

Supplementary information

1.The Negative-Ion ESI-MS of HAOs with Even-Numbered Sugar Residues

20180306-D2_180306110208 #168 RT: 1.47 AV: 1 NL: 2.17E8
T: FTMS - p ESI Full ms [120.00-1500.00]

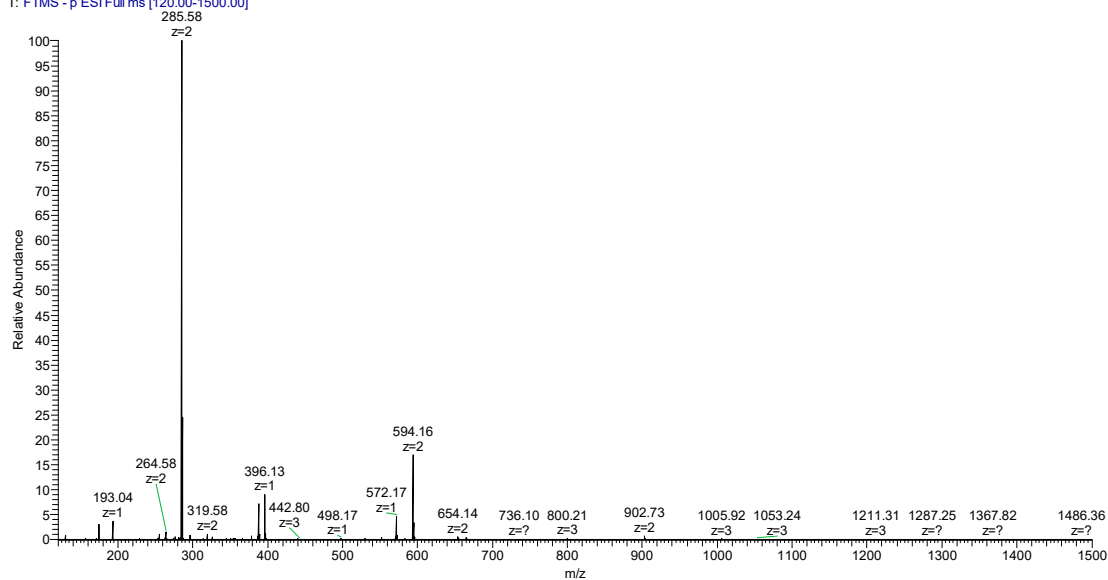


Figure S1. The negative-ion ESI-MS of 3-mer HA

20180306-D4_180306110208 #72 RT: 0.56 AV: 1 NL: 1.63E8
T: FTMS - p ESI Full ms [120.00-1500.00]

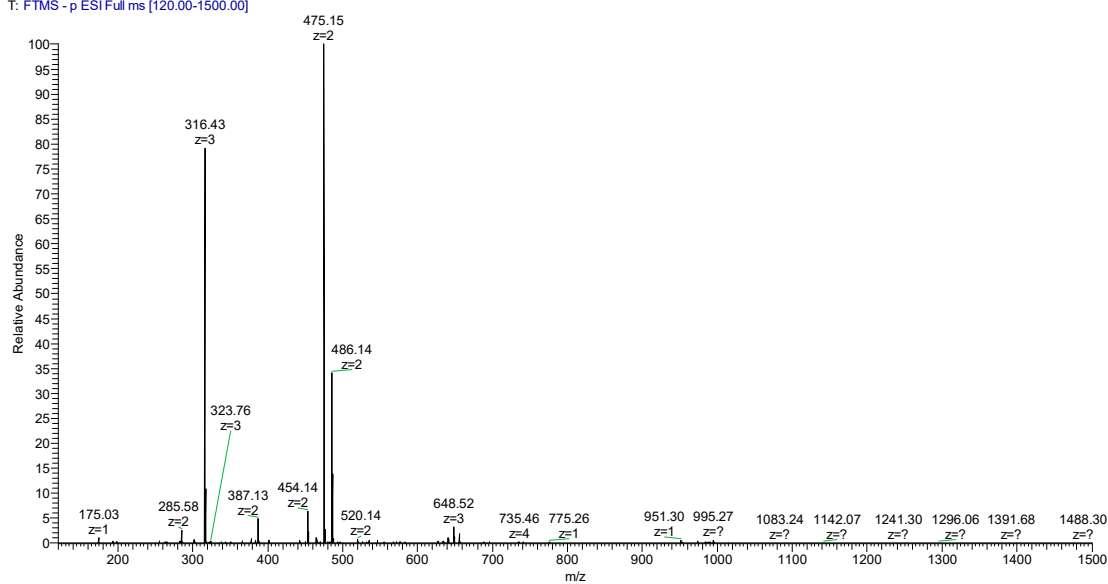


Figure S2 The negative-ion ESI-MS of 5-mer HA

20180306-D6_180306110208 #77 RT: 0.73 AV: 1 NL: 4.39E8
T: FTMS - p ESI Full ms [120.00-1500.00]

