

# **Design, Synthesis and Antimicrobial Activities of 1,2,3-Triazole Glycoside Clickamers**

**Tamer El Malah<sup>1,\*</sup>, Hany F. Nour<sup>1,\*</sup>, Amira A. E. Satti<sup>2,3</sup>, Bahaa A. Hemdan<sup>4,5</sup> and Wael A. El-Sayed<sup>1,6</sup>**

<sup>1</sup> Photochemistry Department, Chemical Industries Research Division, National Research Centre, 33 El Buhouth Street, P.O. Box 12622 Cairo, Egypt; tmara\_nrc3000@yahoo.com; hany.nour@daad-alumni.de

<sup>2</sup> Chemistry Department, Faculty of Science and Arts in Qurayat, Jouf University, P.O. Box 77425, Kingdom of Saudi Arabia; aalhassan@ju.edu.sa

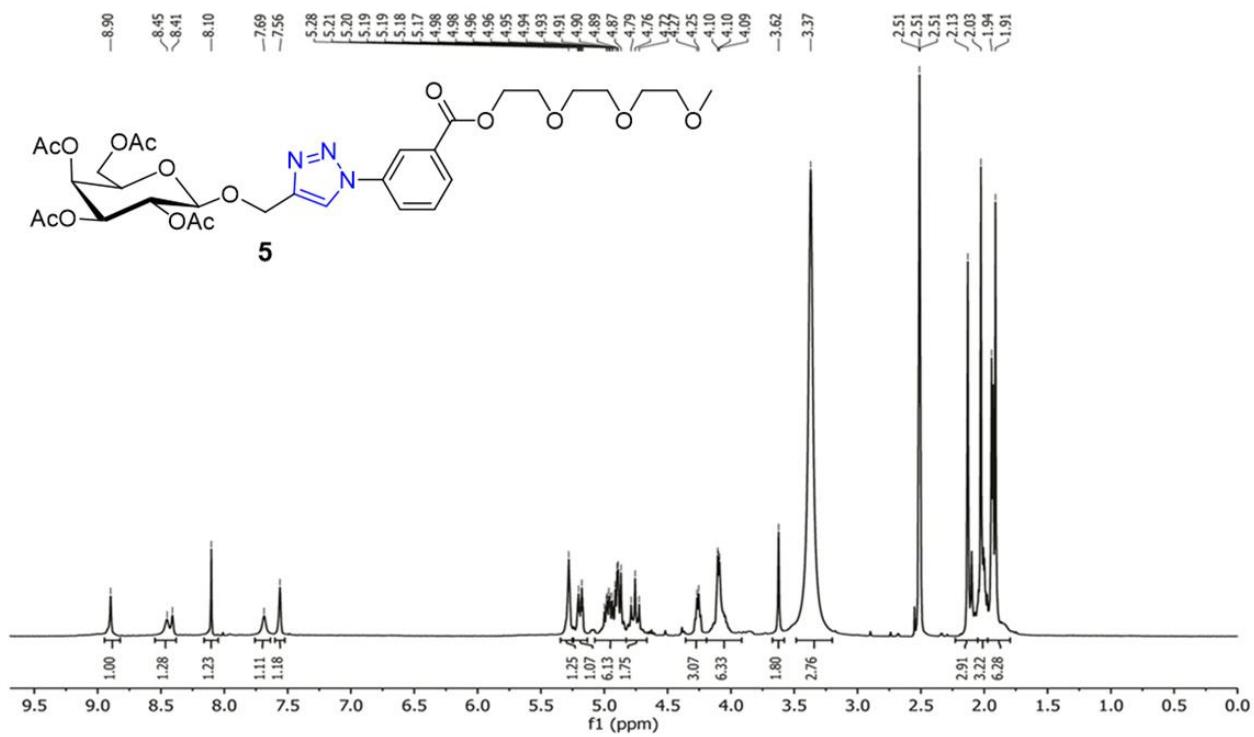
<sup>3</sup> Chemistry Department, College of Science, Sudan University of Science and Technology, P.O. Box 11116 Khartoum, Sudan

<sup>4</sup> Water Pollution Research Department, Environmental Research Division, National Research Centre, 33 El Buhouth Street, P.O. Box 12622 Cairo, Egypt; bahaa\_nrc@yahoo.com

