

Supporting Information

Carbohydrates as potentially versatile core subcarriers for multivalent immunogens

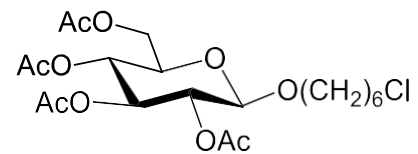
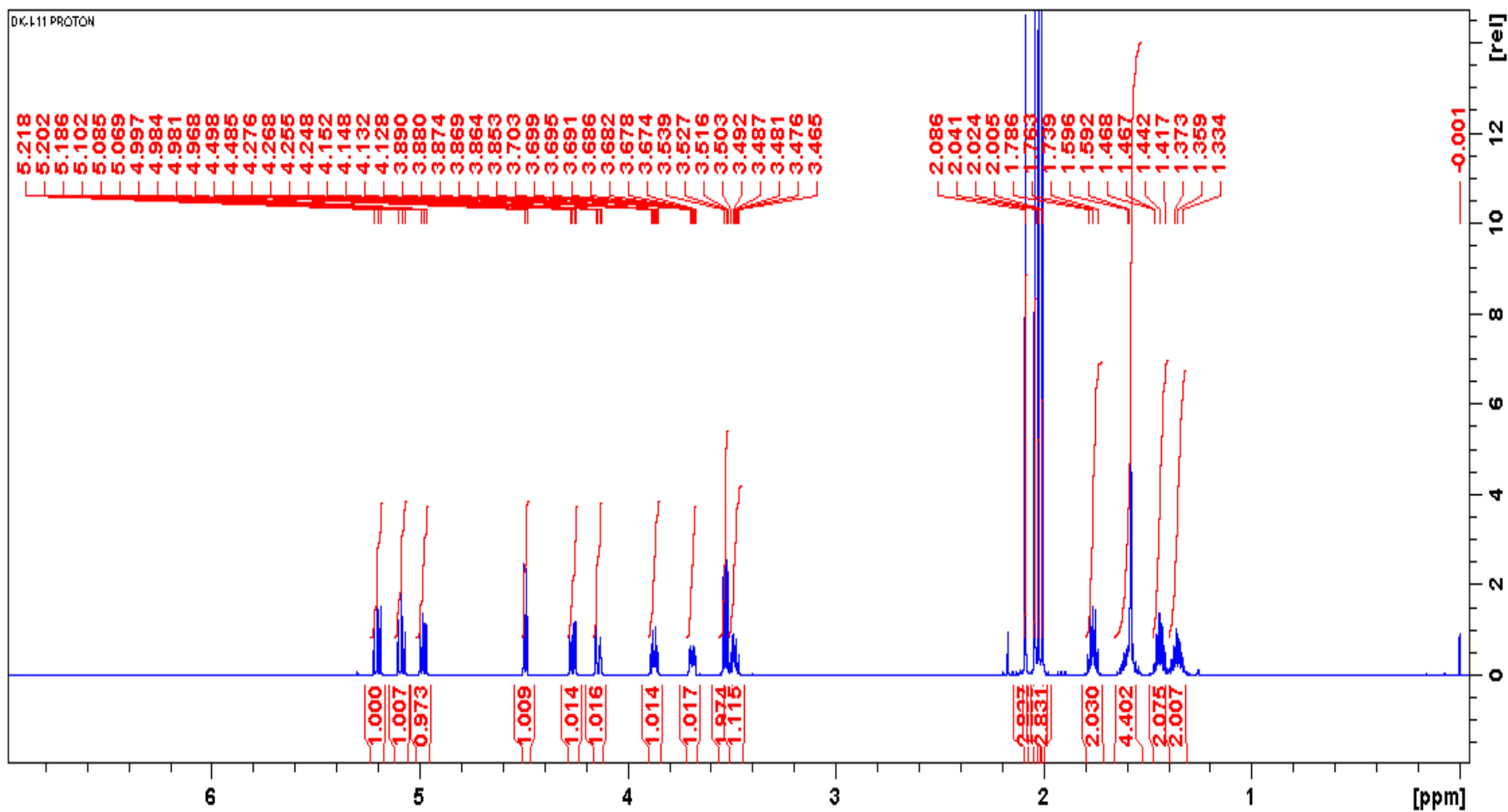
Divya Kushwaha, Peng Xu and Pavol Kováč*

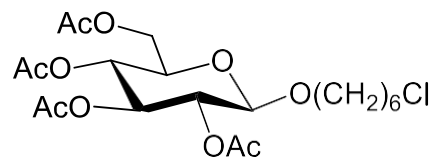
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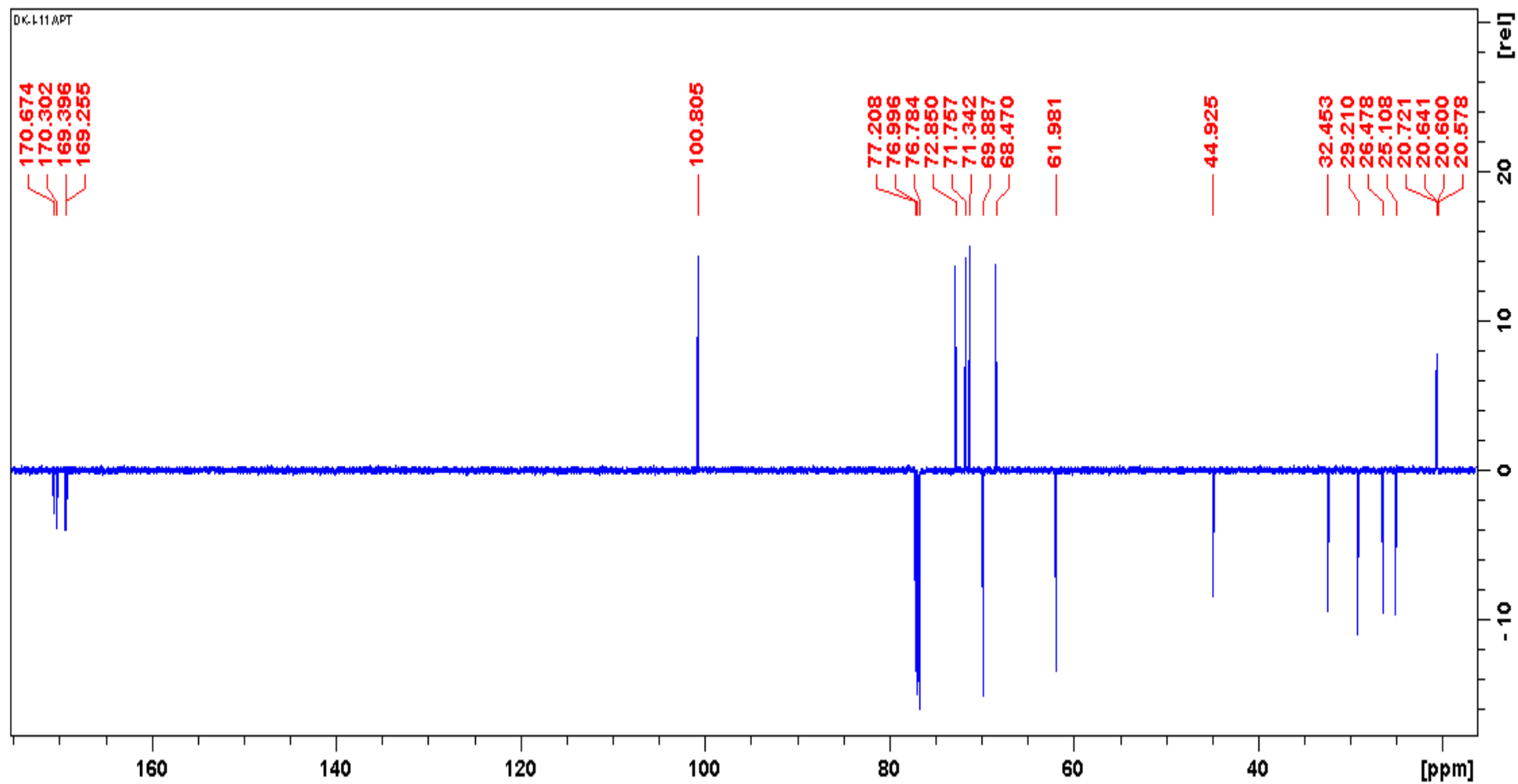
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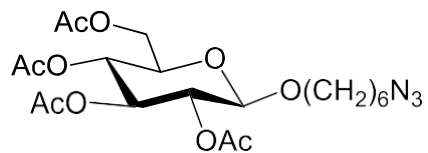
1.	¹ H & ¹³ C NMR spectra of the compounds 2-4,7-8, 11-13, 16-17, & 19-24	2-33
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2, ^1H NMR (600 MHz, CDCl_3)

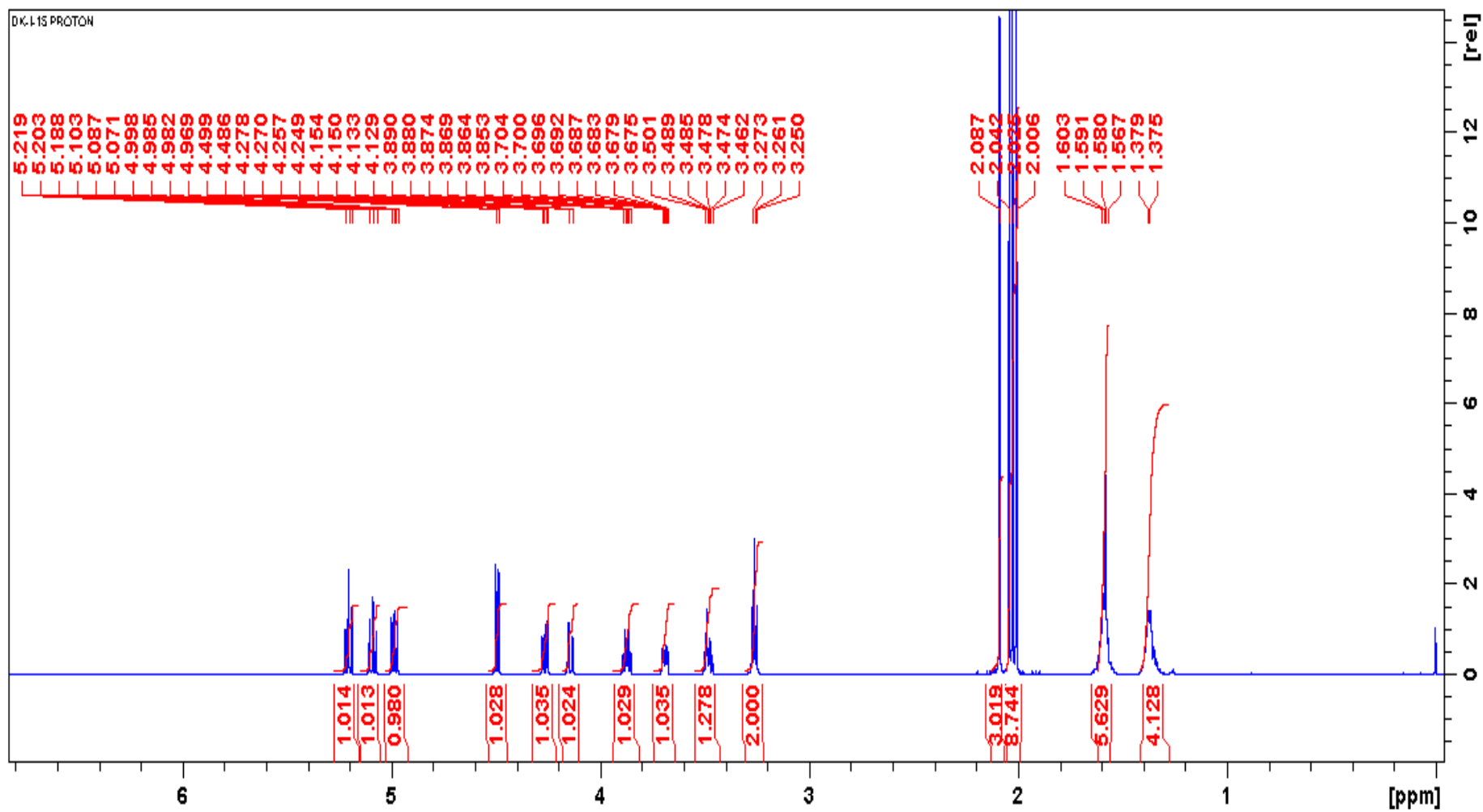


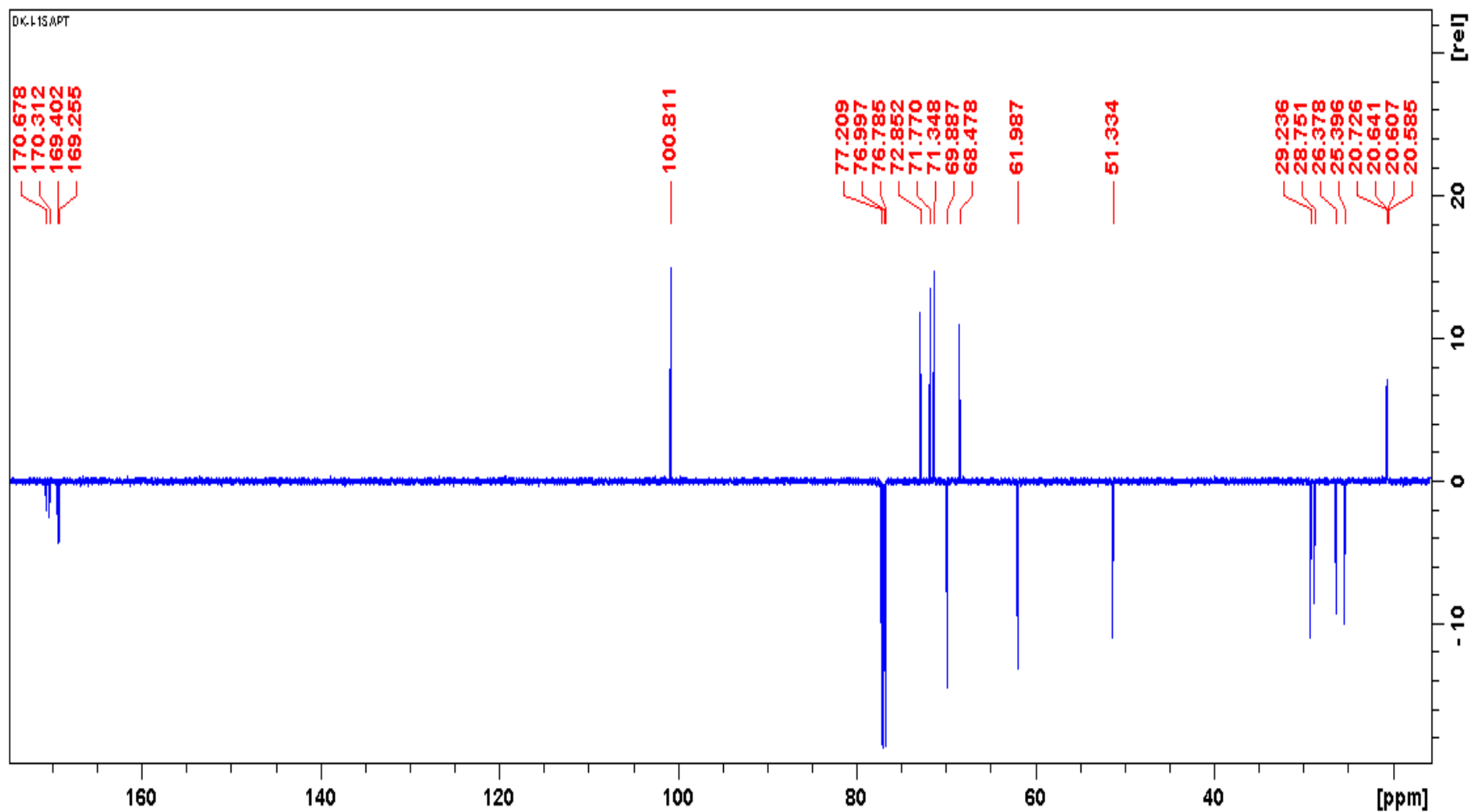
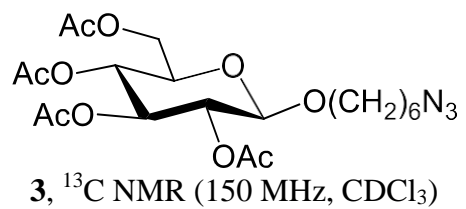
2, ¹³C NMR (150 MHz, CDCl₃)