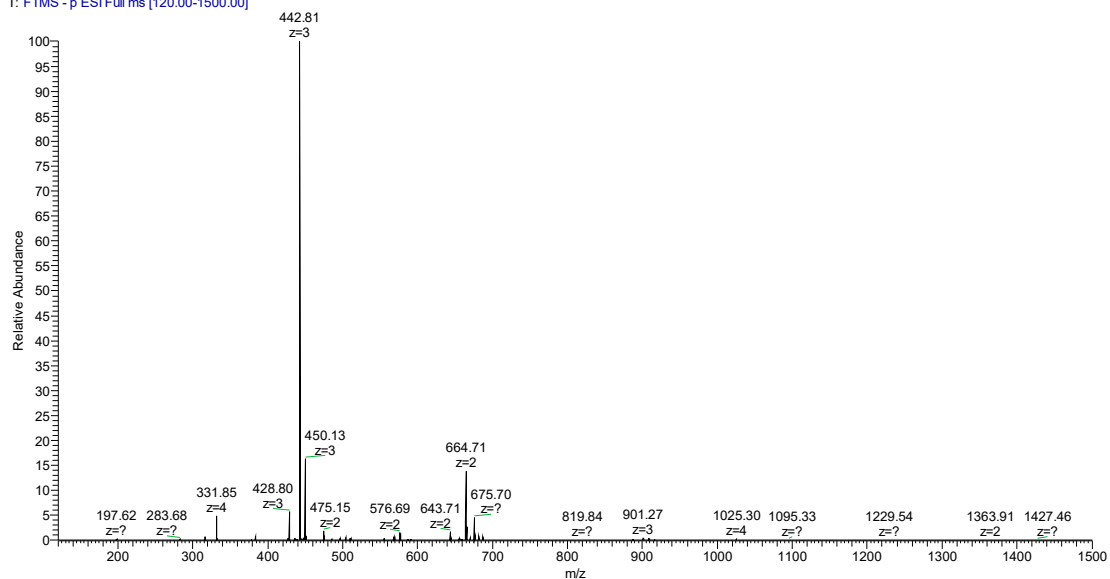


Figure S3. The negative-ion ESI-MS of 7-mer HA

20180306-D6_180306110208 #94 RT: 0.83 AV: 1 NL: 3.36E8
T: FTMS - p ESI Full ms [120.00-1500.00]

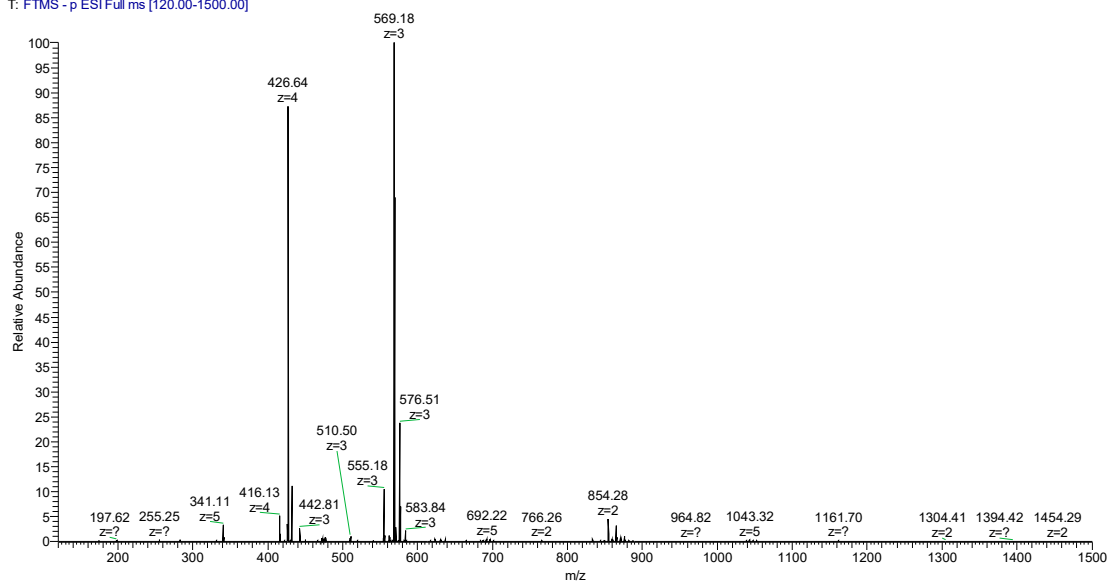


Figure S4. The negative-ion ESI-MS of 9-mer HA

20180306-D10_180306110208 #90 RT: 0.78 AV: 1 NL: 1.65E8
T: FTMS - p ESI Full ms [120.00-1500.00]

