Supporting Information

A comparative study on the effects of picoloyl groups in sialylations based on their substitution pattern

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NMR Spectra – Monosaccharides

**Compound 41 Proton NMR (400 MHz, Chloroform-d)**

![NMR Spectrum of Compound 41]

**Compound 41 $^1$H-$^1$H COSY**

![COSY Spectrum of Compound 41]
Compound 41 Carbon NMR (75 MHz, Chloroform-d)
Compound 30 Proton NMR (400 MHz, Chloroform-d)

Compound 30 $^1\text{H}-^1\text{H}$ COSY spectrum
Compound 30 Carbon NMR (75 MHz, Chloroform-d)
Compound 31 Proton NMR (400 MHz, Chloroform-d)

Compound 31 \(^1\)H-\(^1\)H COSY
Compound 31 Carbon NMR (75 MHz, Chloroform-d)
Compound 3 Proton NMR (400 MHz, Chloroform-d)

Compound 3 \[^1H-^1H\] COSY
Compound 3 Carbon NMR (75 MHz, Chloroform-d)
NMR Spectra – Disaccharides

Compound 12 Proton NMR (400 MHz, Chloroform-d)

Compound 12 \( ^1H-^1H \) COSY

[Image of NMR spectra and COSY plot for Compound 12]
Compound 12 Carbon NMR (75 MHz, Chloroform-d)

J_{C1-H3ax} = 5.1 Hz

Compound 12 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)
Compound 13 Proton NMR (400 MHz, Chloroform-d)

Compound 13 $^1$H-$^1$H COSY
Compound 13 Carbon NMR (75 MHz, Chloroform-d)

![Carbon NMR spectrum of Compound 13](image1)

Compound 13 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

![Selective Proton Decoupled Carbon NMR spectrum of Compound 13](image2)

$J_{C1-H3ax} = 5.1 \text{ Hz}$
Compound 14 Proton NMR (400 MHz, Chloroform-d)

Compound 14 $^1$H-$^1$H COSY
Compound 14 Carbon NMR (75 MHz, Chloroform-d)

Compound 14 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)
Compound 15 Proton NMR (400 MHz, Chloroform-d)

[Image of NMR spectra and COSY plot]

Compound 15 $^1$H-$^1$H COSY
Compound 15 Carbon NMR (75 MHz, Chloroform-d)

Compound 15 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

$J_{C1-H3ax} = 5.1$ Hz
Compound 16 Proton NMR (400 MHz, Chloroform-d)

Compound 16 \(^1\)H-\(^1\)H COSY
Compound 16 Carbon NMR (75 MHz, Chloroform-d)

![Compound 16 Carbon NMR](image)

Compound 16 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

![Compound 16 Selective Proton Decoupled Carbon NMR](image)

$J_{	ext{C1-H3ax}} = 4.5$ Hz
Compound 17 Proton NMR (400 MHz, Chloroform-d)

Compound 17 Proton NMR (400 MHz, Chloroform-d)

Compound 17 $^1$H-$^1$H COSY
Compound 17 Carbon NMR (75 MHz, Chloroform-d)

Compound 17 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

\[ J_{\text{J,ax}} = 5.2 \text{ Hz} \]
Compound 18 Proton NMR (400 MHz, Chloroform-d)

Compound 18 ¹H-¹H COSY
Compound 18 Carbon NMR (75 MHz, Chloroform-d)

Compound 18 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)
Compound 19 Proton NMR (400 MHz, Chloroform-d)

![Compound 19 Proton NMR Spectrogram](image)

Compound 19 $^1$H-$^1$H COSY

![Compound 19 $^1$H-$^1$H COSY Spectrogram](image)
Compound 19 Carbon NMR (75 MHz, Chloroform-d)

Compound 19 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)
Compound 20 Proton NMR (400 MHz, Chloroform-d)

Compound 20 $^1$H-$^1$H COSY
Compound 20 Carbon NMR (75 MHz, Chloroform-d)

Compound 20 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

$J_{C1-H3ax} = 4.1 \text{ Hz}$
Compound 21 Proton NMR (400 MHz, Chloroform-d)

Compound 20 $^1$H-$^1$H COSY
Compound 21 Carbon NMR (75 MHz, Chloroform-d)

![Compound 21 Carbon NMR spectrum]

$J_{C1-H3ax} = 4.9 \text{ Hz}$

Compound 22 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

![Compound 22 Selective Proton Decoupled Carbon NMR spectrum]
Compound 22 Proton NMR (400 MHz, Chloroform-d)

Compound 22 $^1$H-$^1$H COSY
Compound 22 Carbon NMR (75 MHz, Chloroform-d)

![Carbon NMR spectrum of Compound 22](image)

Compound 22 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

![Selective Proton Decoupled Carbon NMR spectrum of Compound 22](image)
Compound 23 Proton NMR (400 MHz, Chloroform-d)

[Graph of NMR spectrum with labeled peaks]

Compound 23 $^1$H-$^1$H COSY

[Graph of COSY spectrum with cross-peaks labeled]
Compound 23 Carbon NMR (75 MHz, Chloroform-d)

Compound 23 Selective Proton Decoupled Carbon NMR (75 MHz, Chloroform-d)

$J_{C1-H3ax} = 4.6$ Hz