

Electronic Supplementary Information for:

Total synthesis of ceramides and β -O-glucosylceramides via intramolecular fatty acyl group migration

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Electronic Supplementary Information

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Solvent: CDCl_3 , Frequency: 500MHz

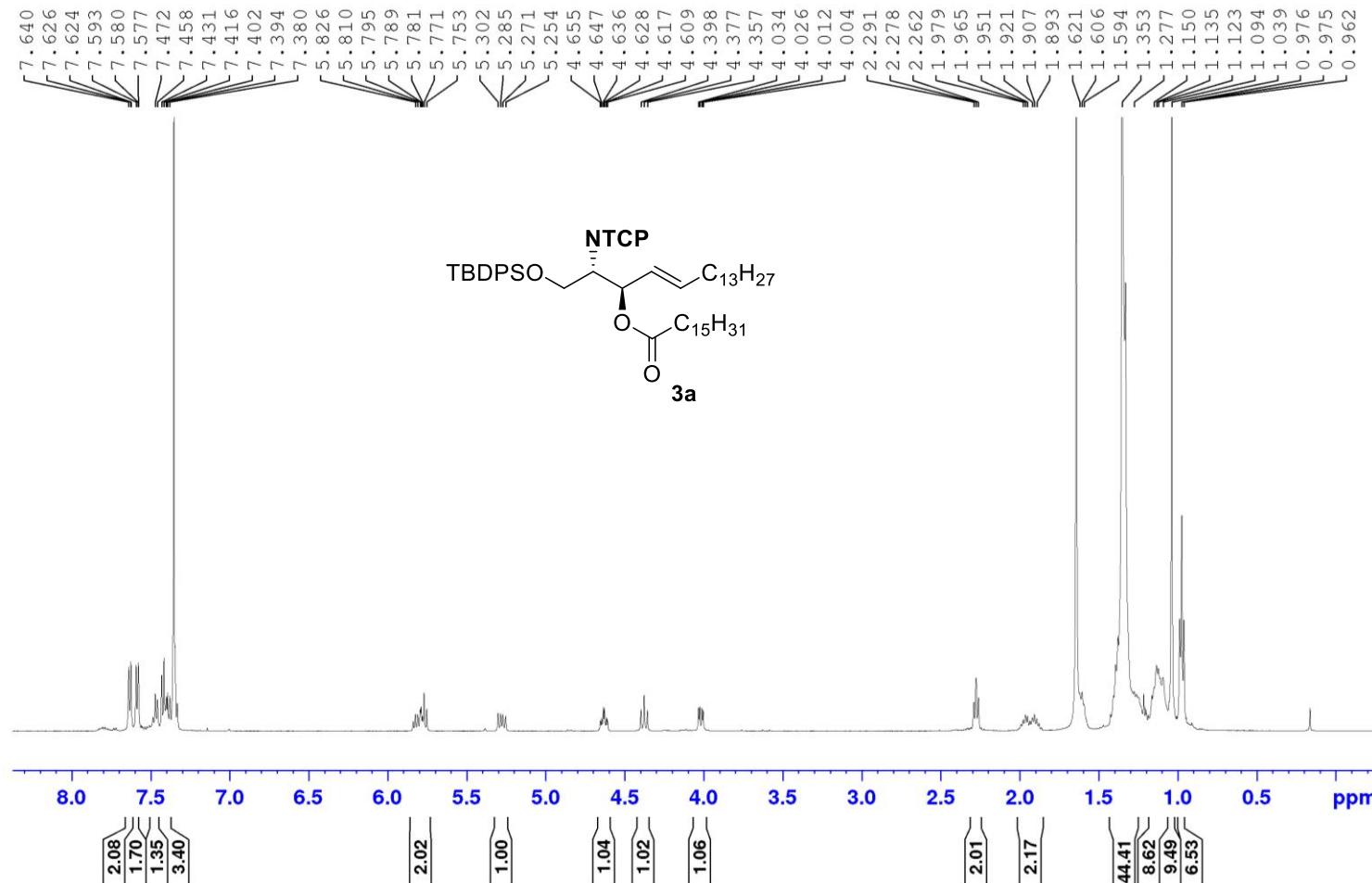


Figure S1. ^1H -NMR (500 MHz, CDCl_3) spectrum of compound **3a**.

Solvent: CDCl_3 , Frequency: 125MHz

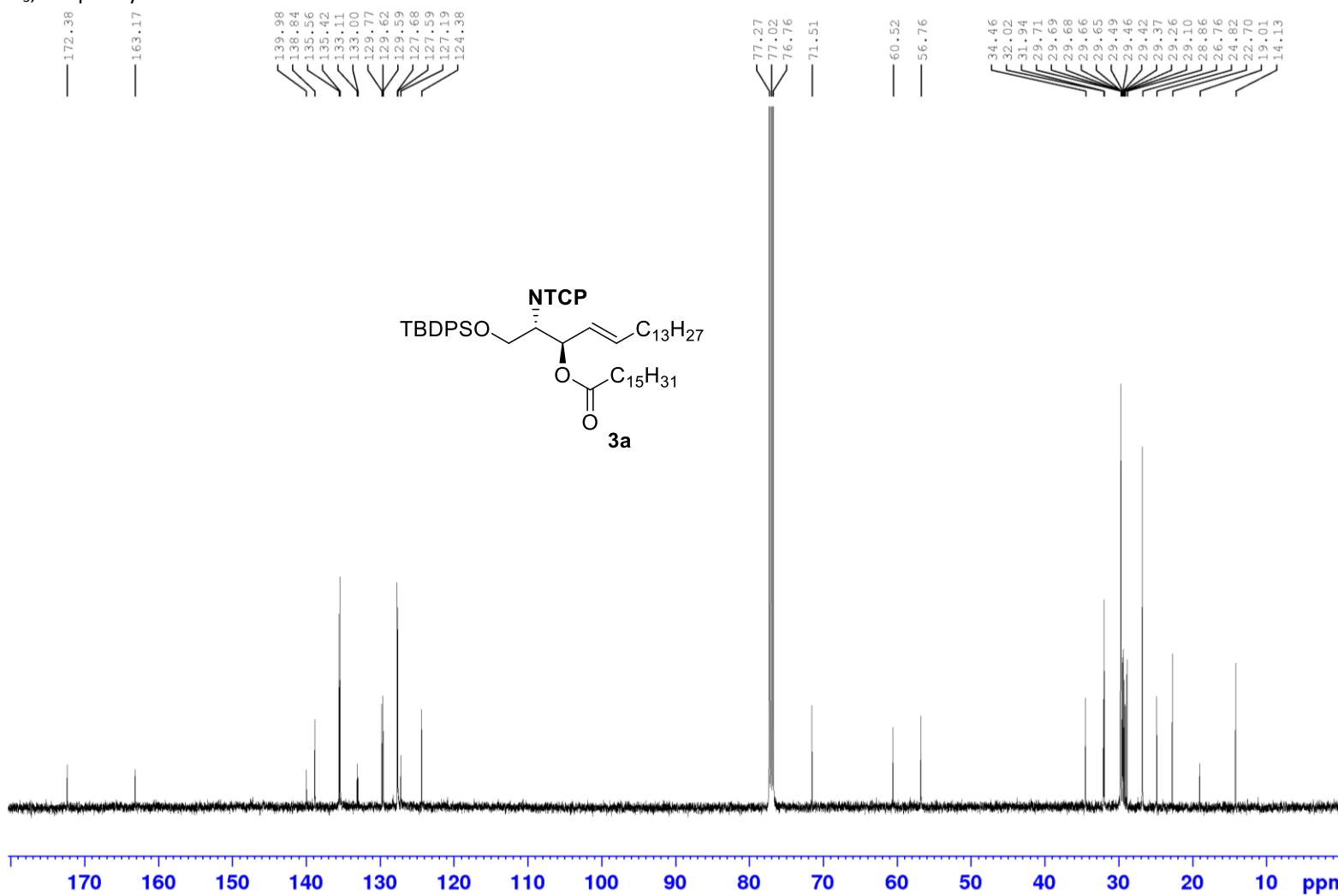


Figure S2. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **3a**.

Solvent: CDCl₃, Frequency: 500MHz

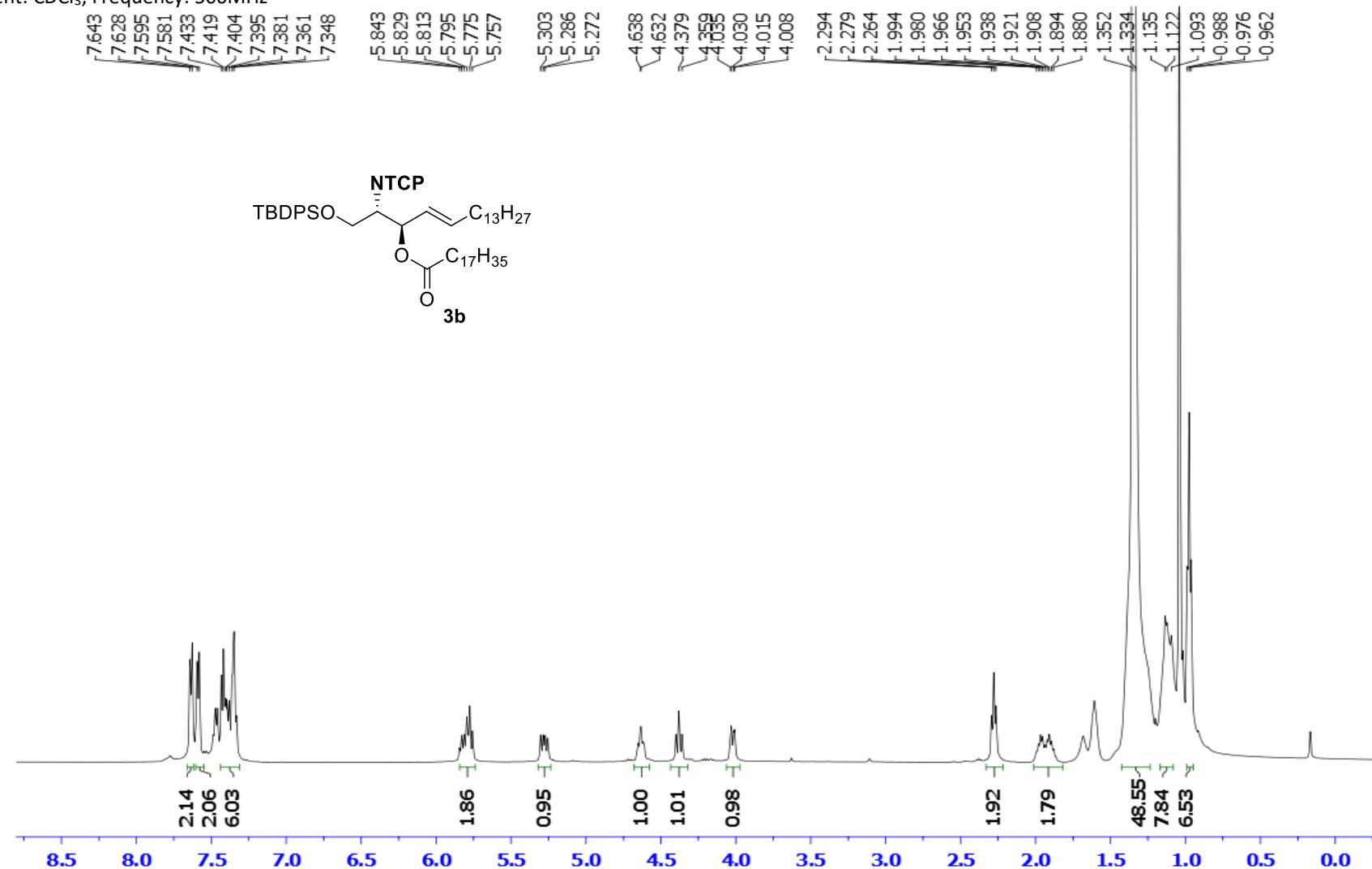


Figure S3. ¹H-NMR (500 MHz, CDCl₃) spectrum of compound 3b.