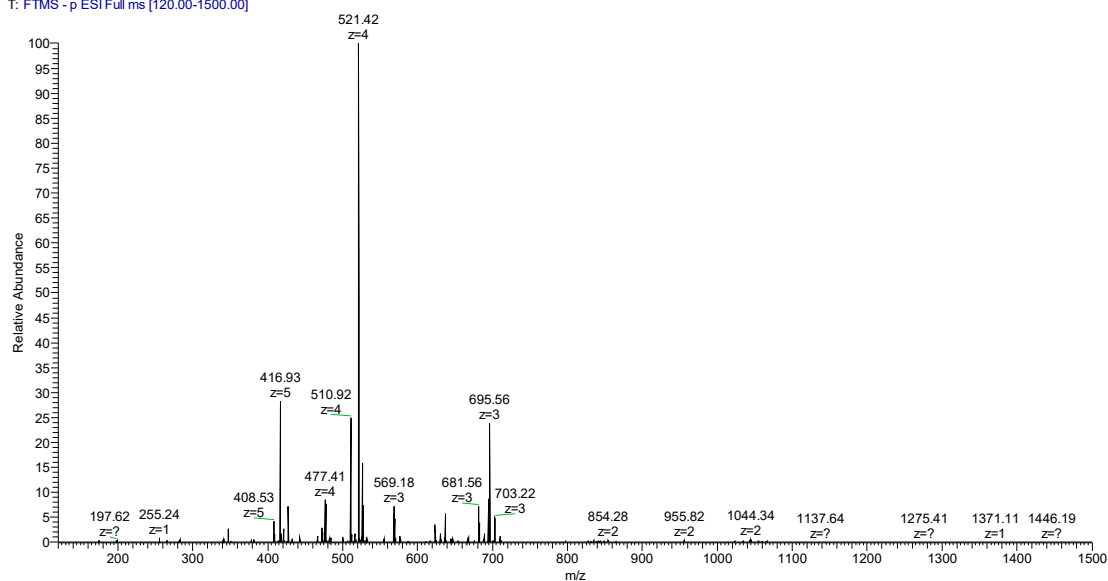


Figure S5. The negative-ion ESI-MS of 11-mer HA

2.The negative-ion ESI-MS of HAOs with odd-numbered sugar residues

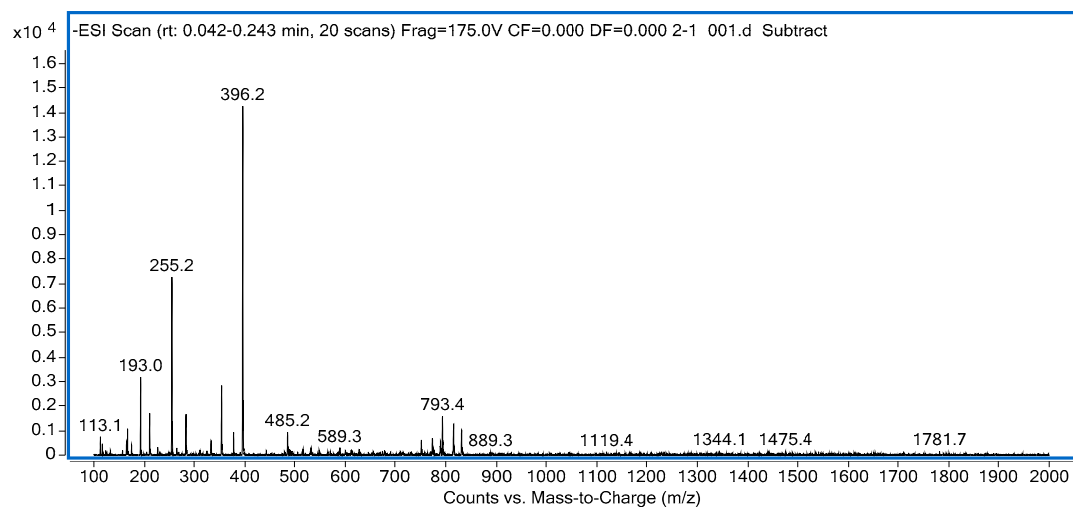


Figure S6. The negative-ion ESI-MS of 2-mer HA

20180404-D4_180402132140 #51 RT: 0.54 AV: 1 NL: 3.72E7
T: FTMS - p ESI Full ms [150.00-2000.00]

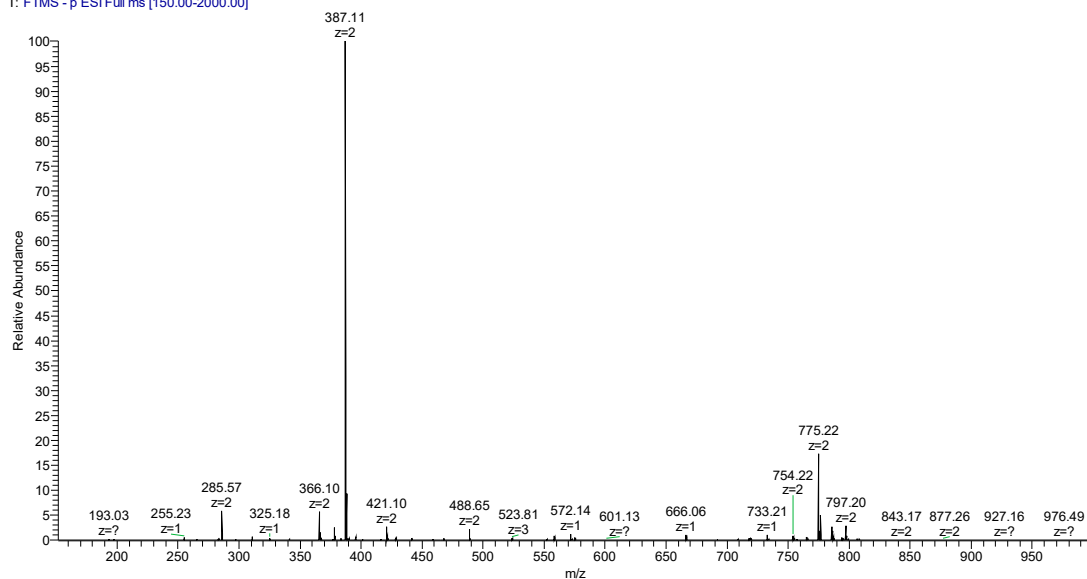


Figure S7. The negative-ion ESI-MS of 4-mer HA

20180404-D6_180402132140 #37 RT: 0.38 AV: 1 NL: 3.51E7
T: FTMS - p ESI Full ms [150.00-2000.00]