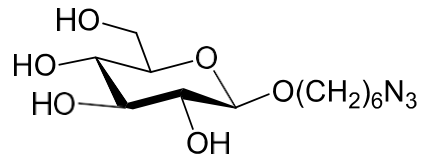
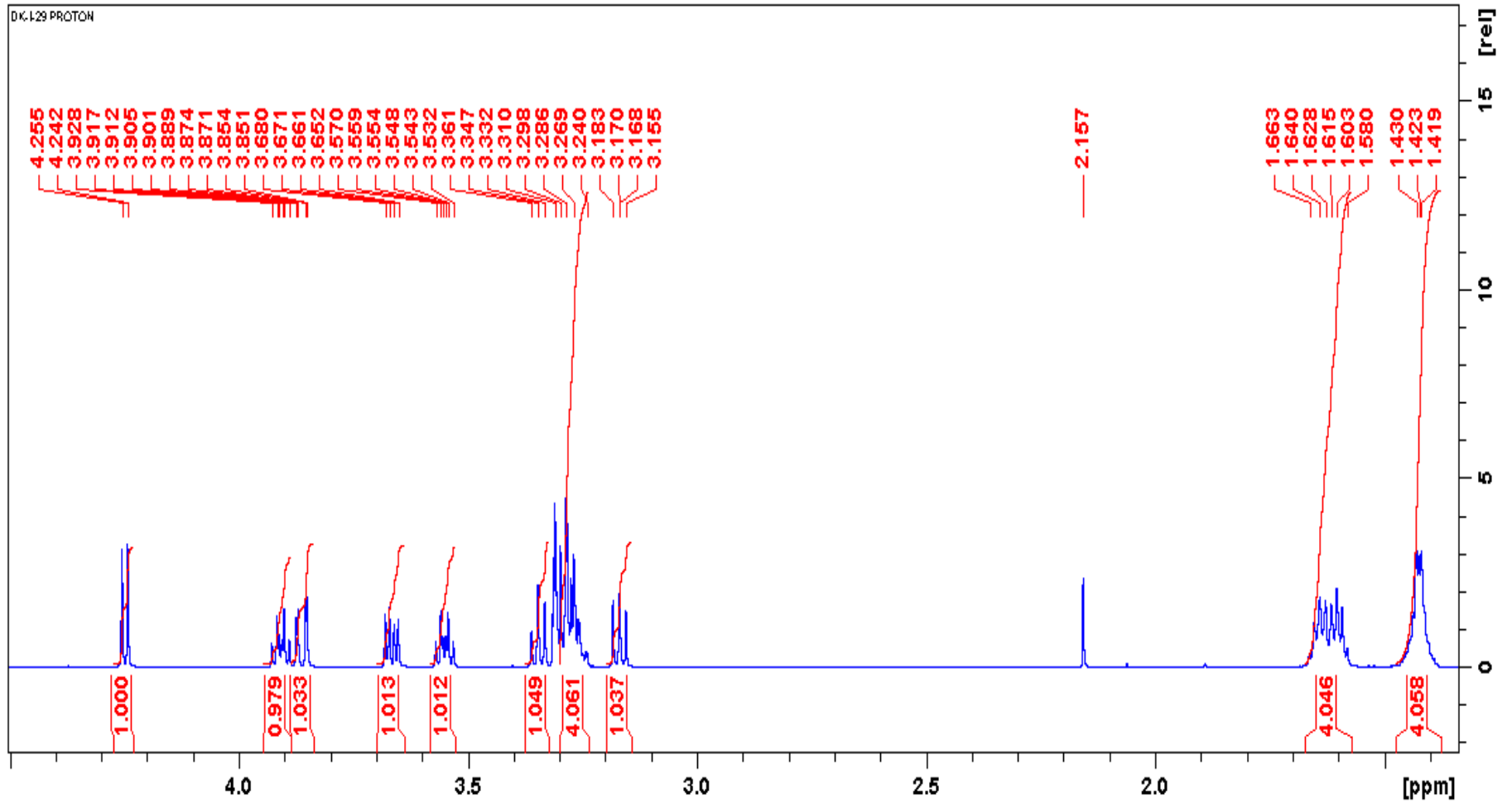


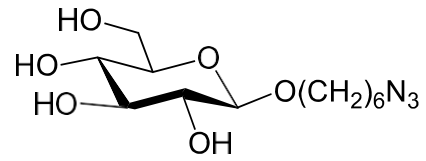


3, ¹H NMR (600 MHz, CDCl₃)

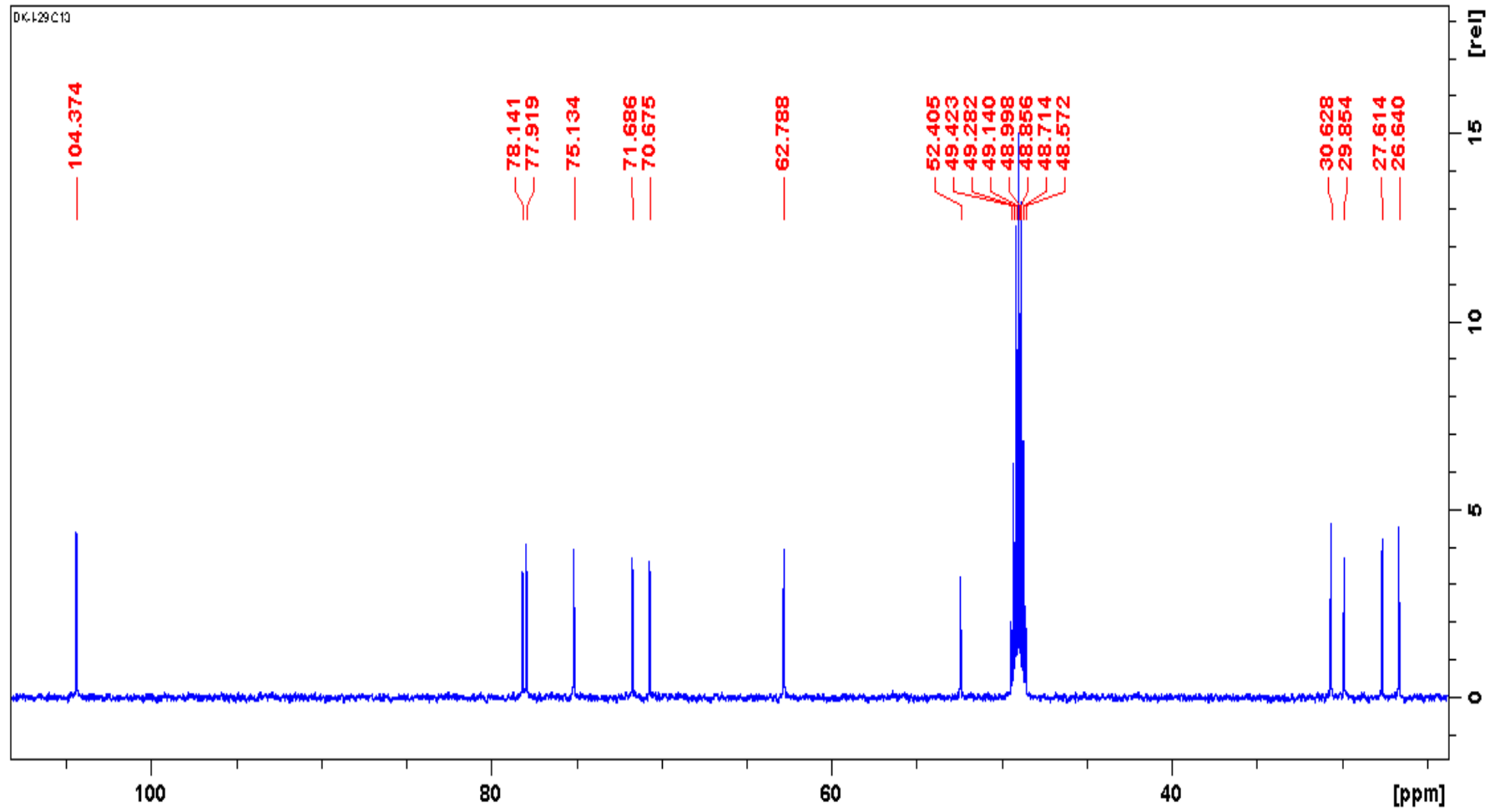


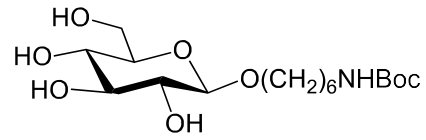
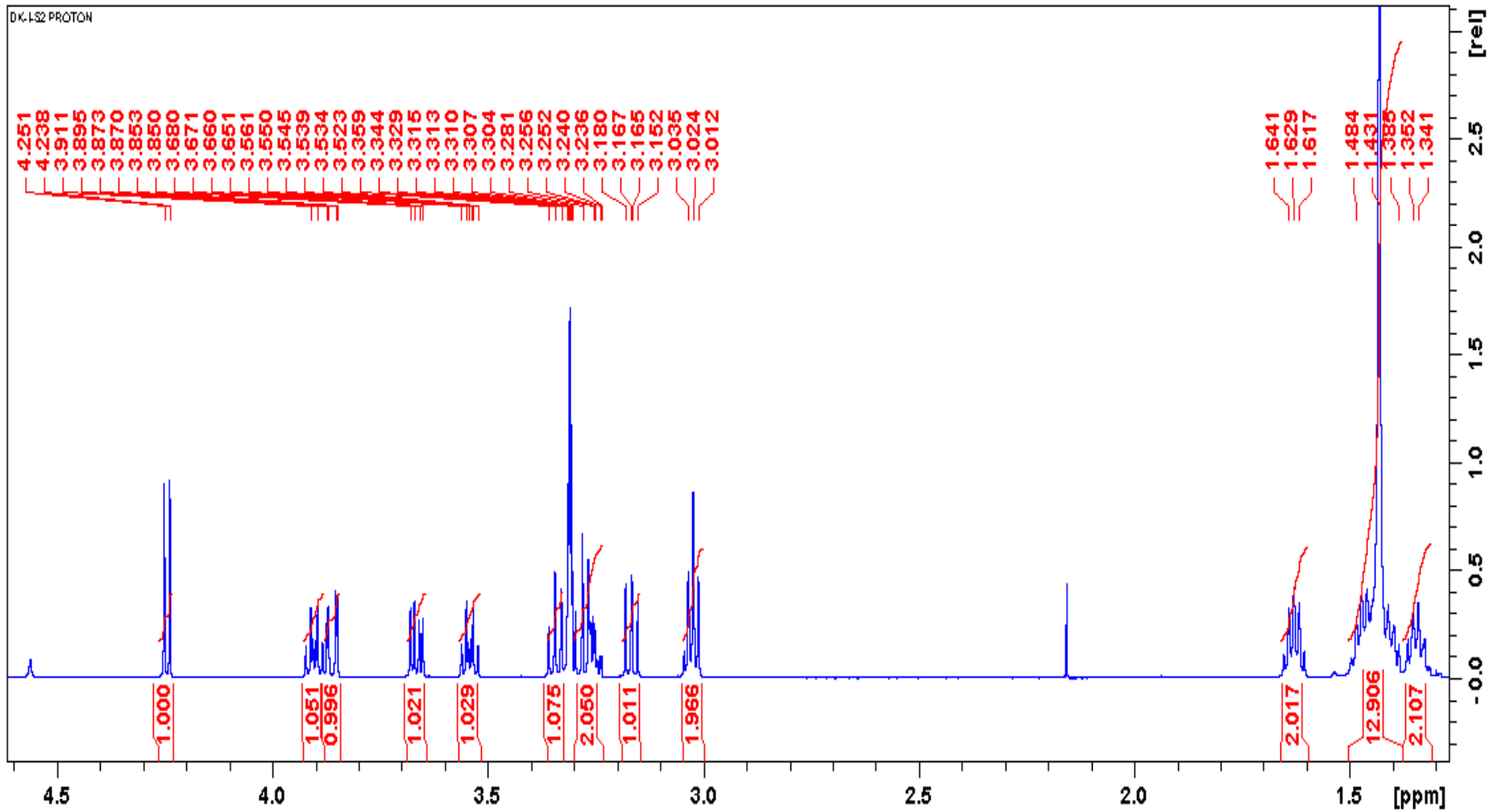


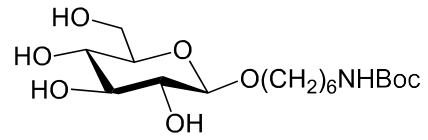
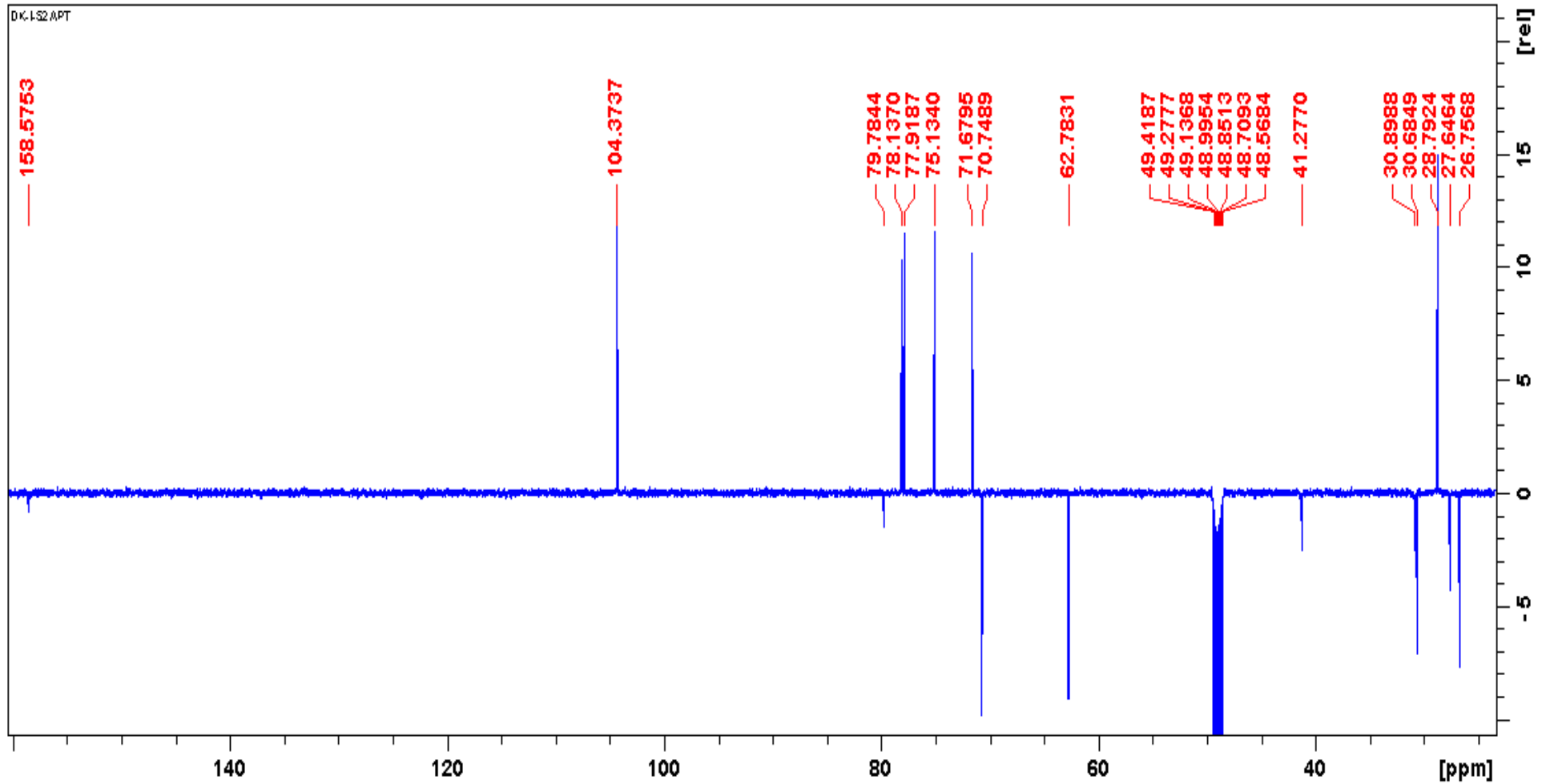
4, ^1H NMR (600 MHz, MeOD)

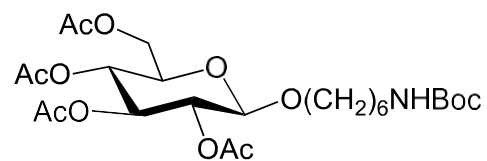


4, ^{13}C NMR (150 MHz, MeOD)

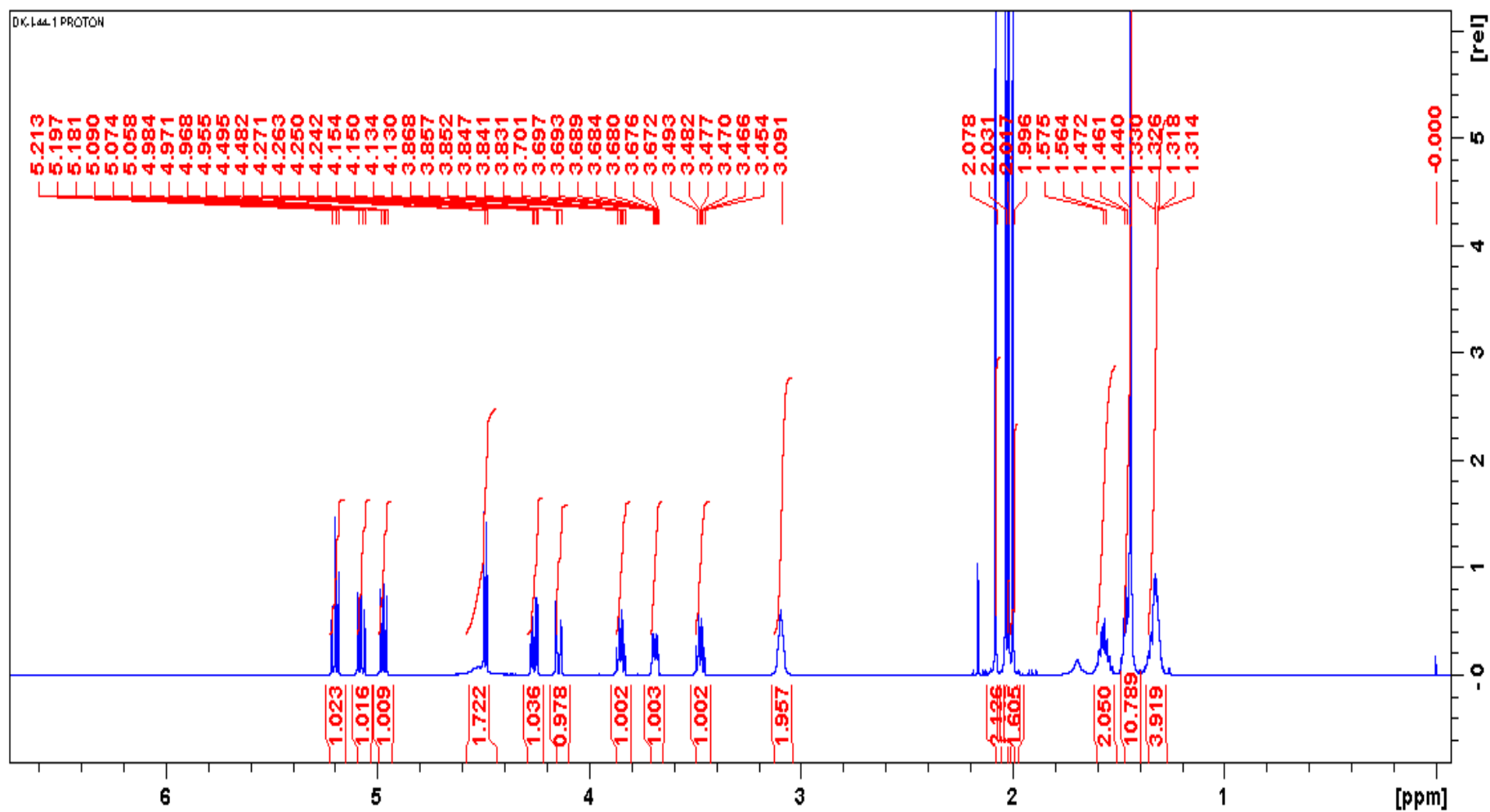


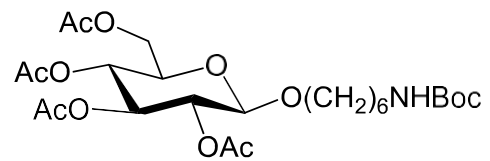
7, ^1H NMR (600 MHz, MeOD)