Solvent: CDCl_3 , Frequency: 125MHz

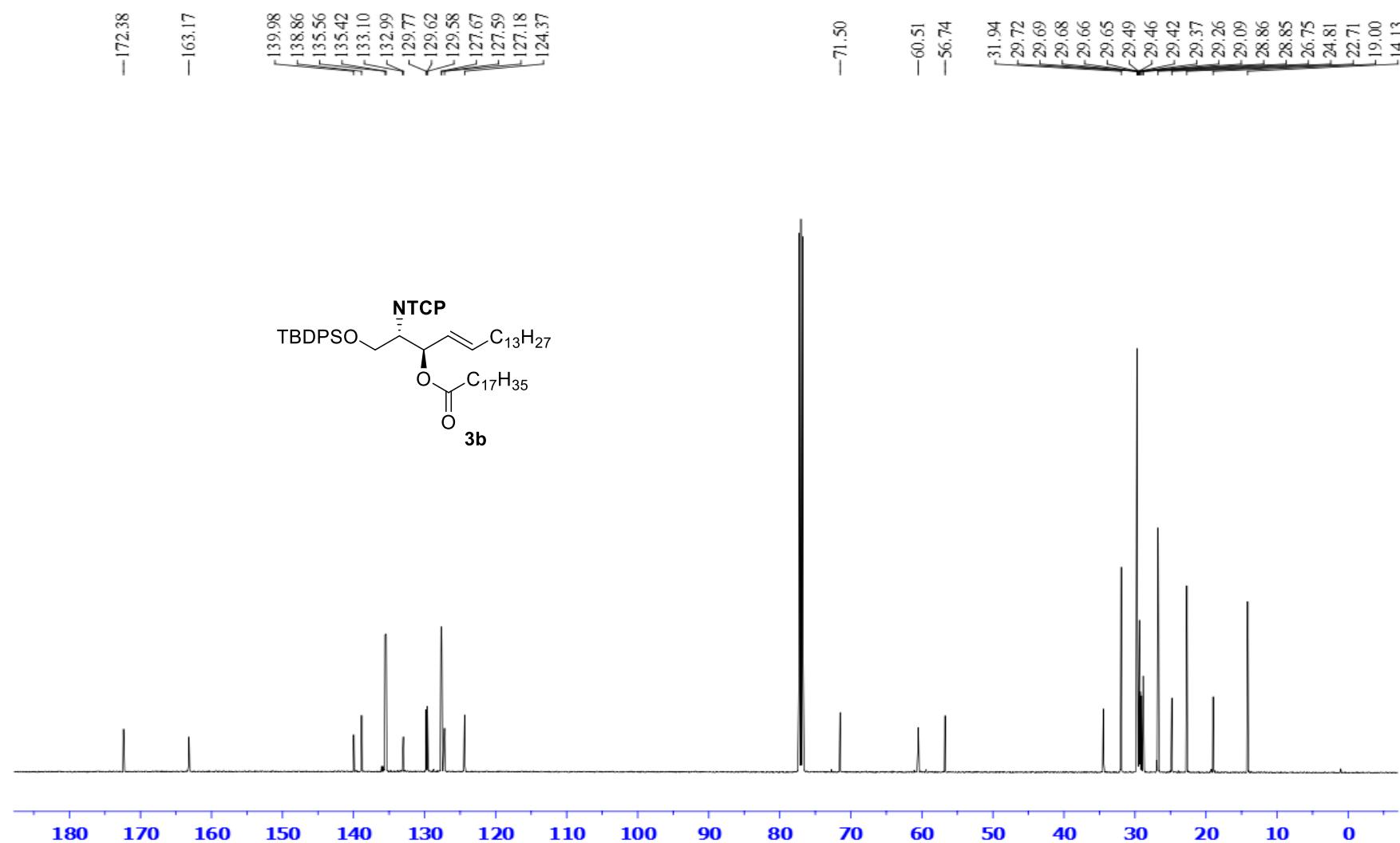


Figure S4. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **3b**.

Solvent: CDCl_3 , Frequency: 500MHz

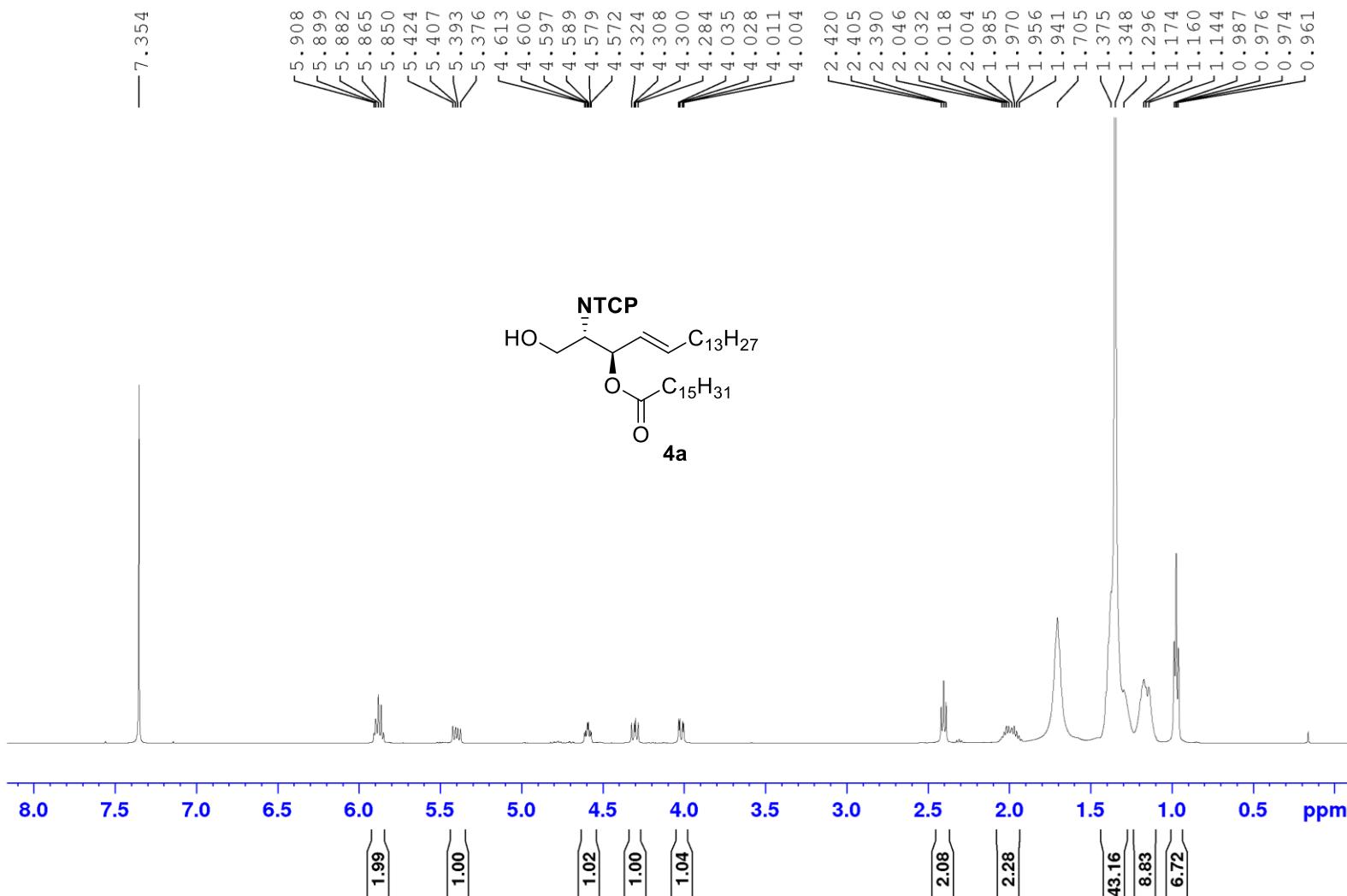


Figure S5. ^1H -NMR (500 MHz, CDCl_3) spectrum of compound **4a**.

Solvent: CDCl_3 , Frequency: 125MHz

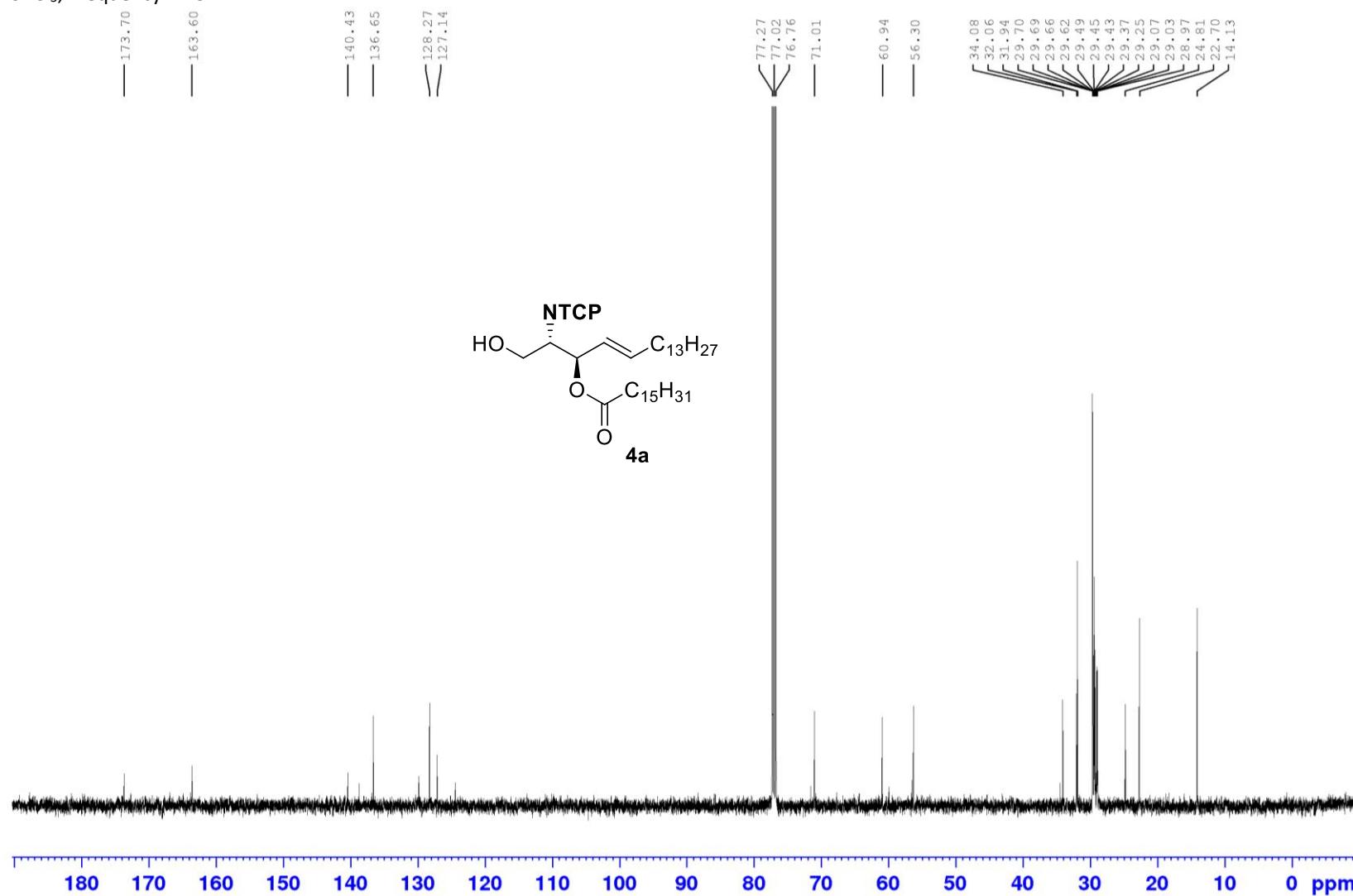


Figure S6. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **4a**.

Solvent: CDCl₃, Frequency: 500MHz

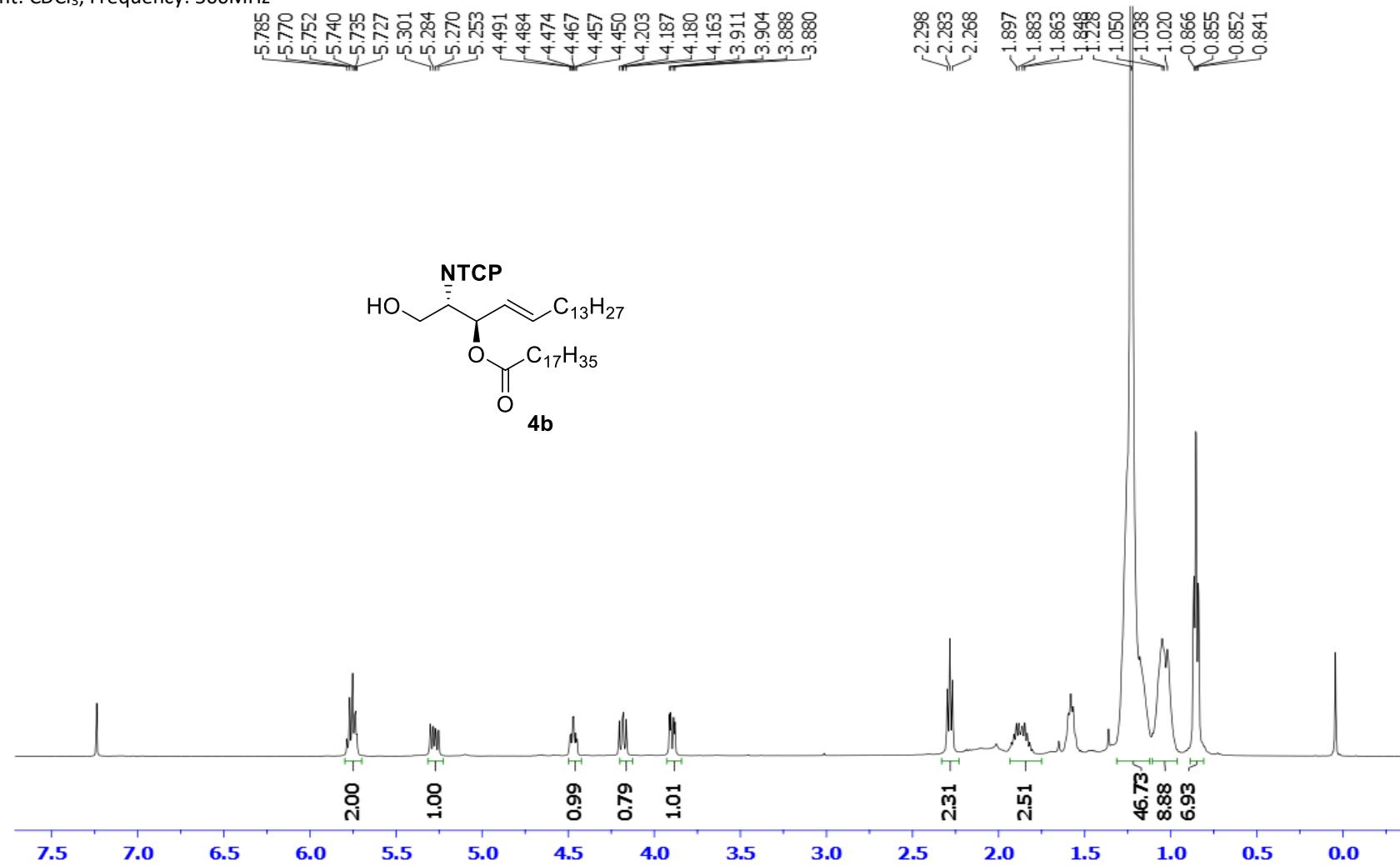


Figure S7. ¹H-NMR (500 MHz, CDCl₃) spectrum of compound **4b**.

