Electronic Supplementary Material (ESI) for New Journal of Chemistry.


# Synthesis of artemisinin derived glycoconjugates inspired by click chemistry

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## Supporting Information

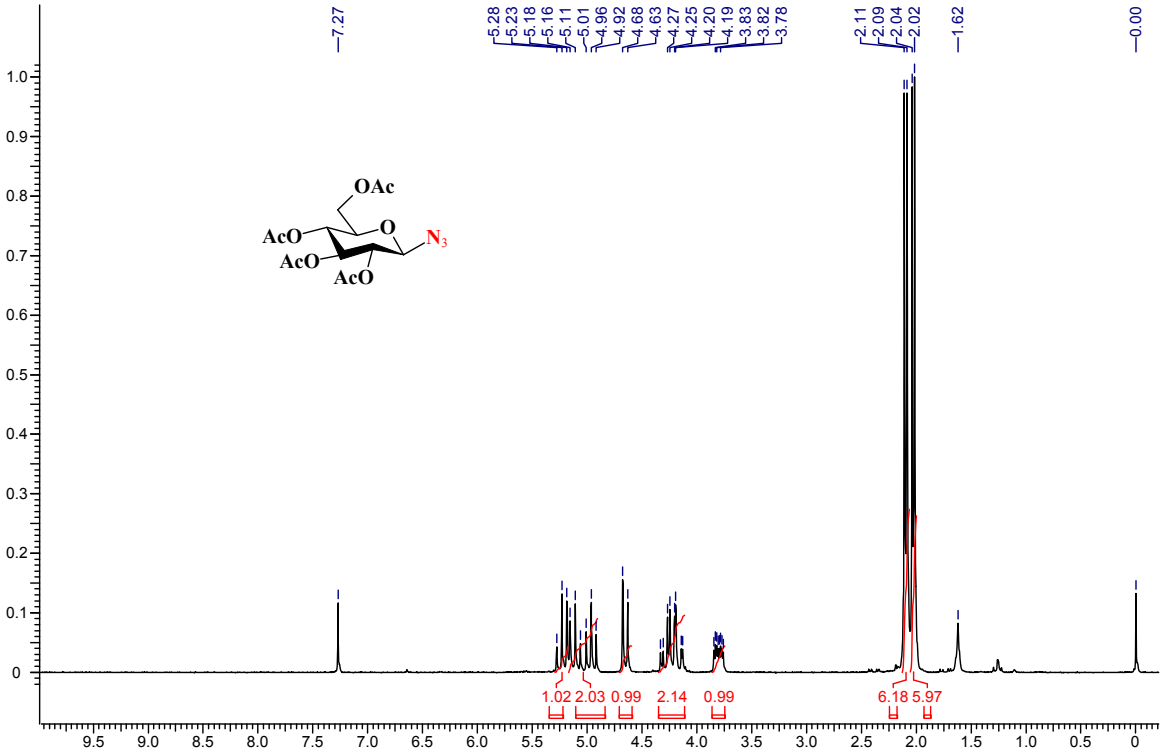
## Spectra of all the synthesised compounds

**Representative procedure for the synthesis of tetra-*O*-acetyl azido glucose (8a):**

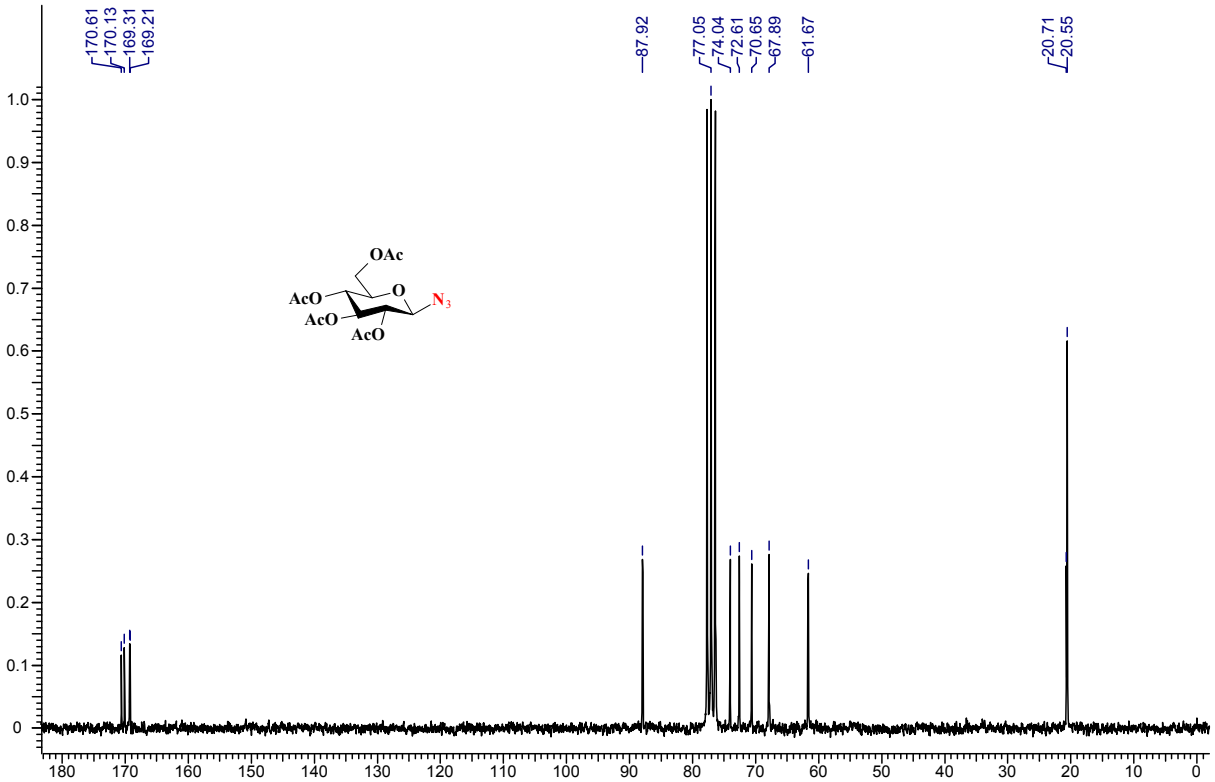
To a solution of D-glucose (10.0 g, 55.5 mmol, 1.0 equiv.) in dry pyridine (100 mL) was cooled to 0 °C. Acetic anhydride (100 mL) was added dropwise to the stirred reaction mixture at 0 °C. After 6 h when the reaction was complete, the reaction mixture was poured to an ice-water mixture which was then extracted with ethyl acetae (3 X 100 mL) and dried over anhydrous sodium sulphate. The reaction mixture was coevaporated with tolune to furnish a semi-solid which was used as such for the bromination without further purification. Pentacylated glucose (6 g) was dissolved in dichloromethane (20 mL) and HBr in acetic acid (33% w/w, 10 mL) was added dropwise. After 2 hours, the whole reaction mixture was azeotroped with tolune to furnish tetra-*O*-acetyl α-bromo glucose. This was utilized in the next step without any further purification. To a solution of tetra-*O*-acetyl α-bromo glucose (2.0 g, 4.86 mmol, 1.0 equiv.) in dry DMF (10 mL), sodium azide was added (0.14 g, 5.84 mmol, 1.2 eq.) and the reaction was allowed to stirr at room temperature for 16 h. After completion of the reaction, the reaction mixture was then diluted with water (50 mL) and extracted with EtOAc (100 mL). The organic layer was dried over anhydrous sodium sulphate and evaporated to dryness. The residue was purified by column chromatographed ($SiO_2$, EtOAc/petroleum ether 1:2) to furnish pure **8a**.

Spectral data of tetra-*O*-acetyl azido glucose (**8a**): Colorless solid; m.p. 128-130 °C; $[\alpha]_D^{25}$ -29.7 (c 1.0, $CHCl_3$); $^1$H NMR (200 MHz, CHLOROFORM-*d*) $\delta_H$: 2.03 (d, $J$ = 4.30 Hz, 6H), 2.10 (d, $J$ = 5.1 Hz, 6H), 3.75-3.86 (m, 1H), 4.11-4.35 (m, 2H), 4.65 (d, ***J* = 8.8 Hz,** 1H) (anomeric proton), 4.90-5.17 (m, 2H), 5.17-5.29 (m, 1H); $^{13}$C NMR (50 MHz, CHLOROFORM-d) $\delta_C$: 20.6, 20.7, 61.7, 67.9, 70.6, 72.6, 74.0, 87.9, 169.2, 169.3, 170.1, 170.6; LCMS (ESI): 396 $(M+Na)^+$.

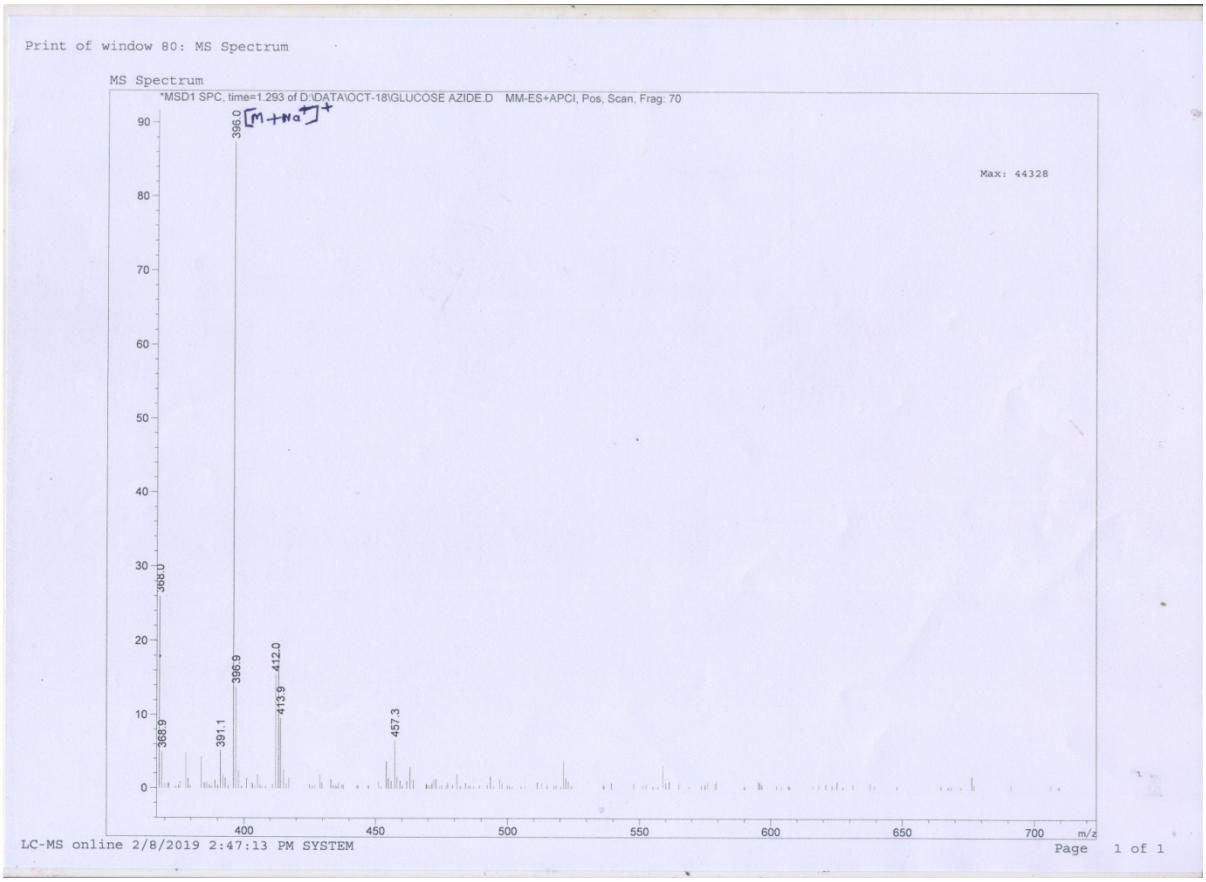
**Ref.:** M. A. Maier, C. G. Yannopoulos, N. Mohamed, A. Roland, H. Fritz, V. Mohan, G. Just and M. Manoharan, *Bioconjugate Chem*, 2003, **14**, 18-29.




$^{1}$ H NMR of **8a** ($CDCl_3$, 200 MHz)

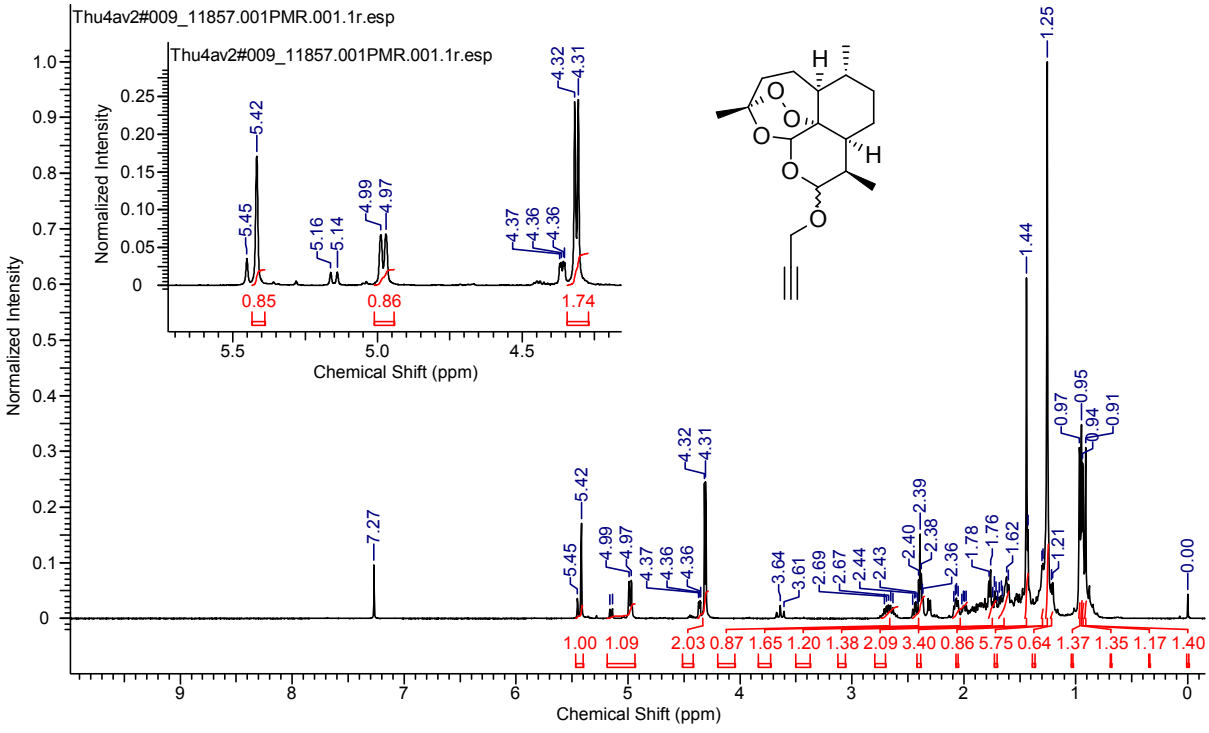



$^{13}$ C NMR of **8a** ($CDCl_3$, 50 MHz)