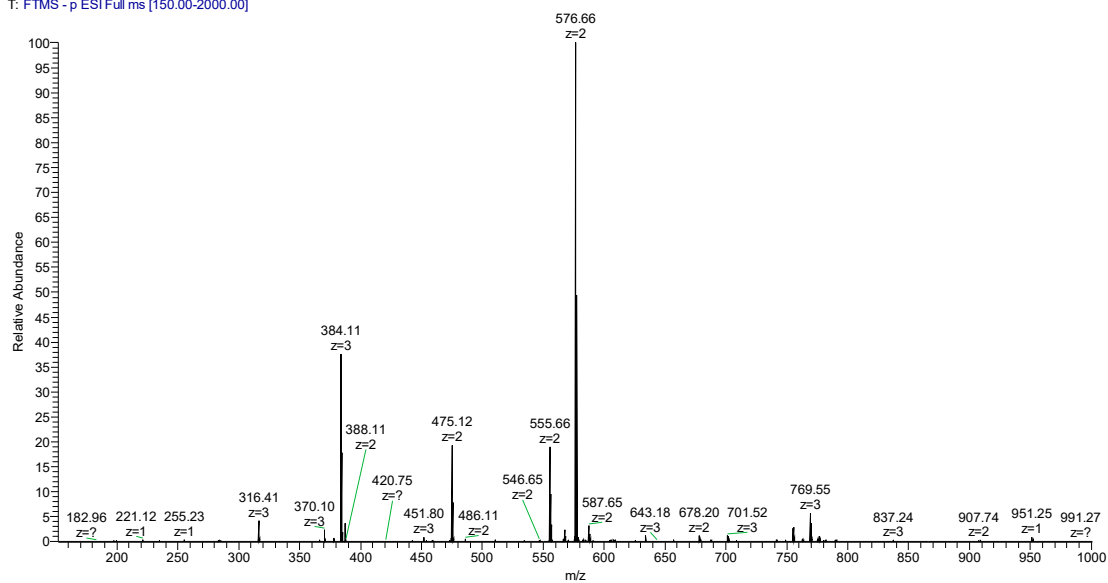


Figure S8. The negative-ion ESI-MS of 6-mer HA

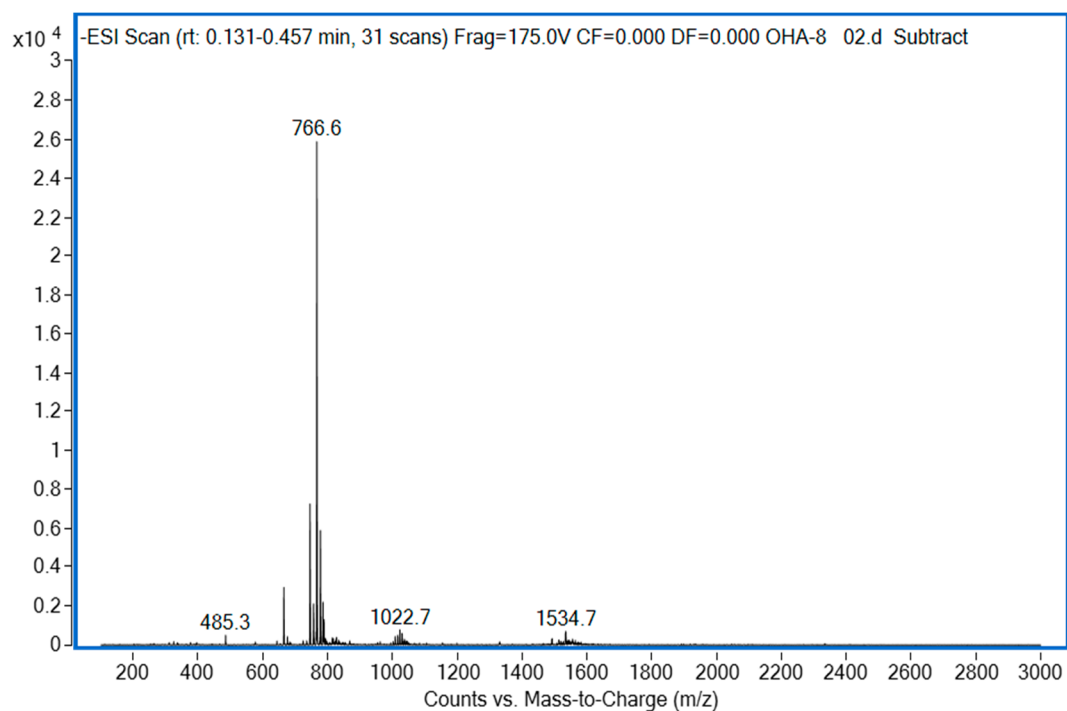


Figure S9. The negative-ion ESI-MS of 8-mer HA

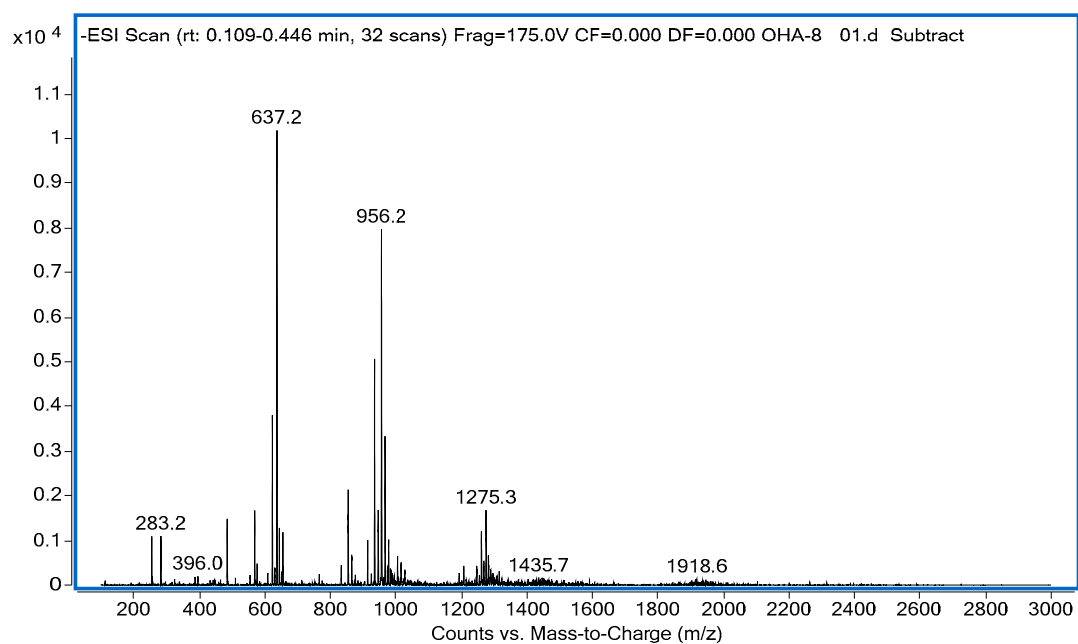


Figure S10. The negative-ion ESI-MS of 10-mer HA