Solvent: CDCl₃, Frequency: 125MHz

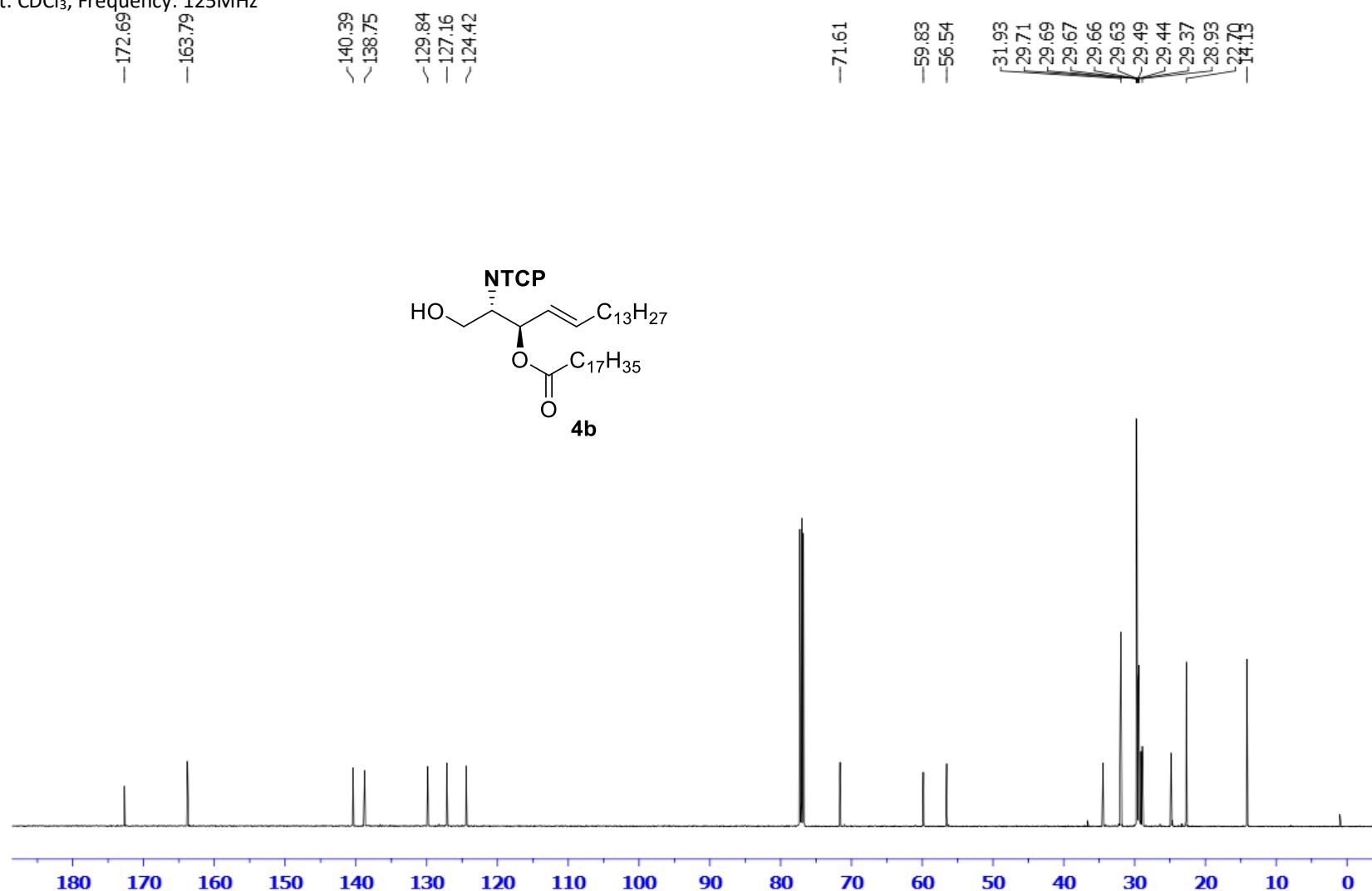


Figure S8. ¹³C-NMR (125 MHz, CDCl₃) spectrum of compound **4b**.

Solvent: CDCl_3 , Frequency: 500MHz

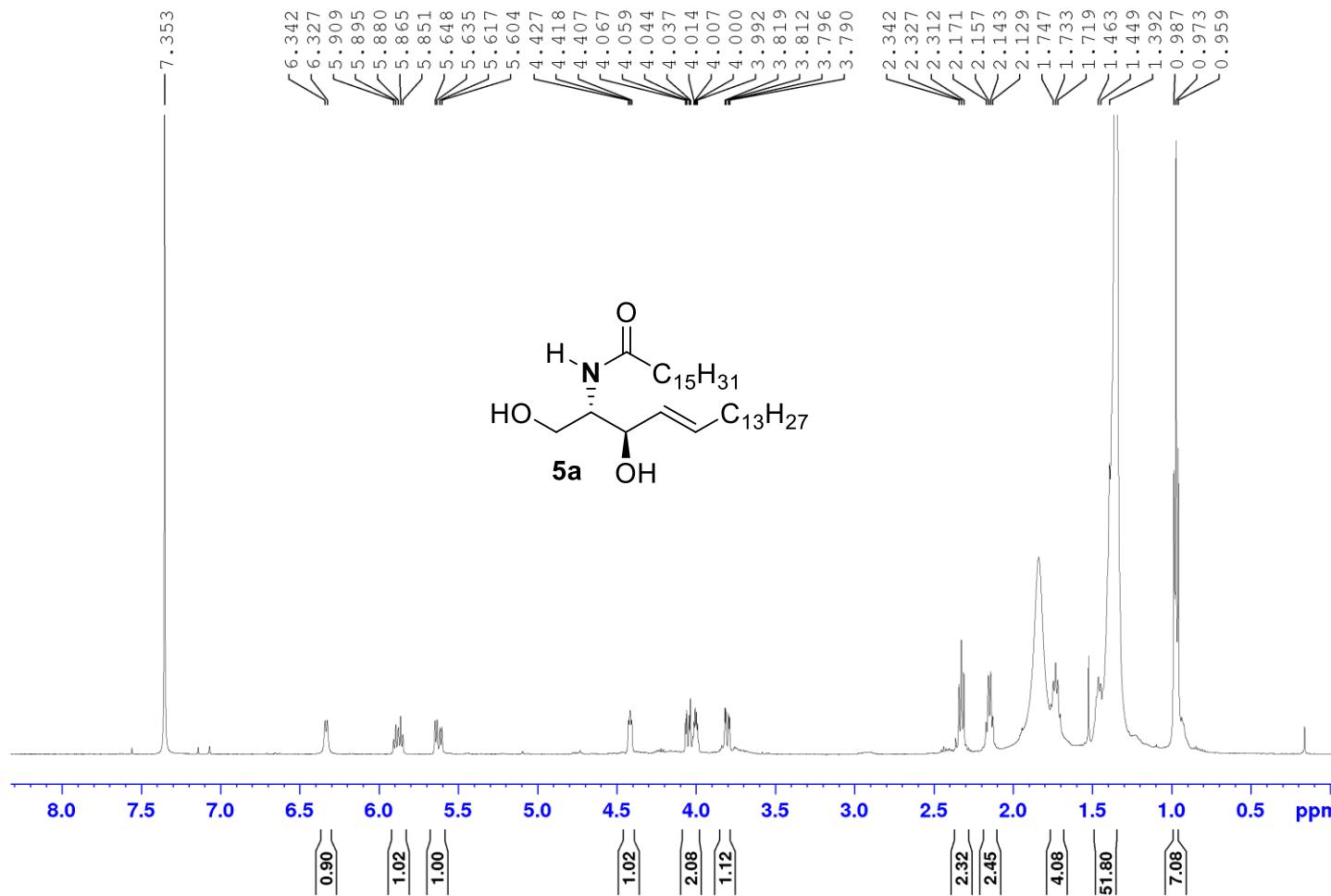


Figure S9. ^1H -NMR (500 MHz, CDCl_3) spectrum of compound **5a**.

Solvent: CDCl_3 , Frequency: 125MHz

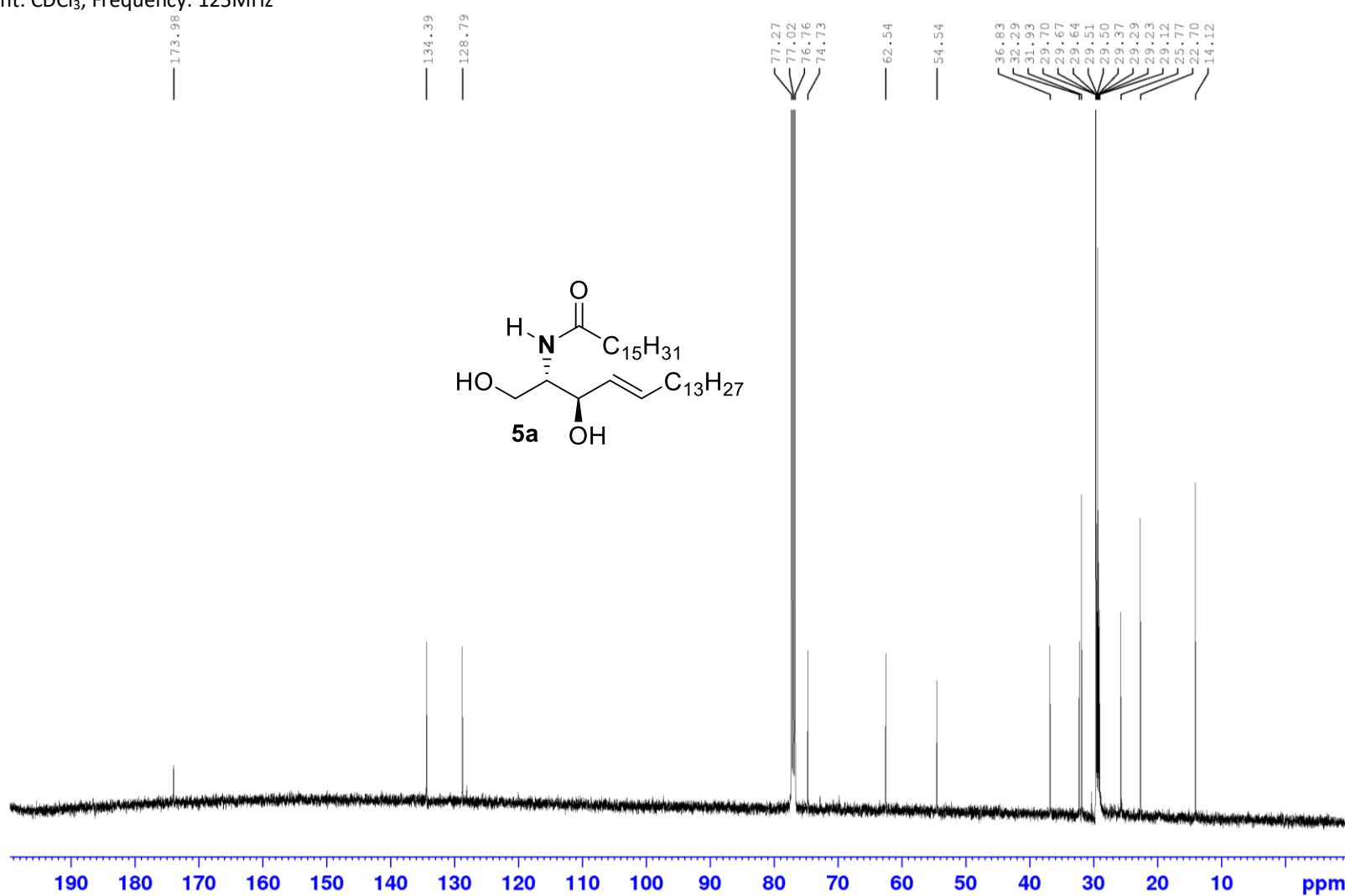


Figure S10. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **5a**.