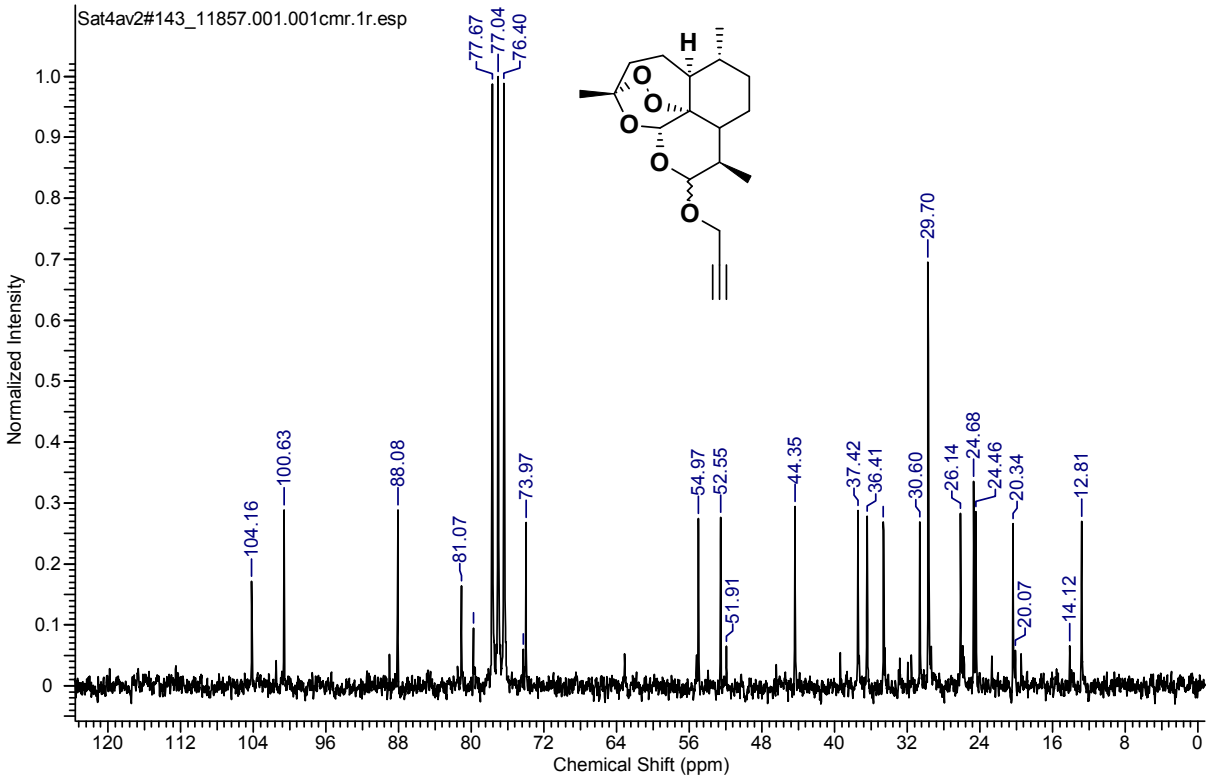



LCMS of **8a**

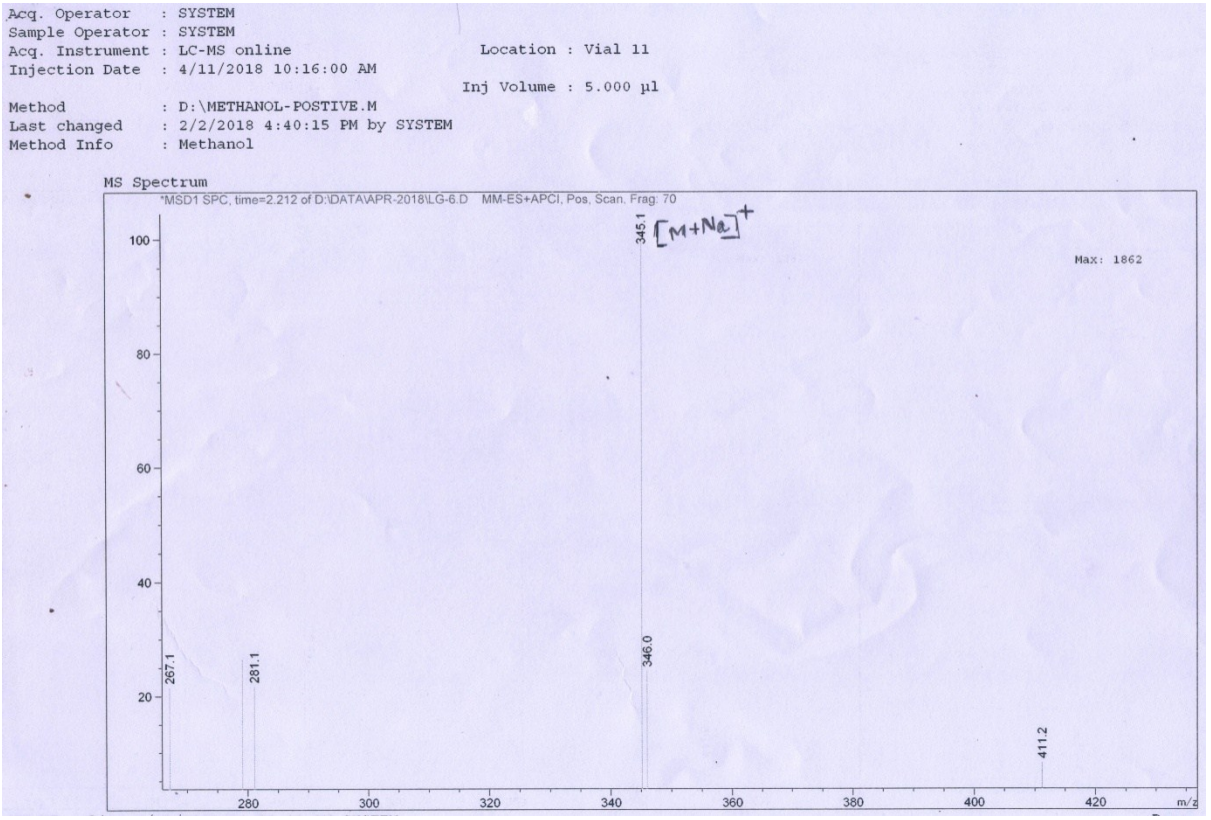
**$^{1}$H, $^{13}$C, LCMS and HRMS spectra of all the synthesized artemisinin glycoconjugates (9a-i)**