7, ^{13}C NMR (150 MHz, MeOD)

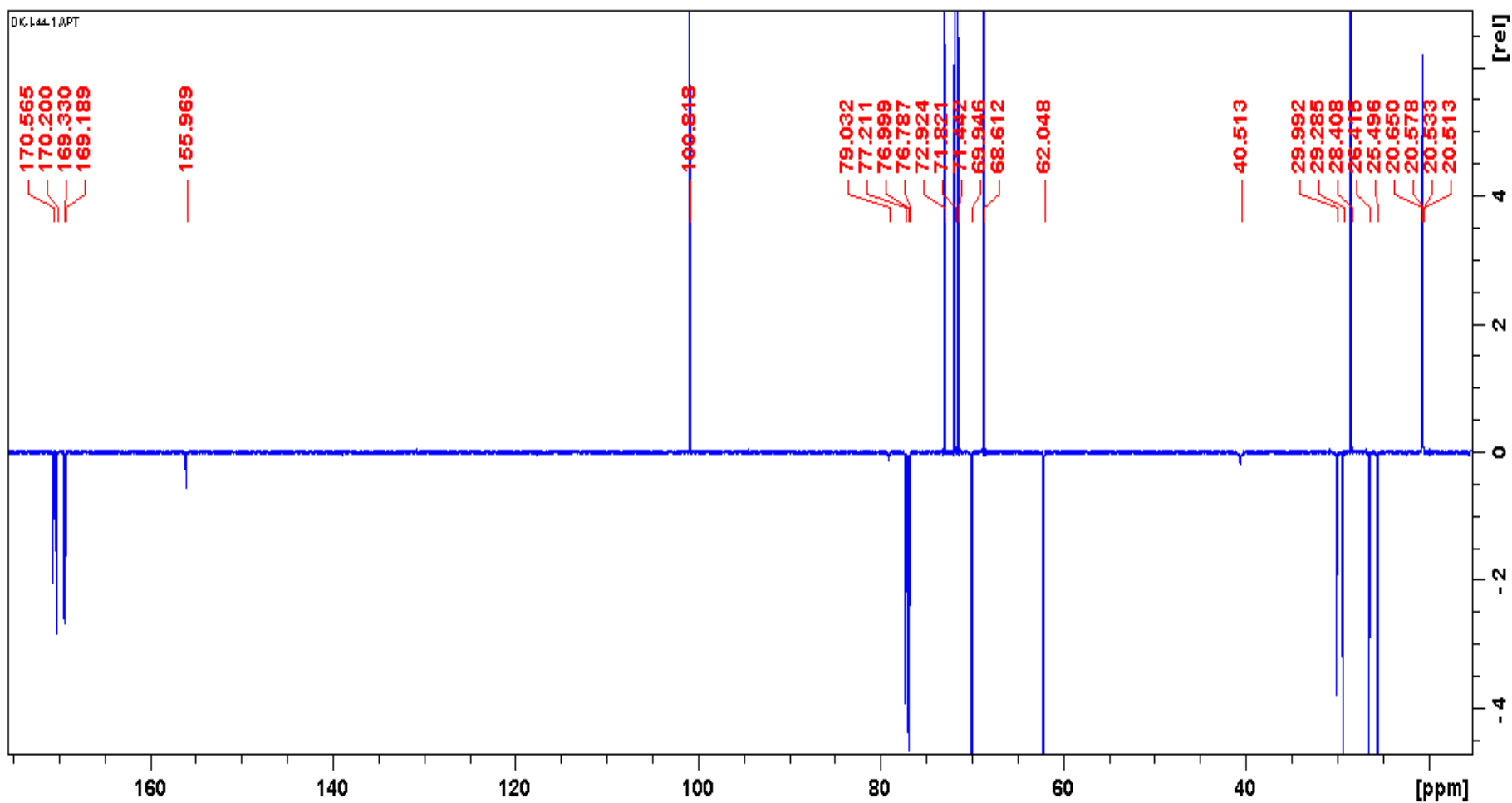


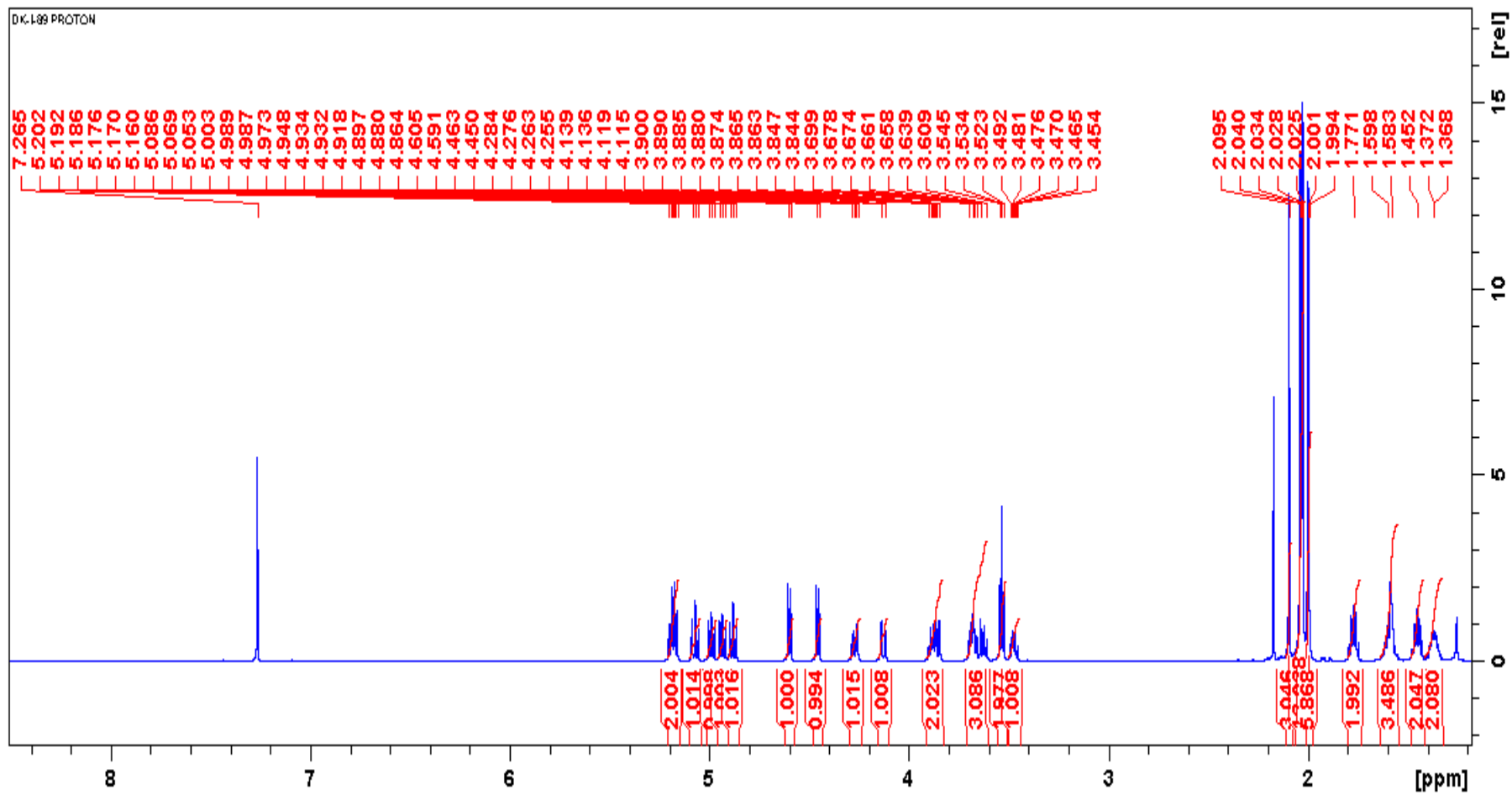
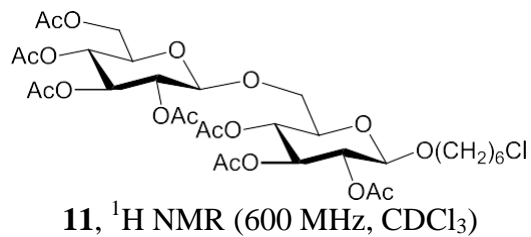
8, ^1H NMR (600 MHz, CDCl_3)

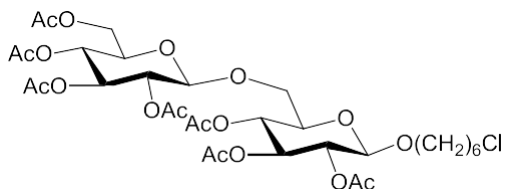




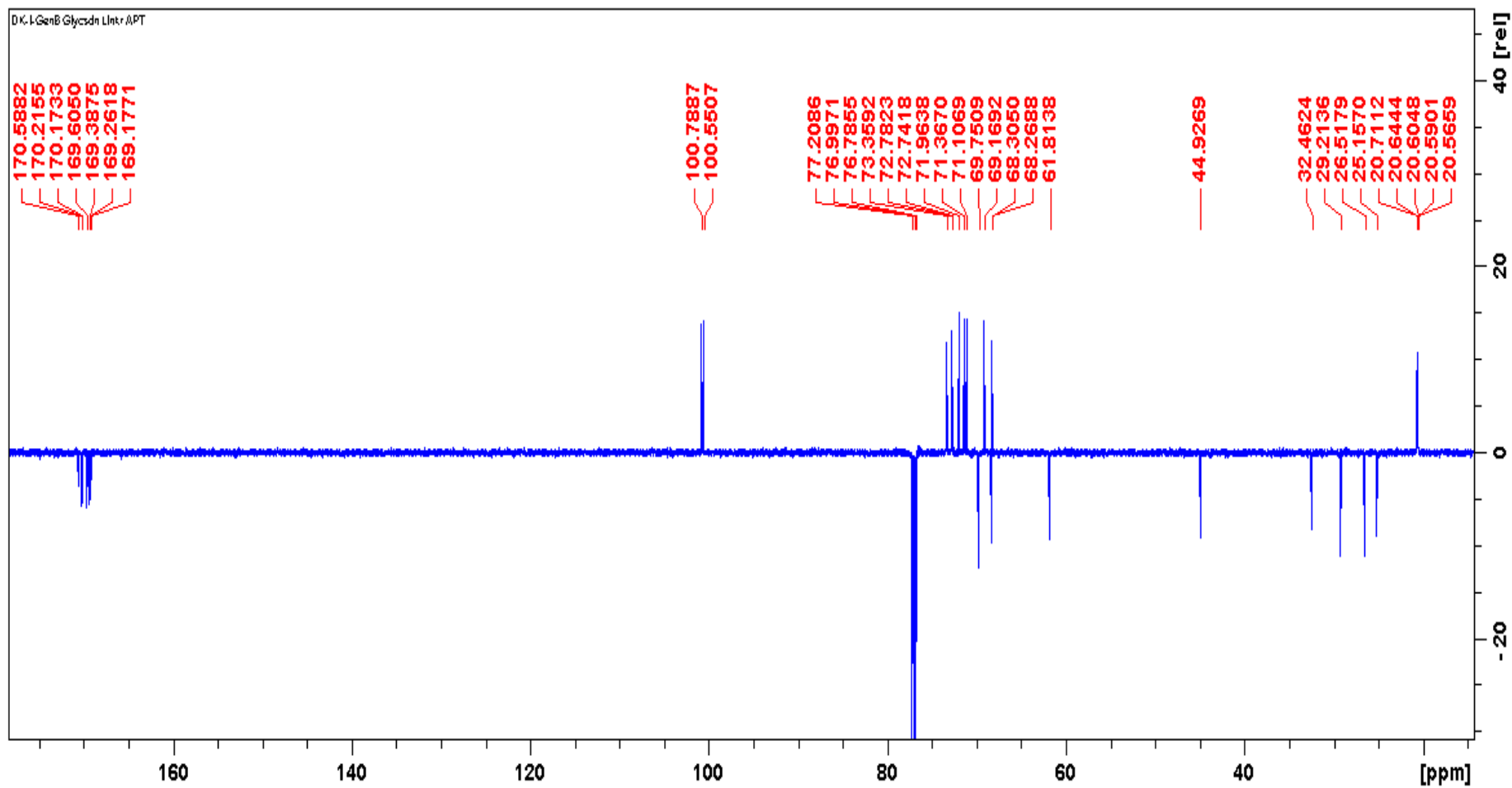
8, ^{13}C NMR (150 MHz, CDCl_3)

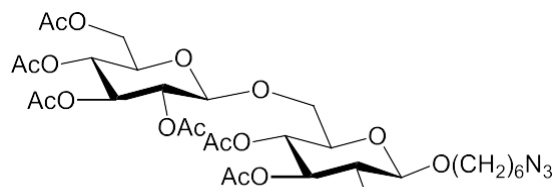




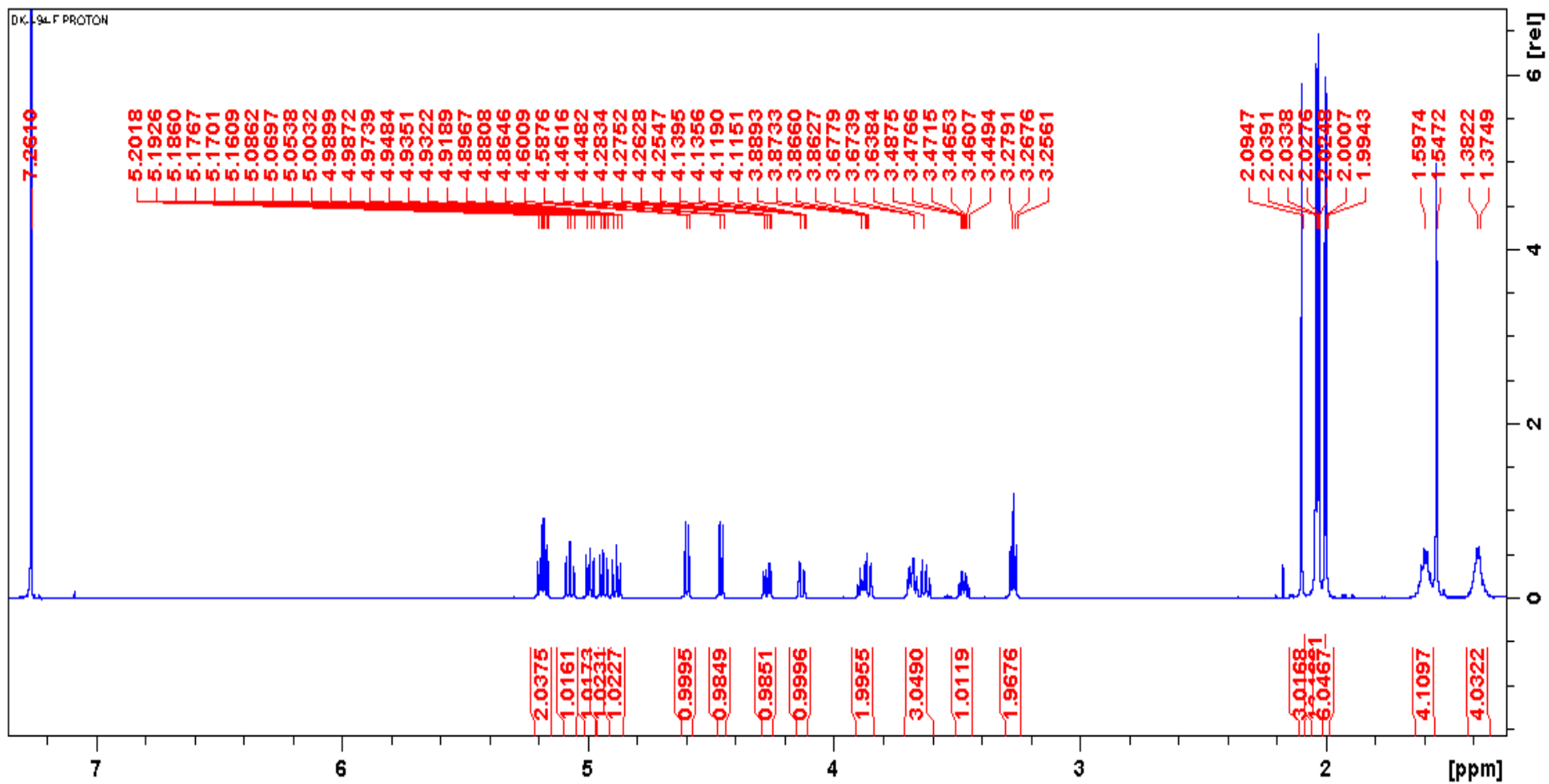


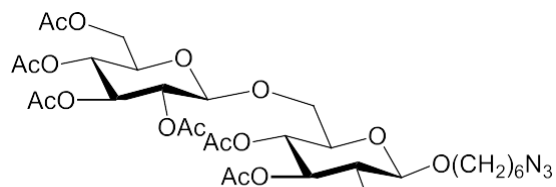
11, ¹³C NMR (150 MHz, CDCl₃)