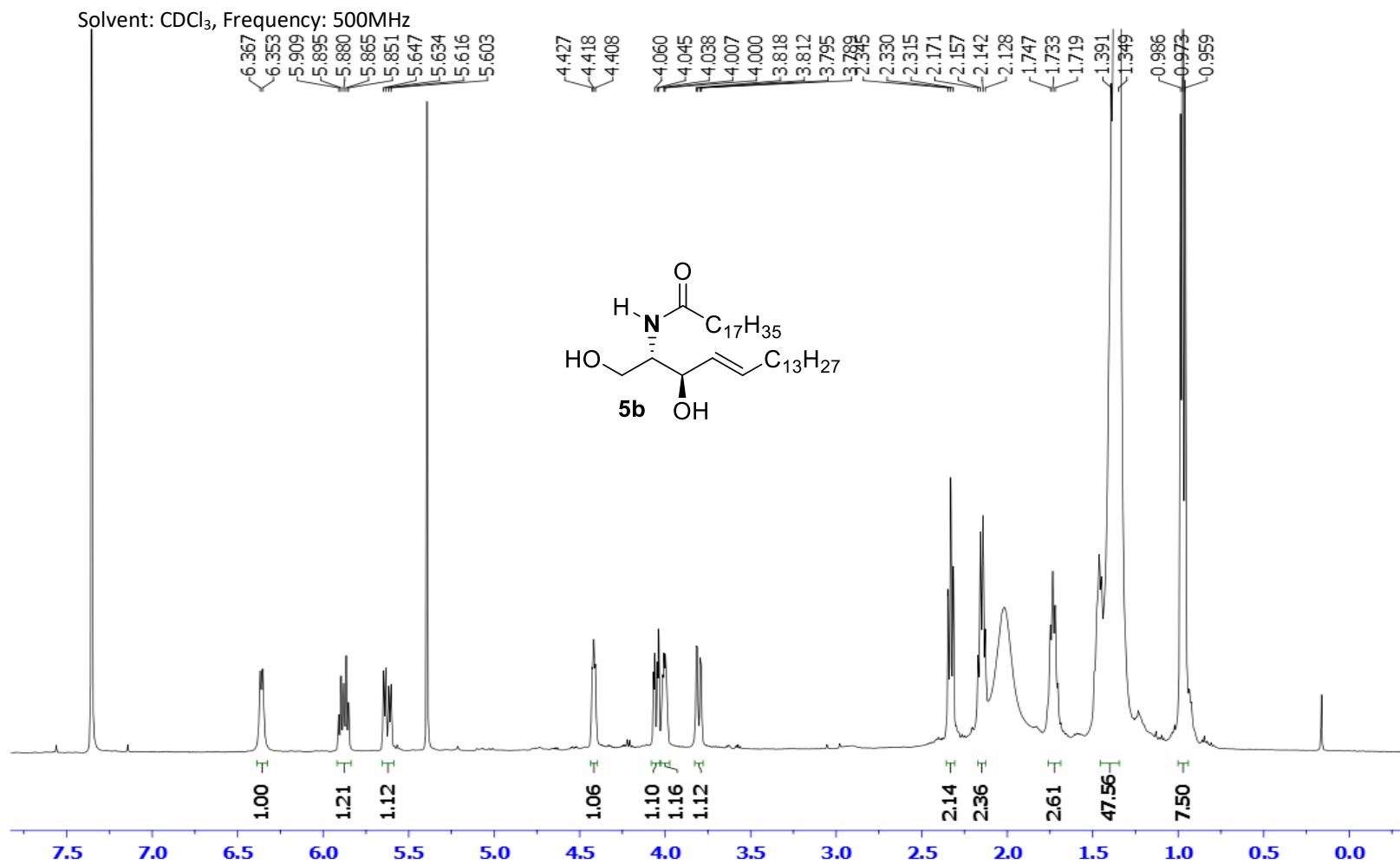


Figure S11. ^1H -NMR (500 MHz, CDCl_3) spectrum of compound **5b**.

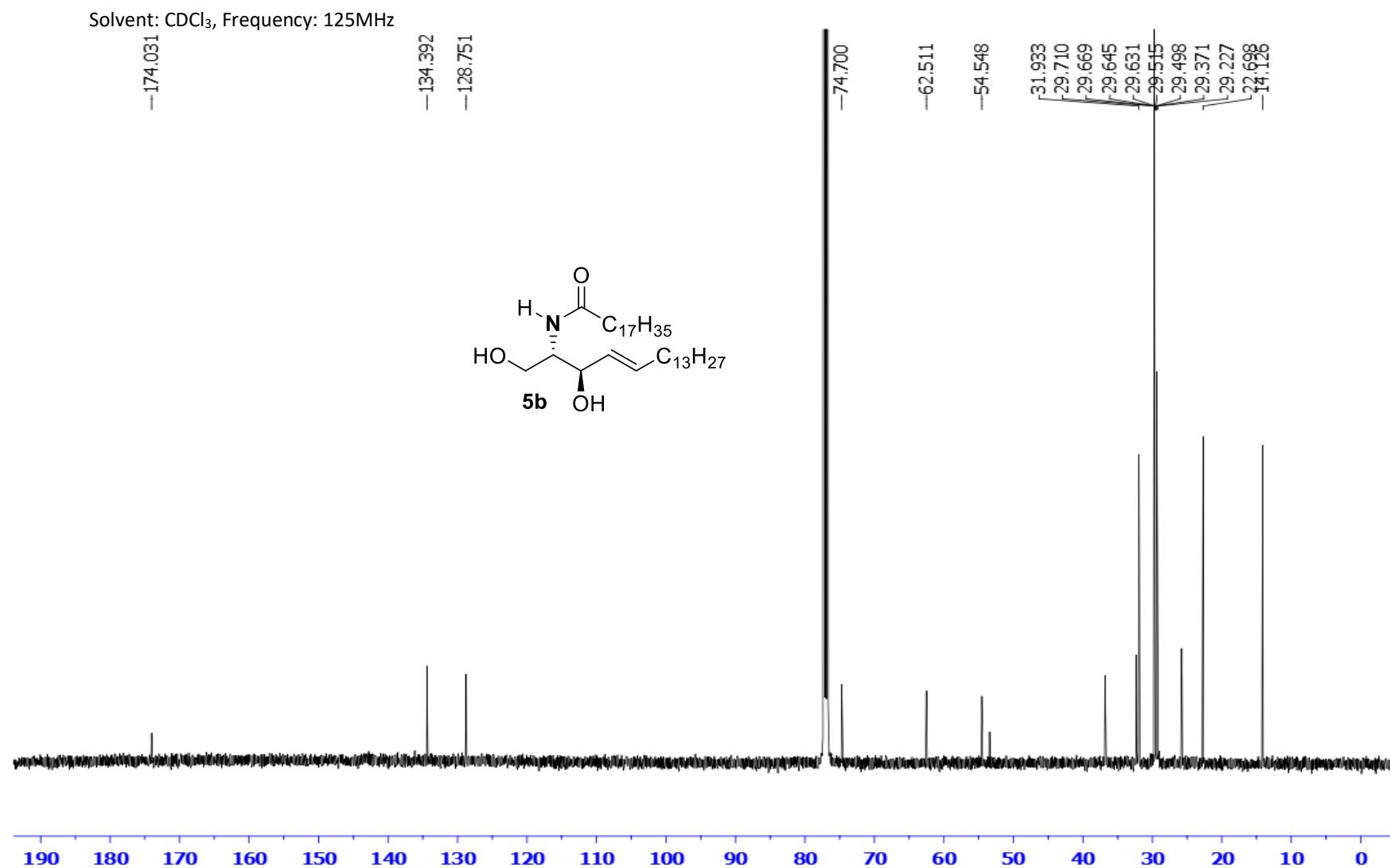


Figure S12. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **5b**.

Solvent: CDCl_3 , Frequency: 400MHz

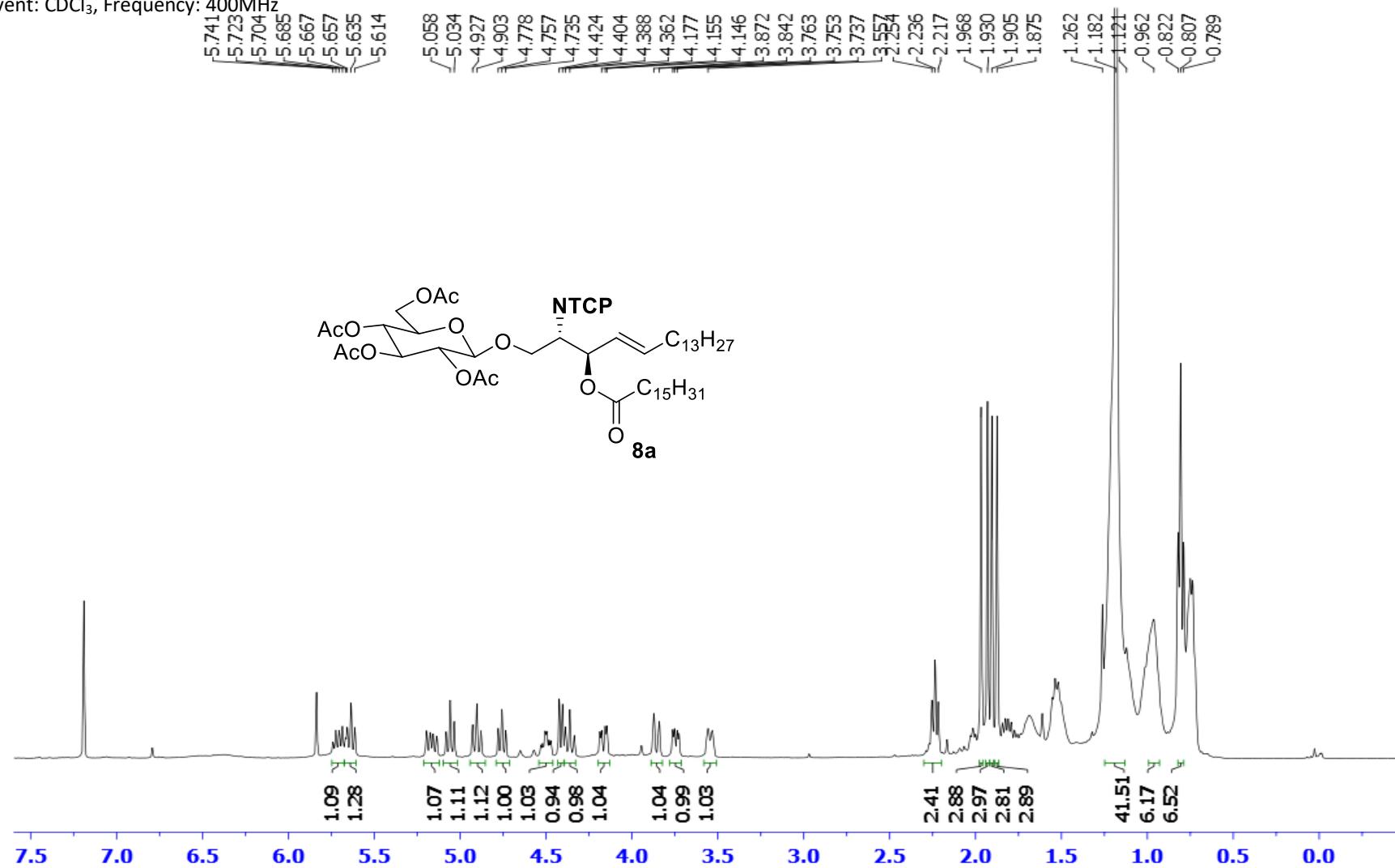


Figure S13. ^1H -NMR (400 MHz, CDCl_3) spectrum of compound **8a**.