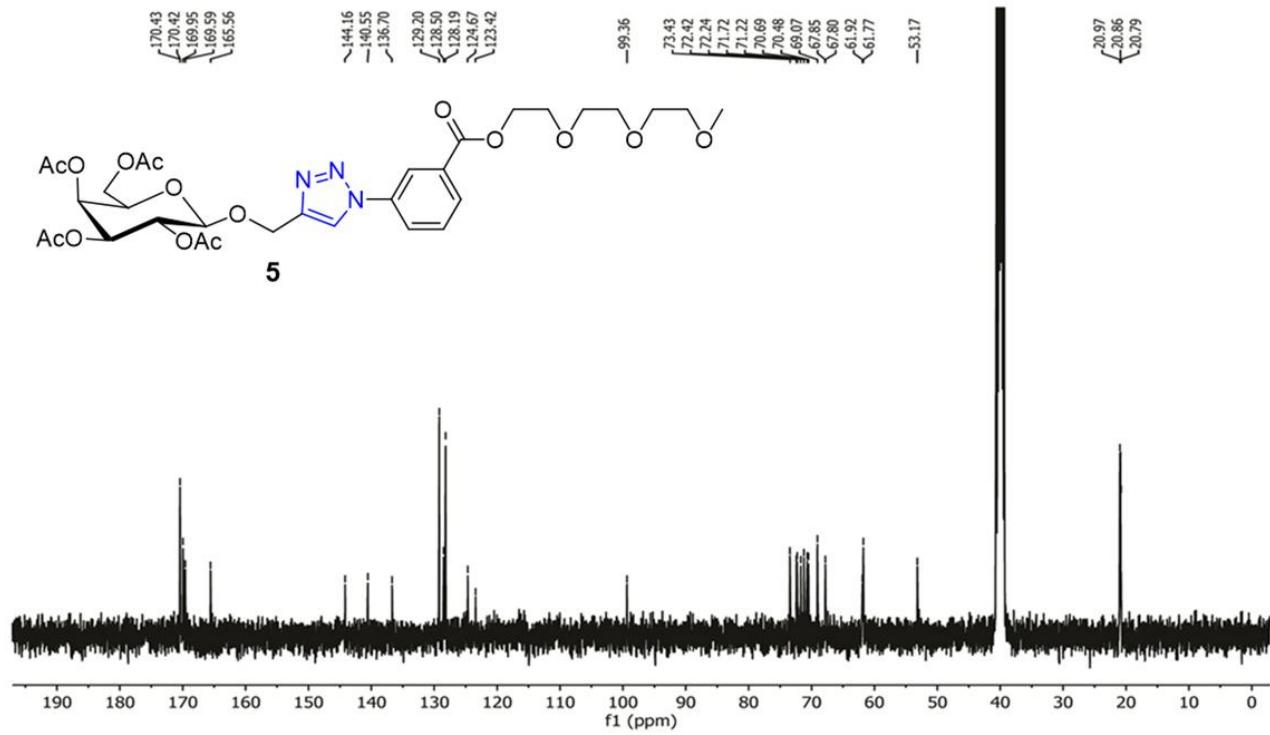
<sup>5</sup> Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, P.O. Box 781039 Assam, India

<sup>6</sup> Department of Chemistry, College of Science, Qassim University, P.O. Box 51452 Buraidah, Kingdom of Saudi Arabia; waelshendy@gmail.com