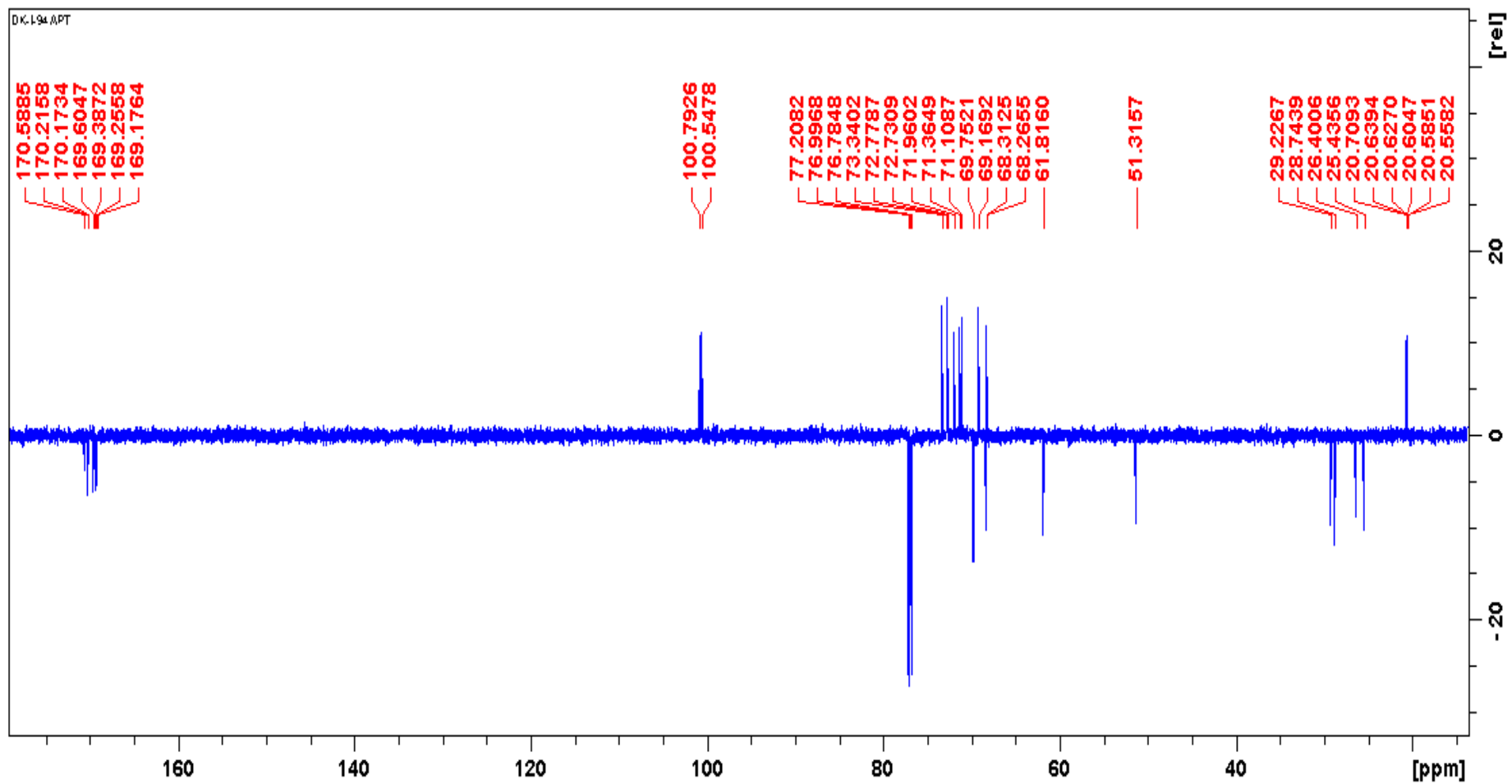


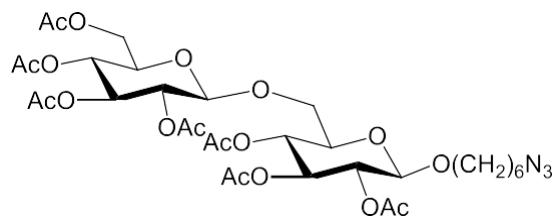
12, ¹H NMR (600 MHz, CDCl₃)



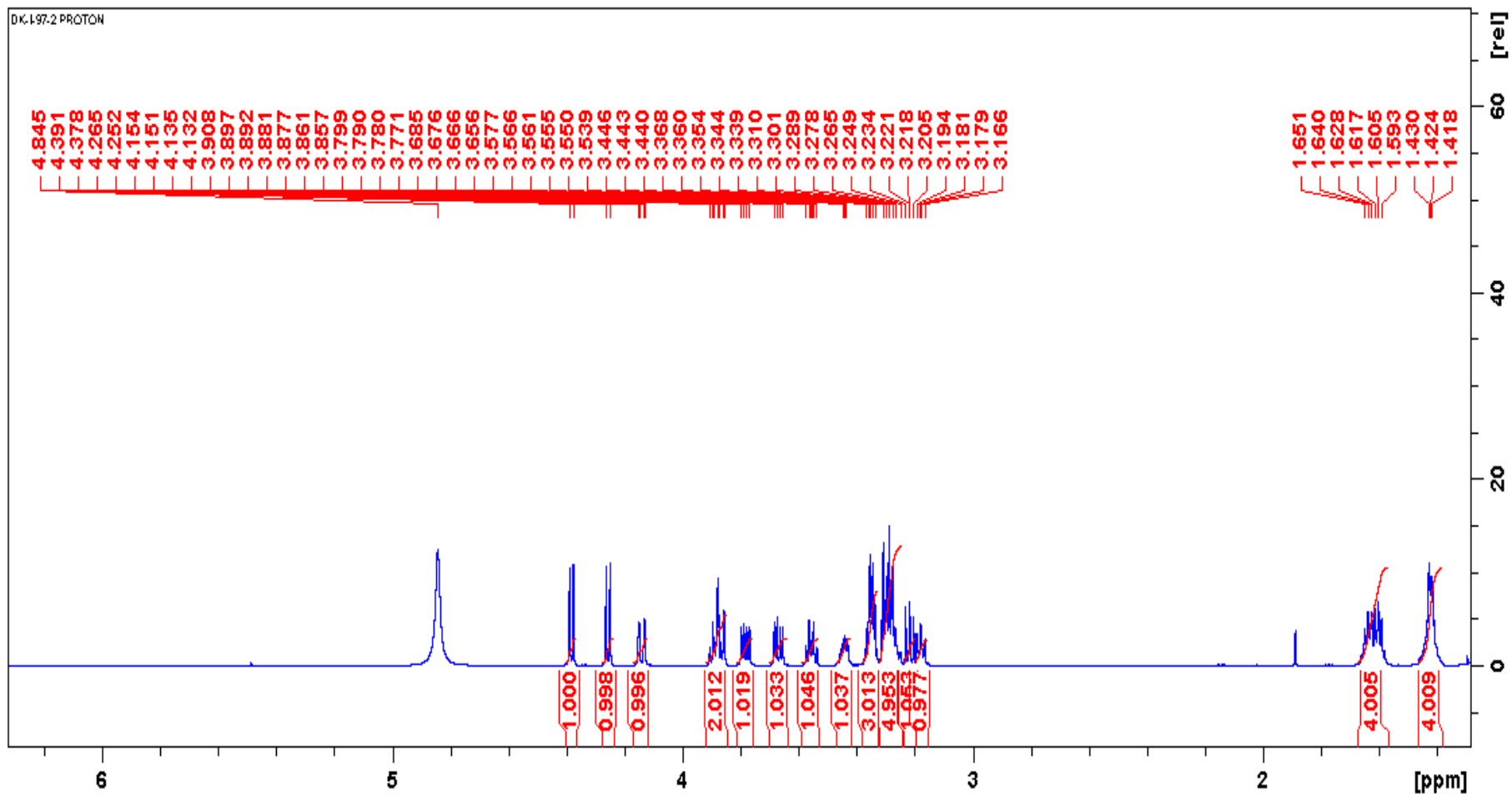


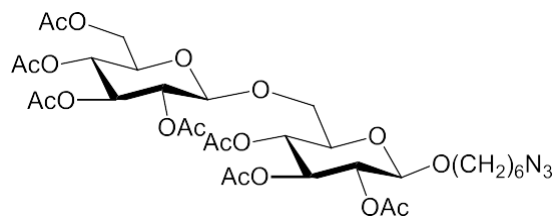
12, ¹H NMR (150 MHz, CDCl₃)



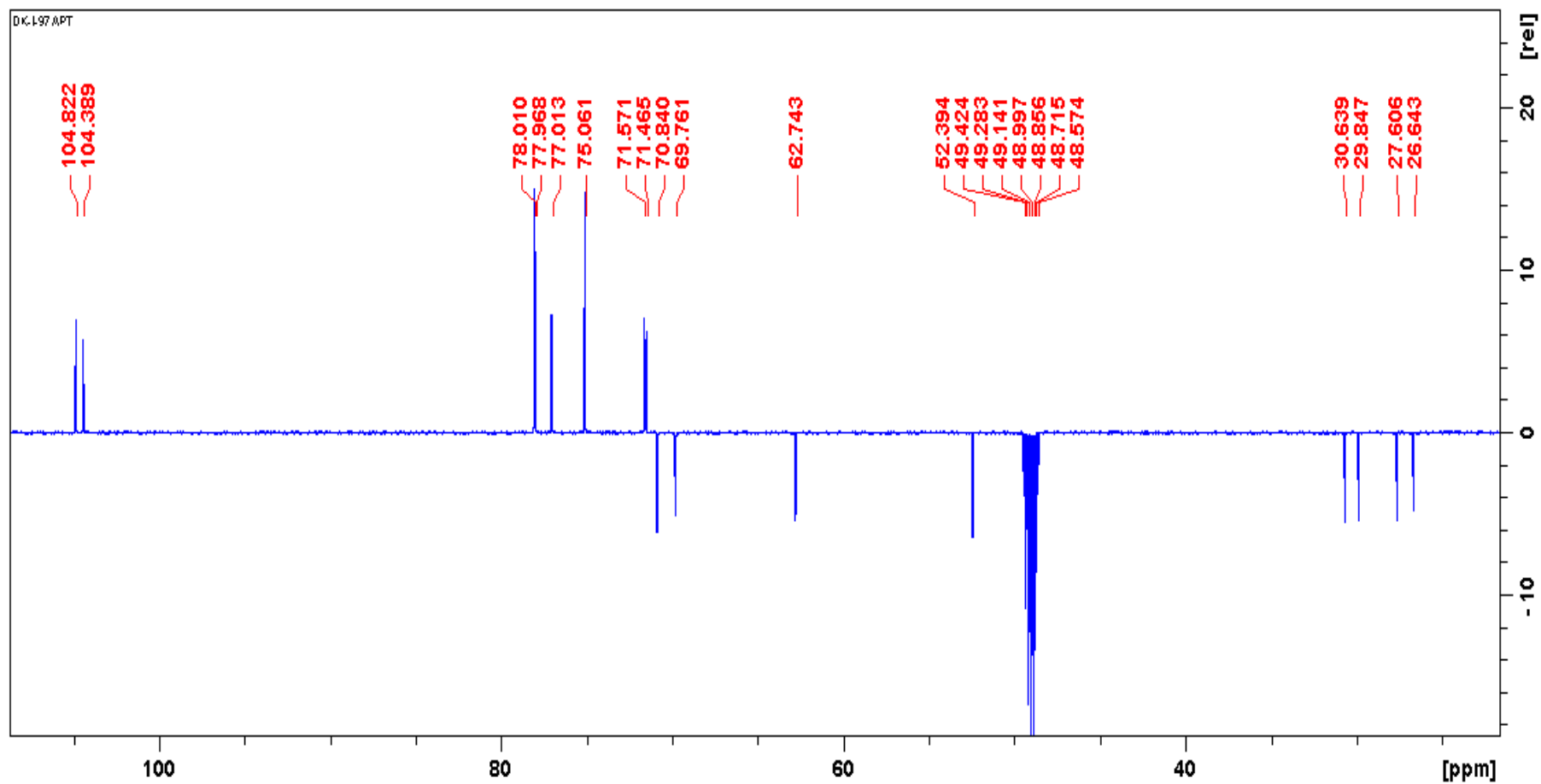


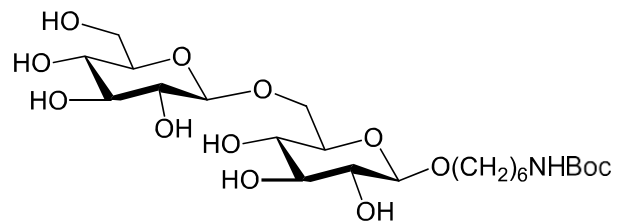
13, ^1H NMR (600 MHz, MeOD)



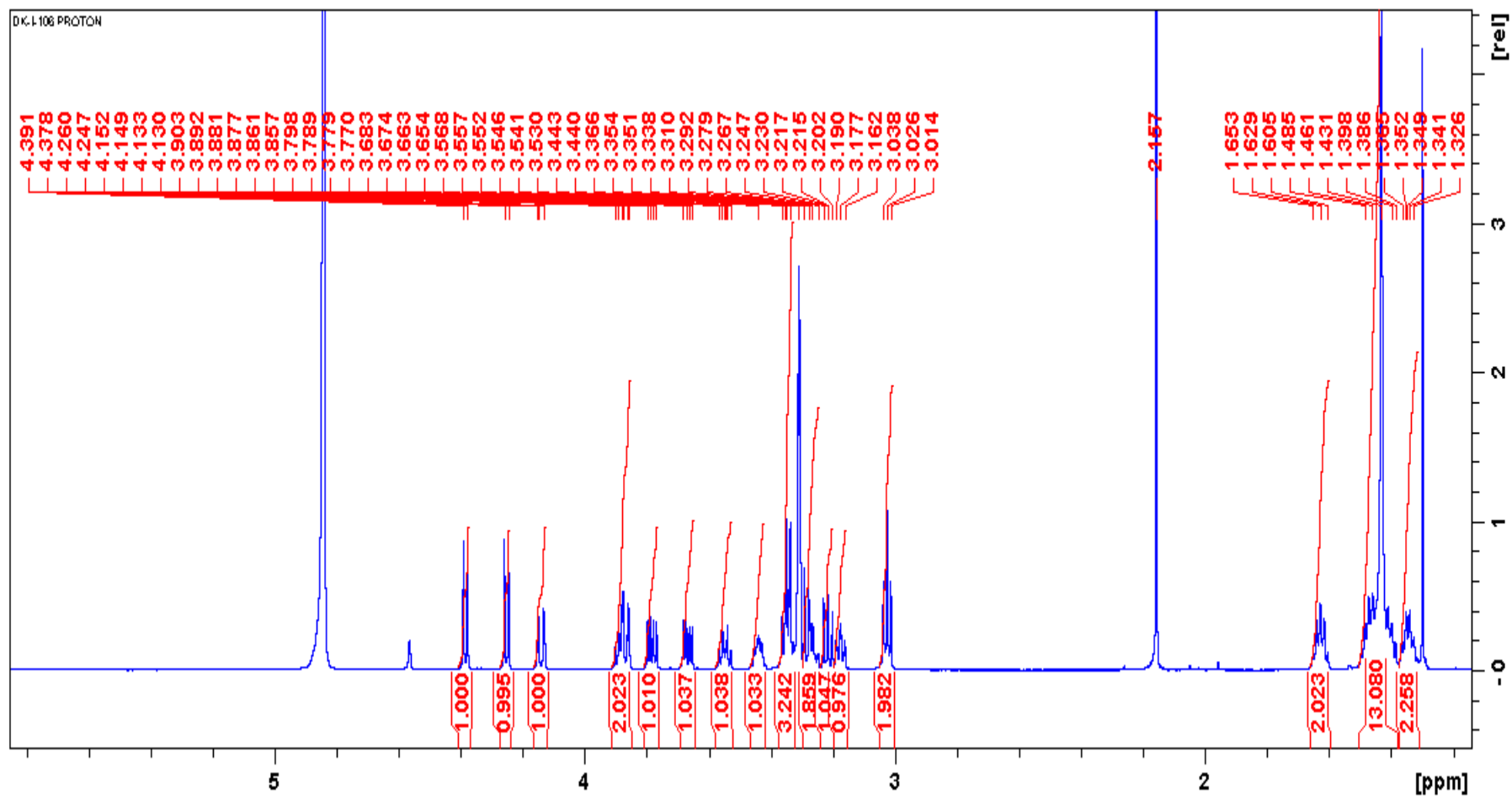


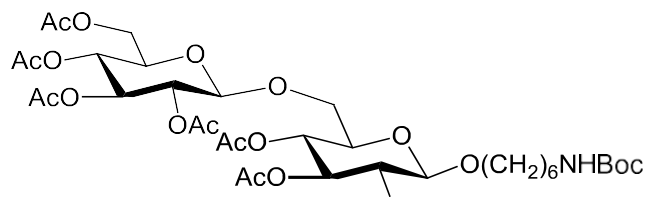
13, ^{13}C NMR (150 MHz, MeOD)