Solvent: CDCl₃, Frequency: 100MHz

172.36
170.50
170.19
169.35
169.30
169.15

140.17
139.21

129.68
127.21
124.07

-100.70

72.62
71.77
71.74
70.86
67.97
65.85
61.48
53.88
31.90
29.68
29.63
29.62
29.48
29.44
29.39
29.34
29.27
29.09
28.84
24.82
22.67
20.64
20.55
20.52
14.10

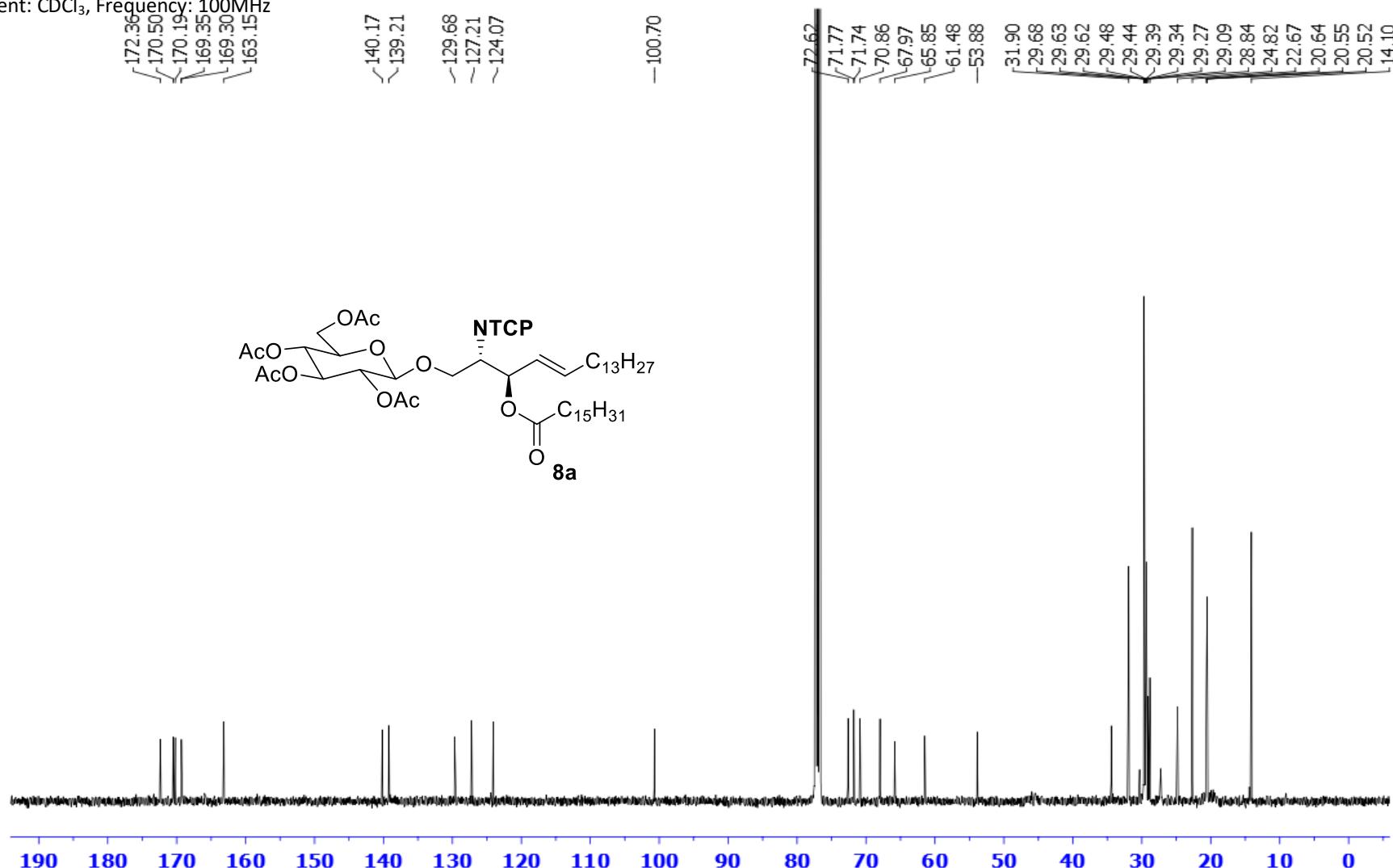
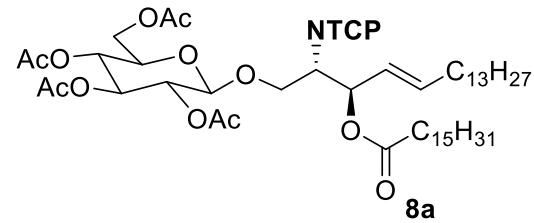


Figure S14. ¹³C-NMR (100 MHz, CDCl₃) spectrum of compound **8a**.

Solvent: CDCl_3 , Frequency: 400MHz

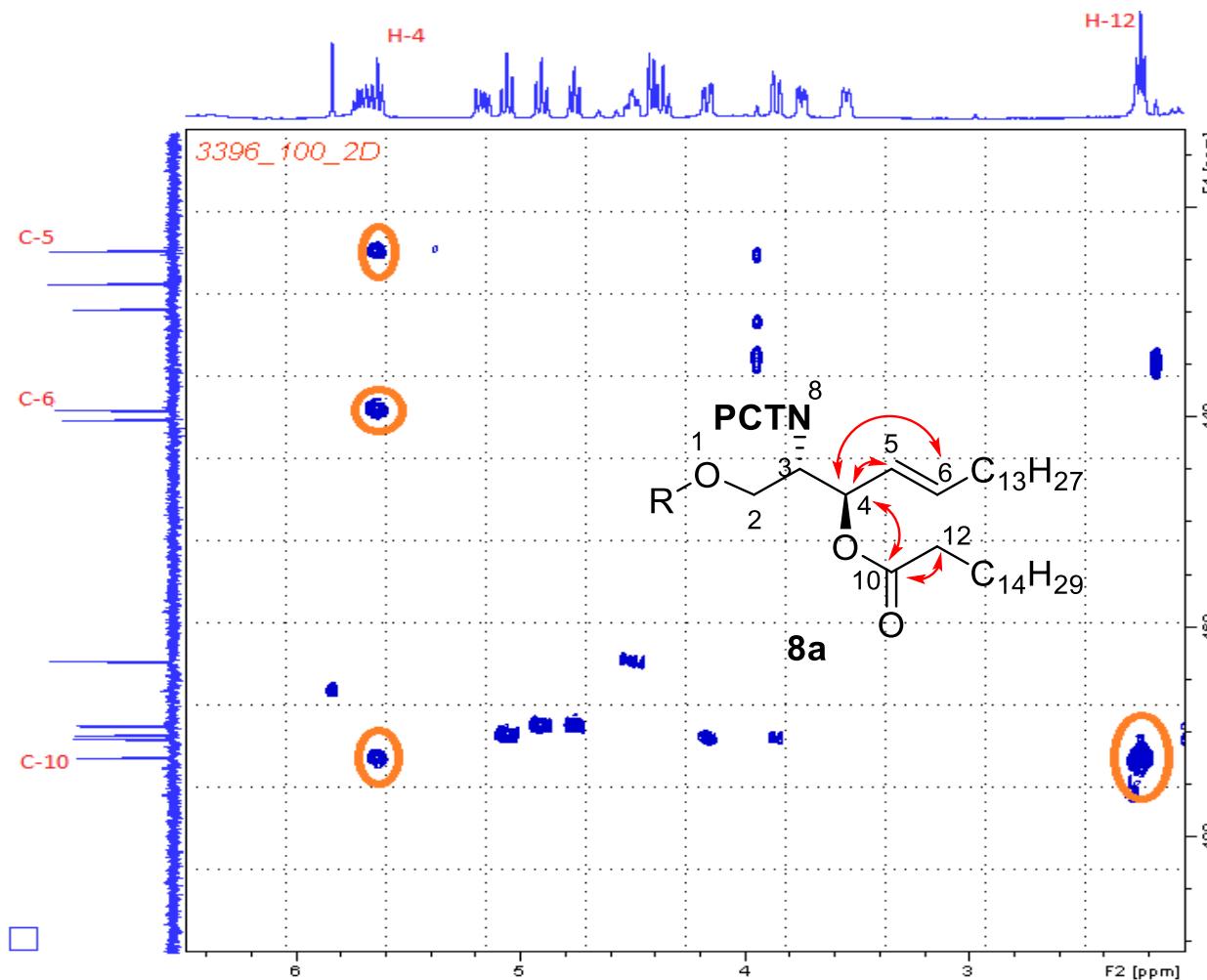


Figure S15. HMBC (400 MHz, CDCl_3) spectrum of compound **8a**.

Solvent: CDCl₃, Frequency: 500MHz

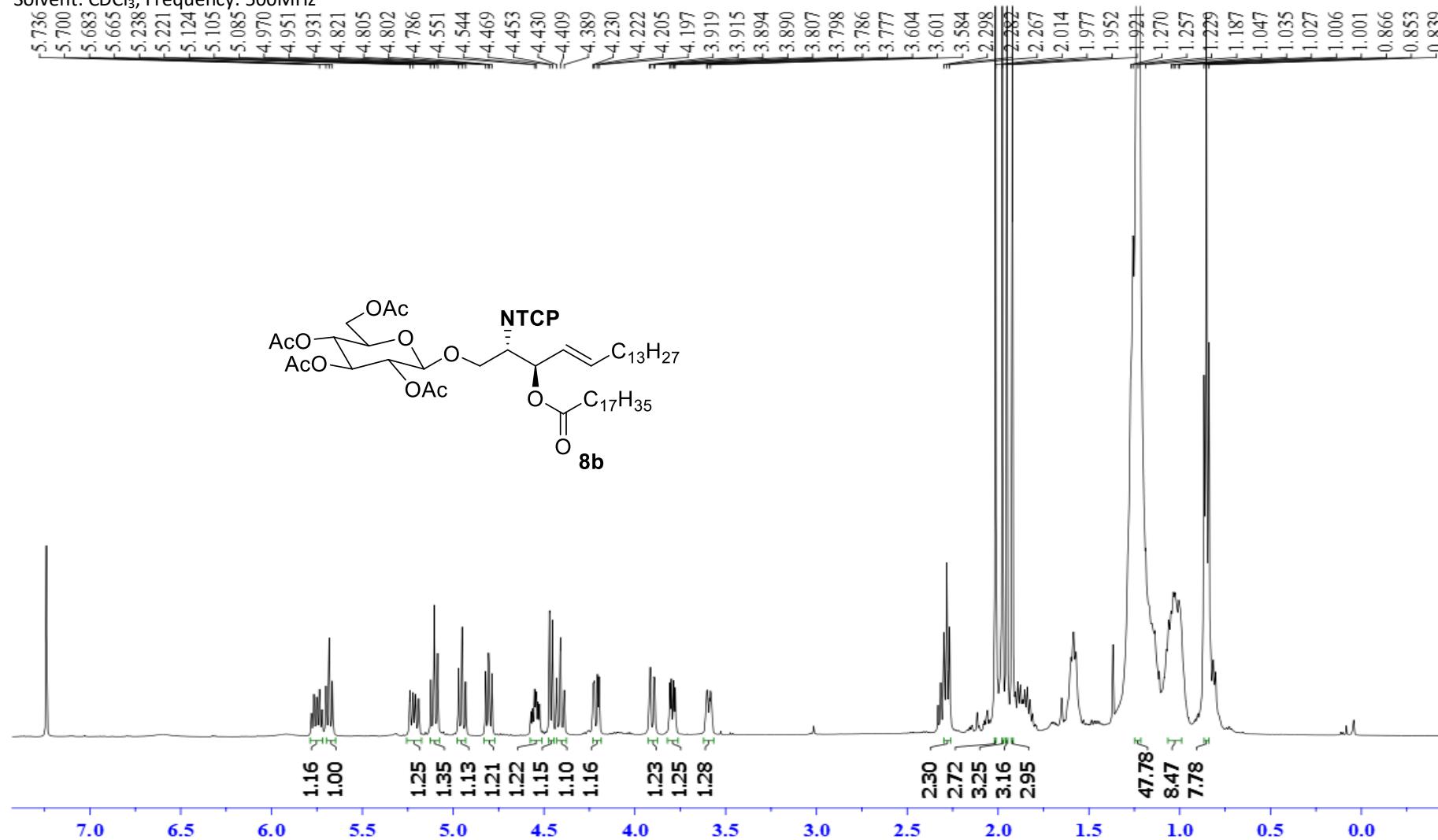


Figure S16. ¹H-NMR (500 MHz, CDCl₃) spectrum of compound **8b**.