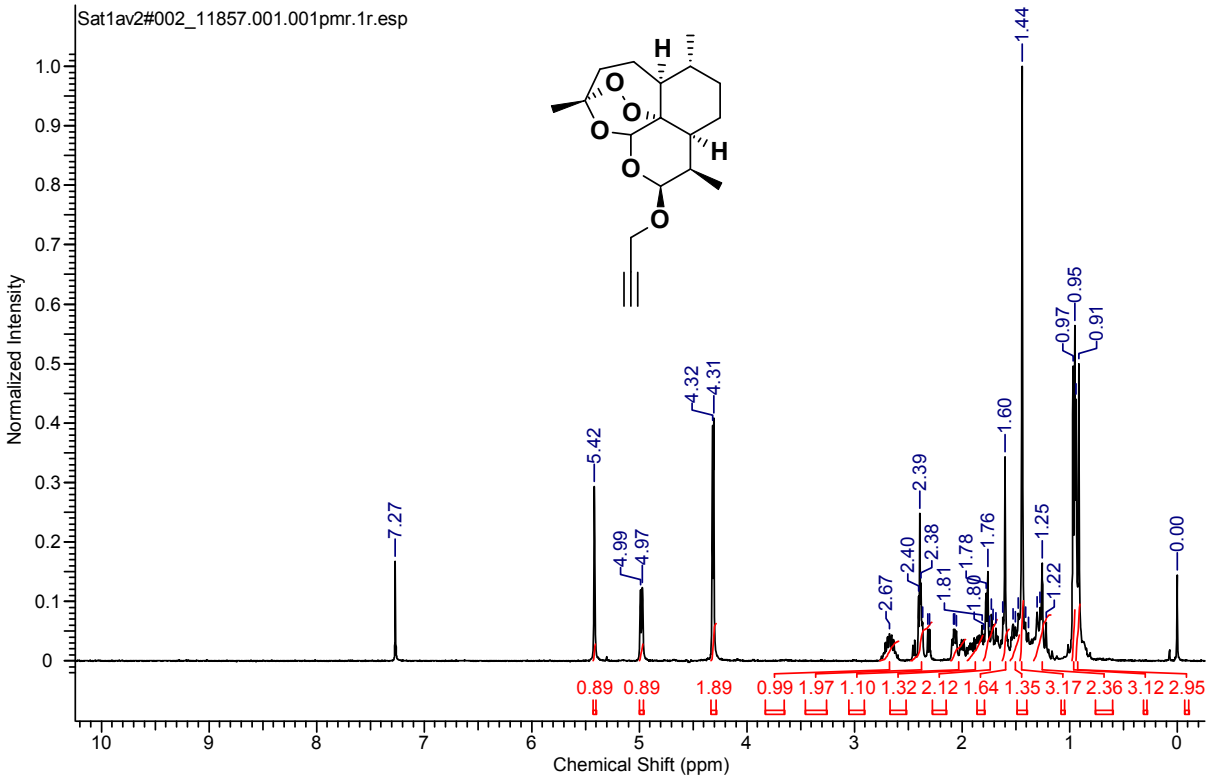

$^{1}$H NMR ($CDCl_3$, 200 MHz) of **7 (α+β)**



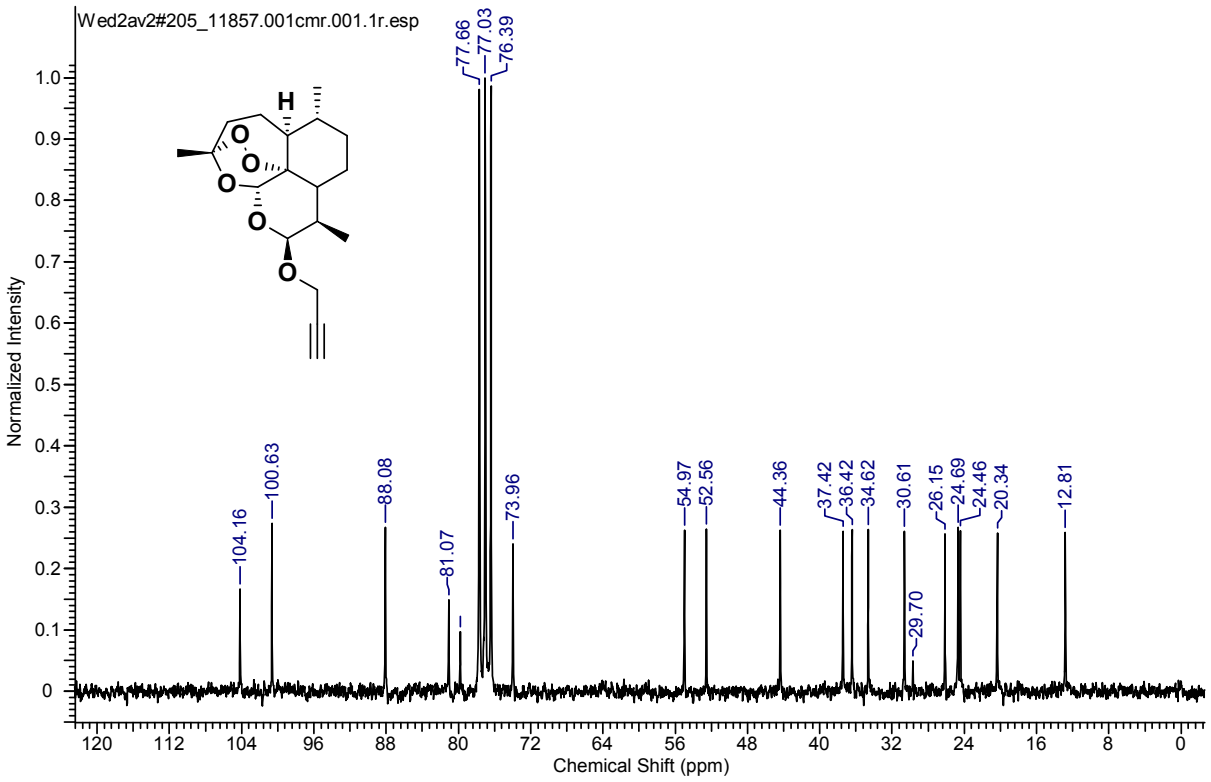

$^{13}C$ NMR ($CDCl_3$, 50 MHz) of **7 (α+β)**




LCMS of **7**




$^{1}$H NMR ($CDCl_3$, 200 MHz) of **7a**

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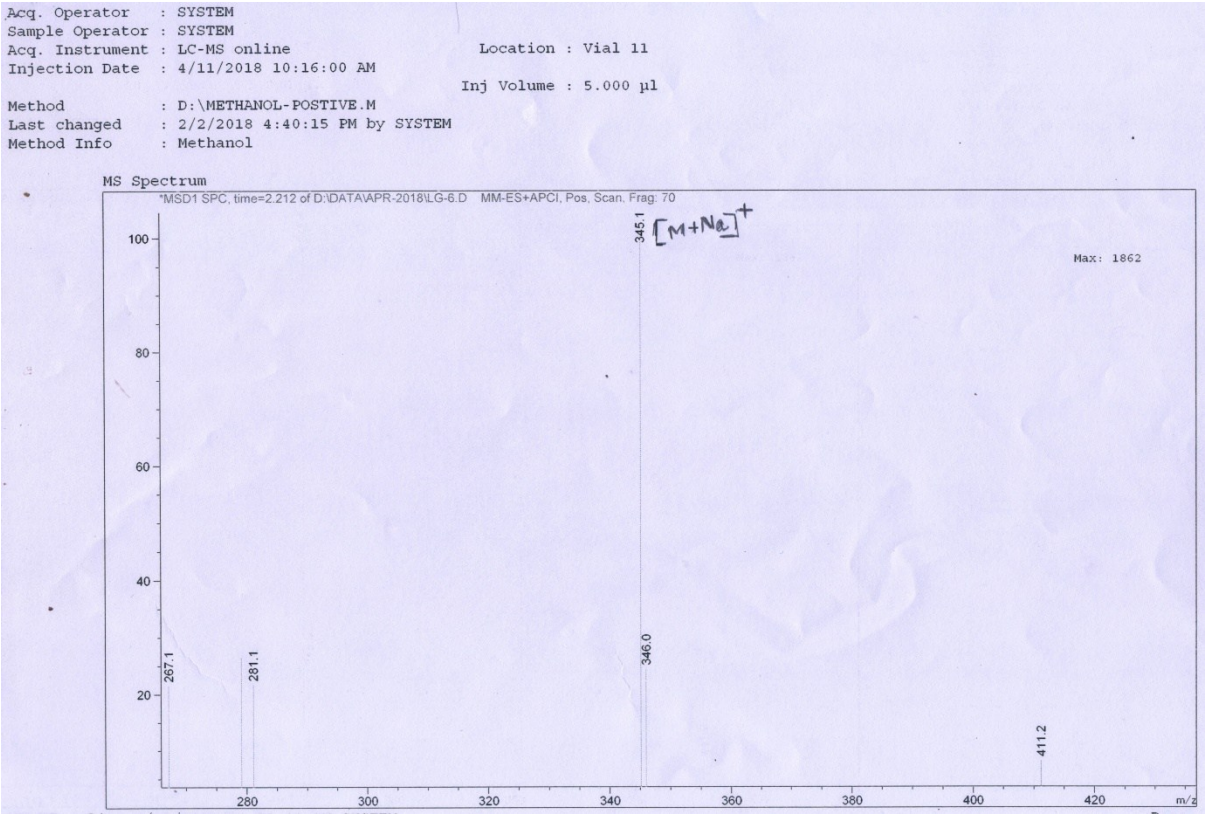


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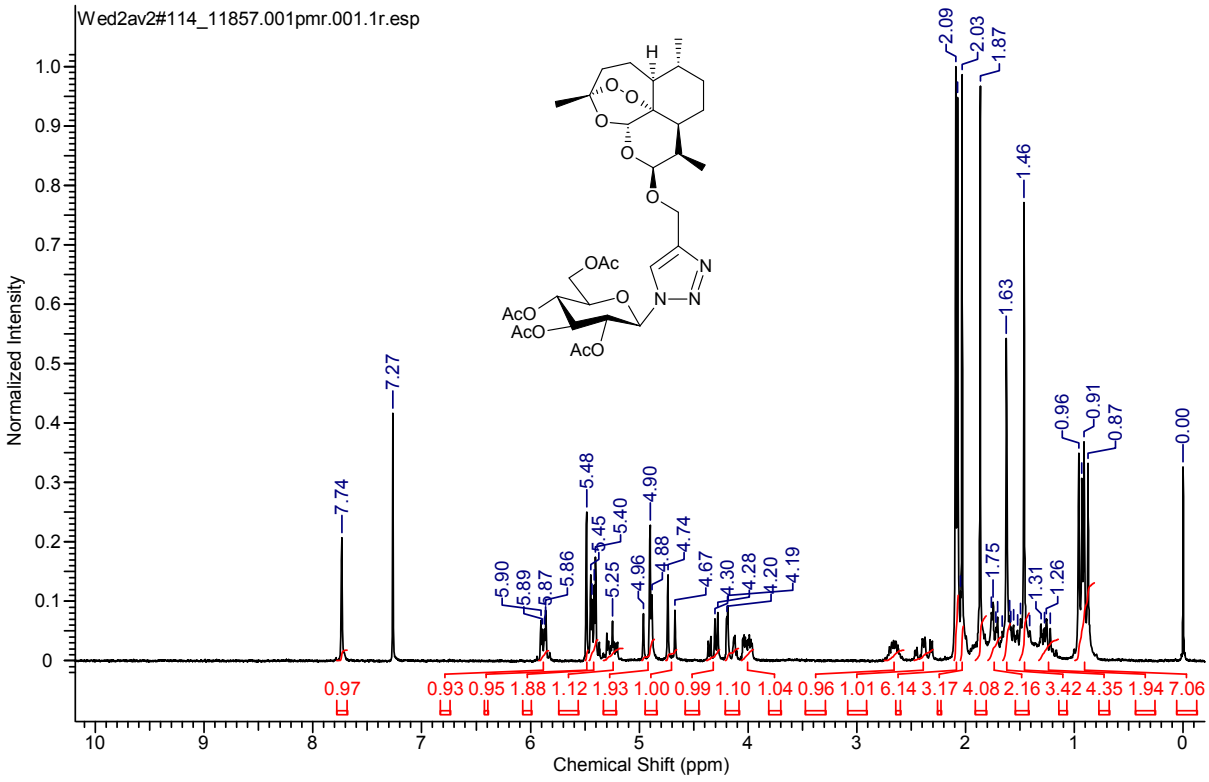


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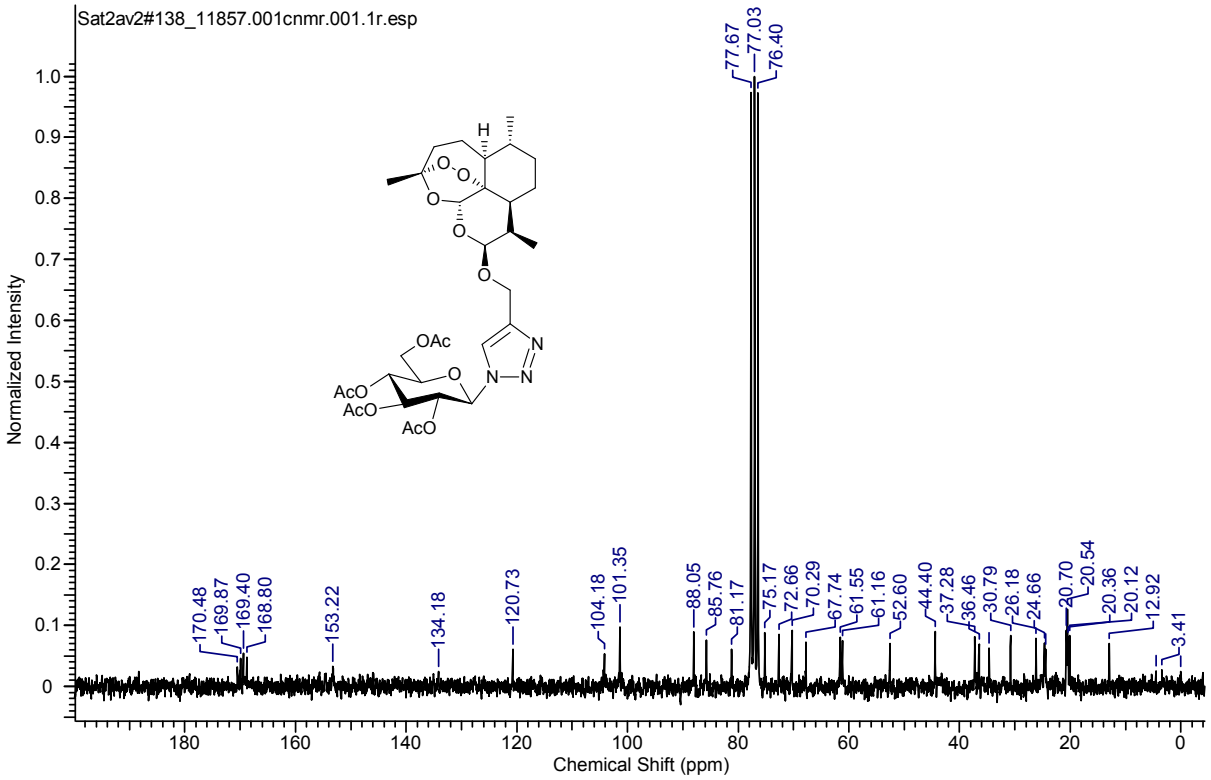


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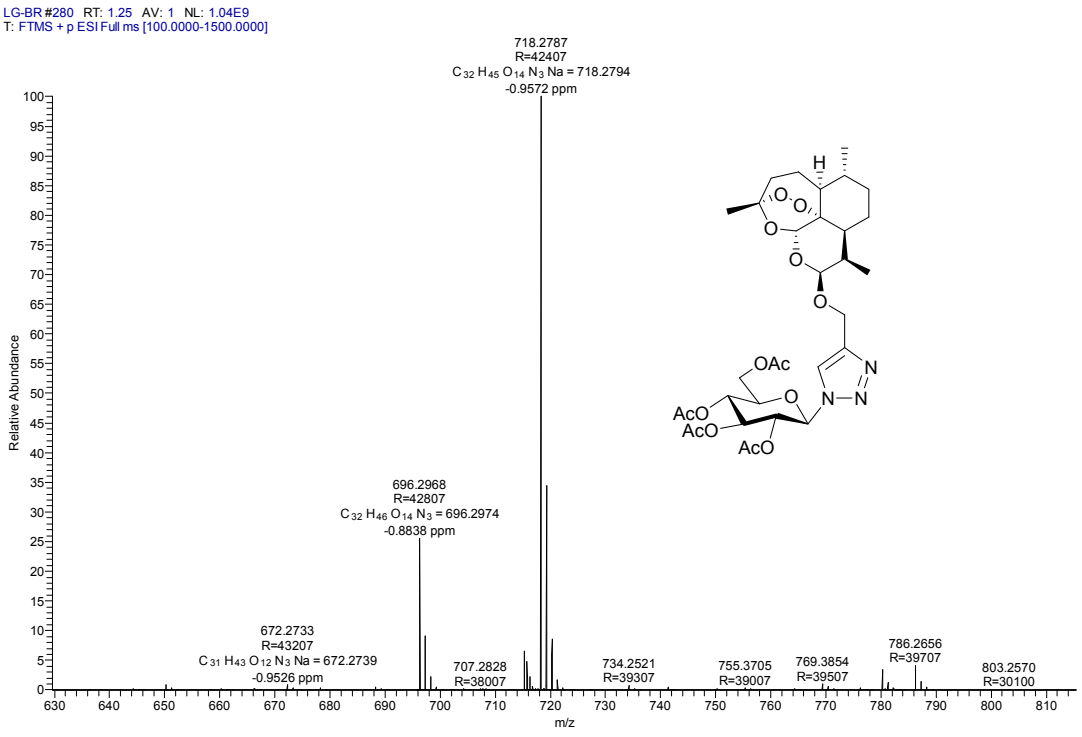
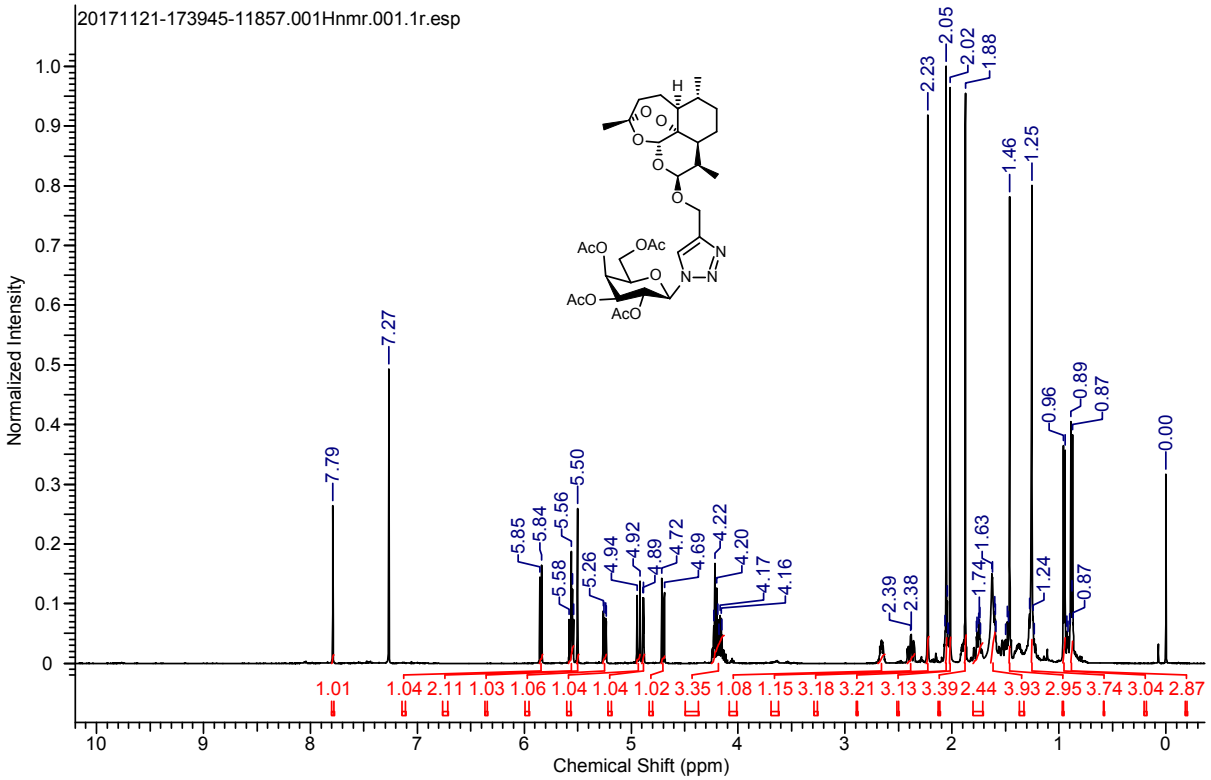
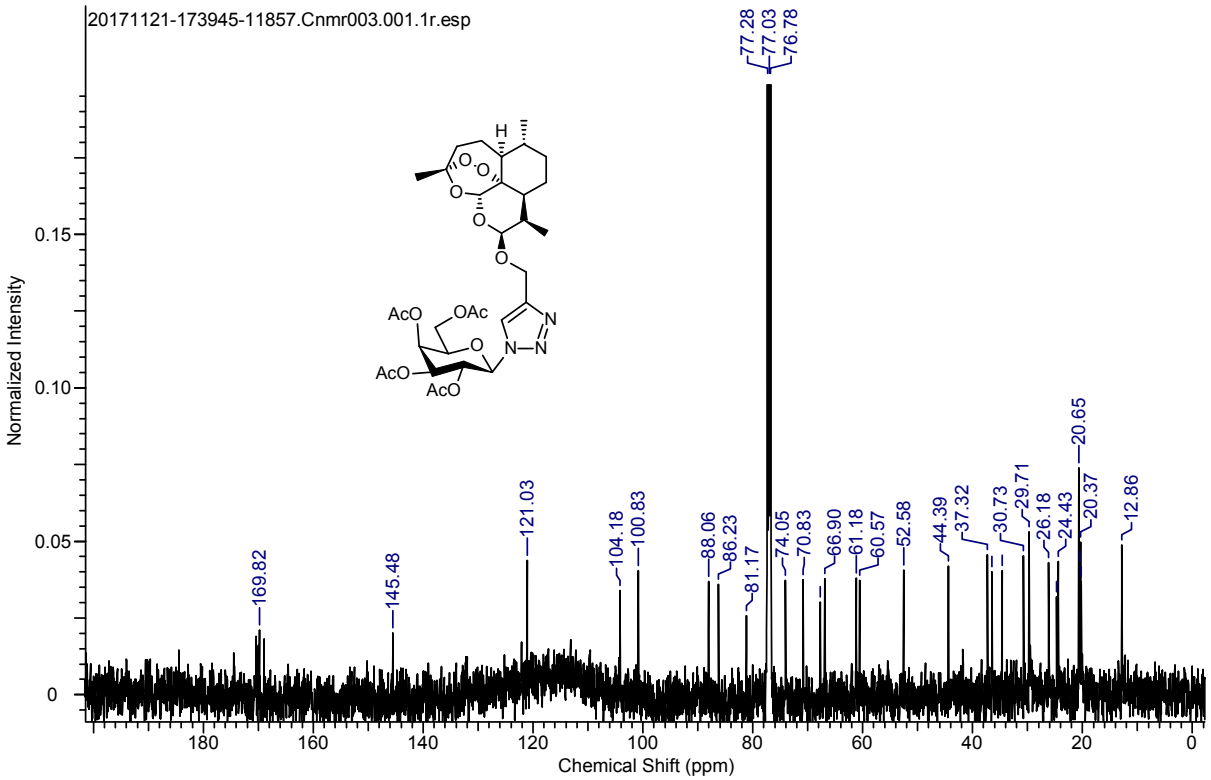