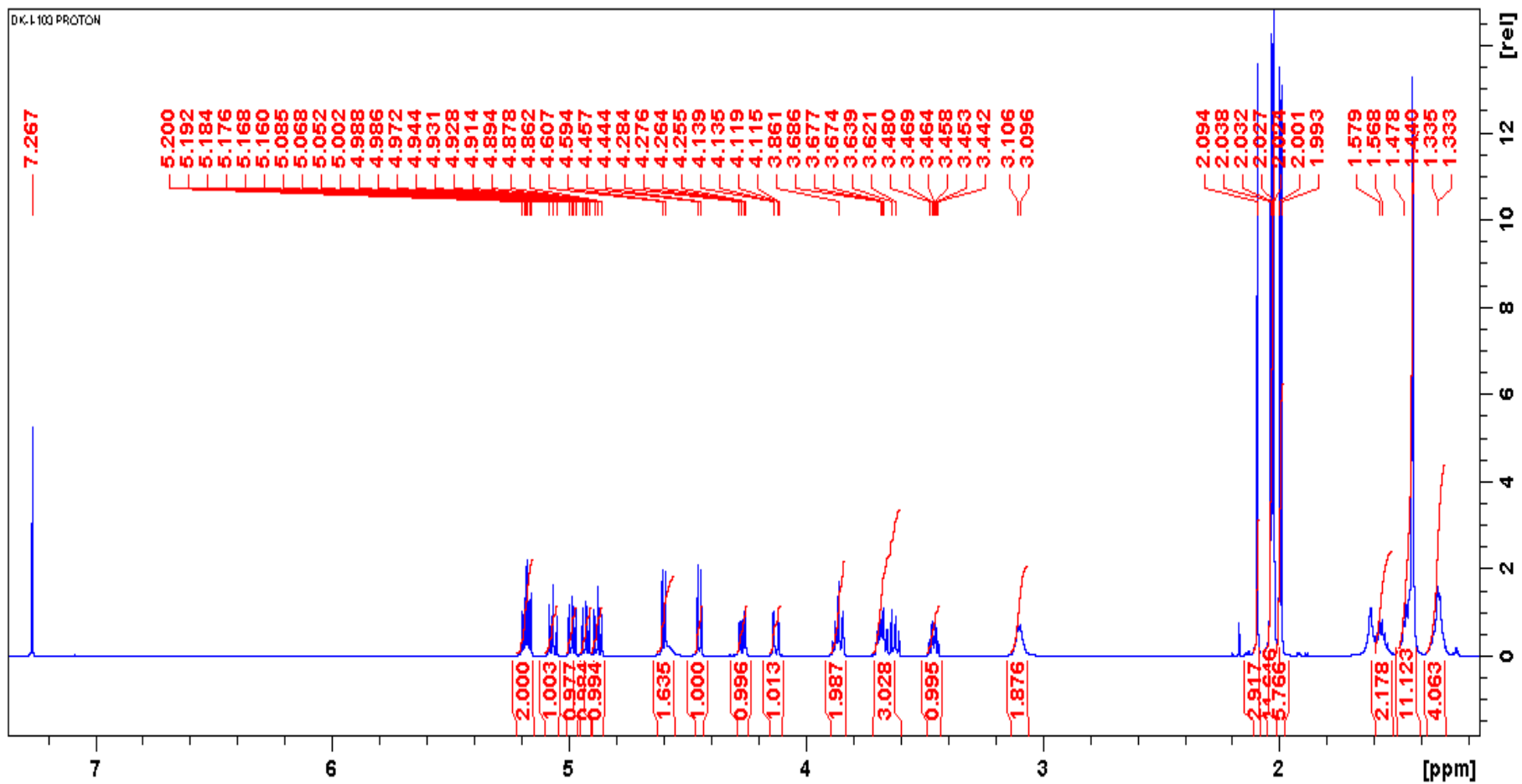


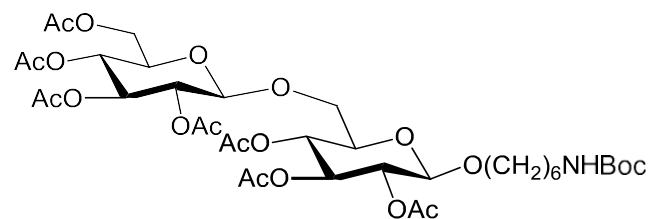
16, ^1H NMR (600 MHz, MeOD)



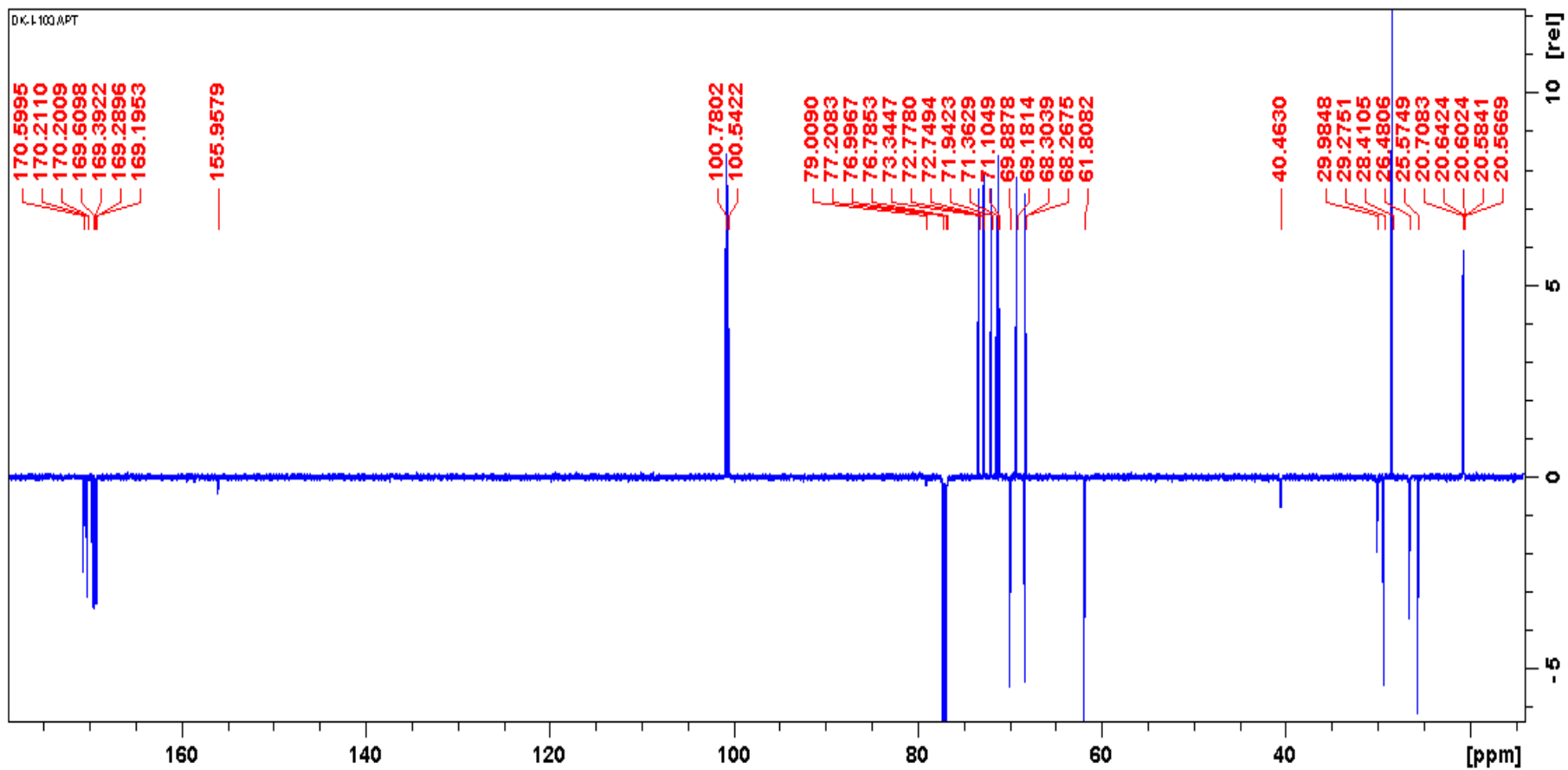


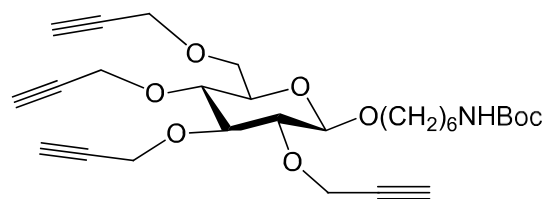
17, ^1H NMR (600 MHz, CDCl_3)



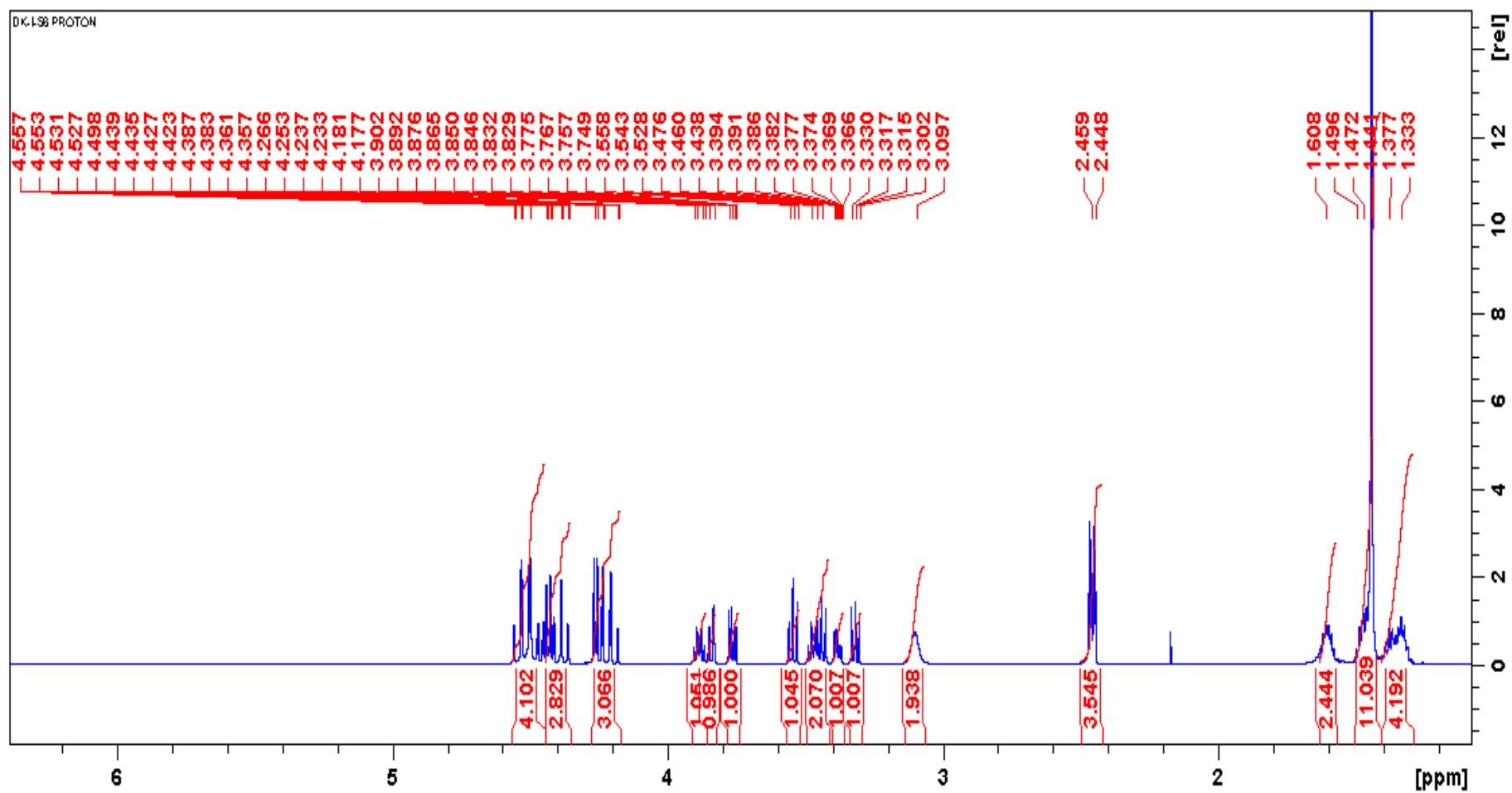


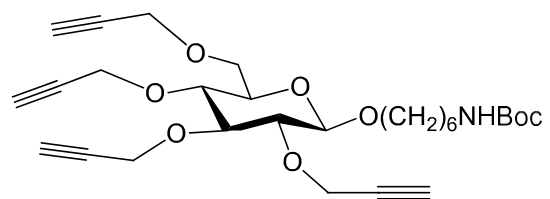
17, ¹³C NMR (150 MHz, CDCl₃)



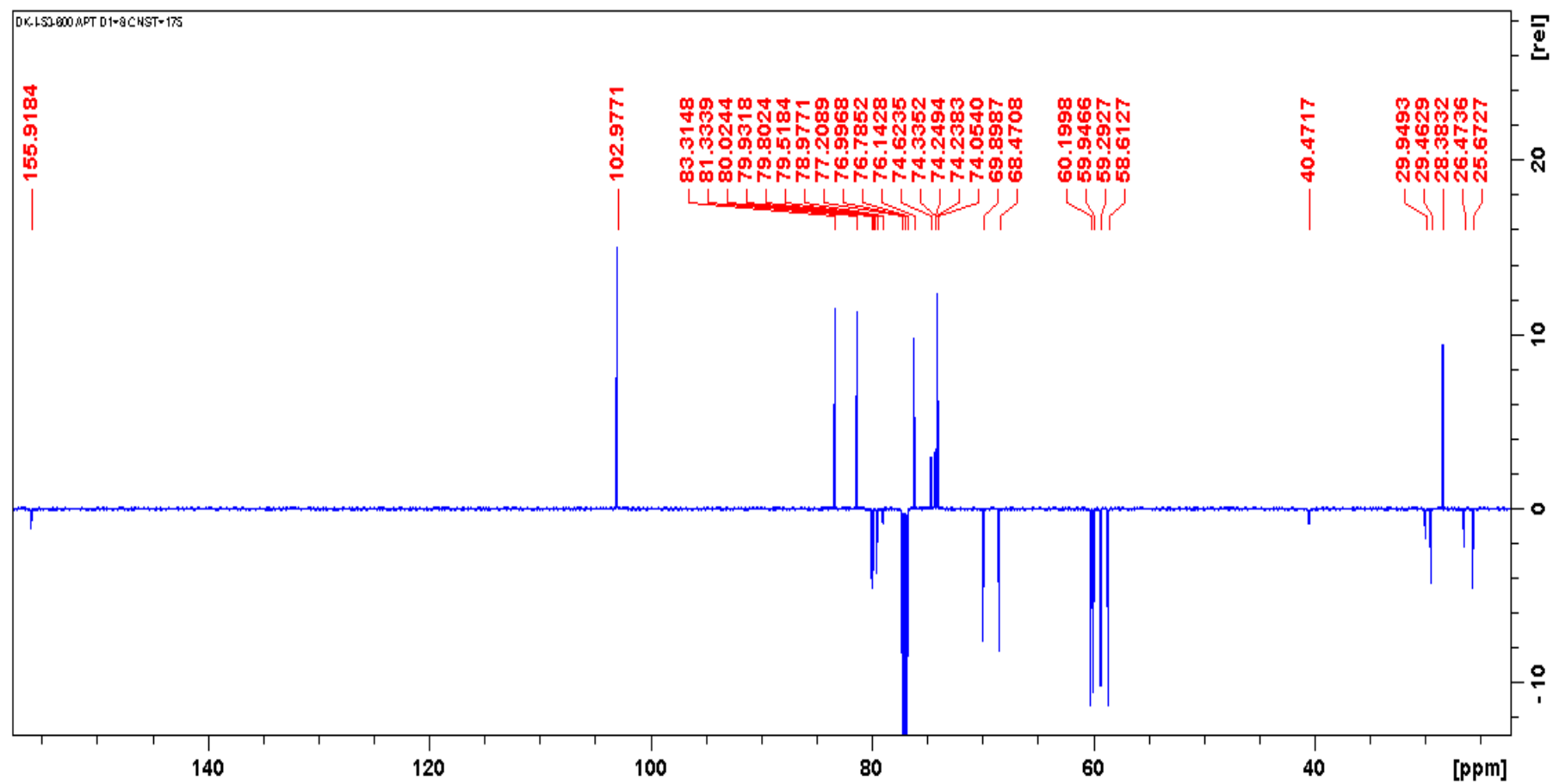


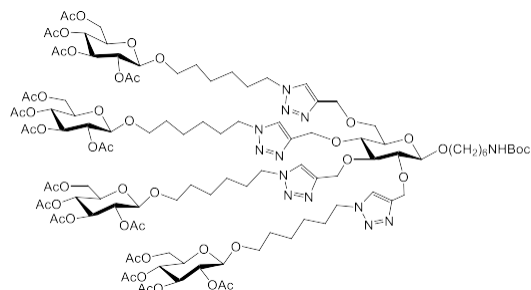
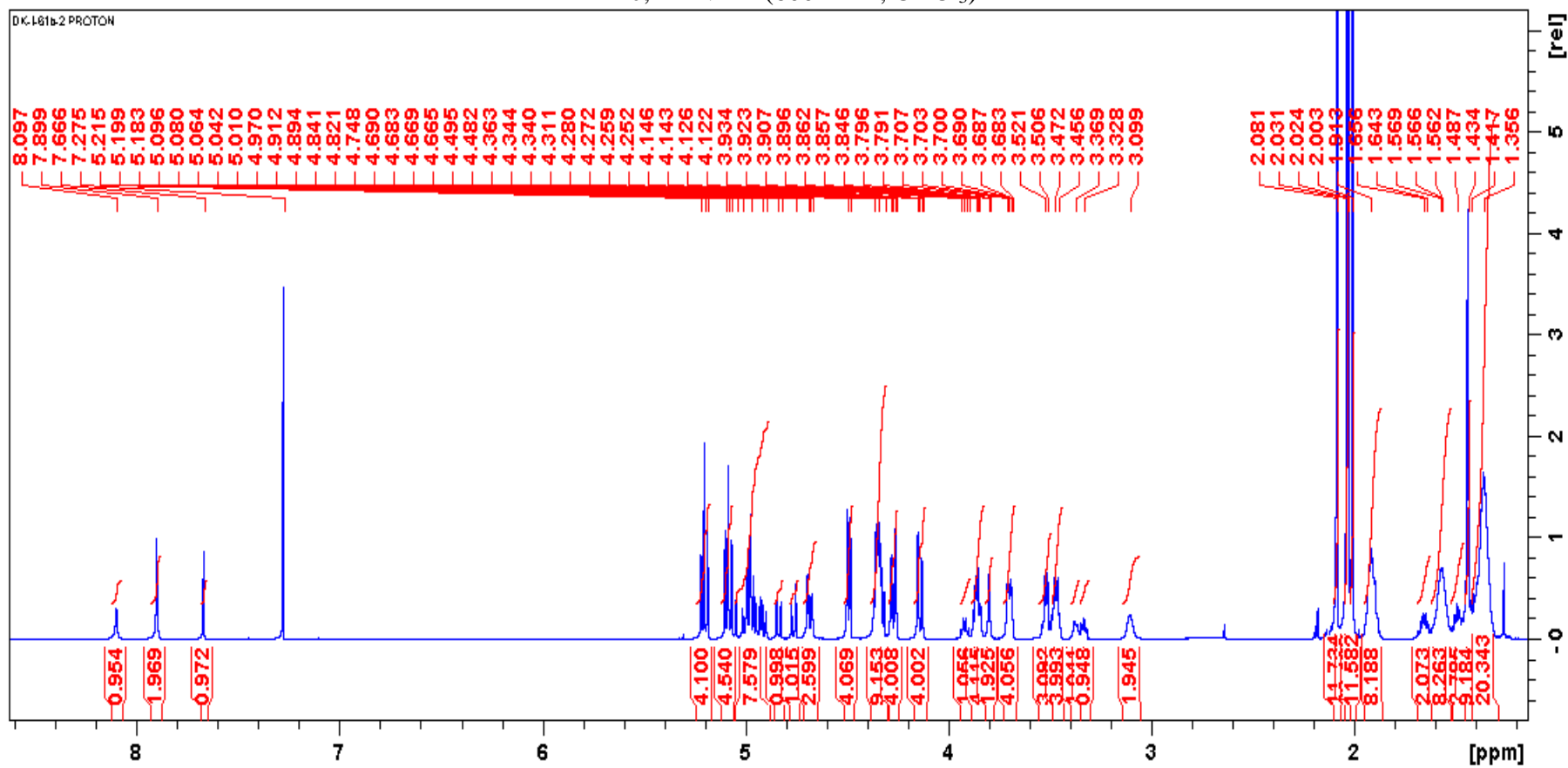
19, ^1H NMR (600 MHz, CDCl_3)