3.The ¹H NMR spectra of HAOs with even-numbered sugar residues

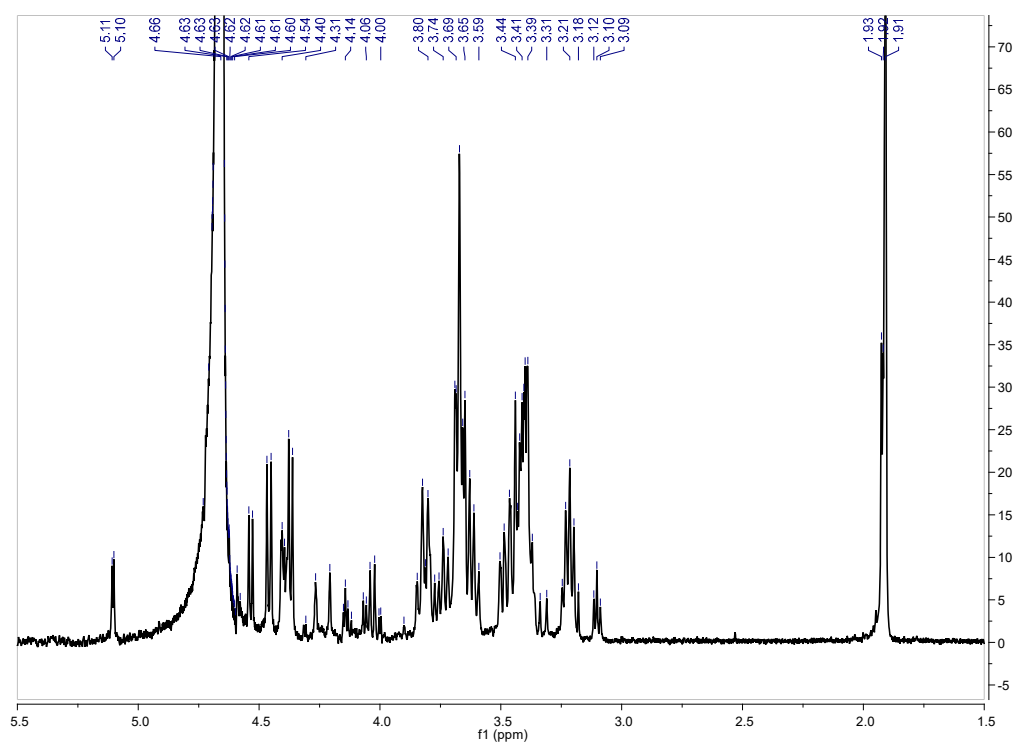


Figure S11. The ^1H NMR spectrum of 3-mer HA

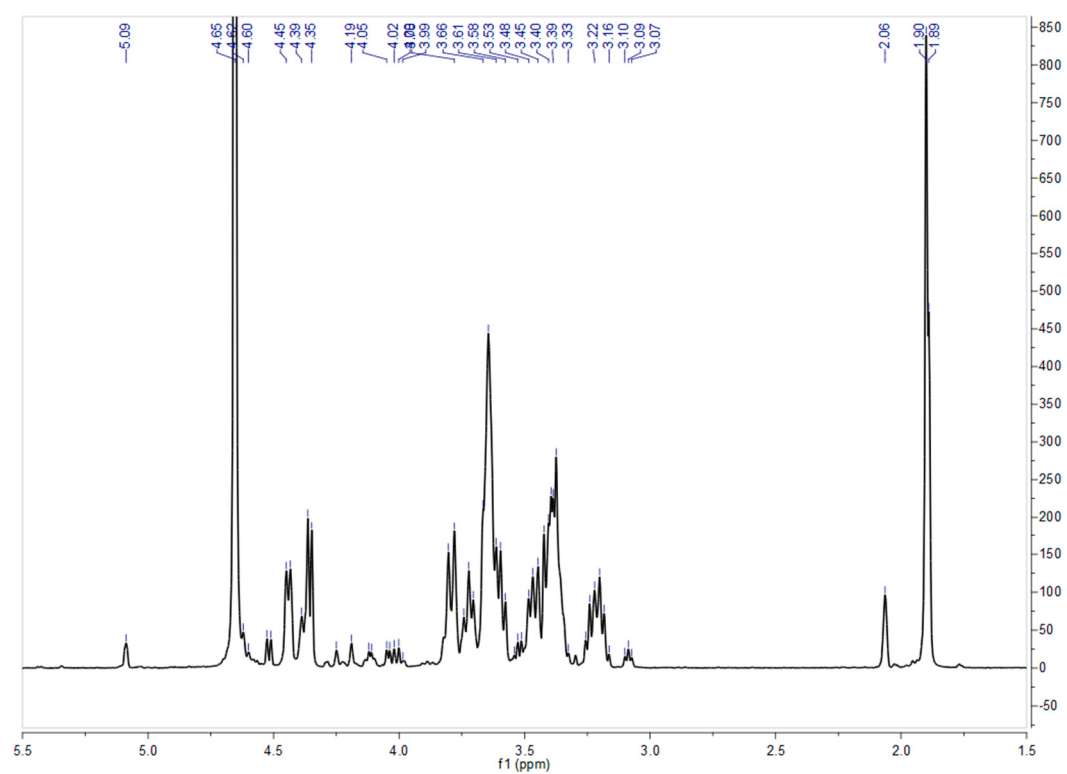


Figure S12. The ^1H NMR spectrum of 5-mer HA