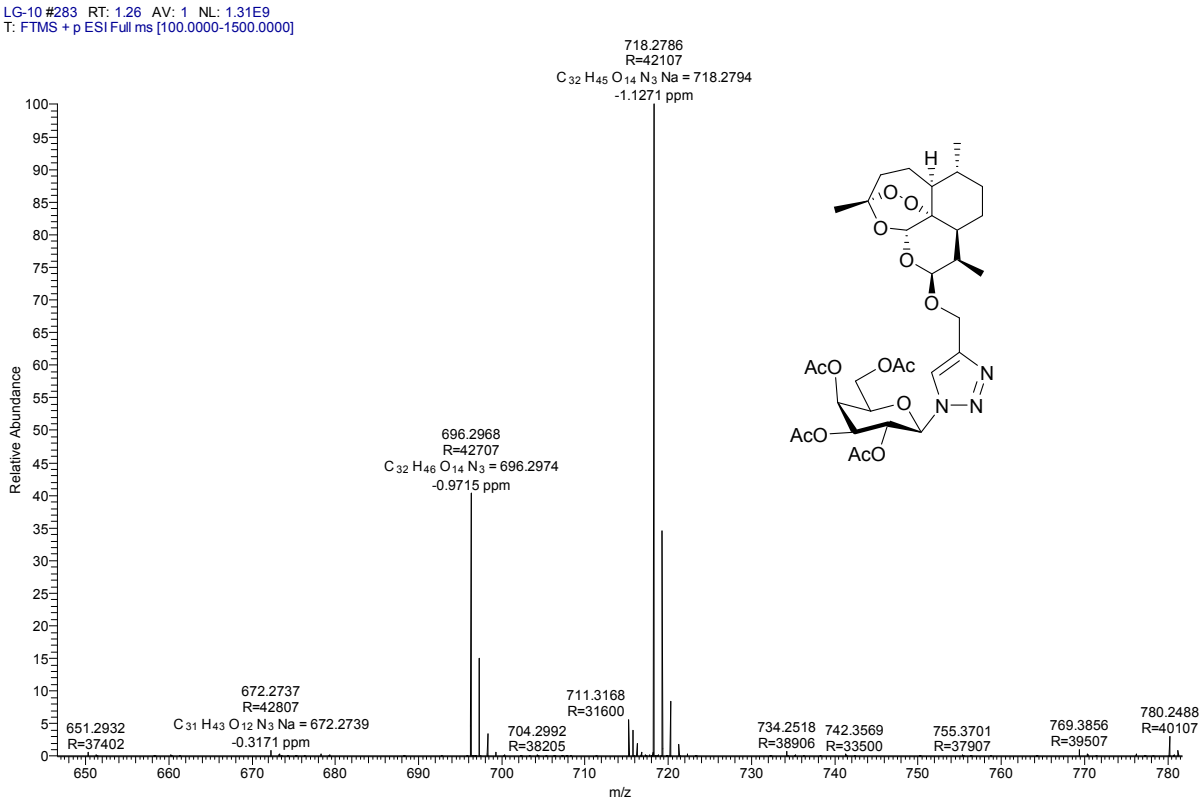

HRMS of **9a**




$^{1}$H NMR ($CDCl_3$, 500 MHz) of **9b**




$^{13}$C NMR ($CDCl_3$, 125 MHz) of **9b**

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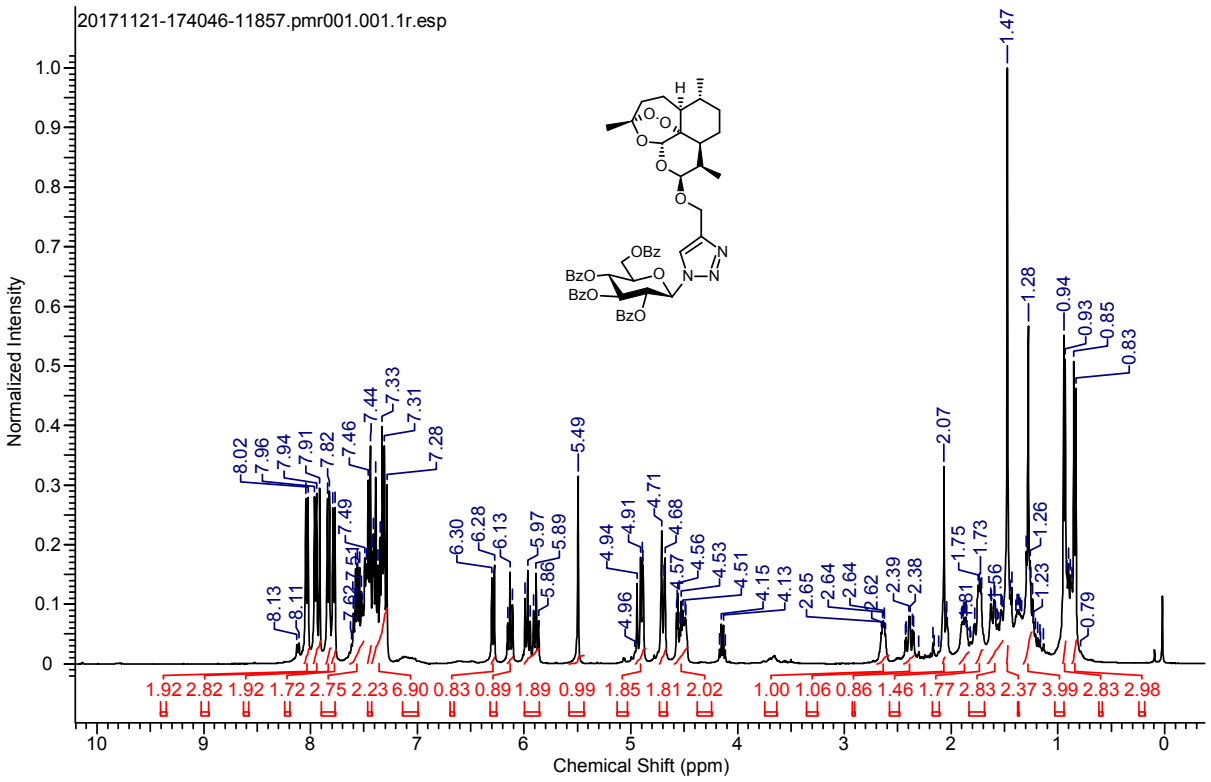
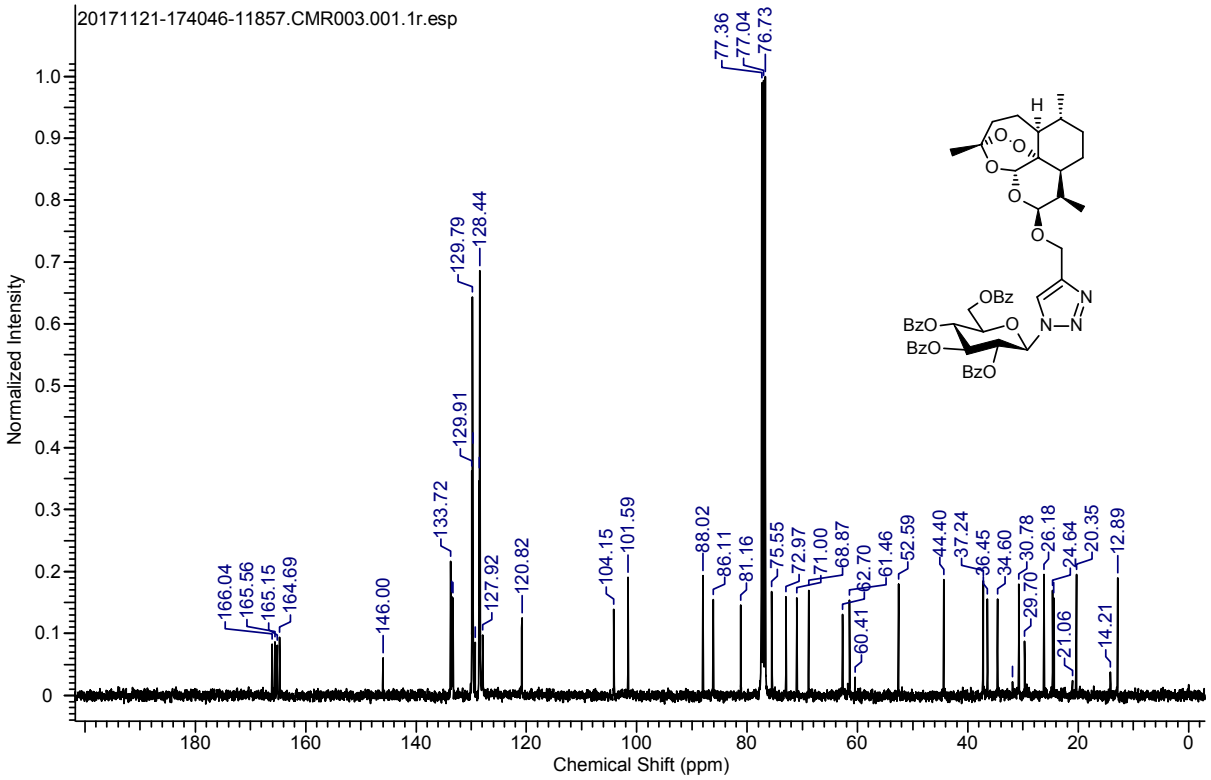



