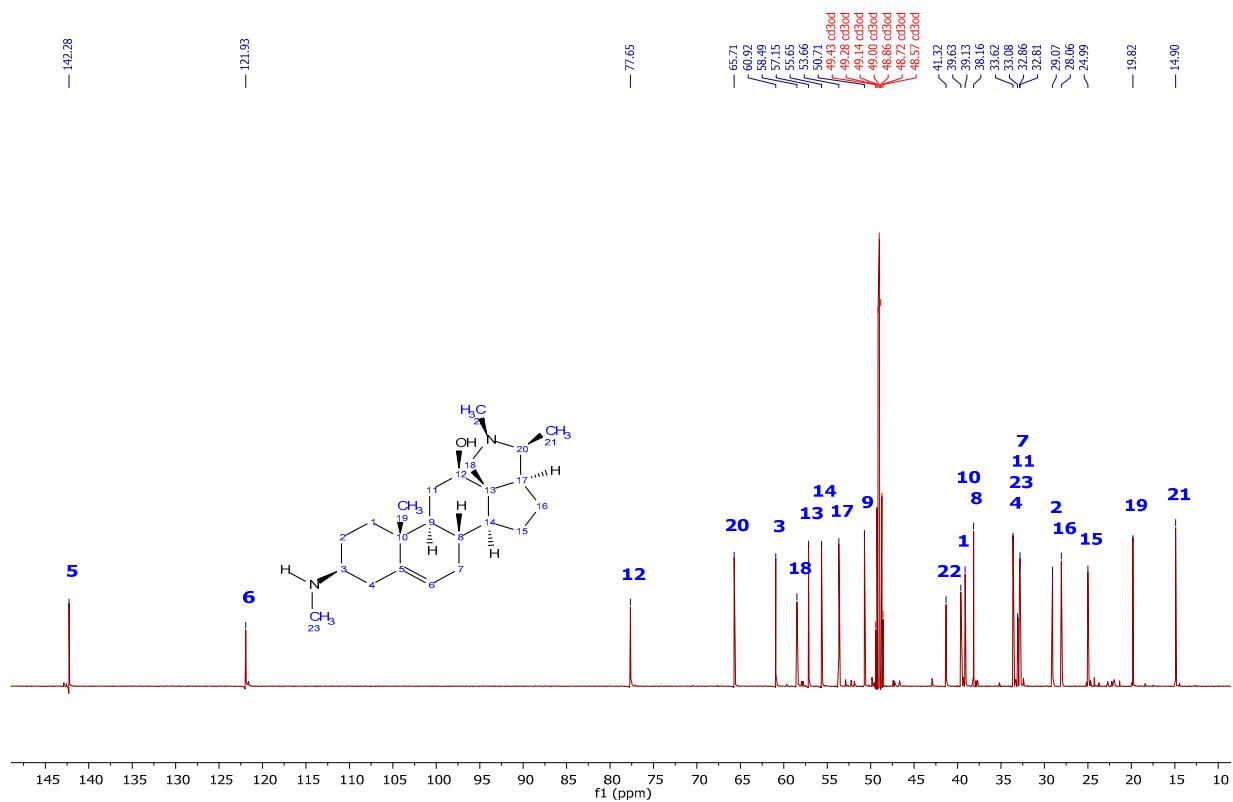
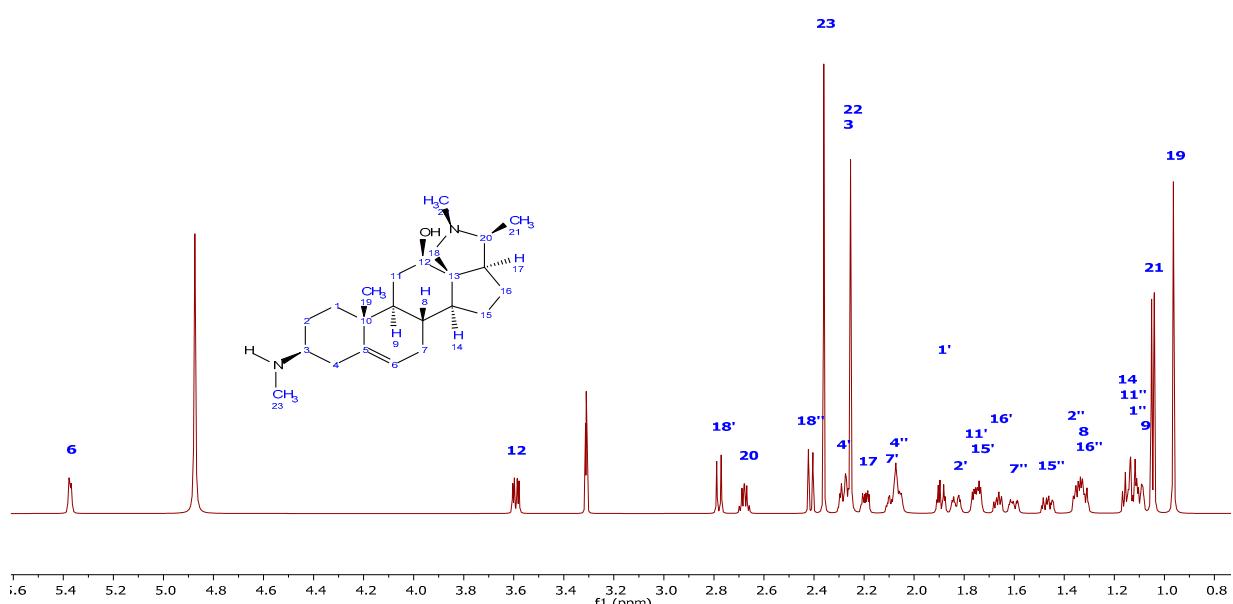


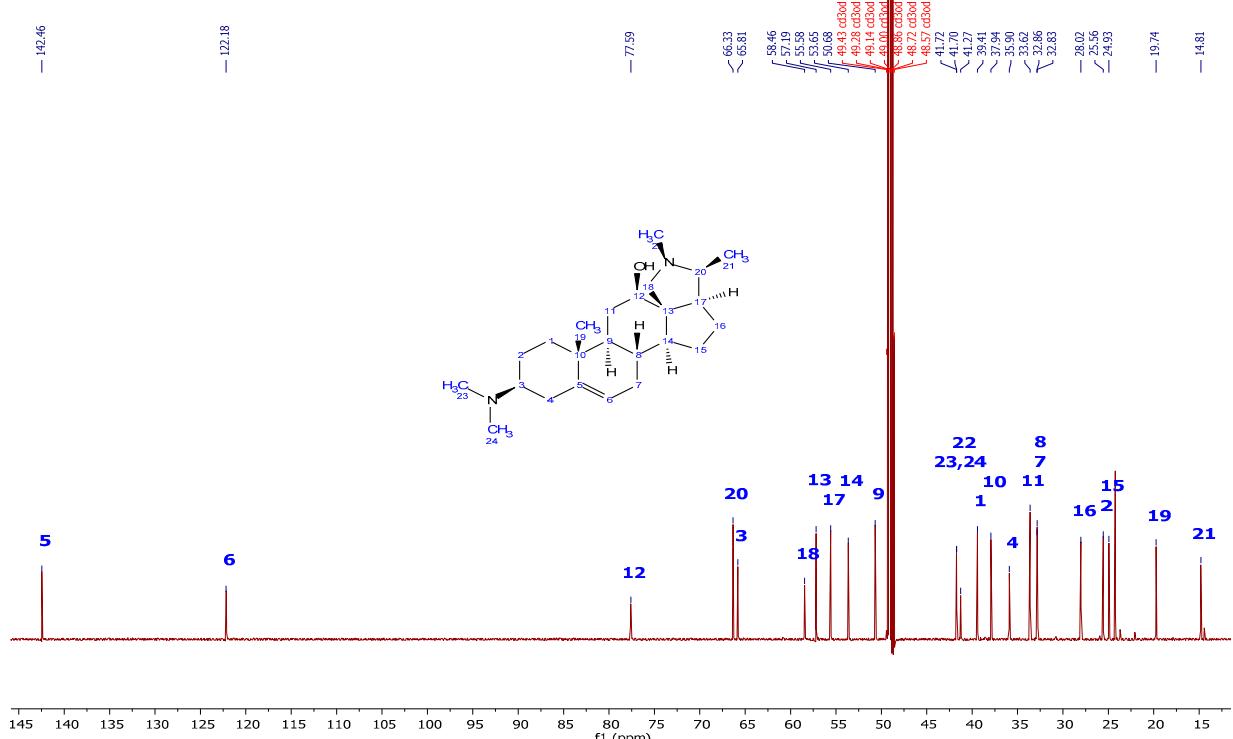
Figure S30: <sup>1</sup>H NMR spectrum