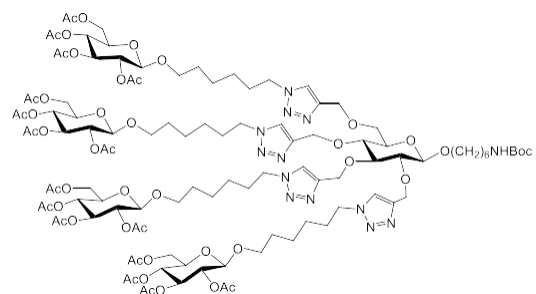




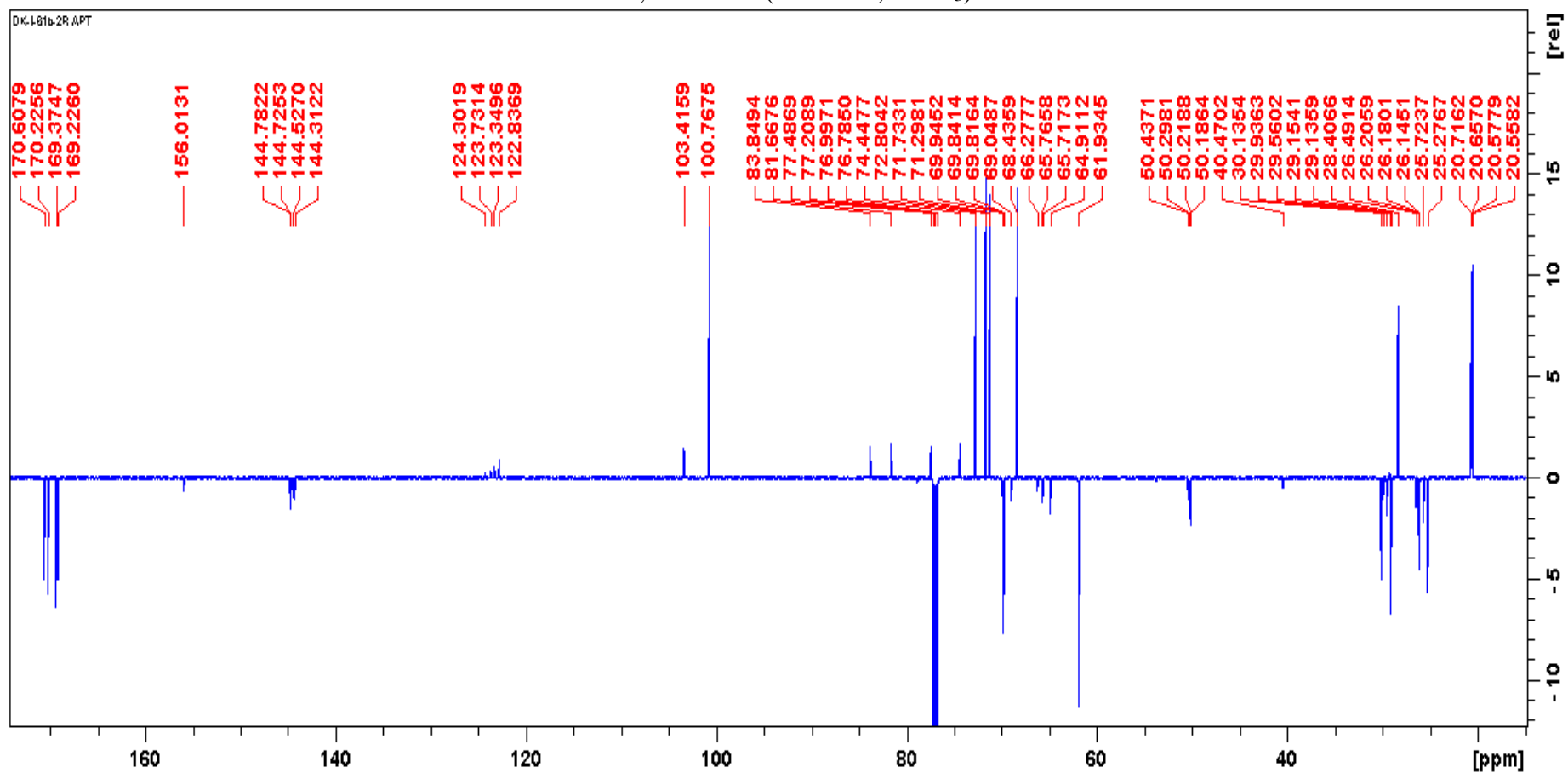
19, ¹³C NMR (150 MHz, CDCl₃)

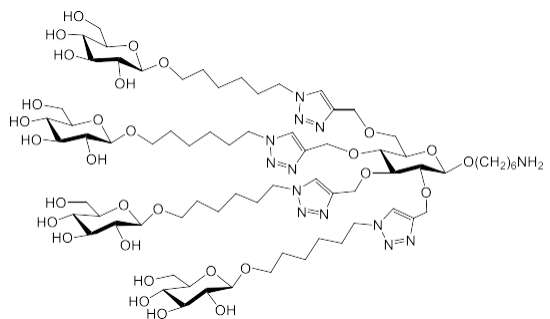
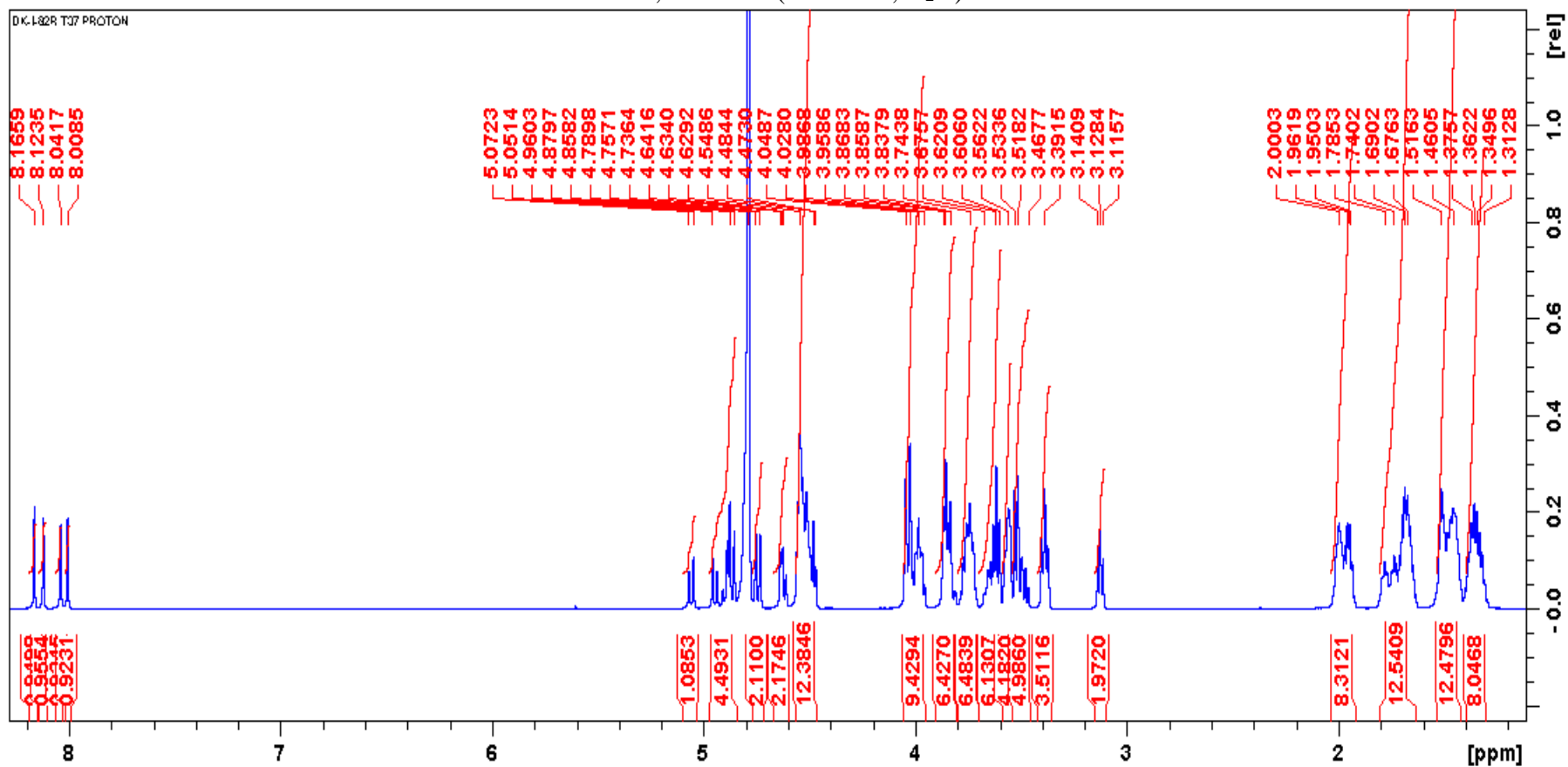


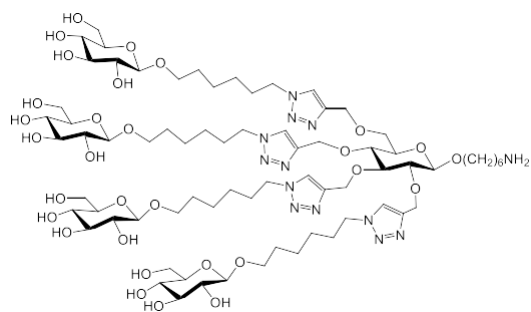
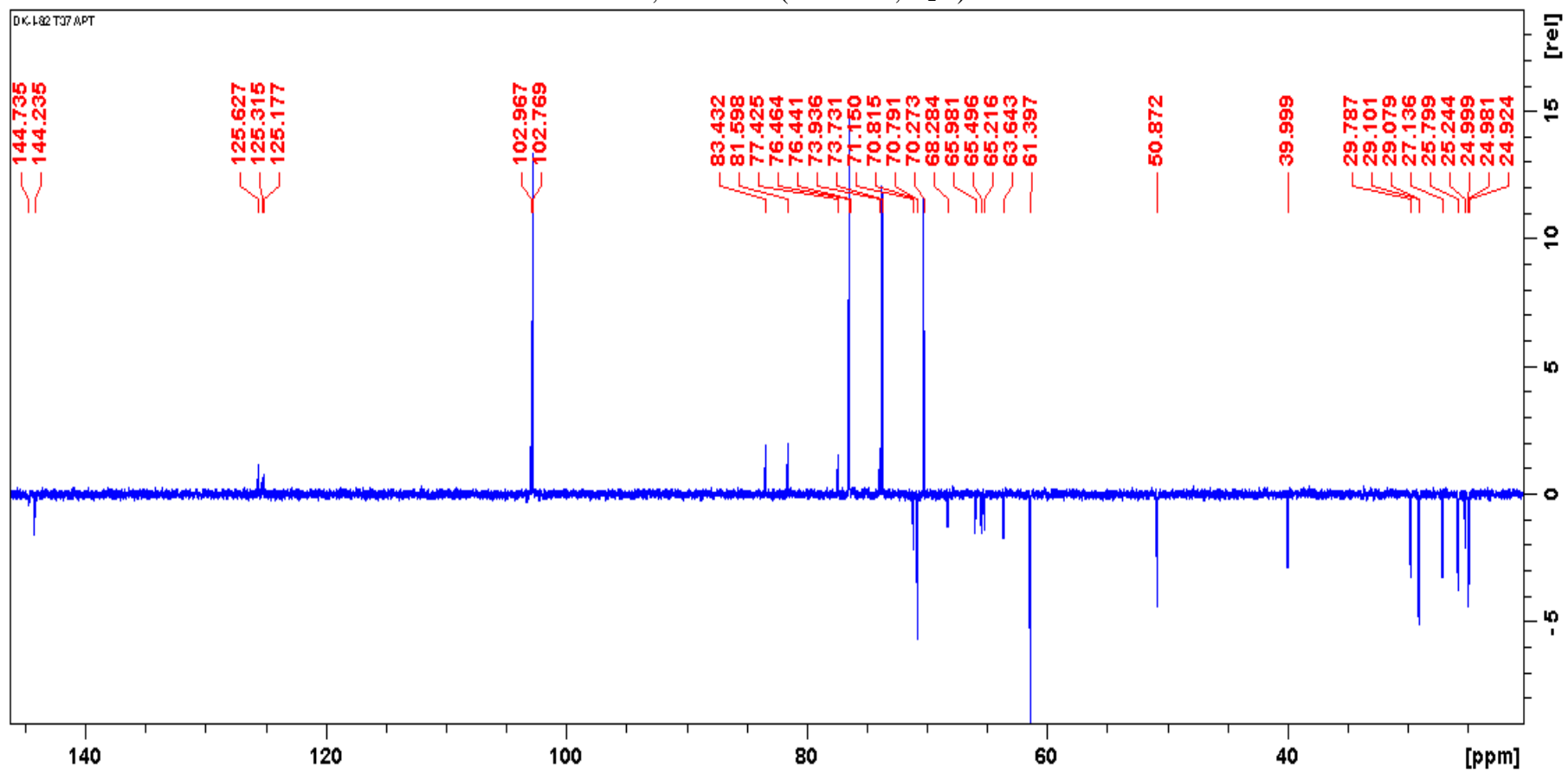
20, ^1H NMR (600 MHz, CDCl_3)

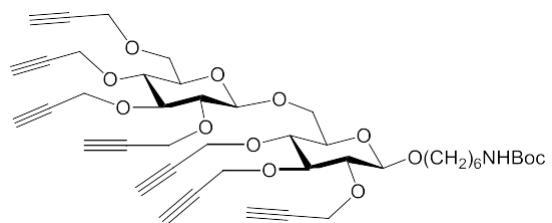
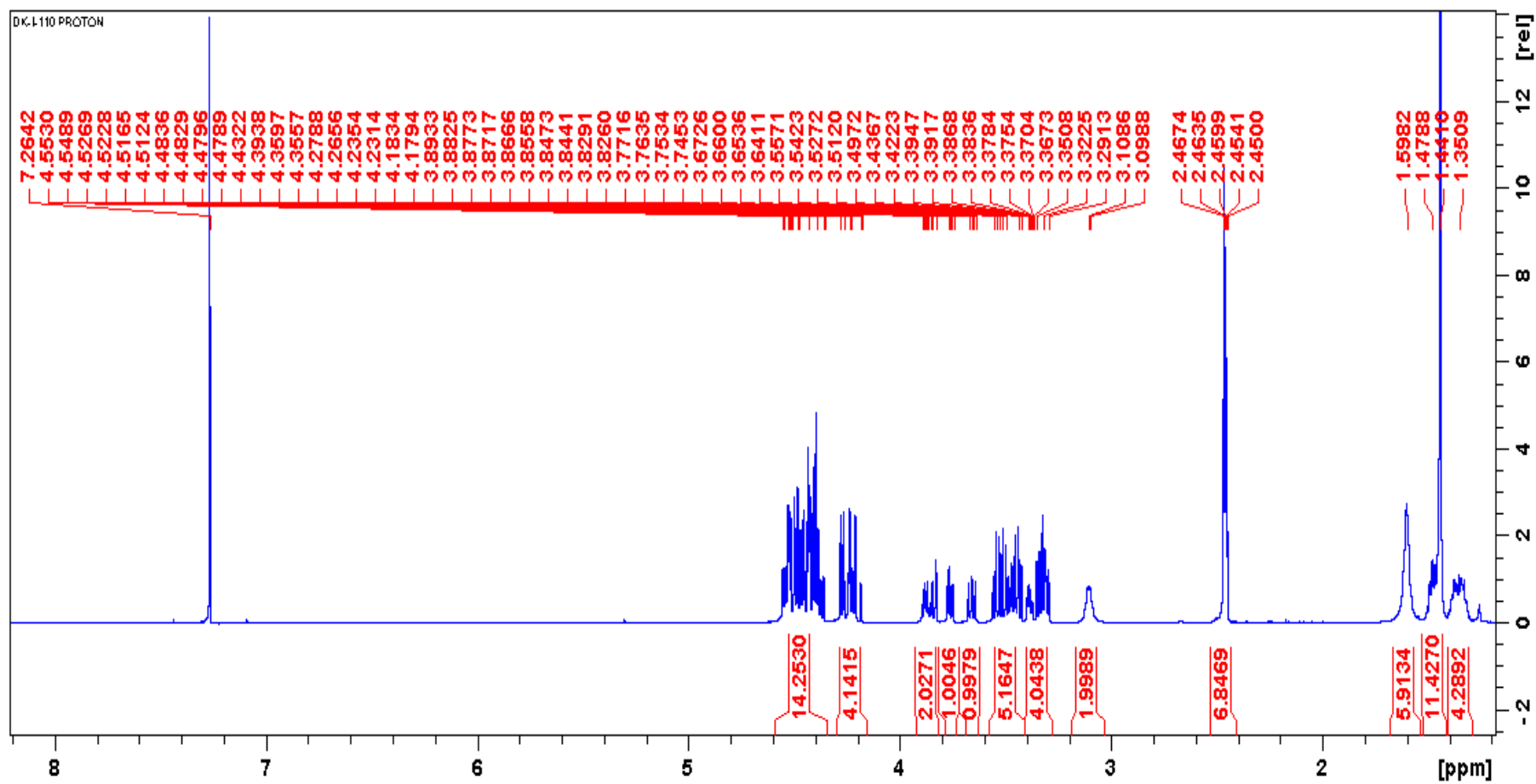


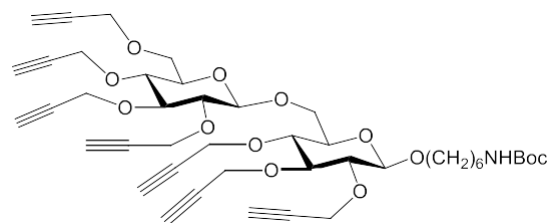
20, ¹³C NMR (150 MHz, CDCl₃)