$^1$H NMR ($CDCl_3$, 400 MHz) of **9c**

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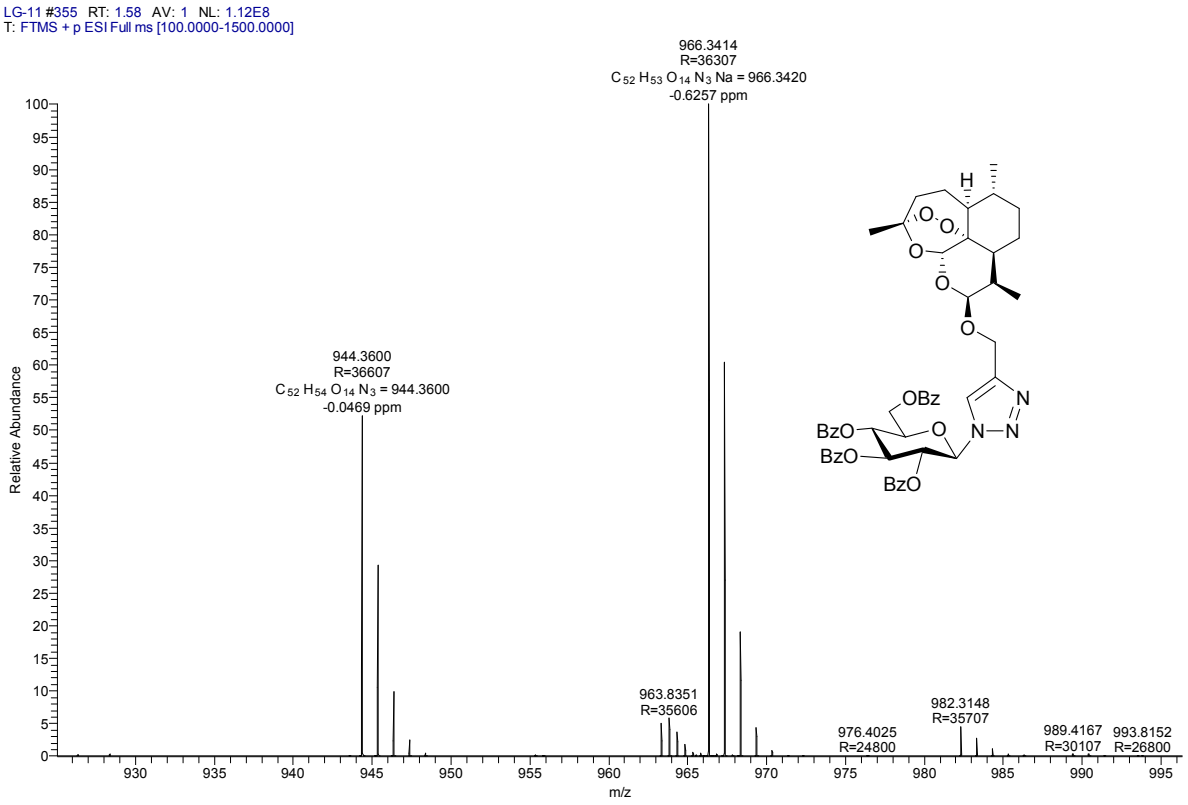
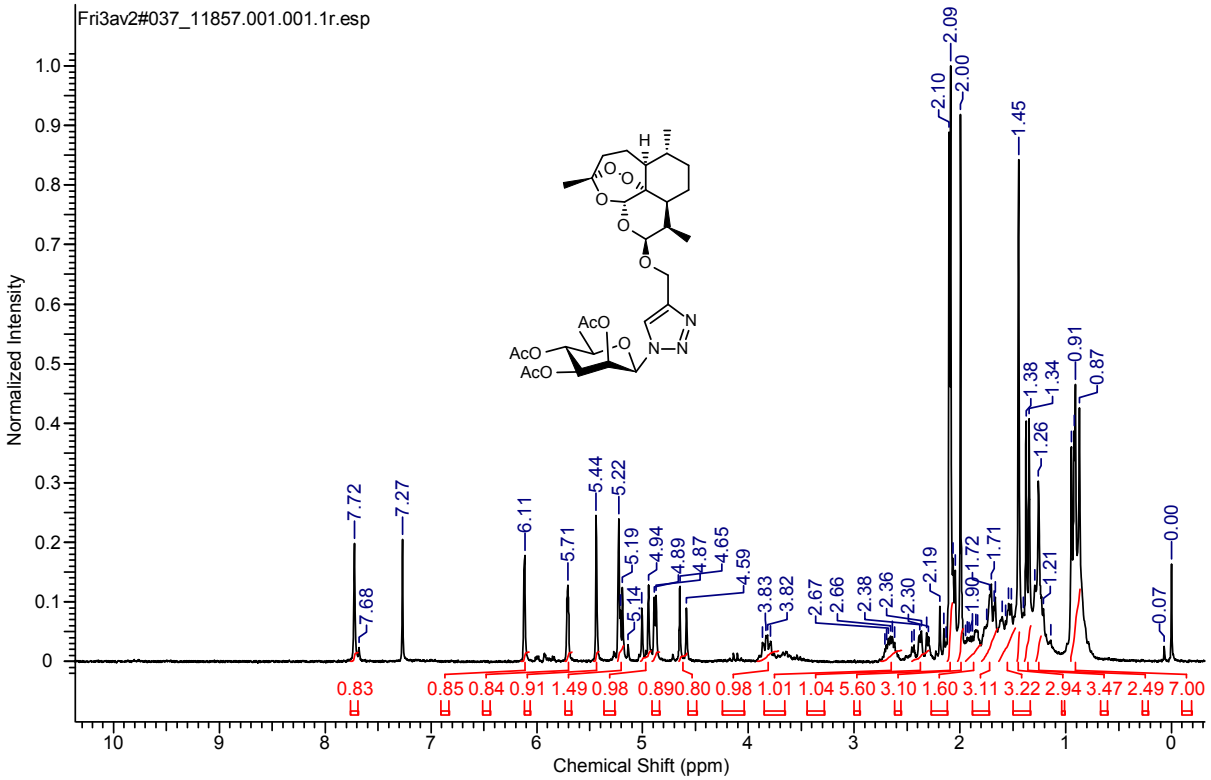
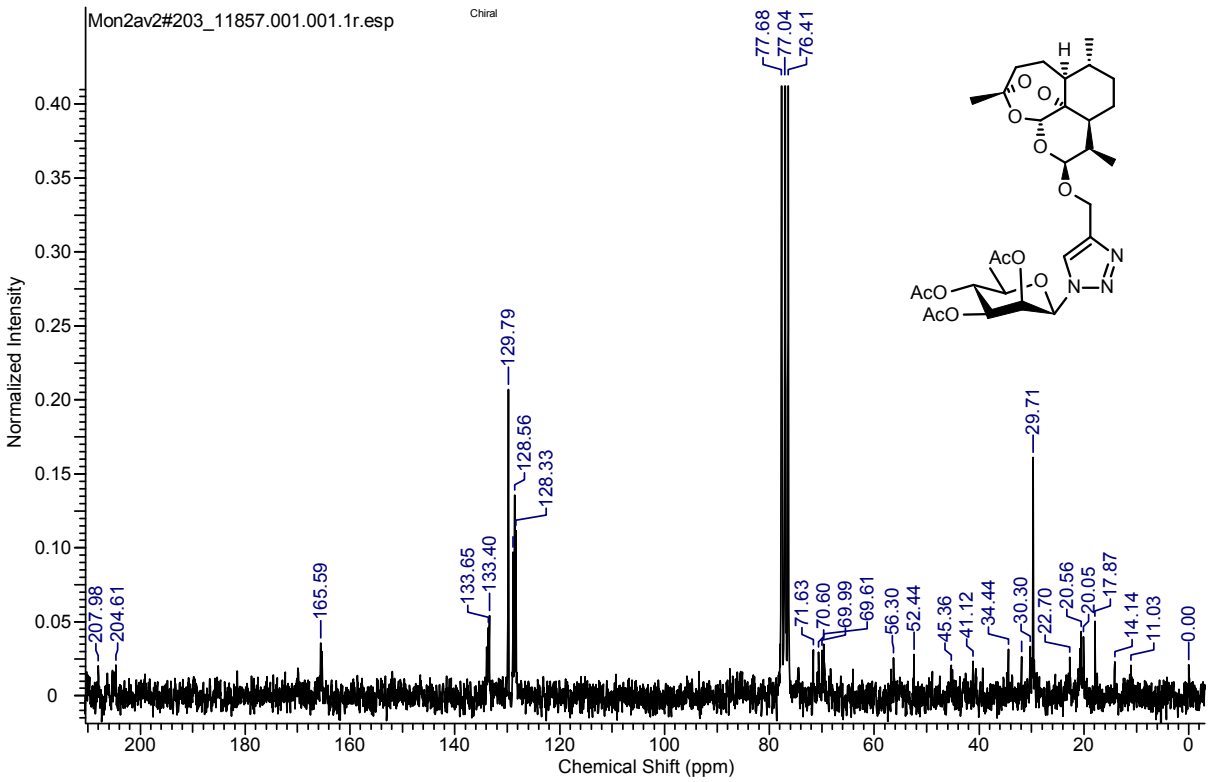



HRMS of **9c**




$^1$H NMR ($CDCl_3$, 200 MHz) of **9d**

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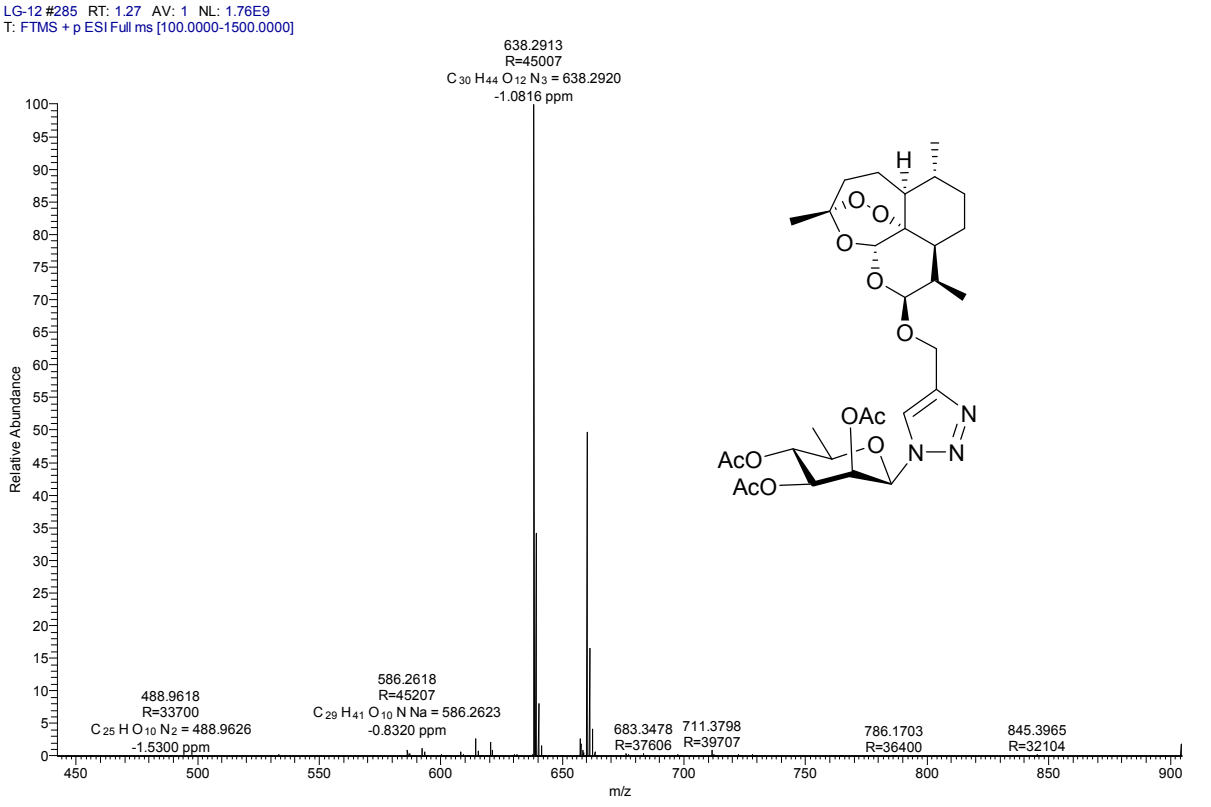
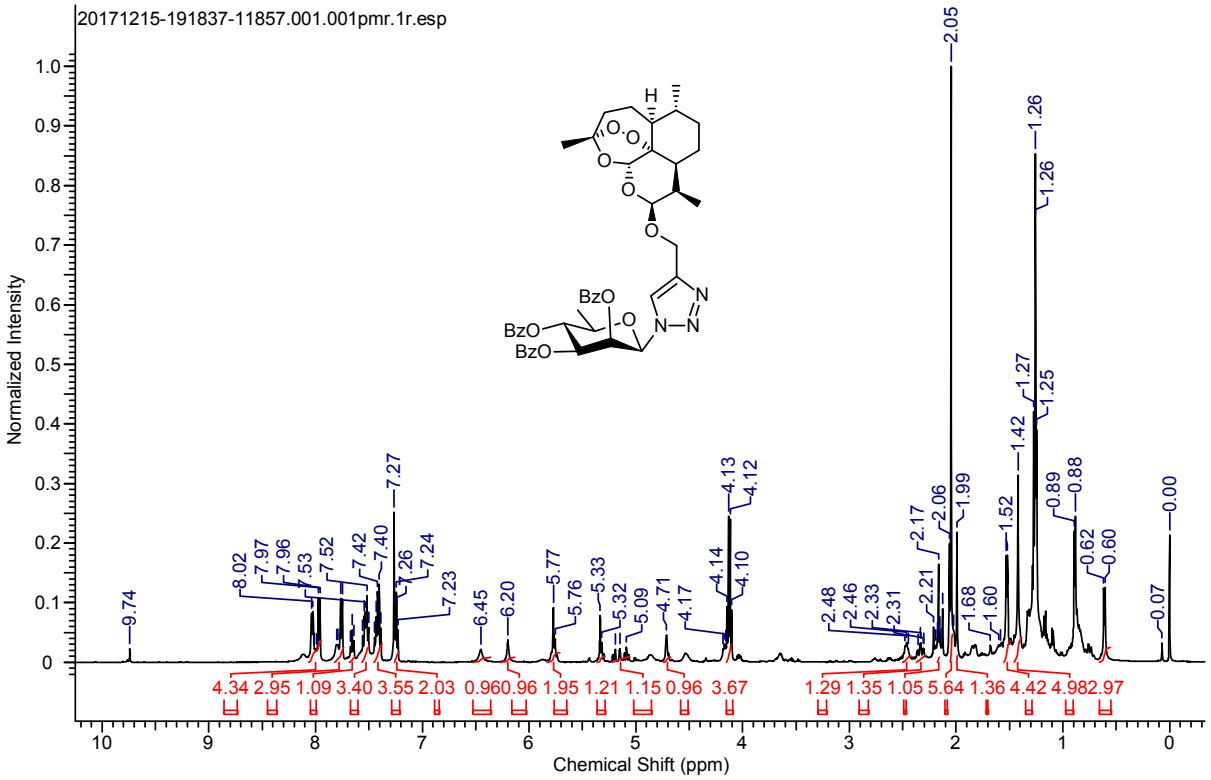