Solvent: CDCl_3 , Frequency: 125MHz

172.374
170.520
170.211
169.363
169.322
163.167

140.187
139.226
129.699
127.239
124.101

-100.719

72.647
71.796
71.769
70.886
67.999
65.867
61.508
53.911
31.927
29.707
29.683
29.661
29.653
29.638
29.509
29.460
29.363
29.298
28.864
28.846
22.693
20.565
20.534
14.121

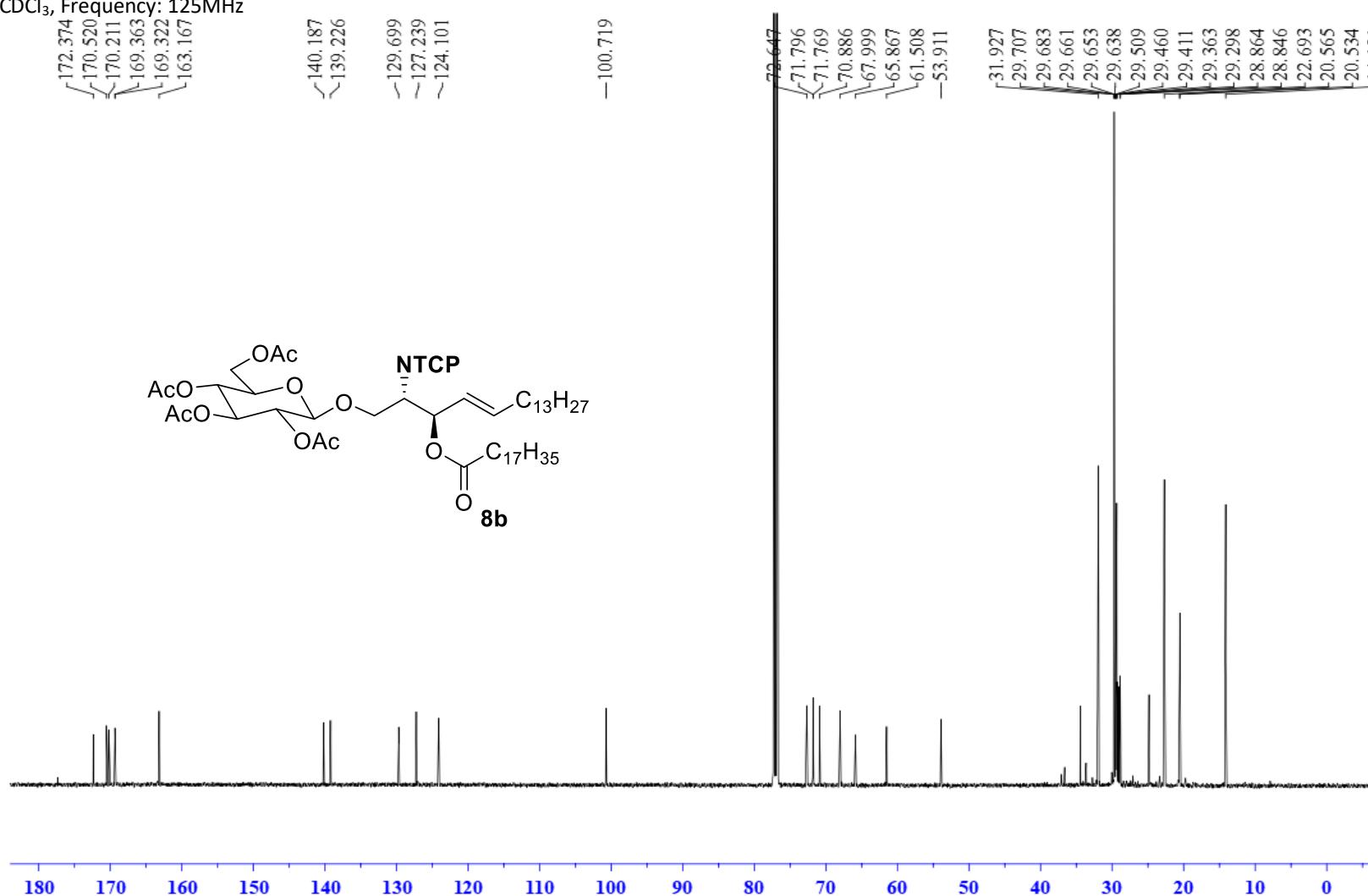
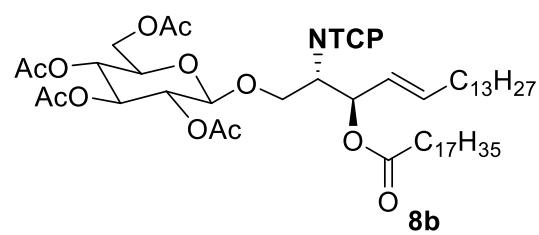
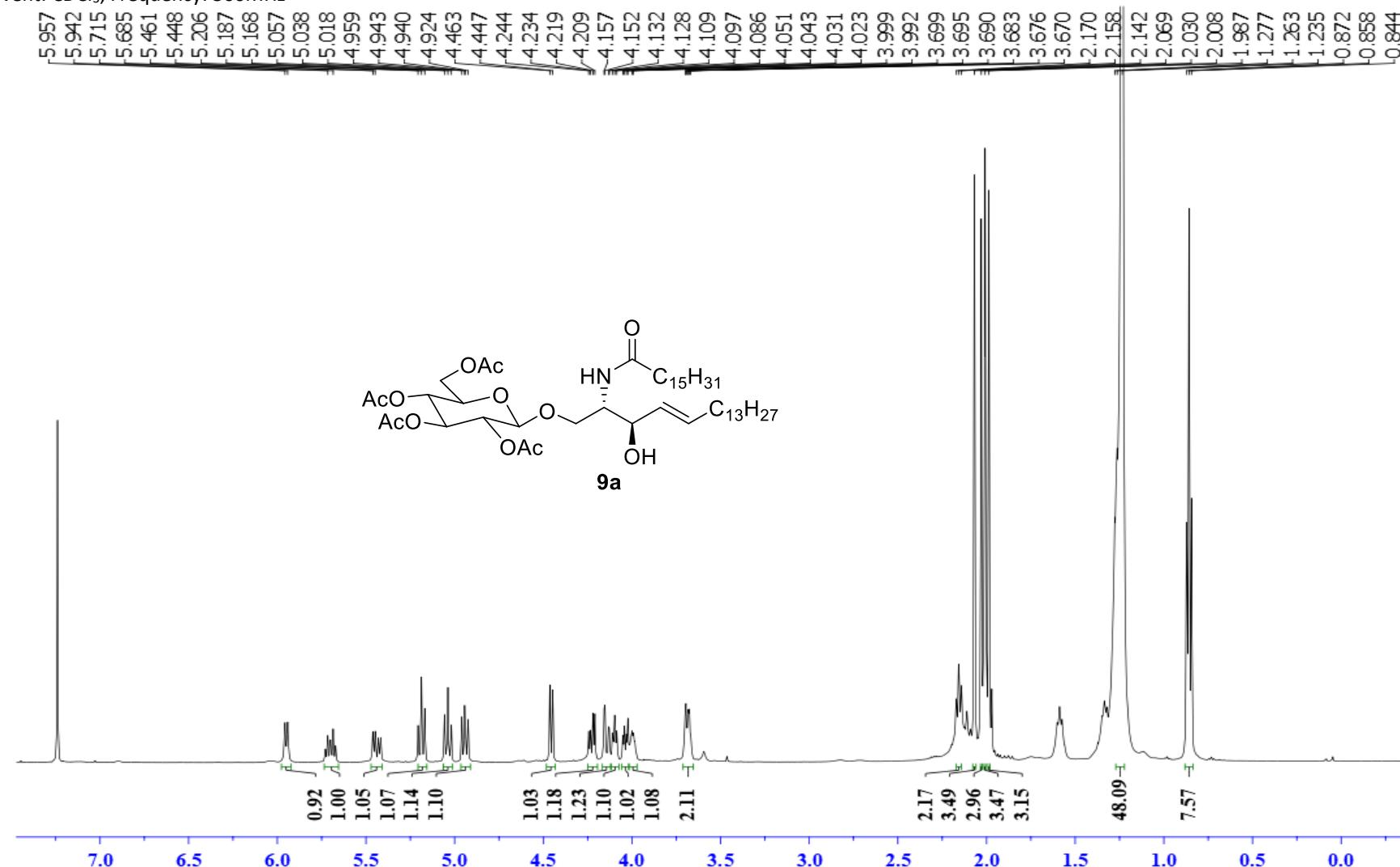


Figure S17. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound **8b**.

Solvent: CDCl_3 , Frequency: 500MHz



Solvent: CDCl_3 , Frequency: 125MHz

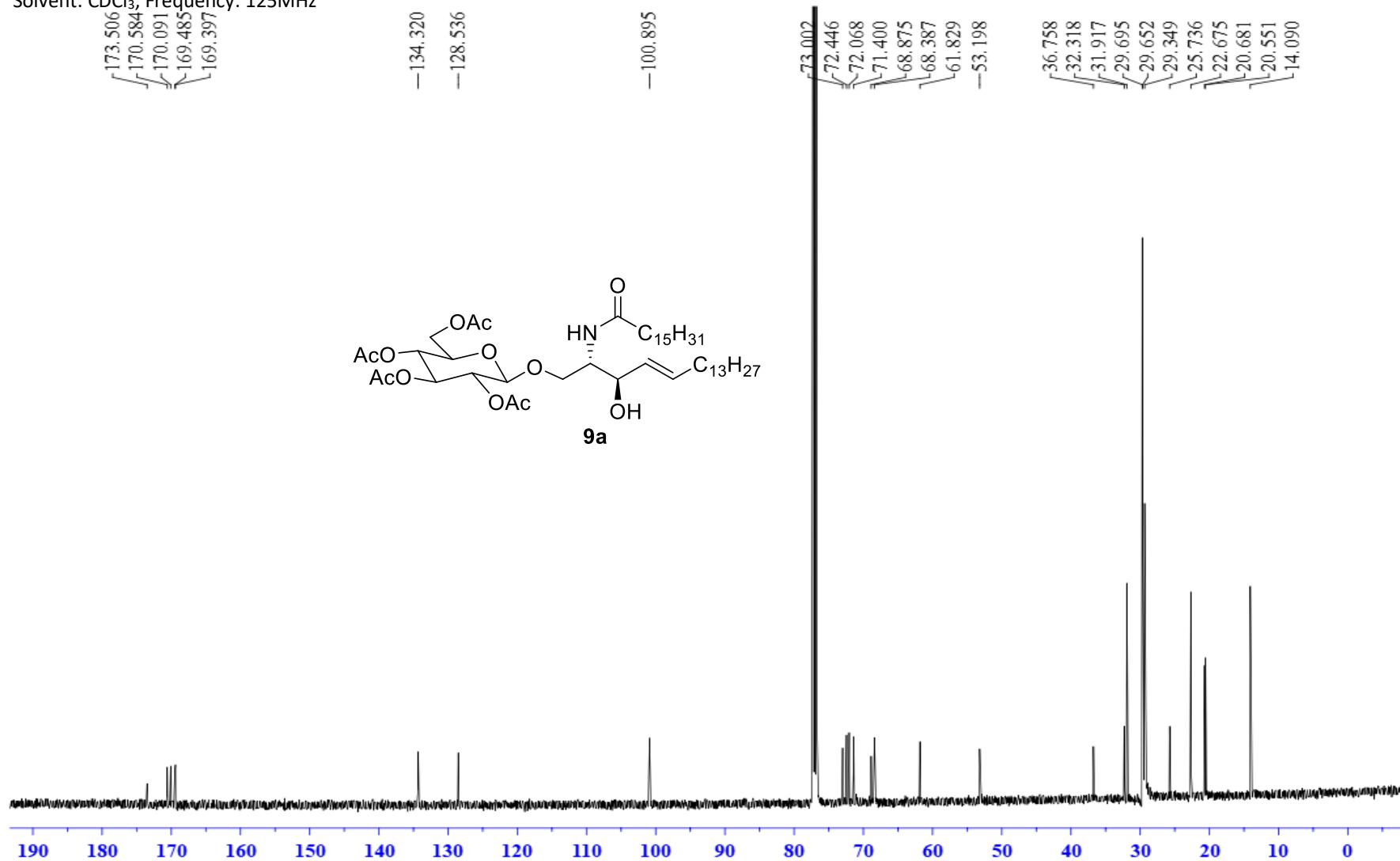


Figure S19. ^{13}C -NMR (125 MHz, CDCl_3) spectrum of compound 9a.

Solvent: CDCl_3 , Frequency: 500MHz

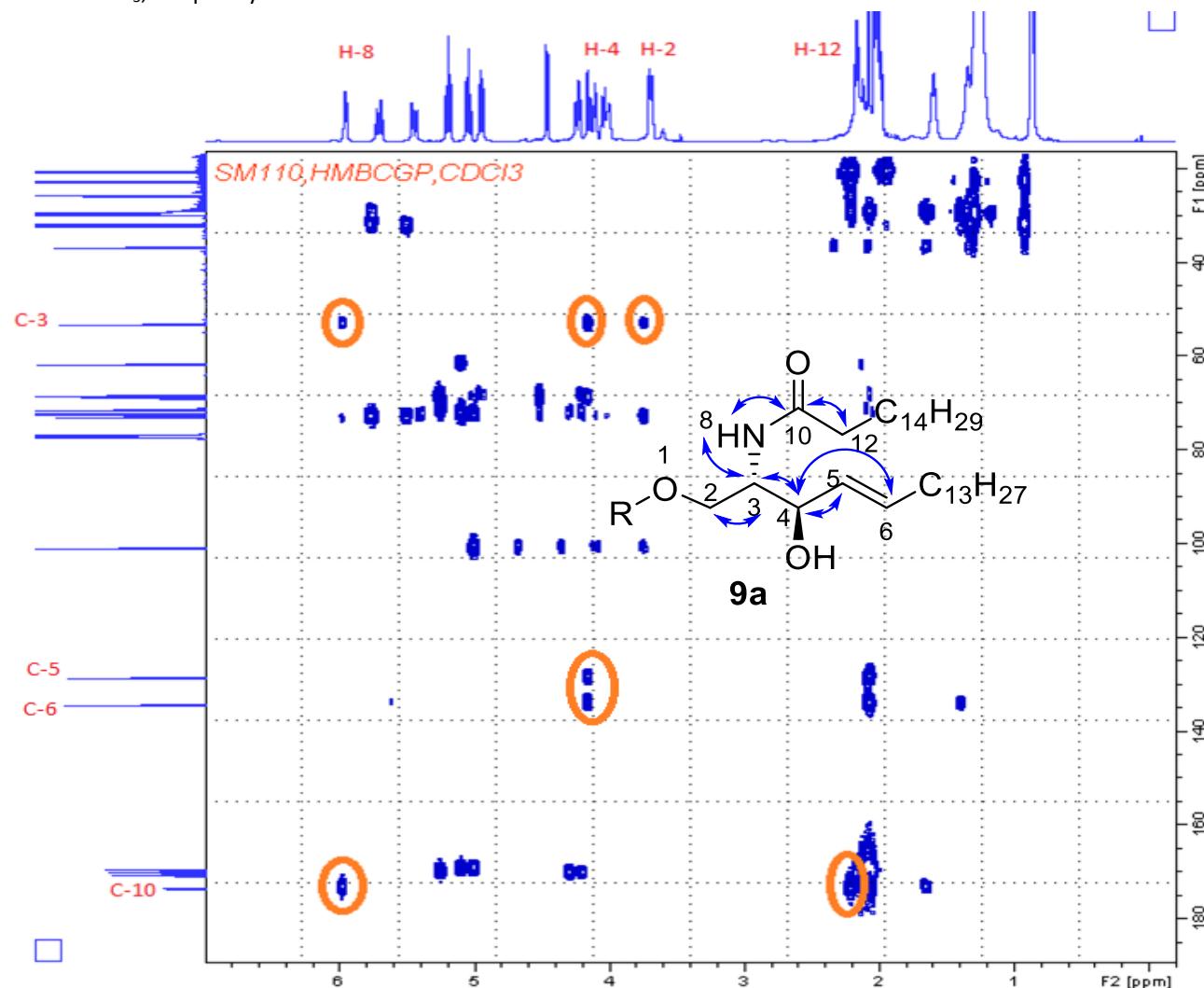


Figure S20. HMBC (500 MHz, CDCl_3) spectrum of compound 9a.