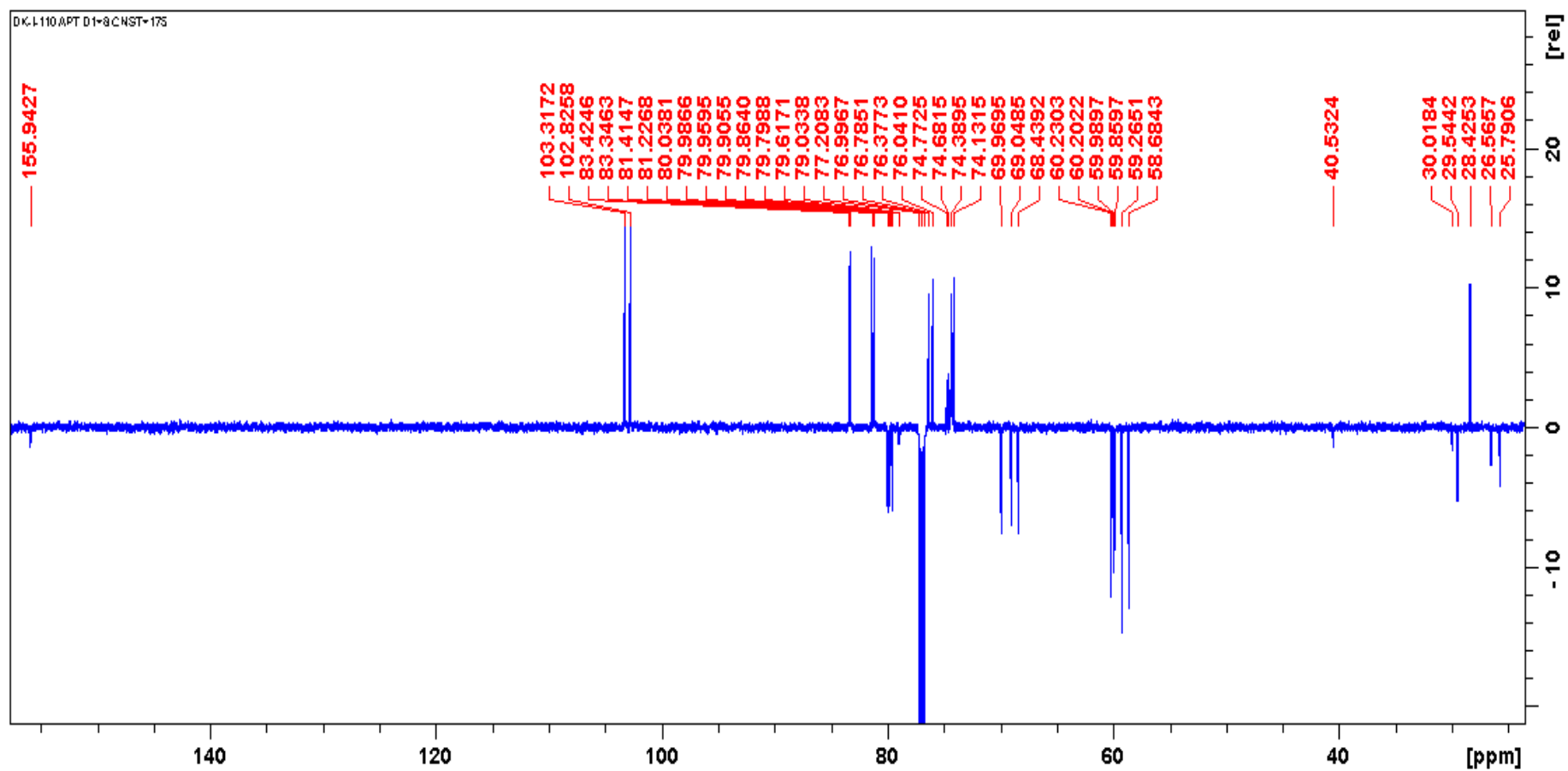
21, ^1H NMR (600 MHz, D_2O)

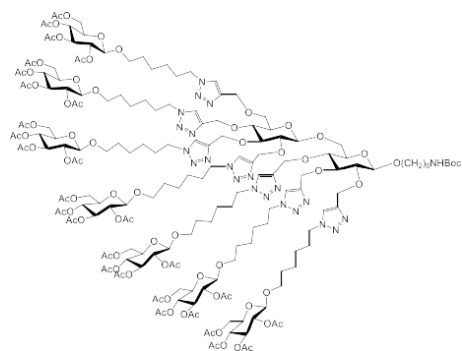
**21**, ^{13}C NMR (150 MHz, D_2O)

22, ^1H NMR (600 MHz, CDCl_3)

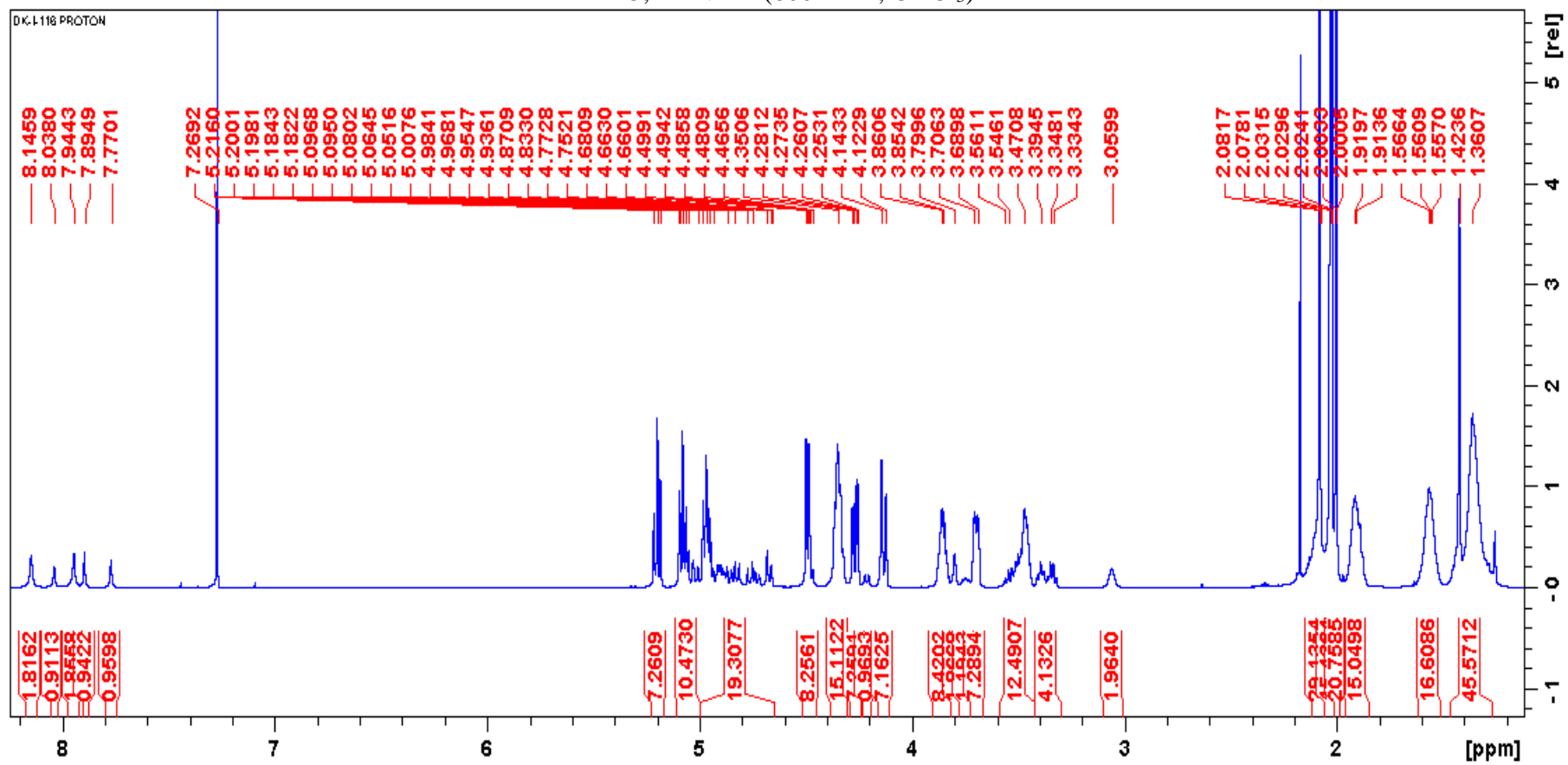


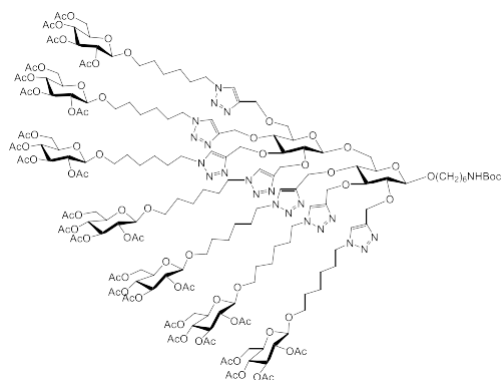
22, ^{13}C NMR (150 MHz, CDCl_3)



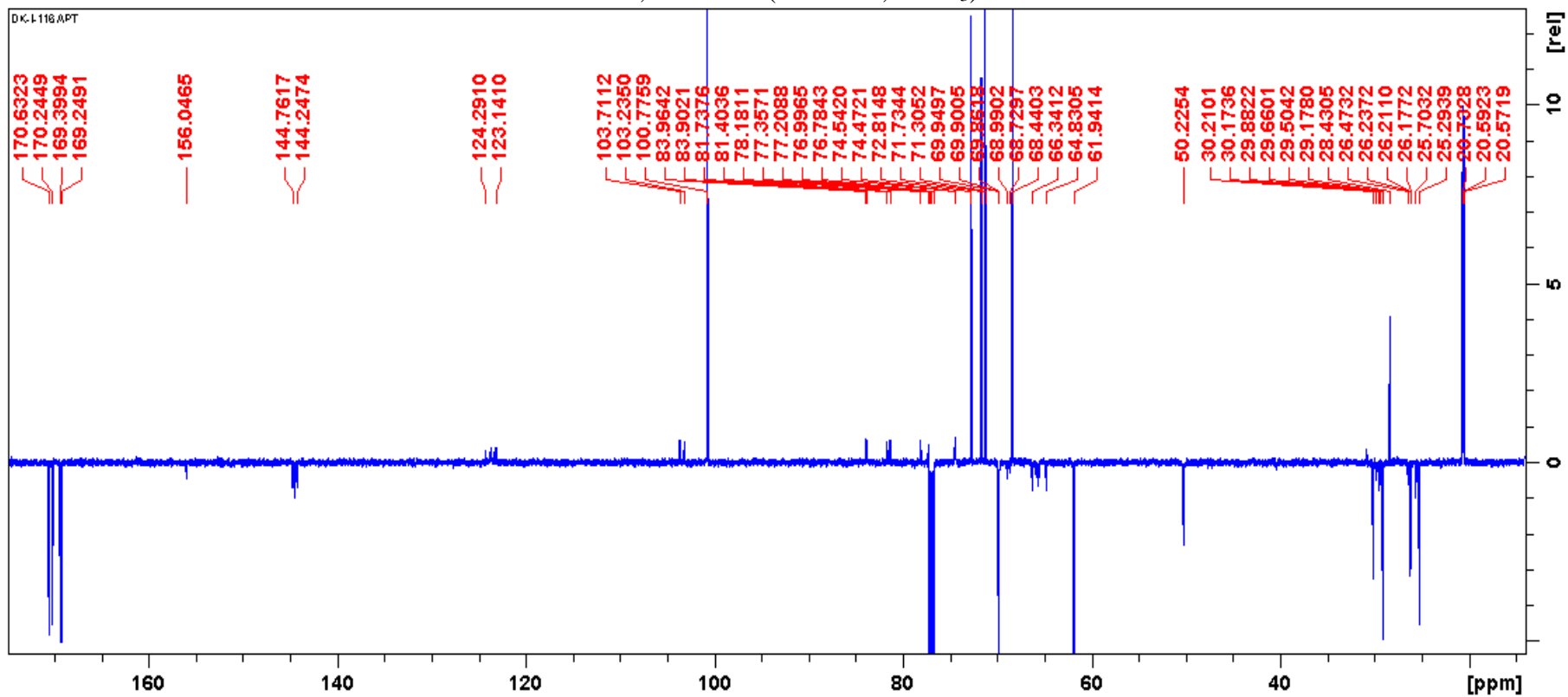


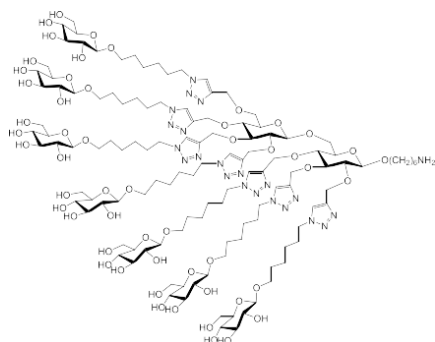
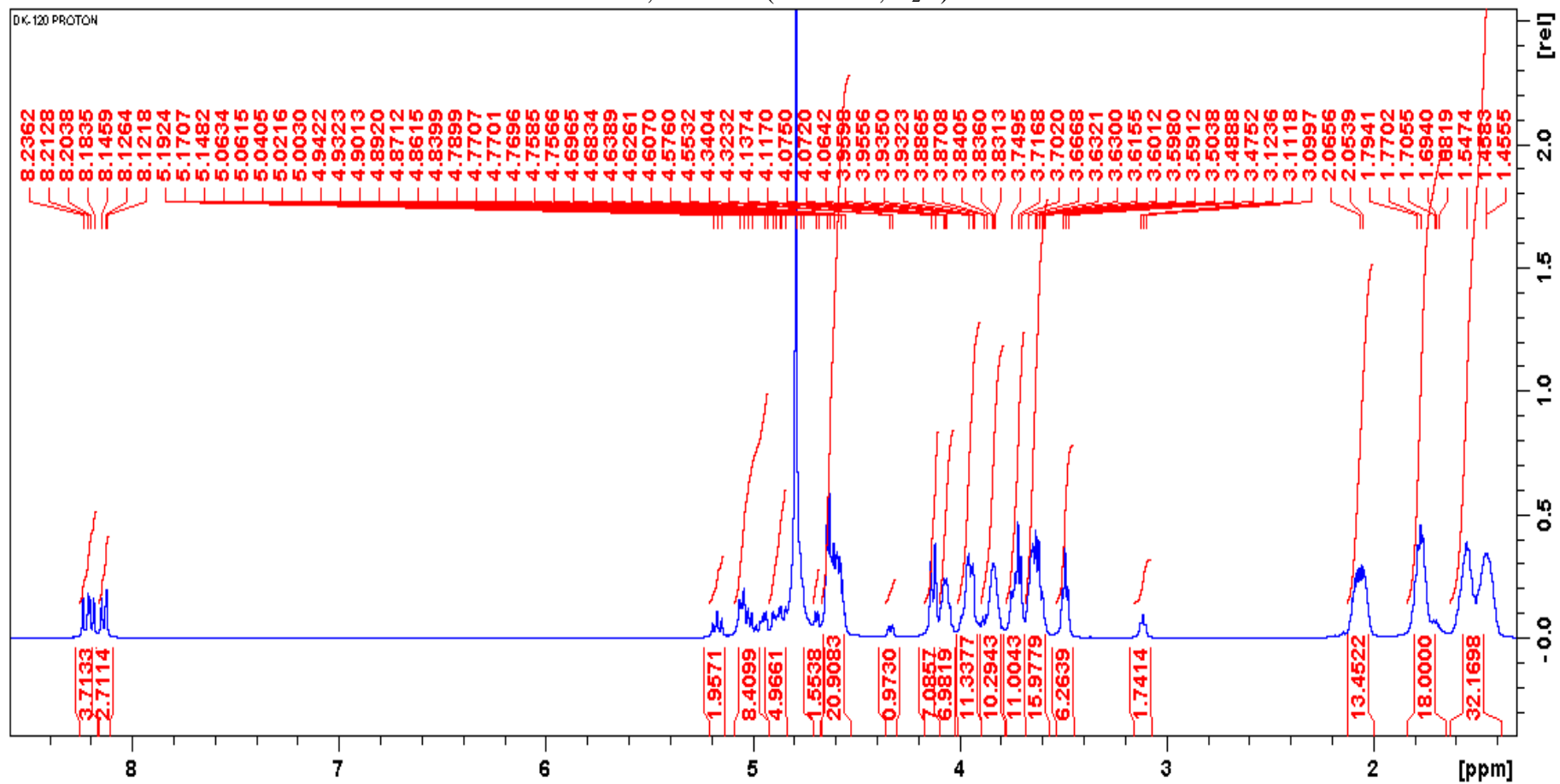
23, ^1H NMR (600 MHz, CDCl_3)