of compound 15 (CDCl<sub>3</sub>, 600 MHz)



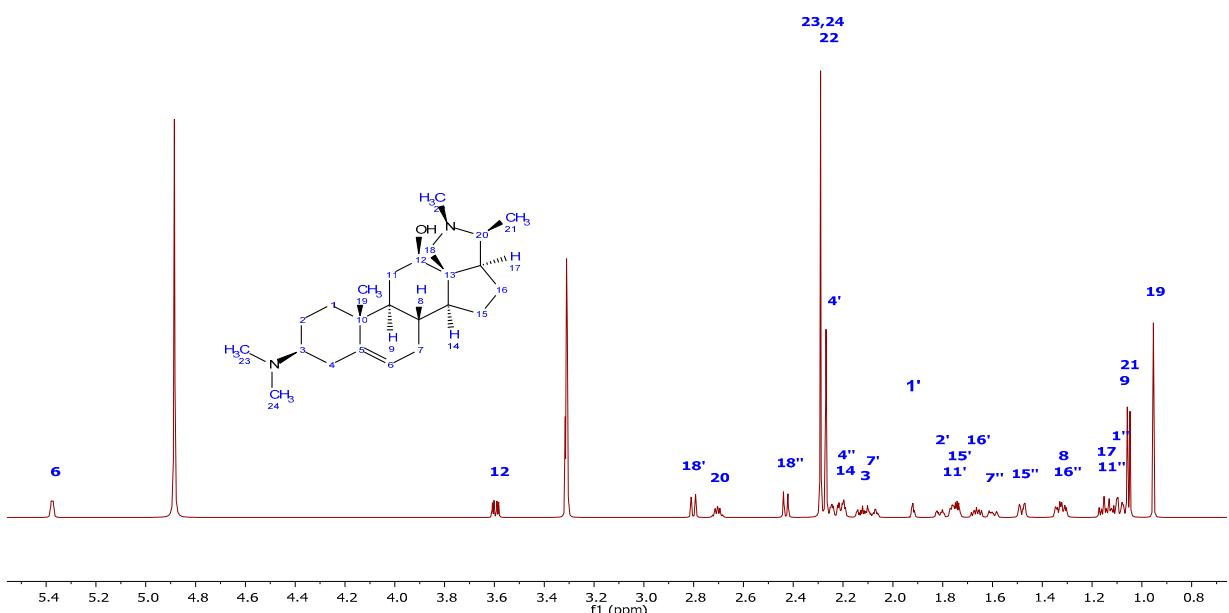
**Figure S31:** <sup>13</sup>C NMR spectrum of compound **16** (CD<sub>3</sub>OD, 