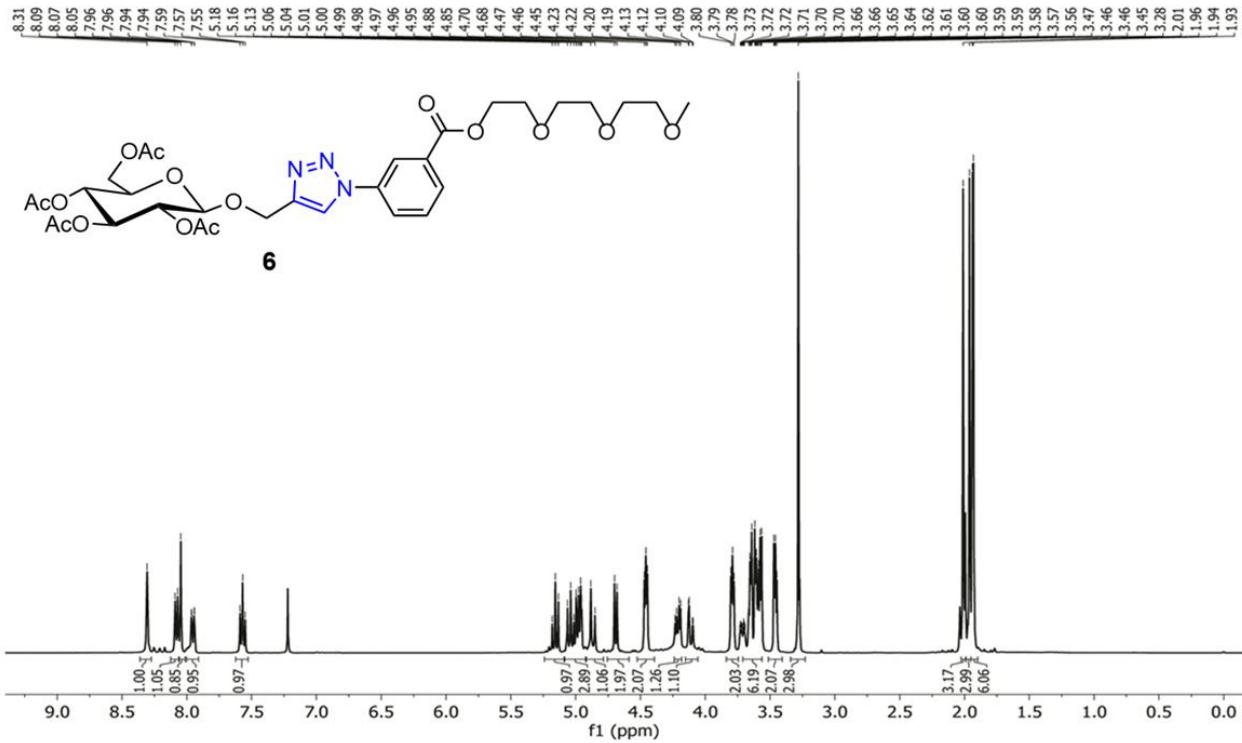
\* Correspondence: tmara\_nrc3000@yahoo.com (T.E.M.); hany.nour@daad-alumni.de (H.F.N.)



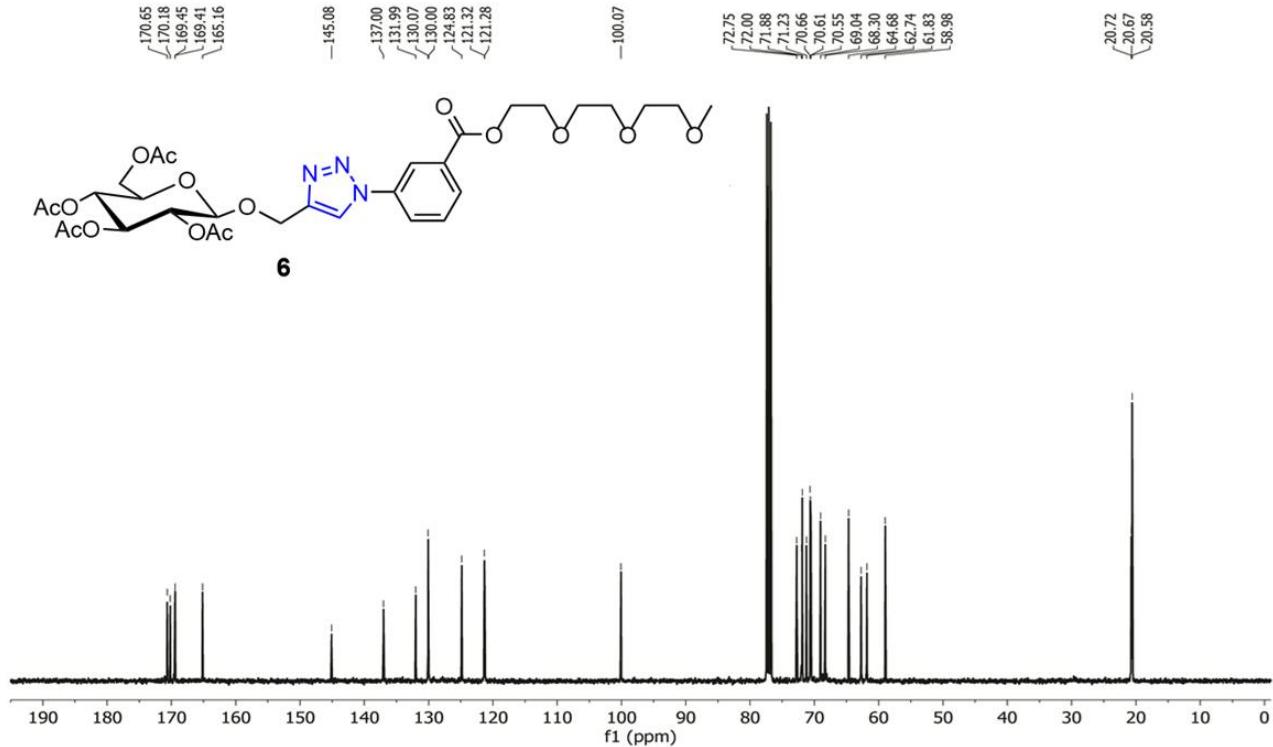
**Figure 1.**  $^1\text{H}$  NMR spectrum of 1,2,3-triazole glucoside **5** ( $\text{CDCl}_3$ , 400 MHz).