HRMS of **9d**

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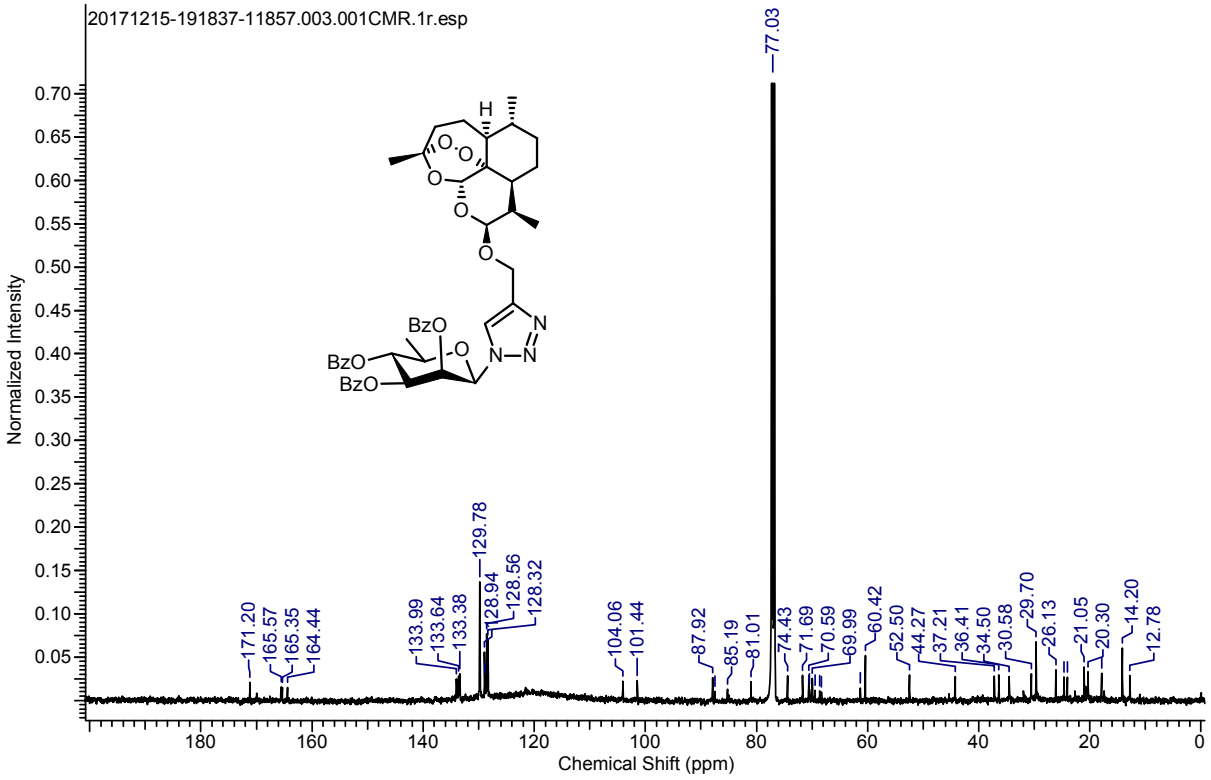
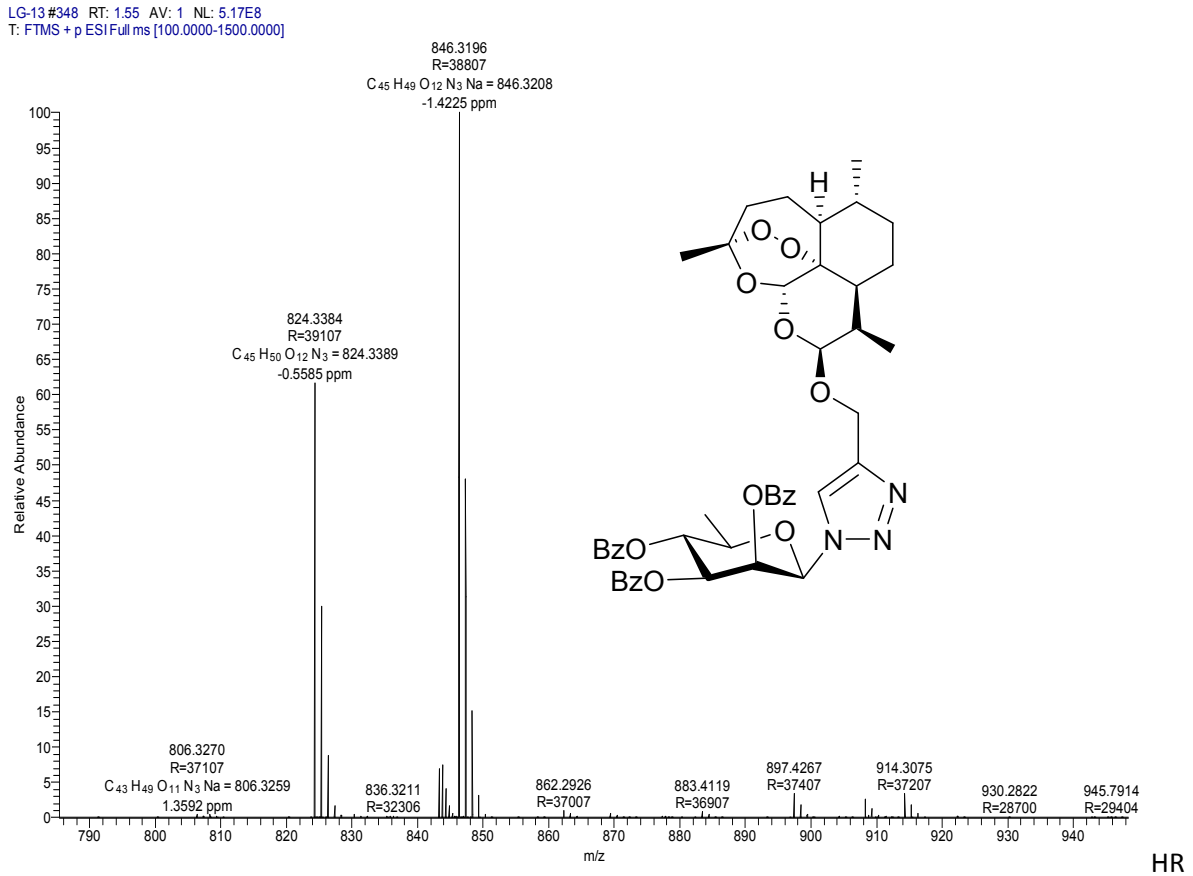
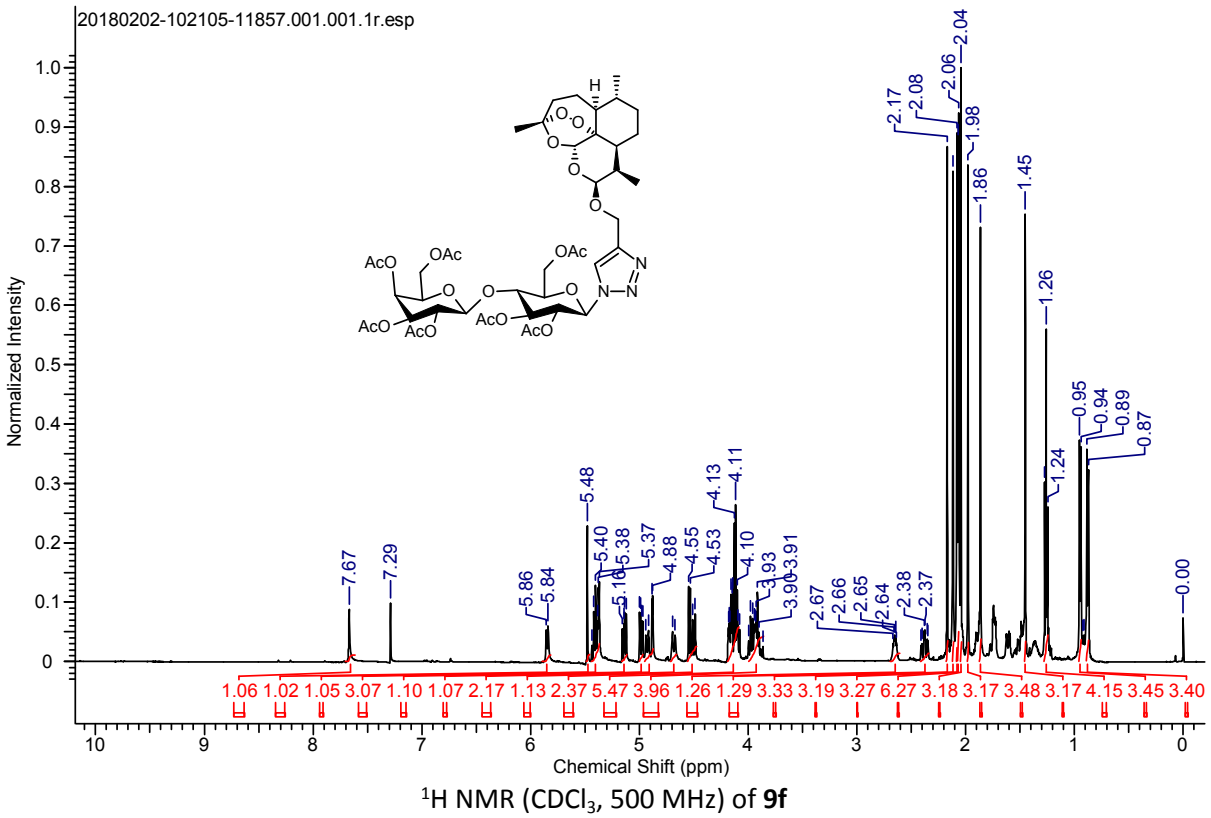