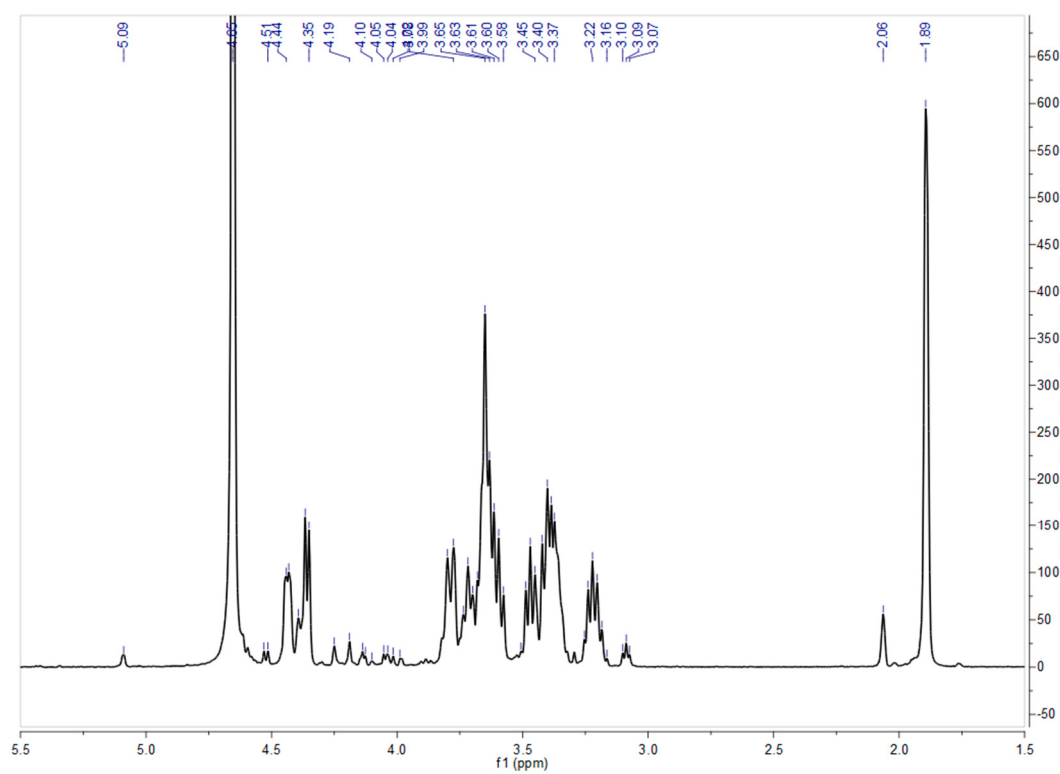


Figure S13. The ^1H NMR spectrum of 7-mer HA

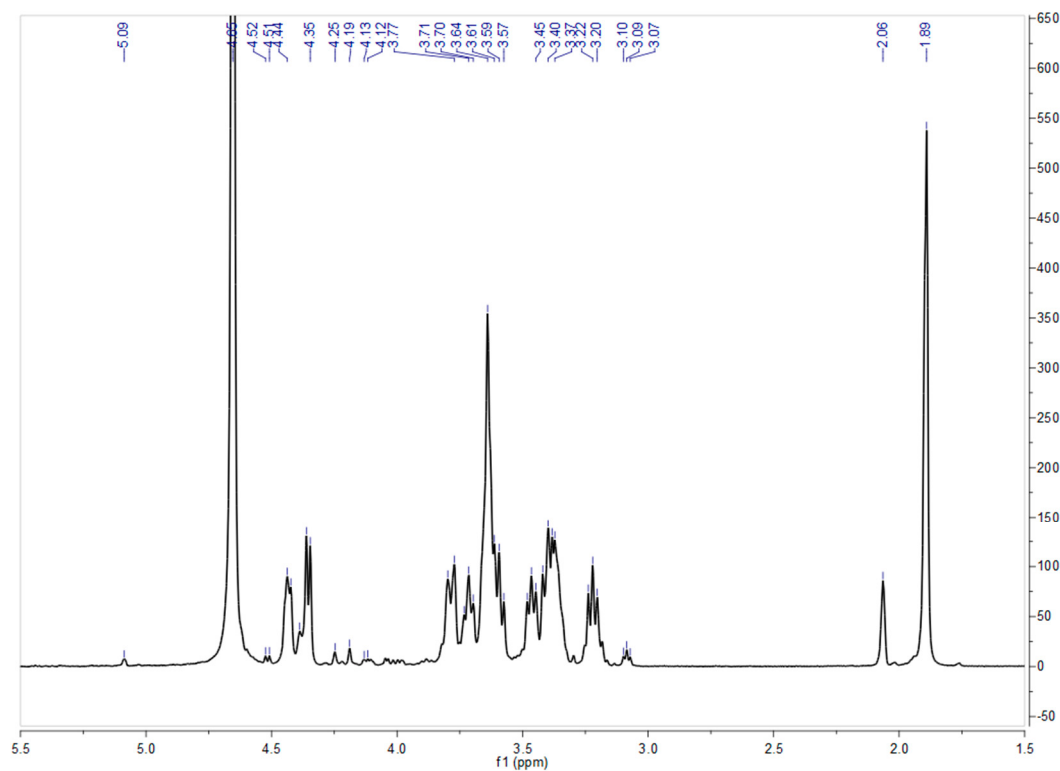


Figure S14. The ^1H NMR spectrum of 9-mer HA

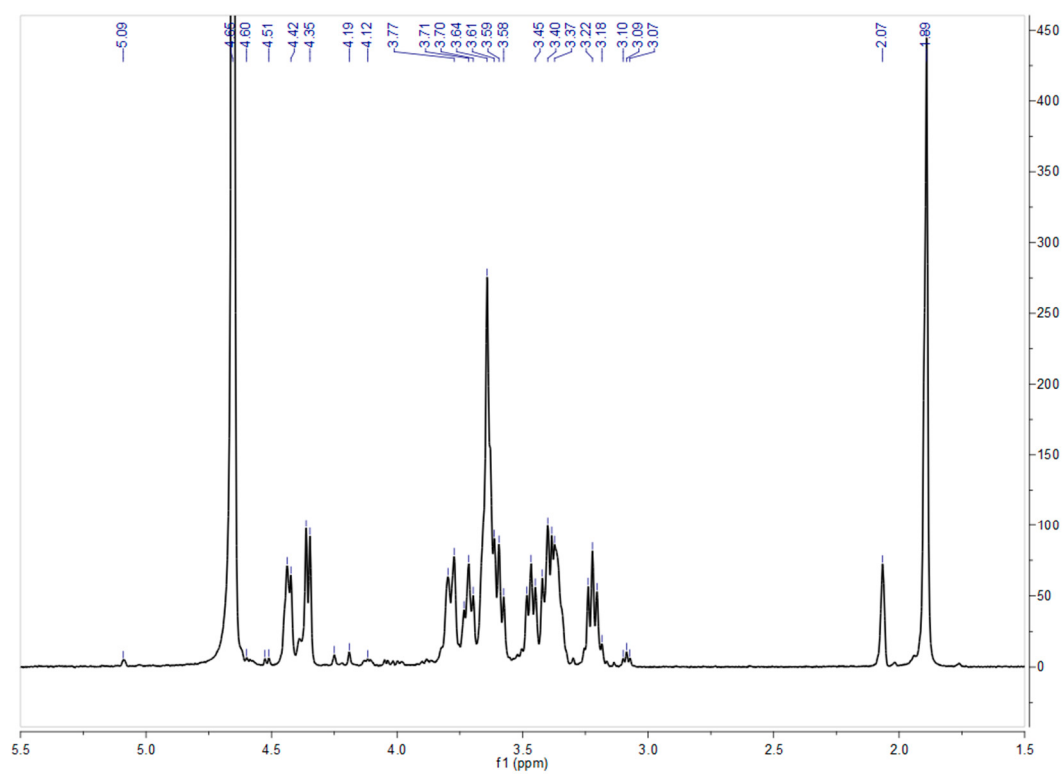


Figure S15. The ^1H NMR spectrum of 11-mer HA