600 MHz)



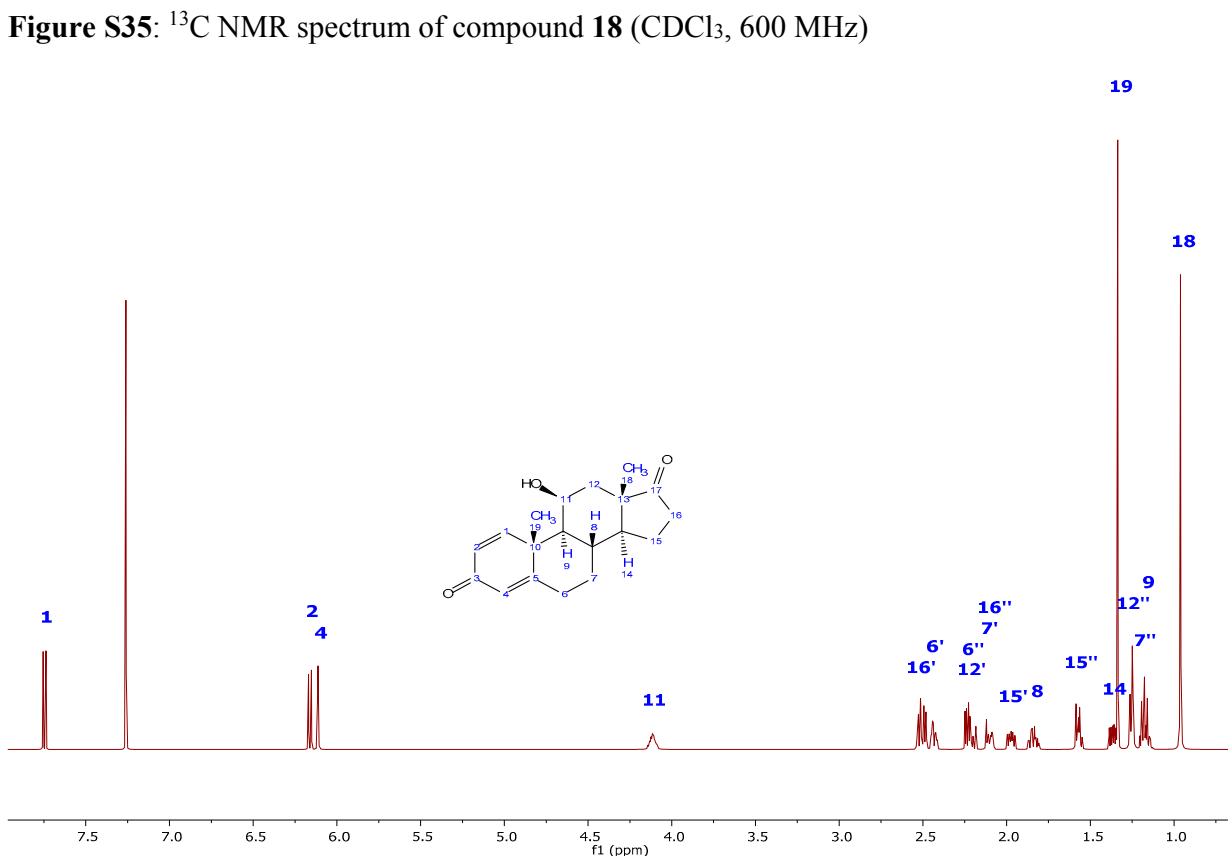
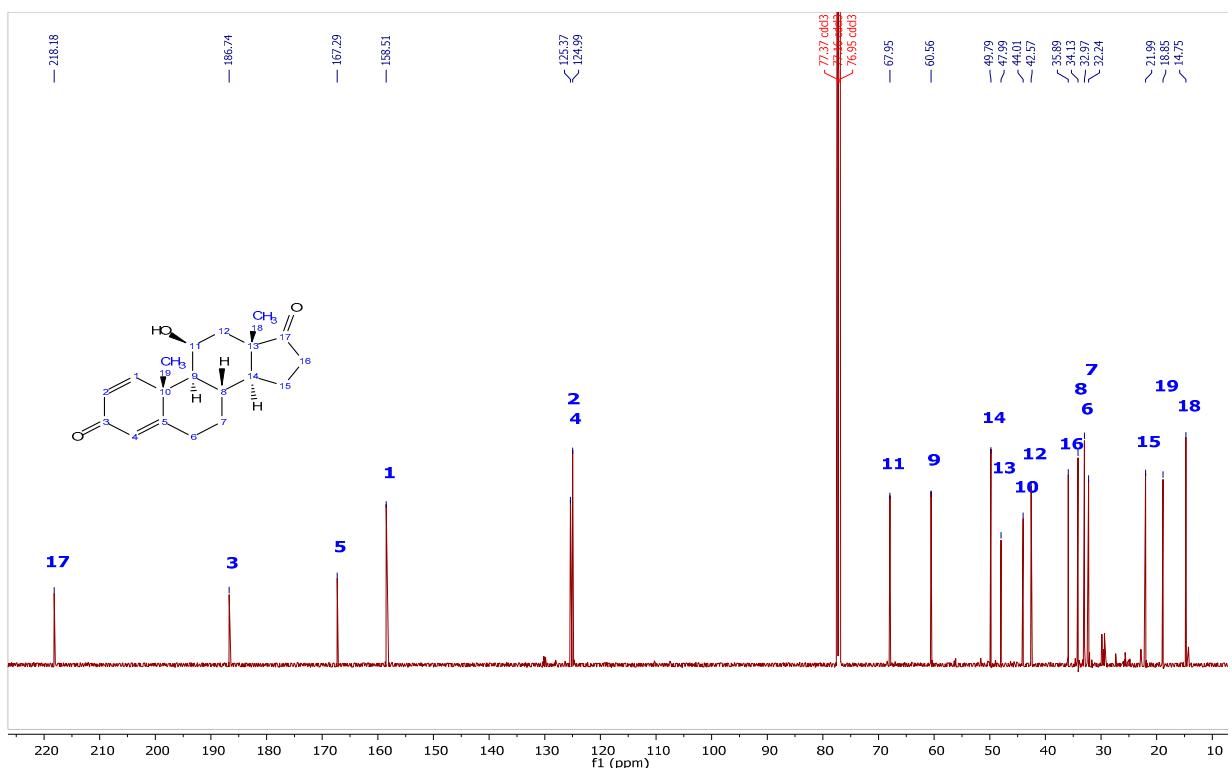
**Figure S32:** <sup>1</sup>H NMR spectrum of compound **16** (CD<sub>3</sub>OD, 600 MHz)

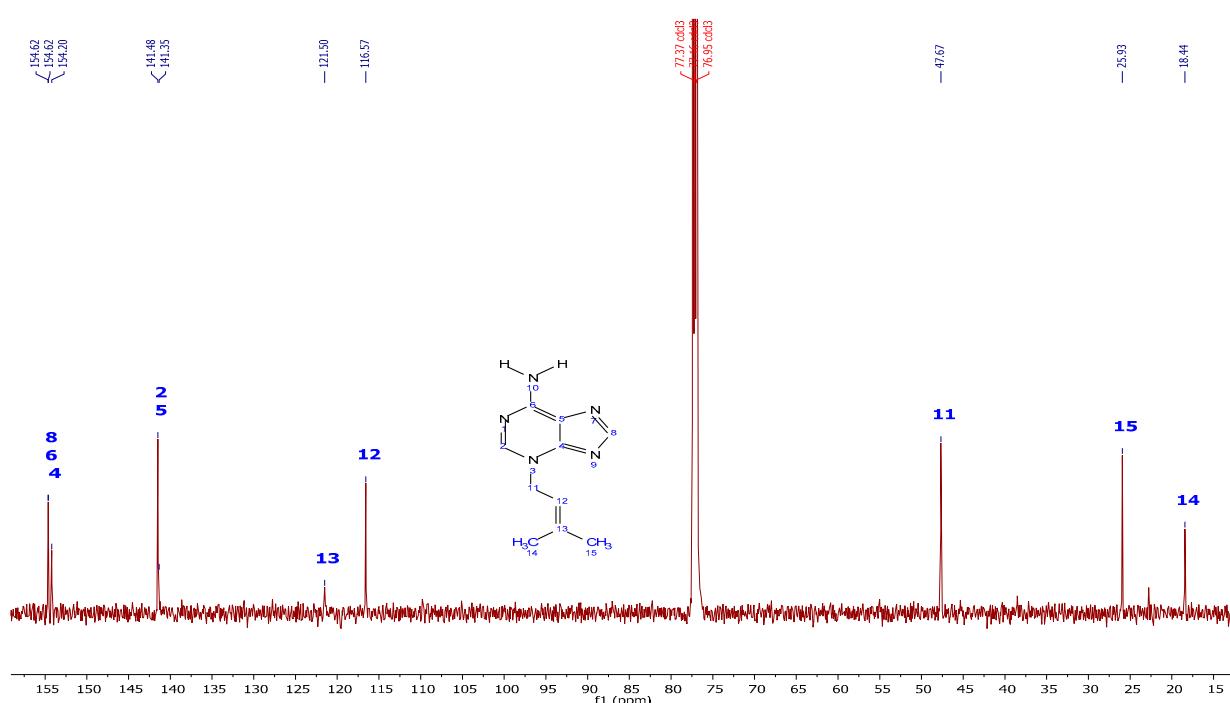


**Figure S33:**  $^{13}\text{C}$  NMR spectrum of compound 17 (CD<sub>3</sub>OD, 600 