$^{13}$C NMR ($CDCl_3$, 125 MHz) of **9e**

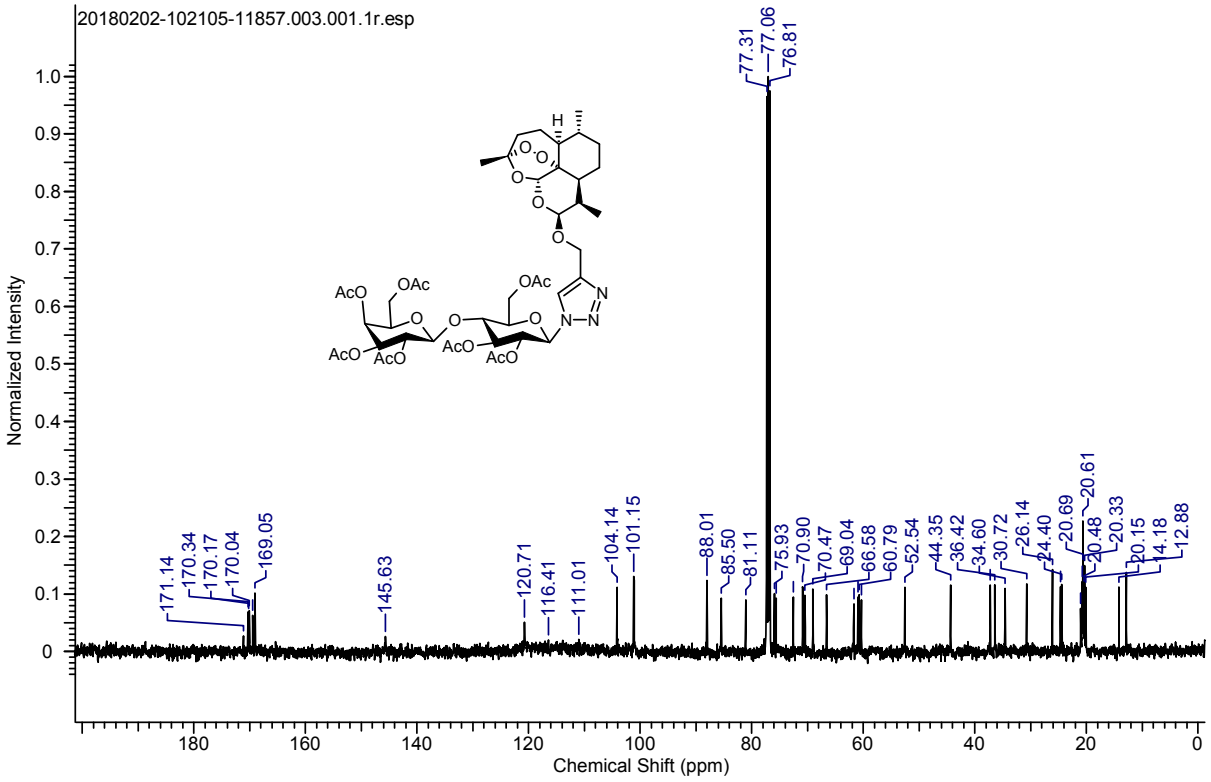



HR

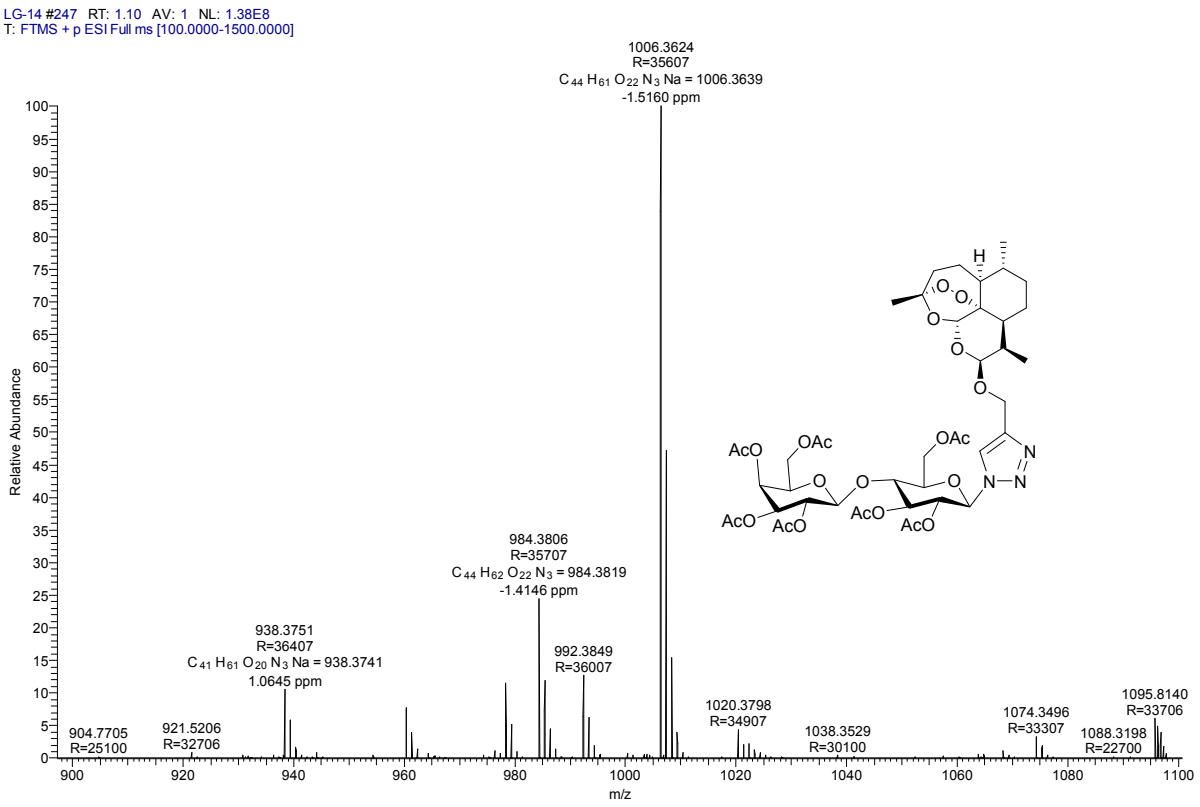
MS of **9e**




$^1$H NMR ($CDCl_3$, 500 MHz) of **9f**




$^{13}$C NMR ($CDCl_3$, 125 MHz) of **9f**

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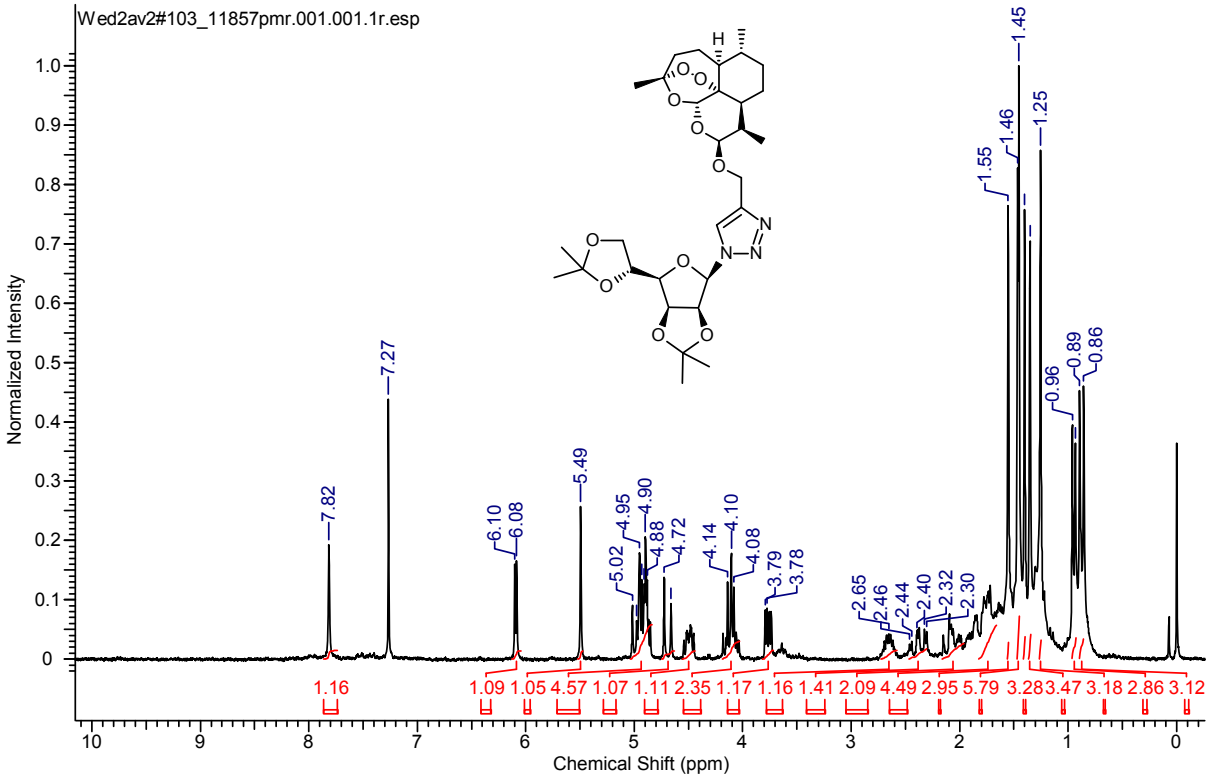
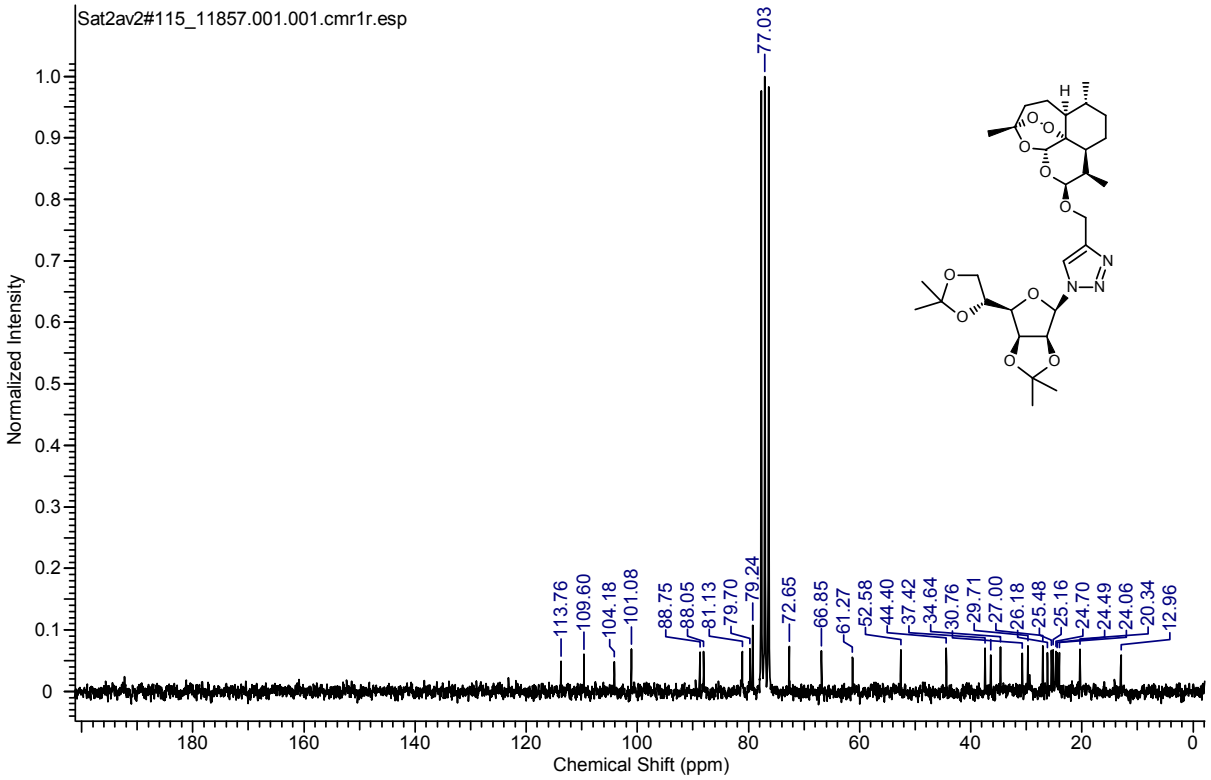
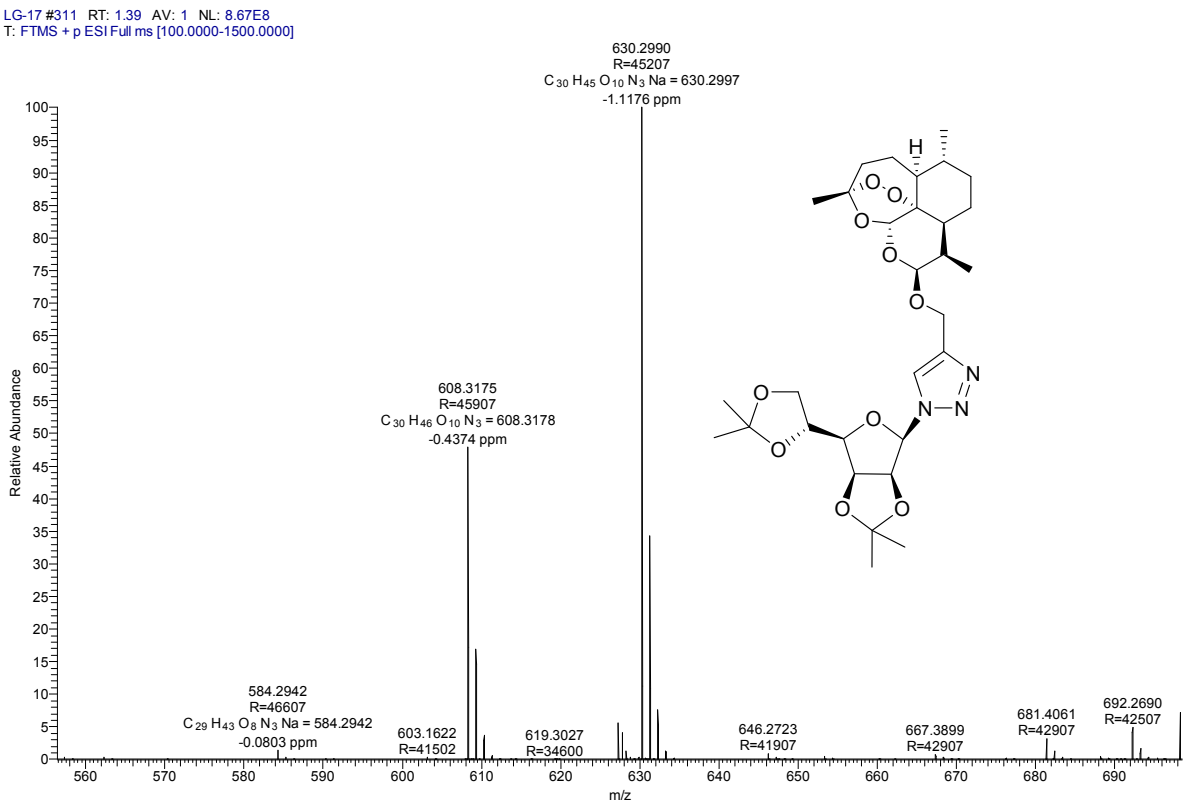