4. The ^1H NMR spectra of HAOs with odd-numbered sugar residues

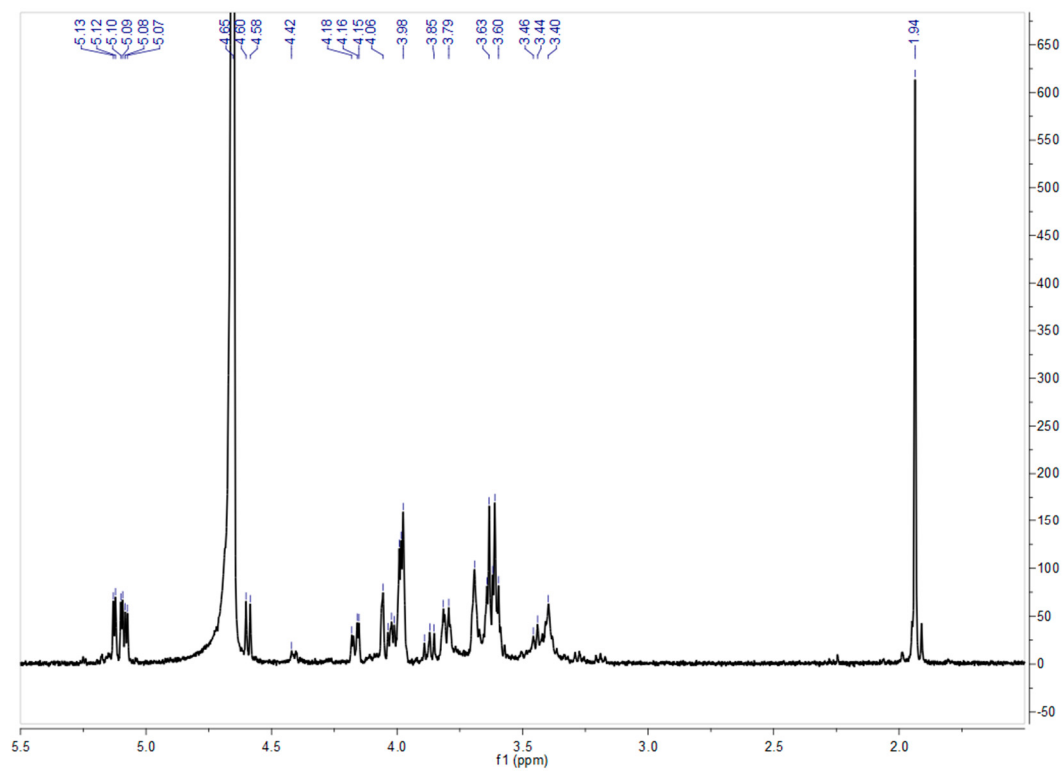


Figure S16. The ^1H NMR spectrum of 2-mer HA

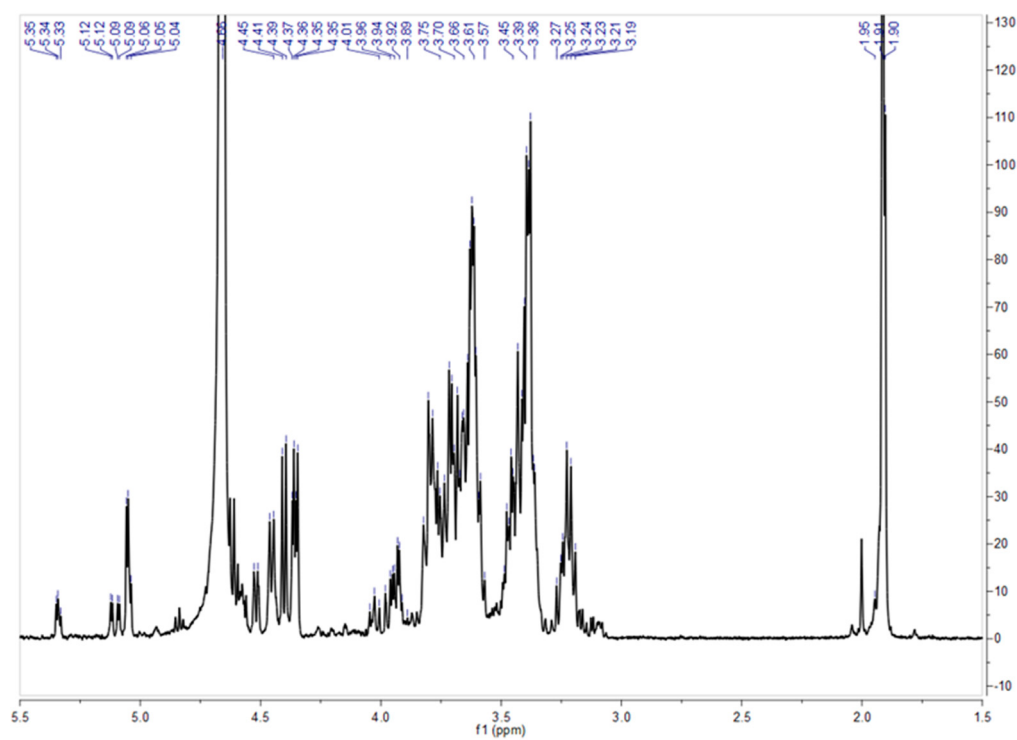


Figure S17. The ^1H NMR spectrum of 4-mer HA