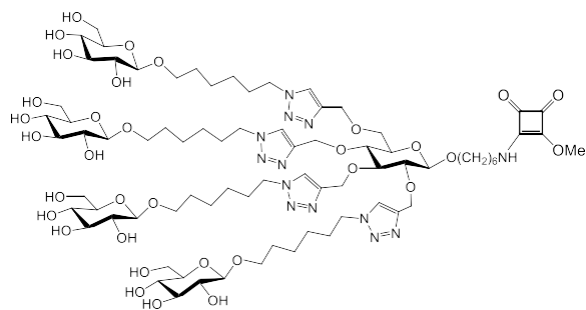
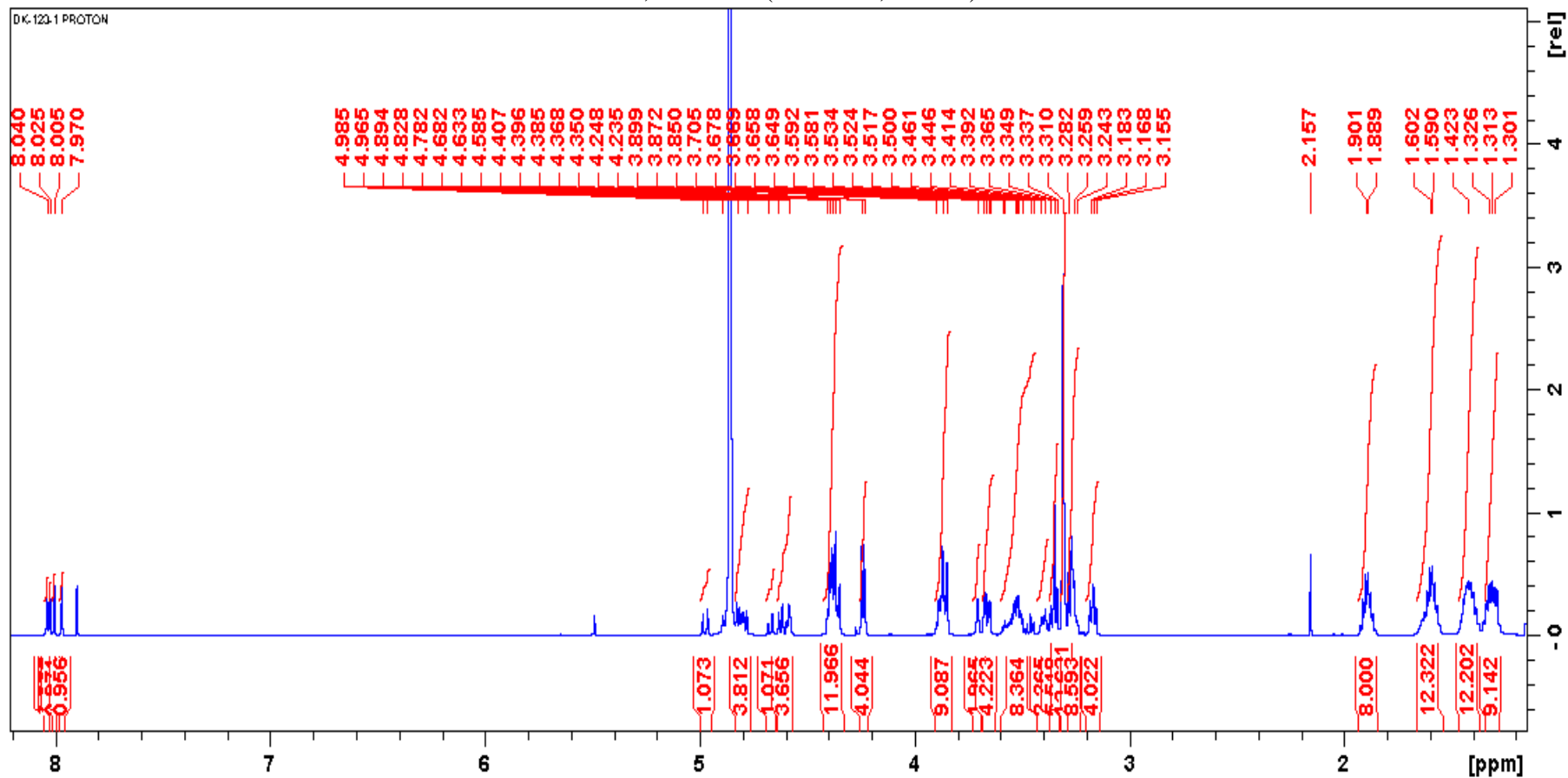


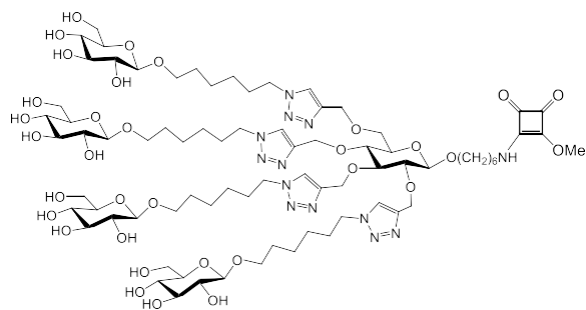


23, ¹³C NMR (150 MHz, CDCl₃)

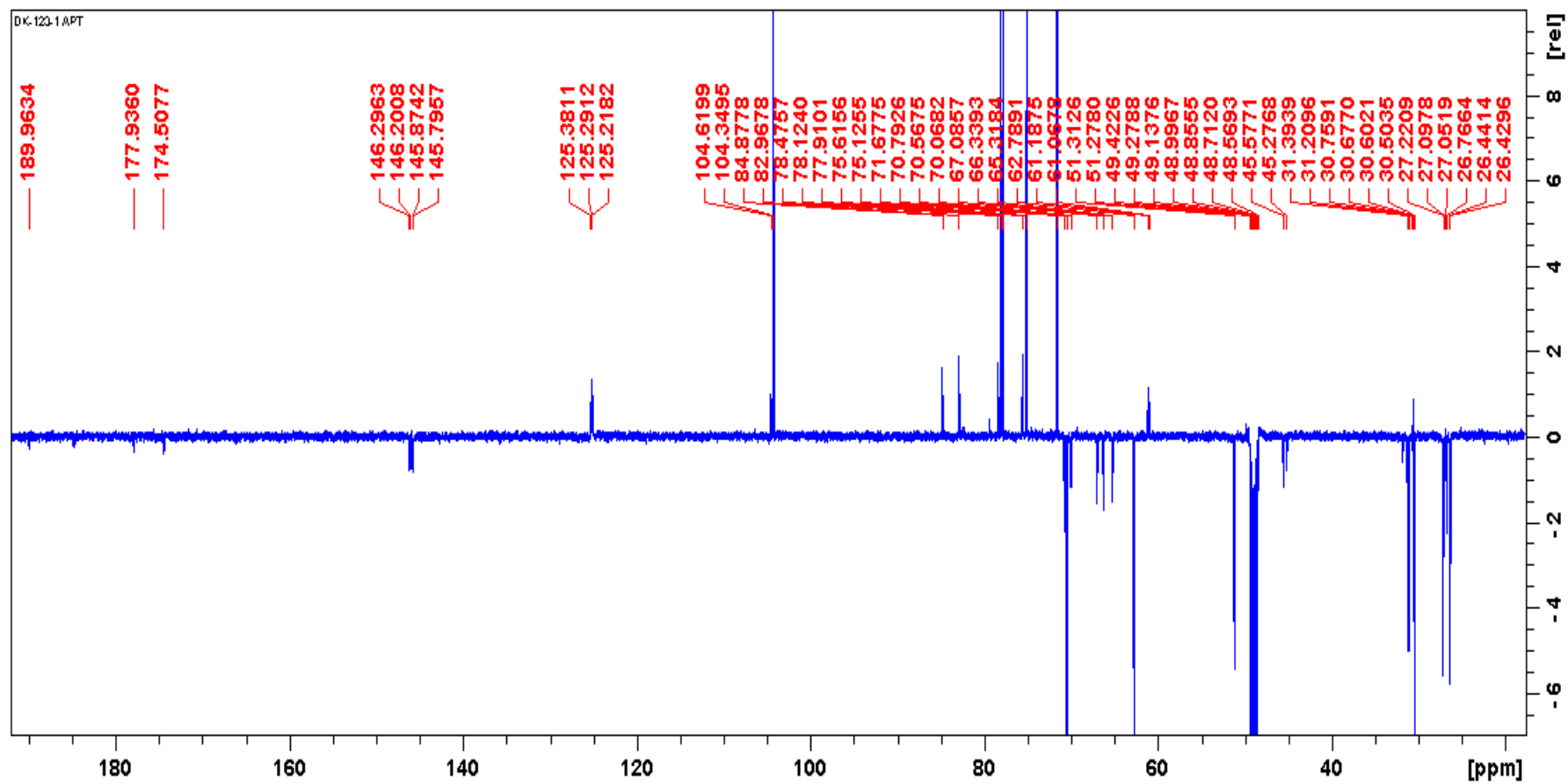


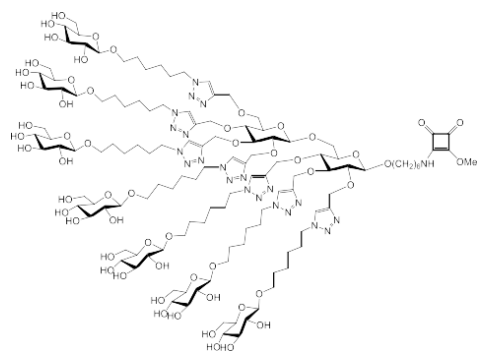
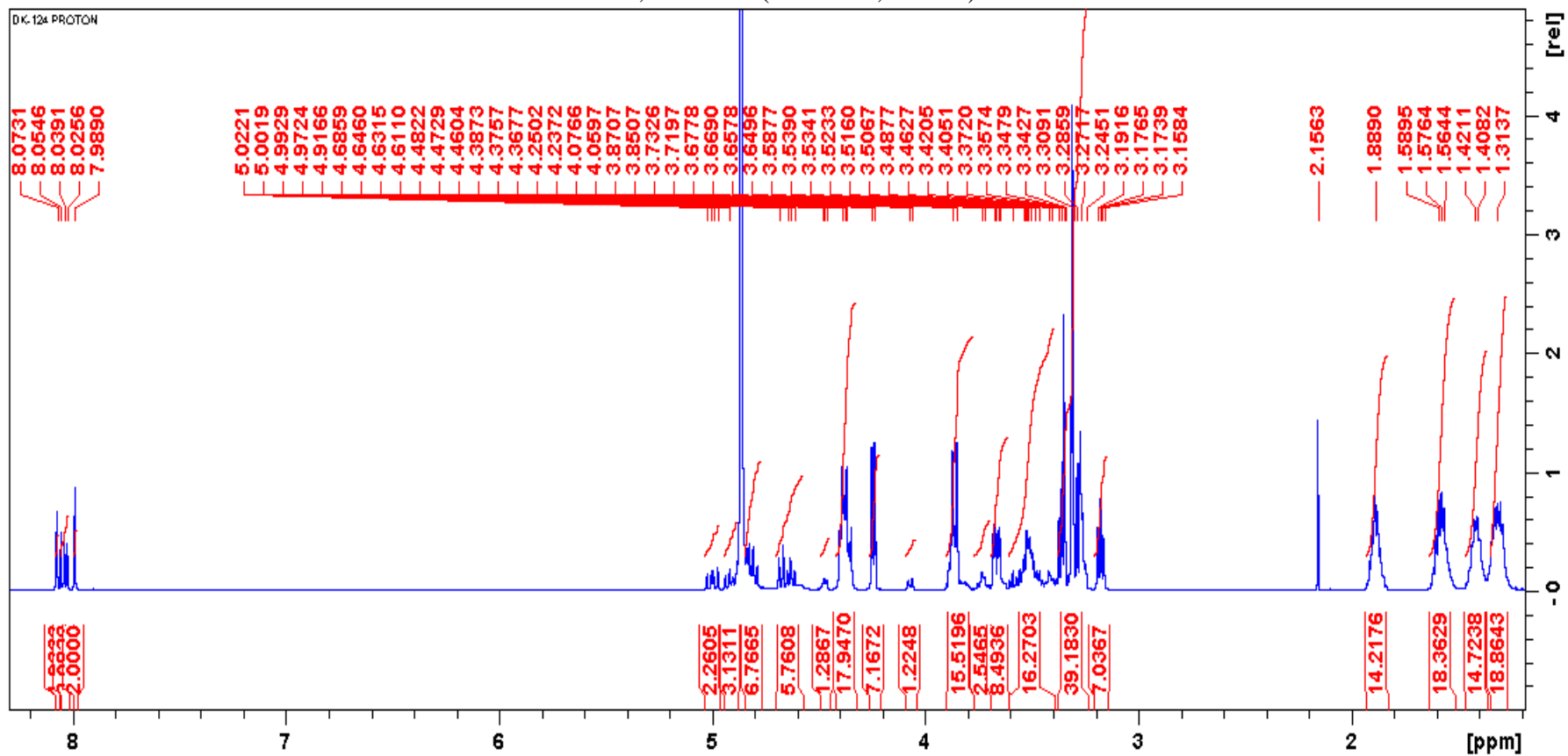
24, ^1H NMR (600 MHz, D_2O)

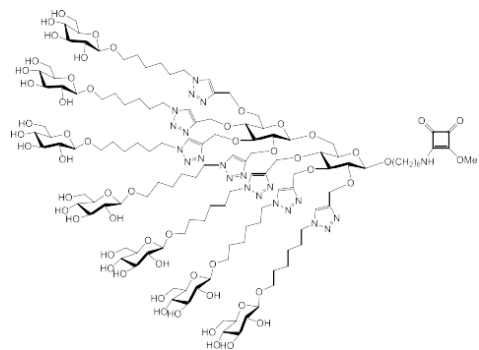
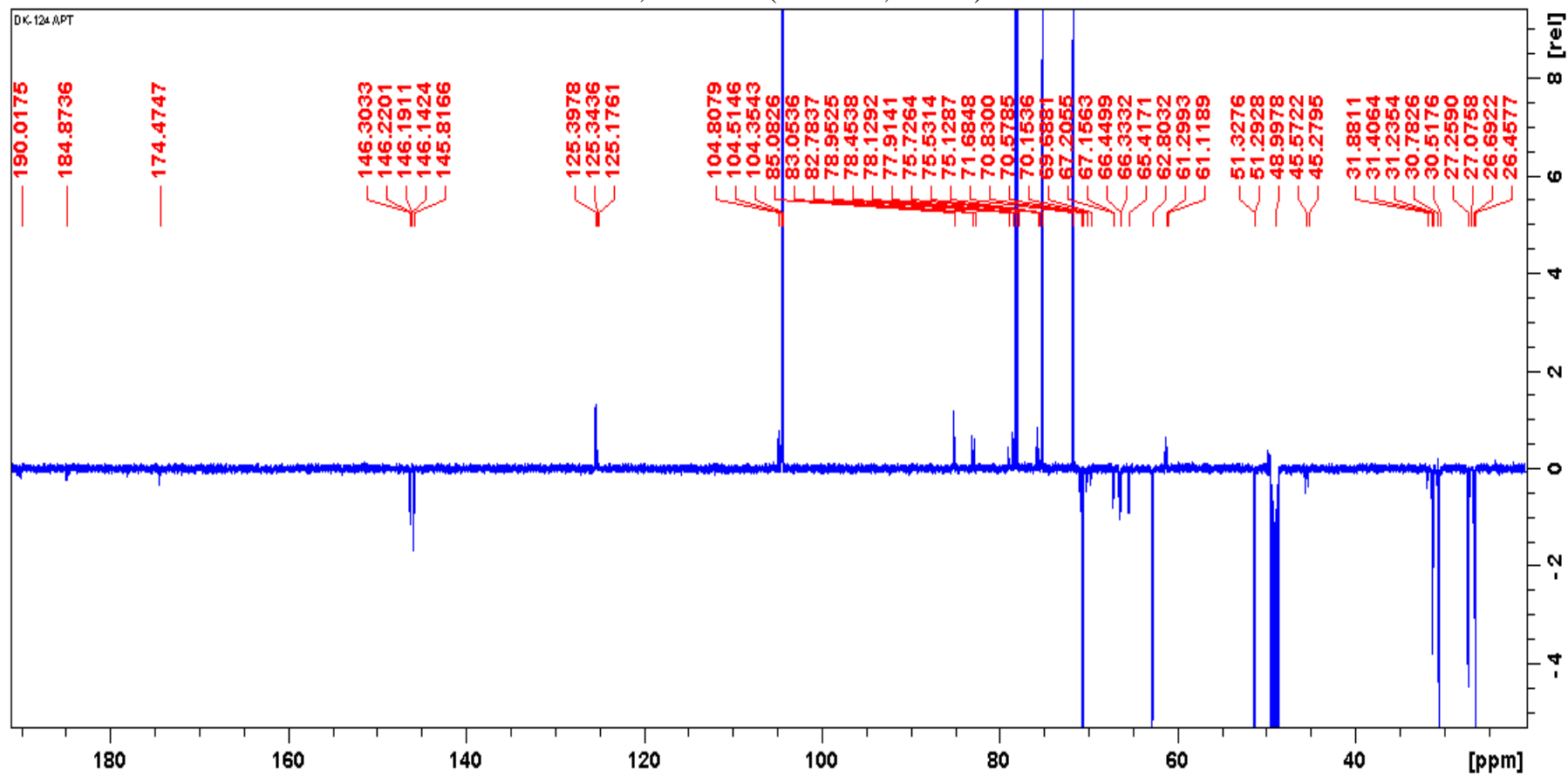
25, ^1H NMR (600 MHz, MeOD)

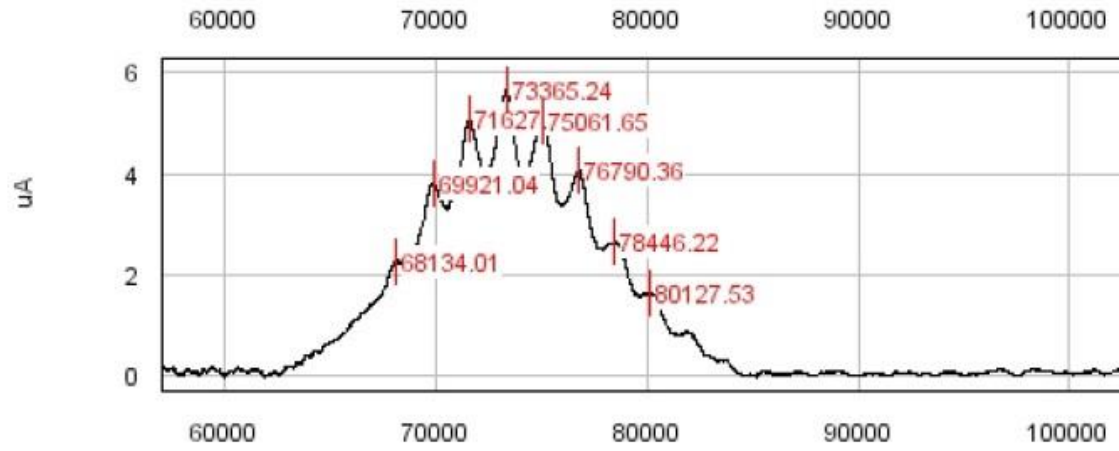


25, ¹³C NMR (150 MHz, MeOD)



27, ^1H NMR (600 MHz, MeOD)

27, ^{13}C NMR (150 MHz, MeOD)

SELDI-TOF MS of hapten-BSA Conjugate 26**SELDI-TOF MS of hapten-BSA Conjugate 28**