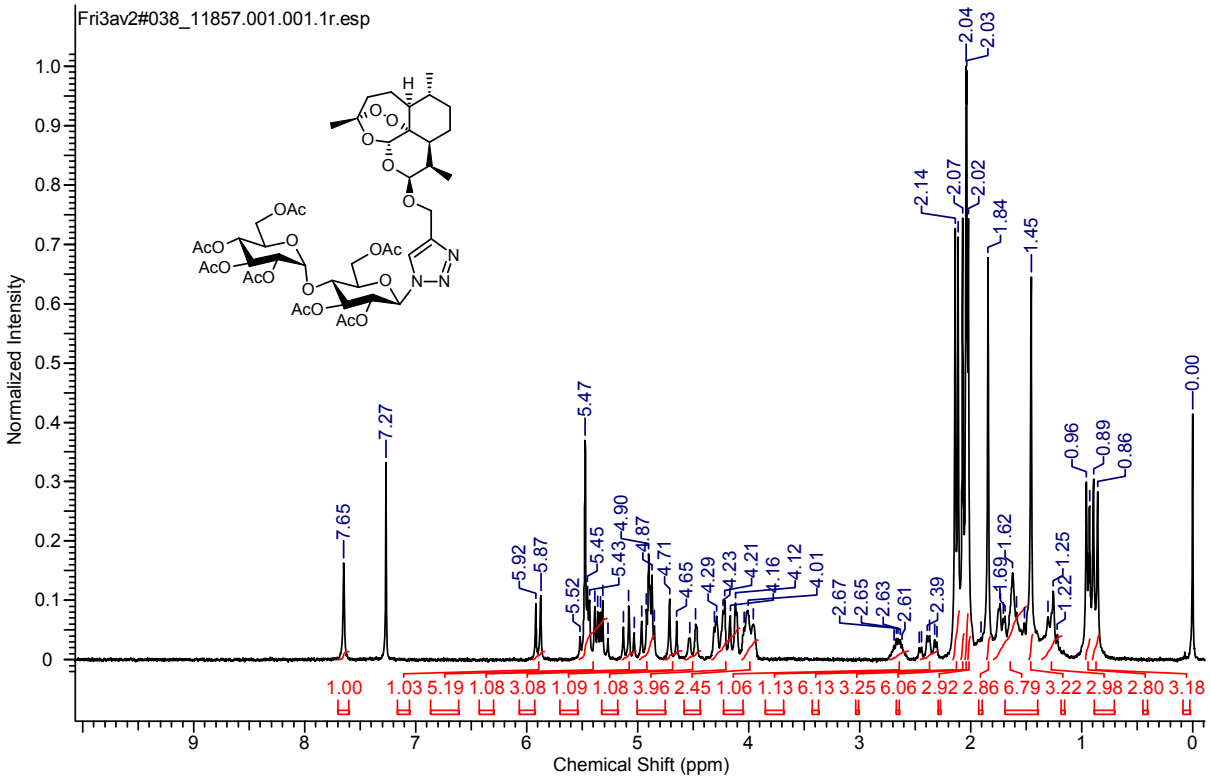

$^1$H NMR ($CDCl_3$, 200 MHz) of **9g**



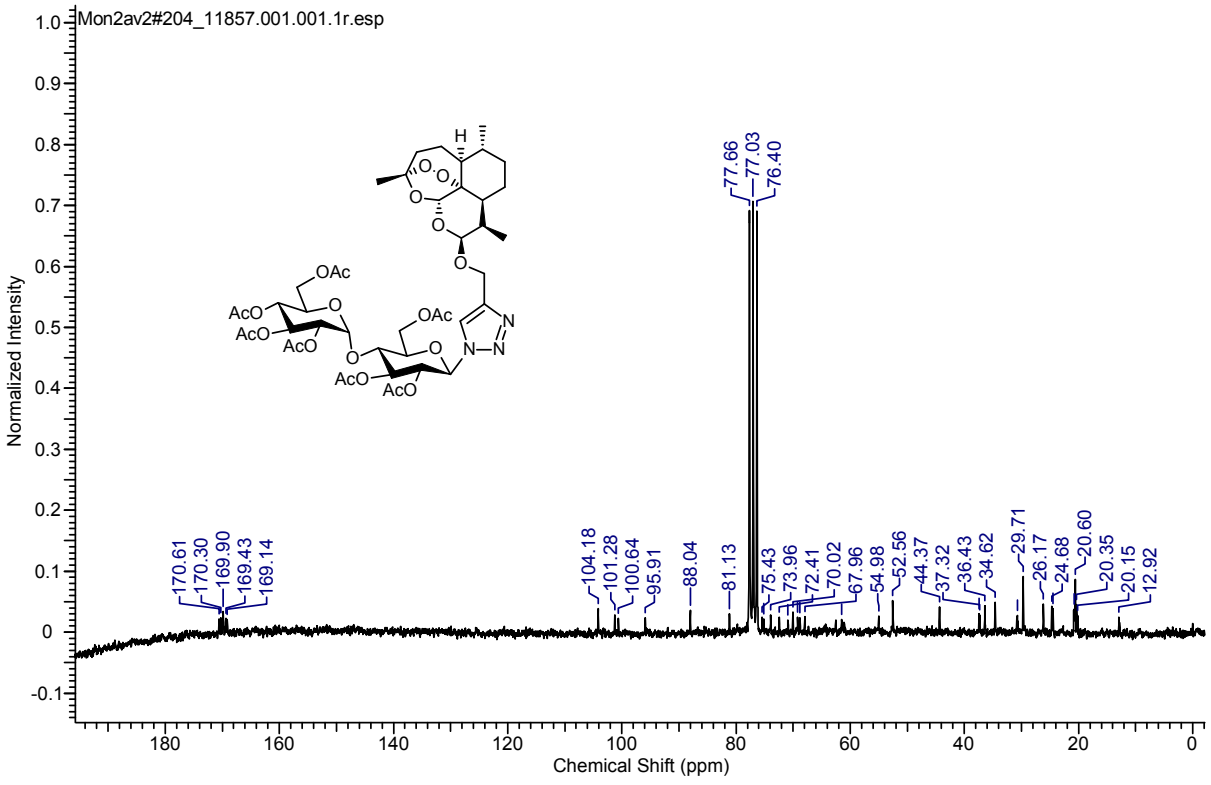

$^{13}C$ NMR ($CDCl_3$, 50 MHz) of **9g**




HRMS of **9g**




$^{1}$H NMR ($CDCl_3$,200 MHz) of **9h**

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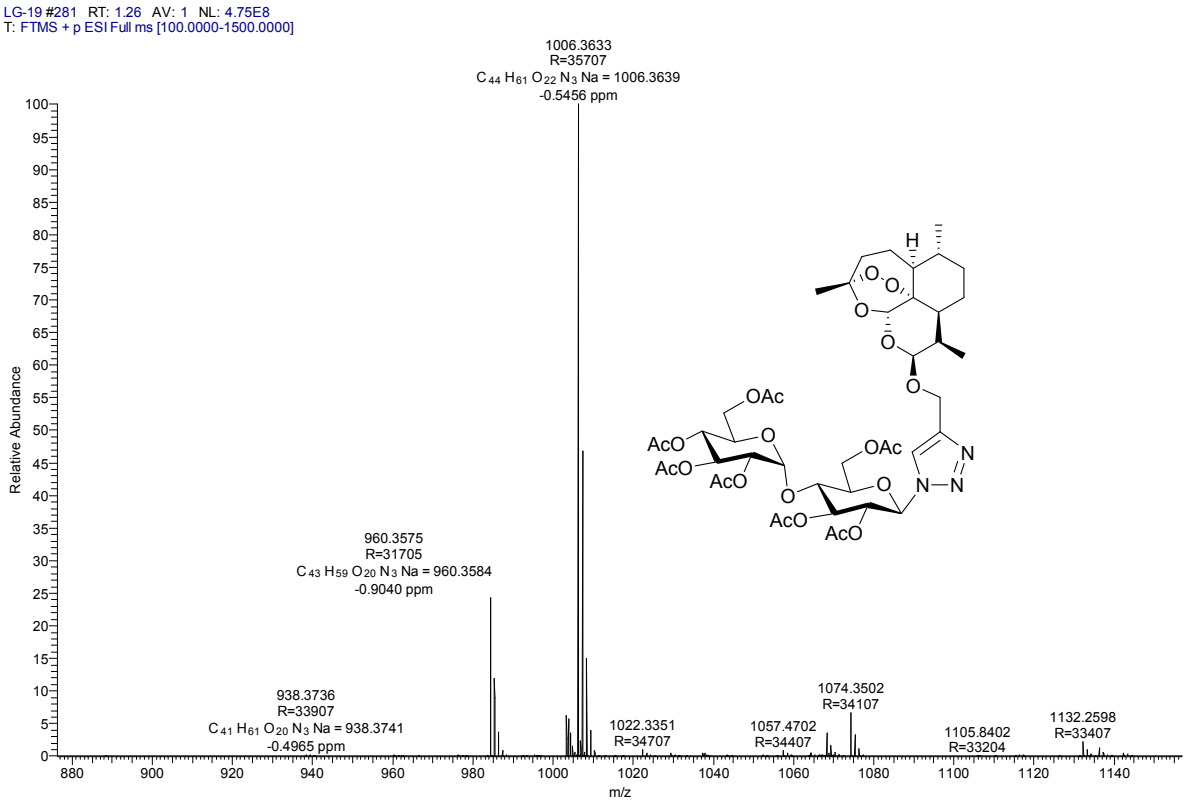


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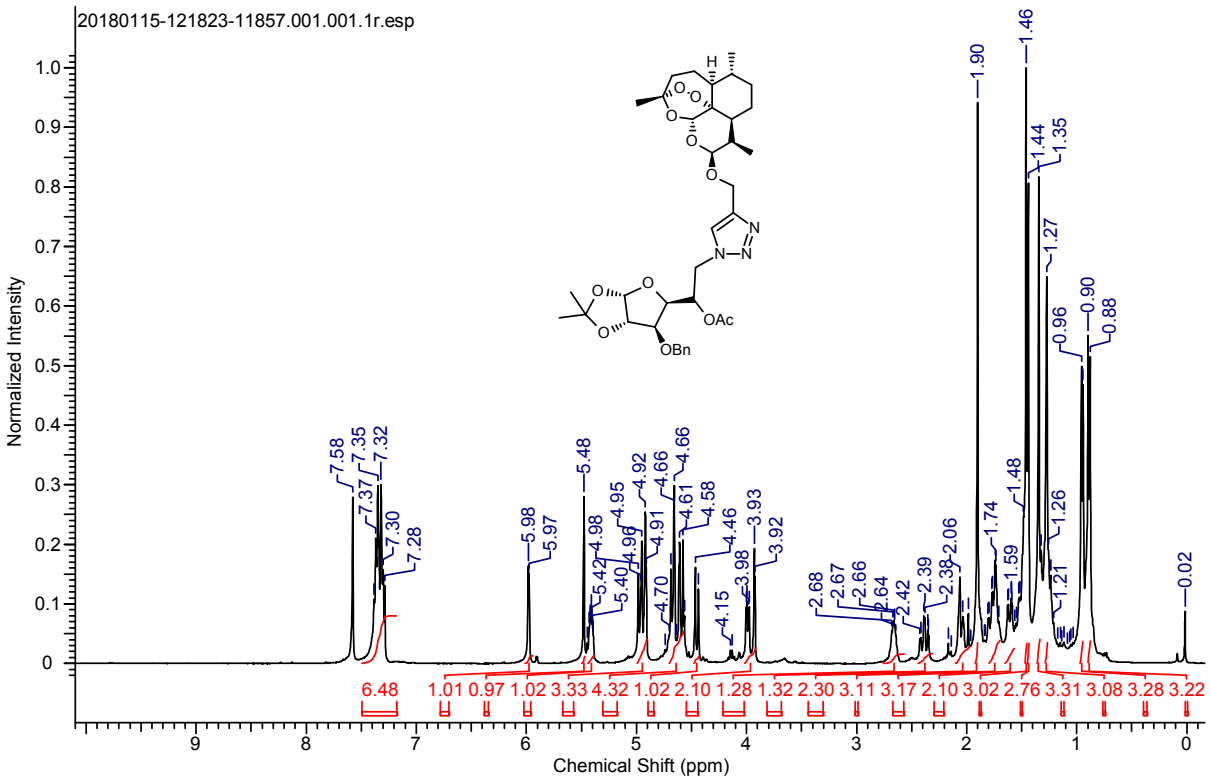
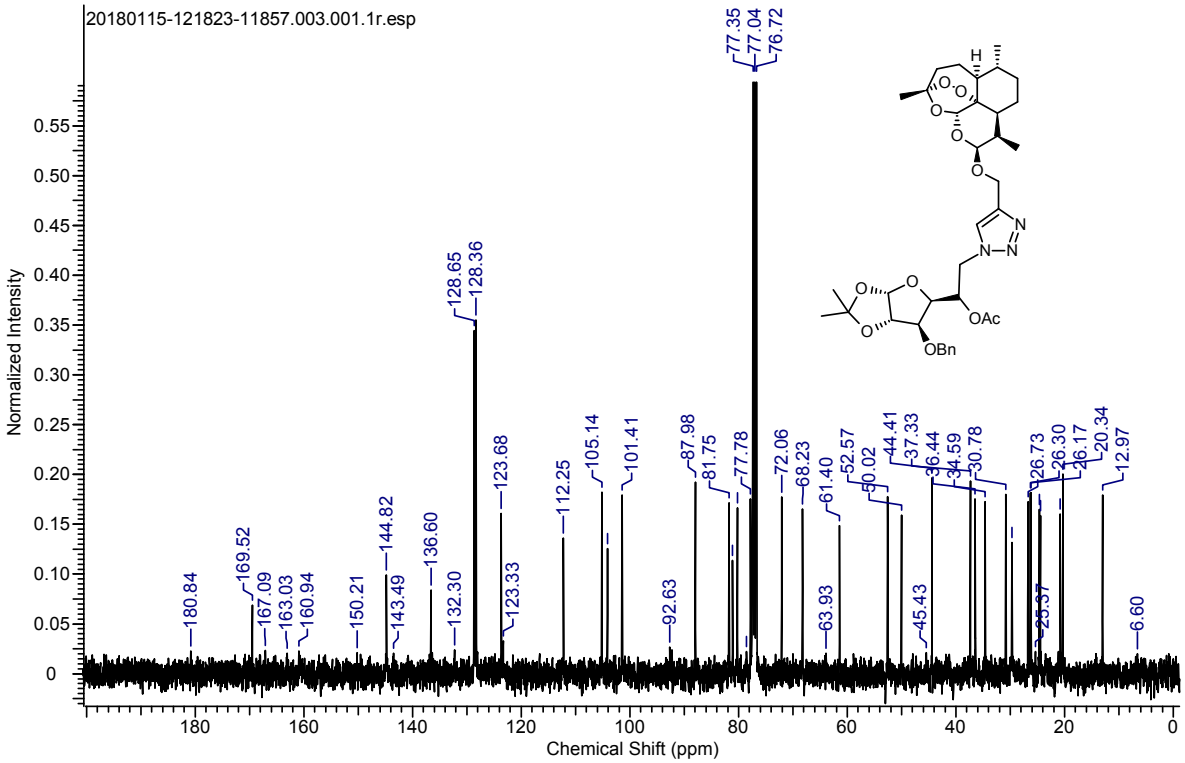



$^1$H NMR ($CDCl_3$, 400 MHz) of **9i**

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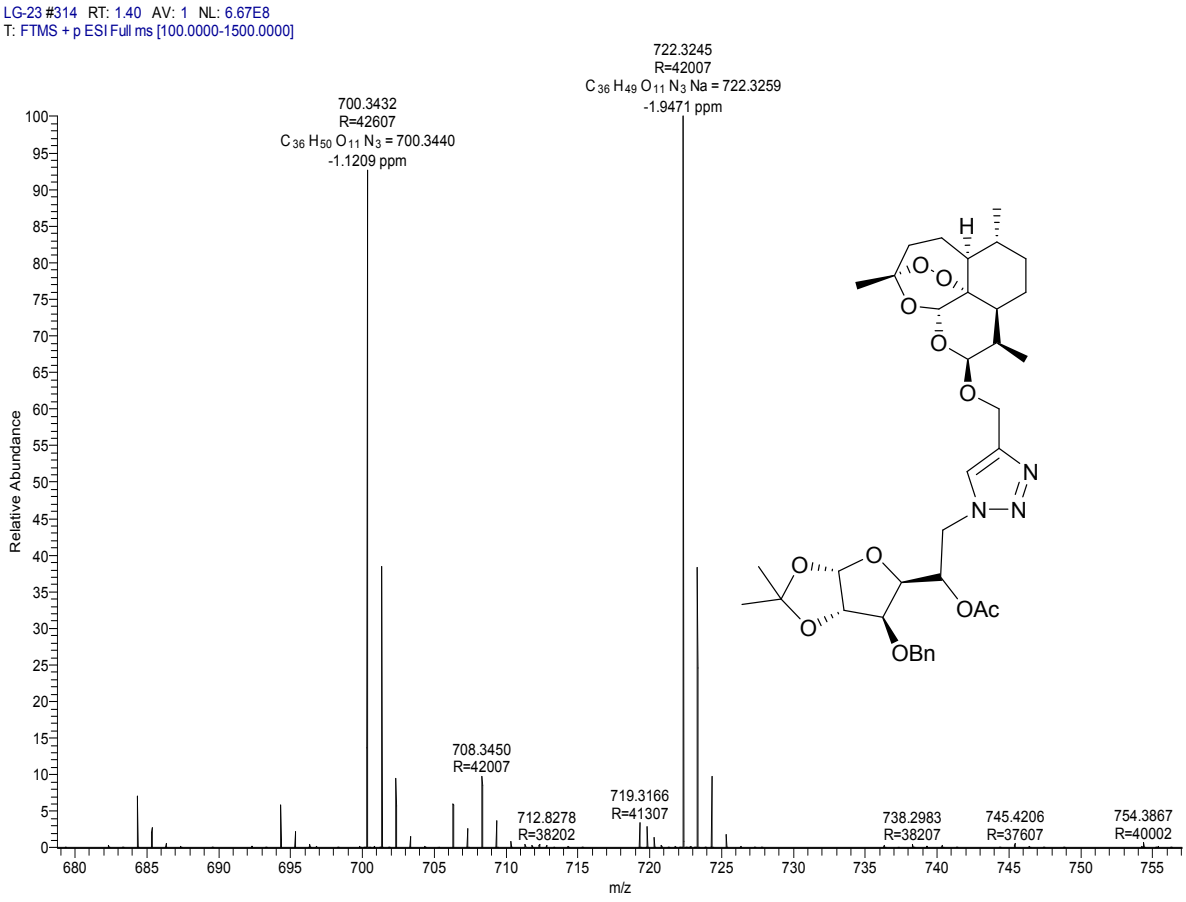


HRMS of **9i**