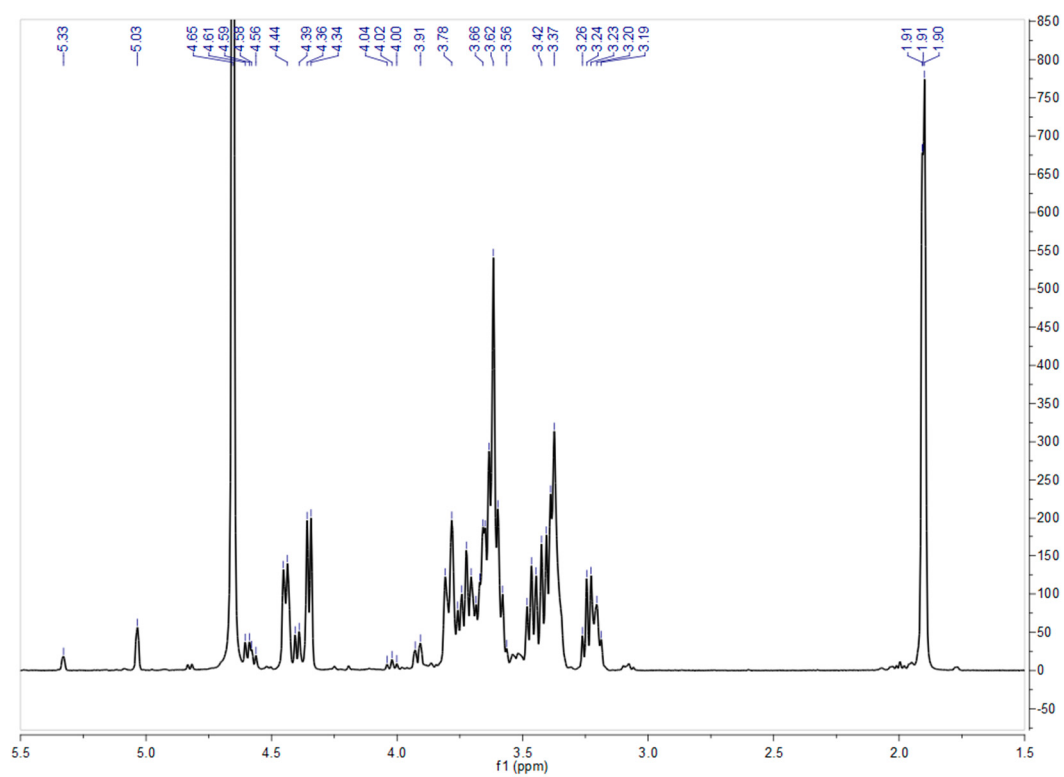


Figure S18. The ^1H NMR spectrum of 6-mer HA

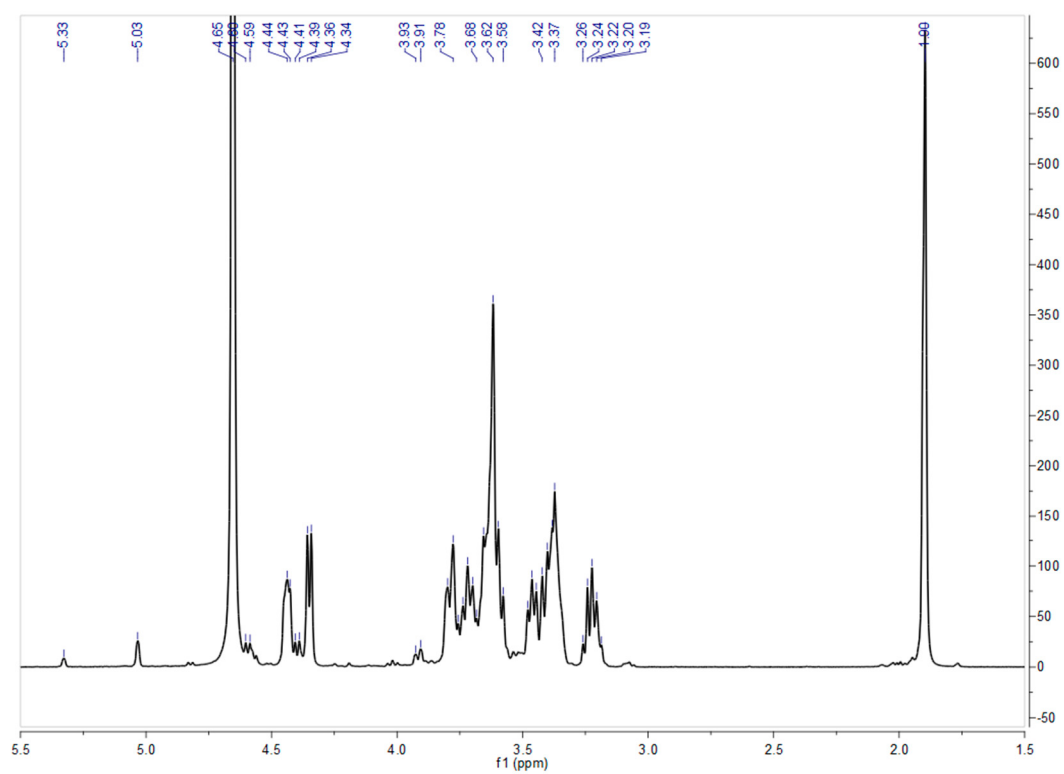


Figure S19. The ^1H NMR spectrum of 8-mer HA

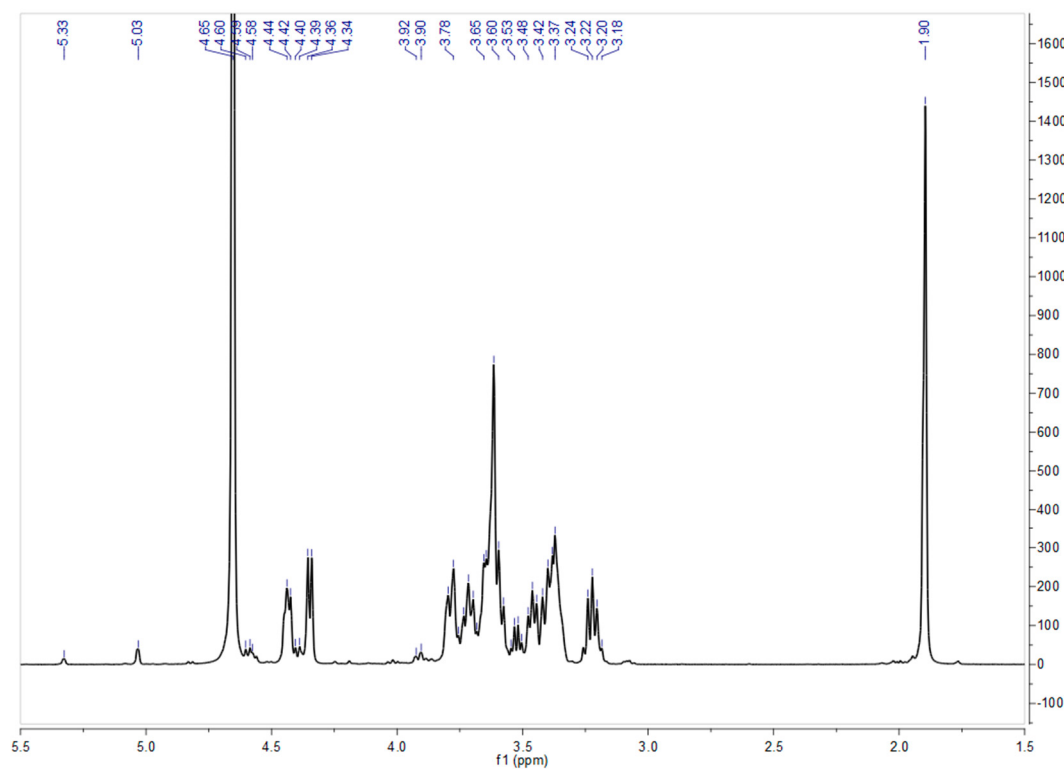


Figure S20. The ^1H NMR spectrum of 10-mer HA