MHz)

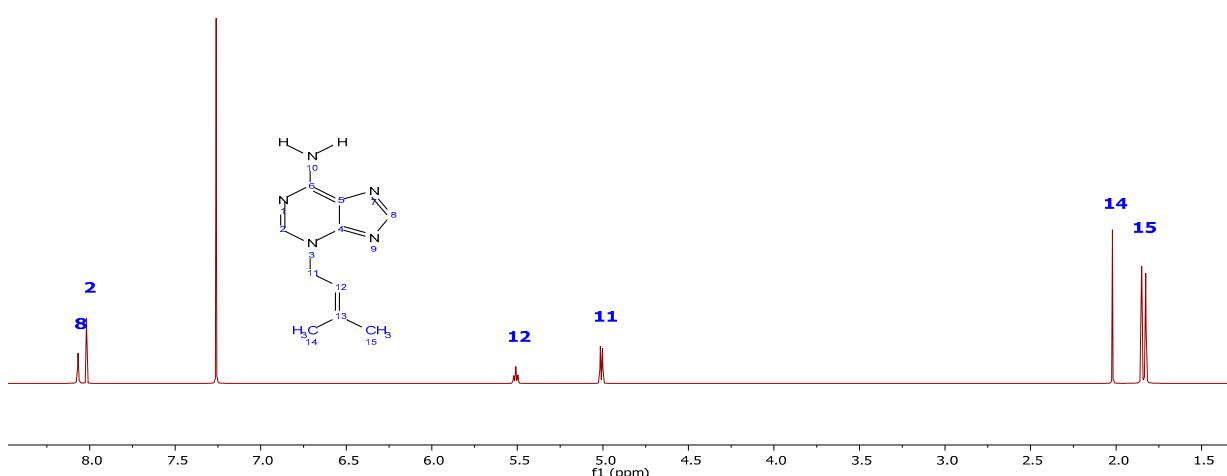


**Figure S34:**  $^1\text{H}$  NMR spectrum of compound 17 (CD<sub>3</sub>OD, 600 MHz)





**Figure S37:**  $^{13}\text{C}$  NMR spectrum of compound 19 ( $\text{CDCl}_3$ , 600 MHz)



**Figure S38:**  $^1\text{H}$  NMR spectrum of compound 19 ( $\text{CDCl}_3$ , 600 MHz)