Solvent: CDCl₃, Frequency: 500MHz

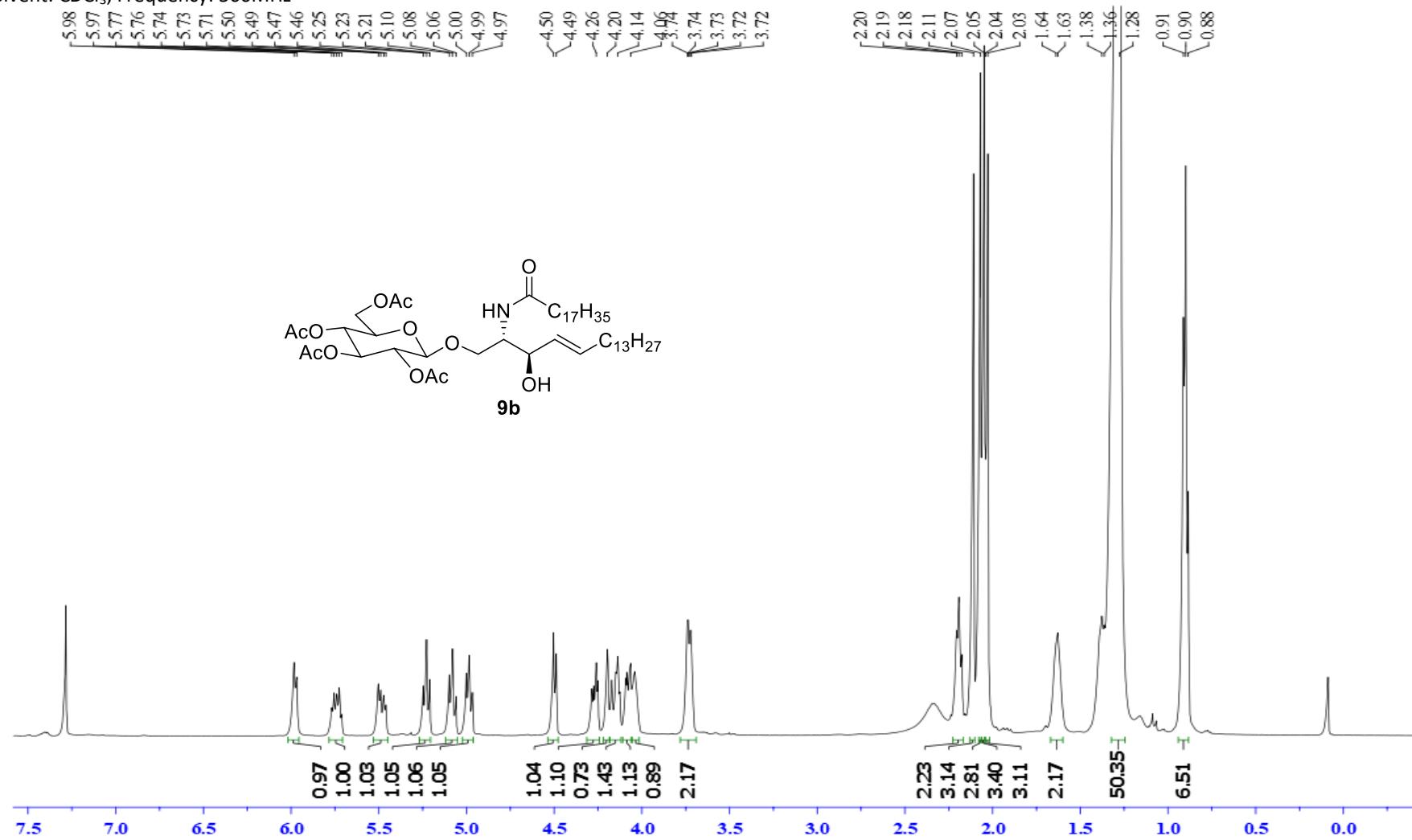


Figure S21. ^1H -NMR (500 MHz, CDCl_3) spectrum of compound **9b**.

Solvent: CDCl₃, Frequency: 125MHz

173.46
170.58
170.08
169.48
169.39

—134.29
—128.54

—100.89

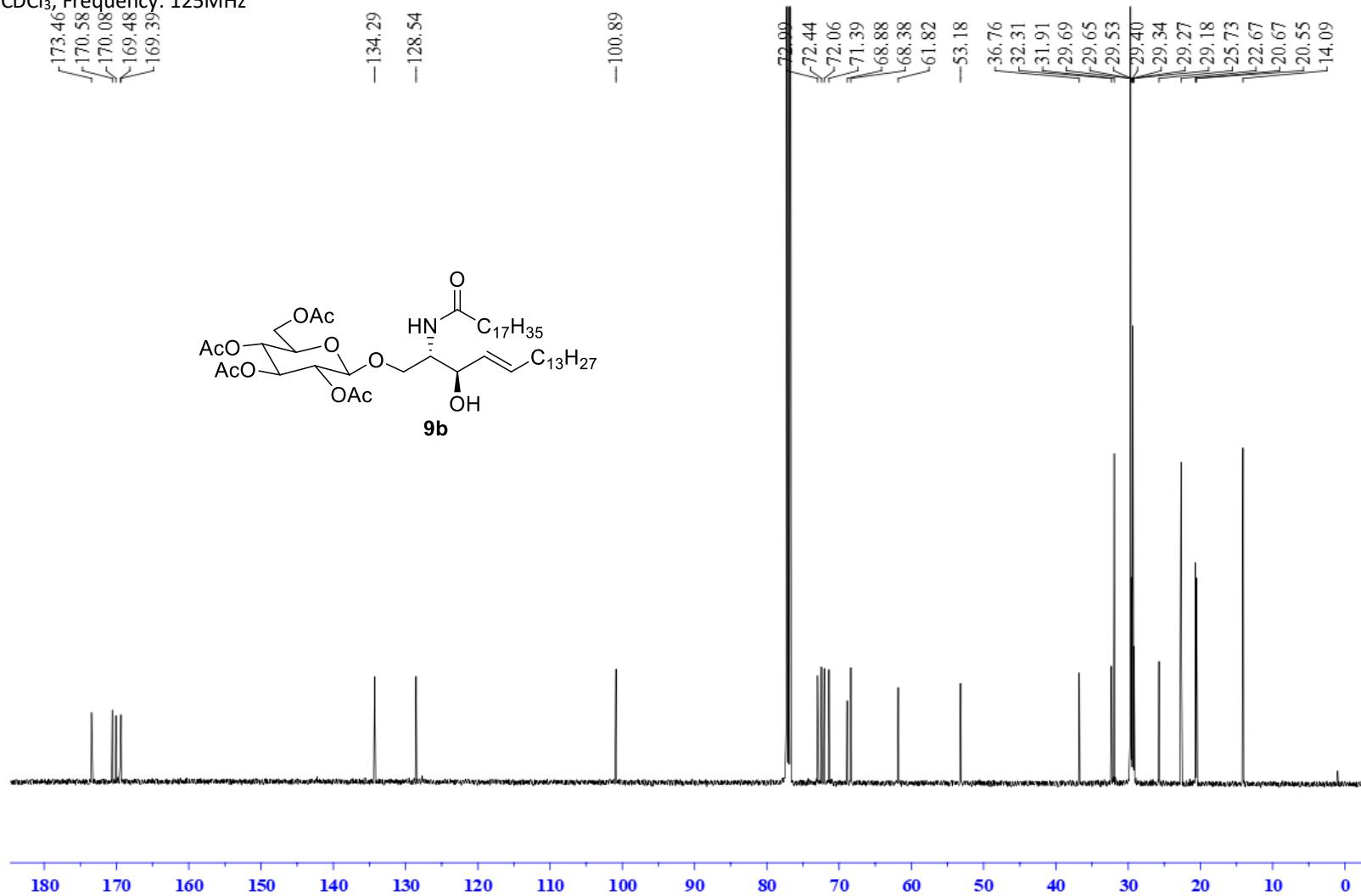
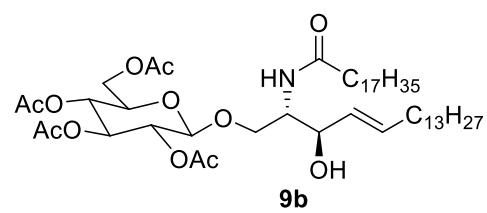


Figure S22. ¹³C-NMR (125 MHz, CDCl₃) spectrum of compound **9b**.

Solvent: CDCl₃:CD₃OD (6:1), Frequency: 500MHz

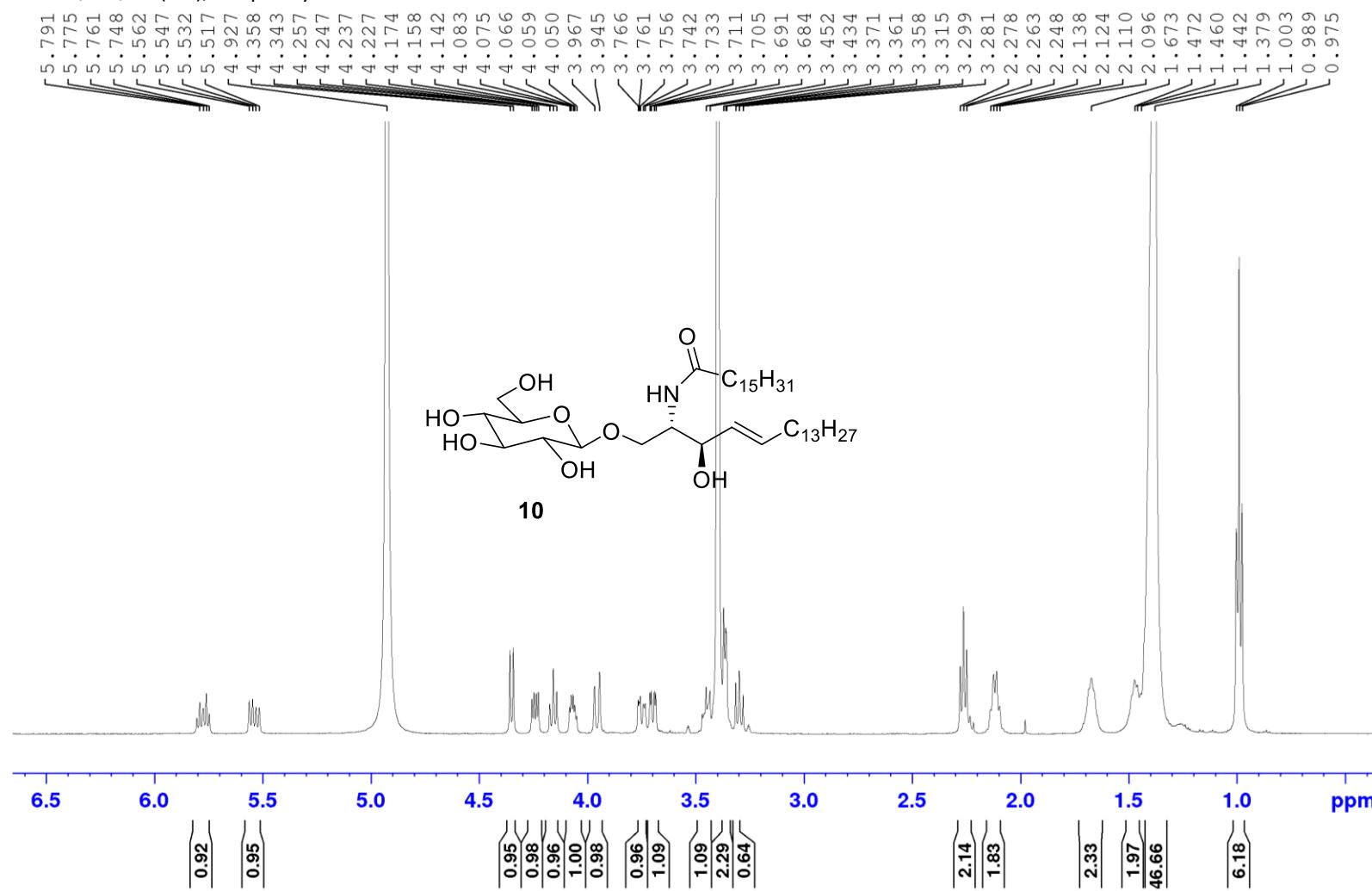


Figure S23. ^1H -NMR (500 MHz, CD_3OD : CDCl_3) spectrum of compound **10**.

Solvent: $\text{CDCl}_3:\text{CD}_3\text{OD}$ (6:1), Frequency: 125MHz

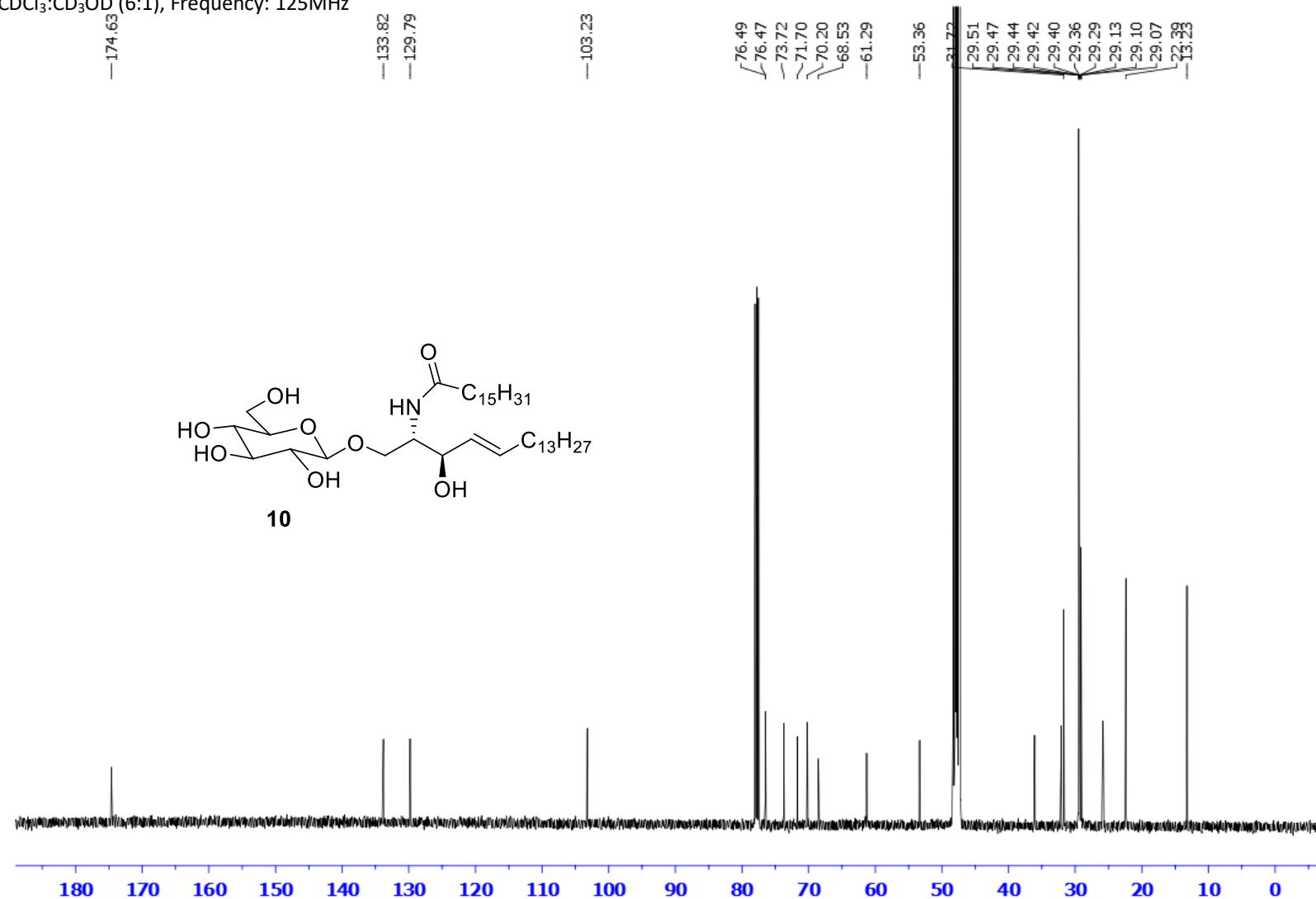


Figure S24. ^{13}C -NMR (125 MHz, CD_3OD : CDCl_3) spectrum of compound **10**.

Solvent: $\text{CDCl}_3:\text{CD}_3\text{OD}$ (6:1), Frequency: 500MHz

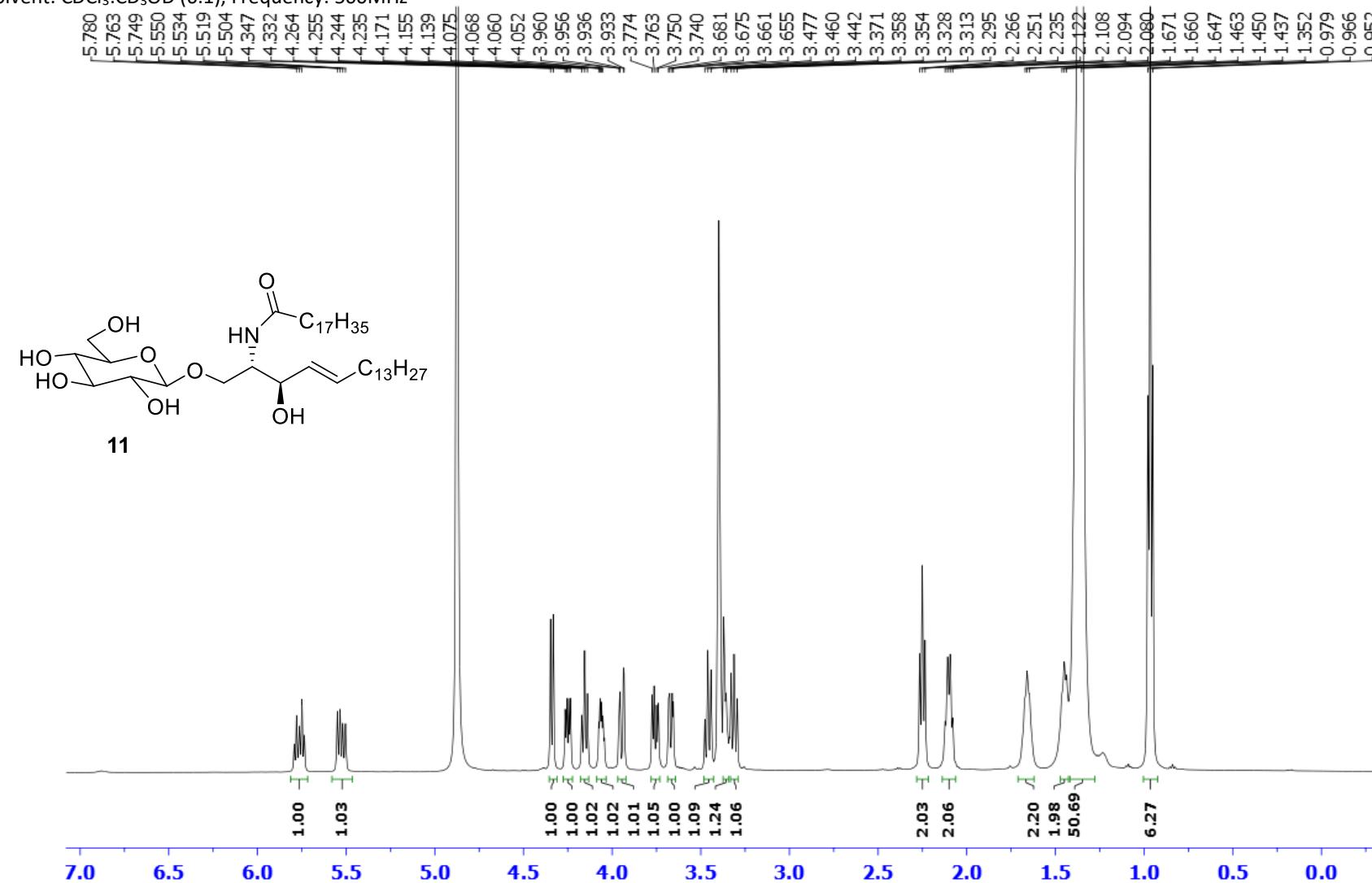


Figure S25. ^1H -NMR (500 MHz, $\text{CD}_3\text{OD}:\text{CDCl}_3$) spectrum of compound 11.

Solvent: $\text{CDCl}_3:\text{CD}_3\text{OD}$ (6:1), Frequency: 125MHz

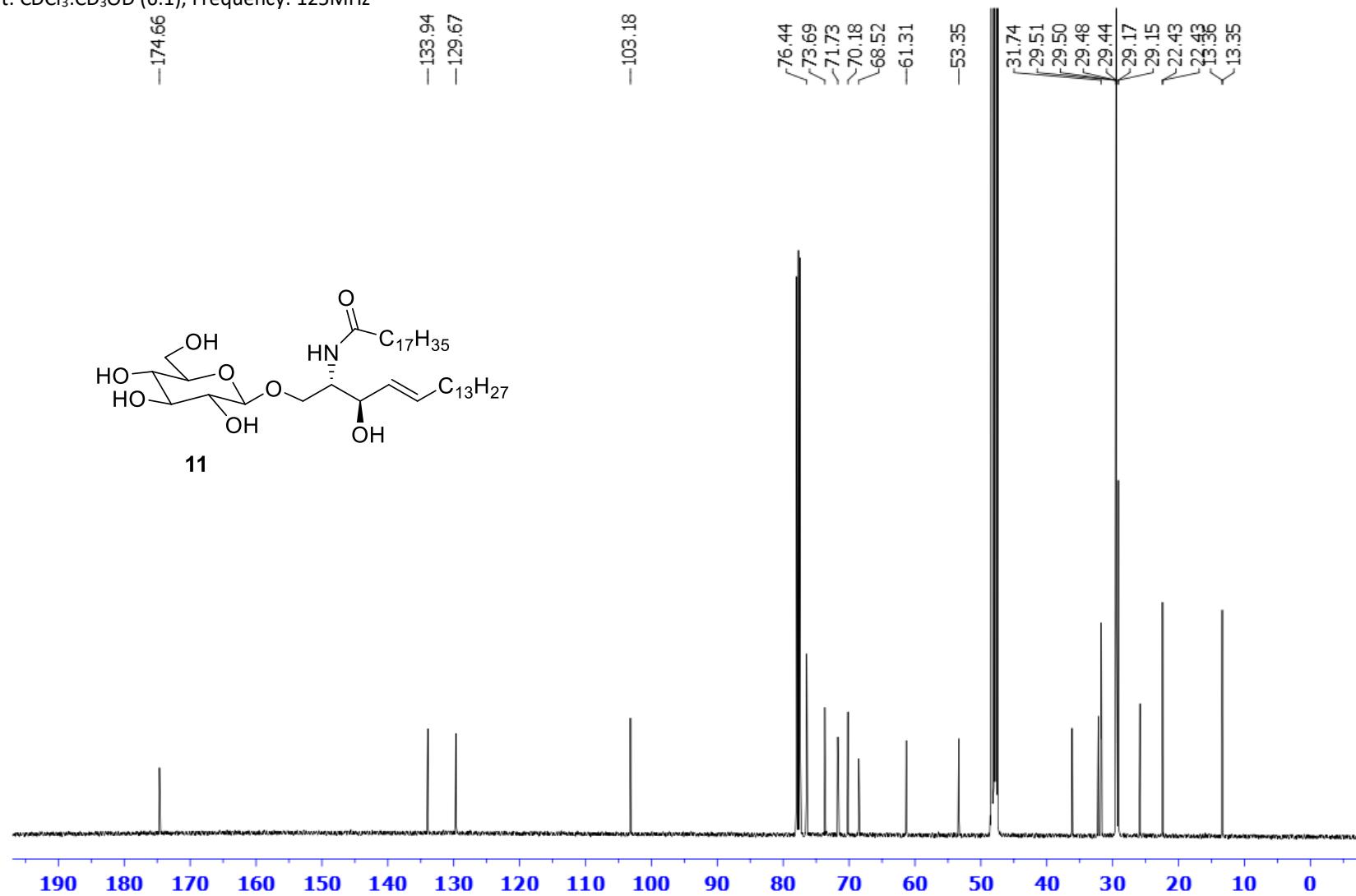


Figure S26. ^{13}C -NMR (125 MHz, CD_3OD : CDCl_3) spectrum of compound **11**.