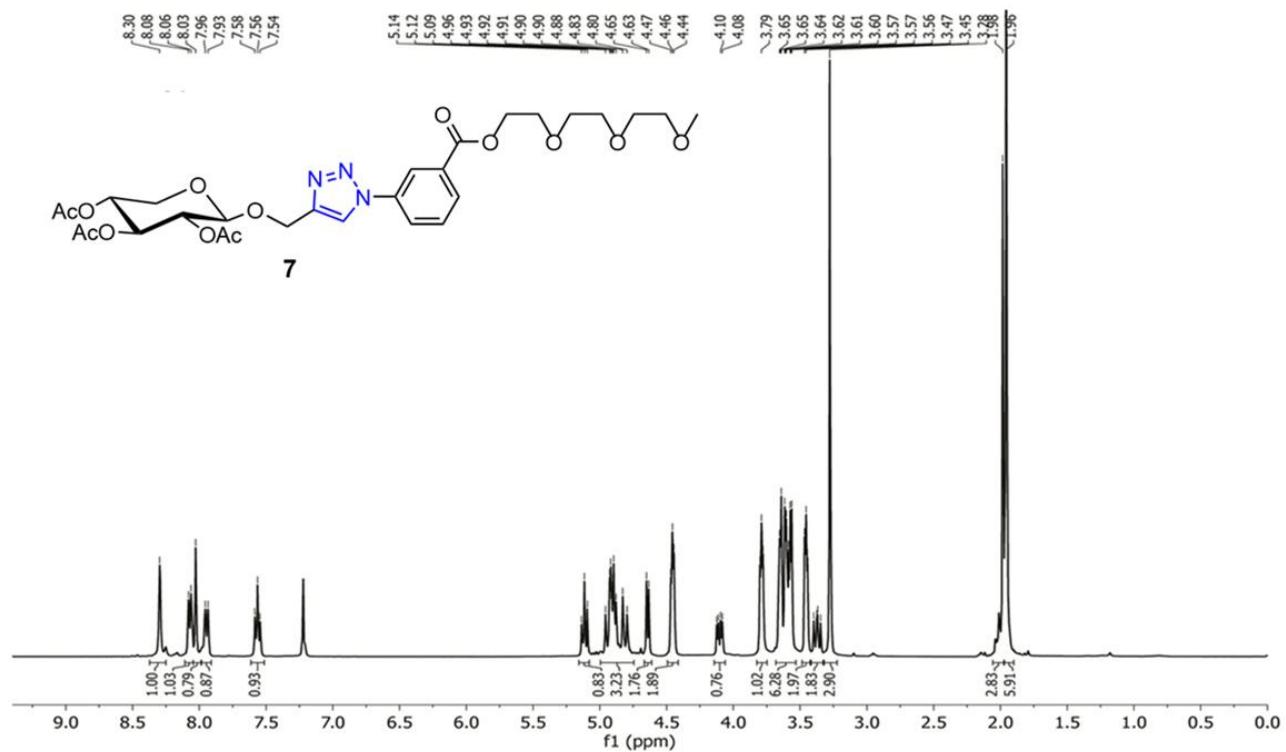
**Figure 2.**  $^{13}\text{C}$  NMR spectrum of 1,2,3-triazole glucoside **5** ( $\text{CDCl}_3$ , 100 MHz).



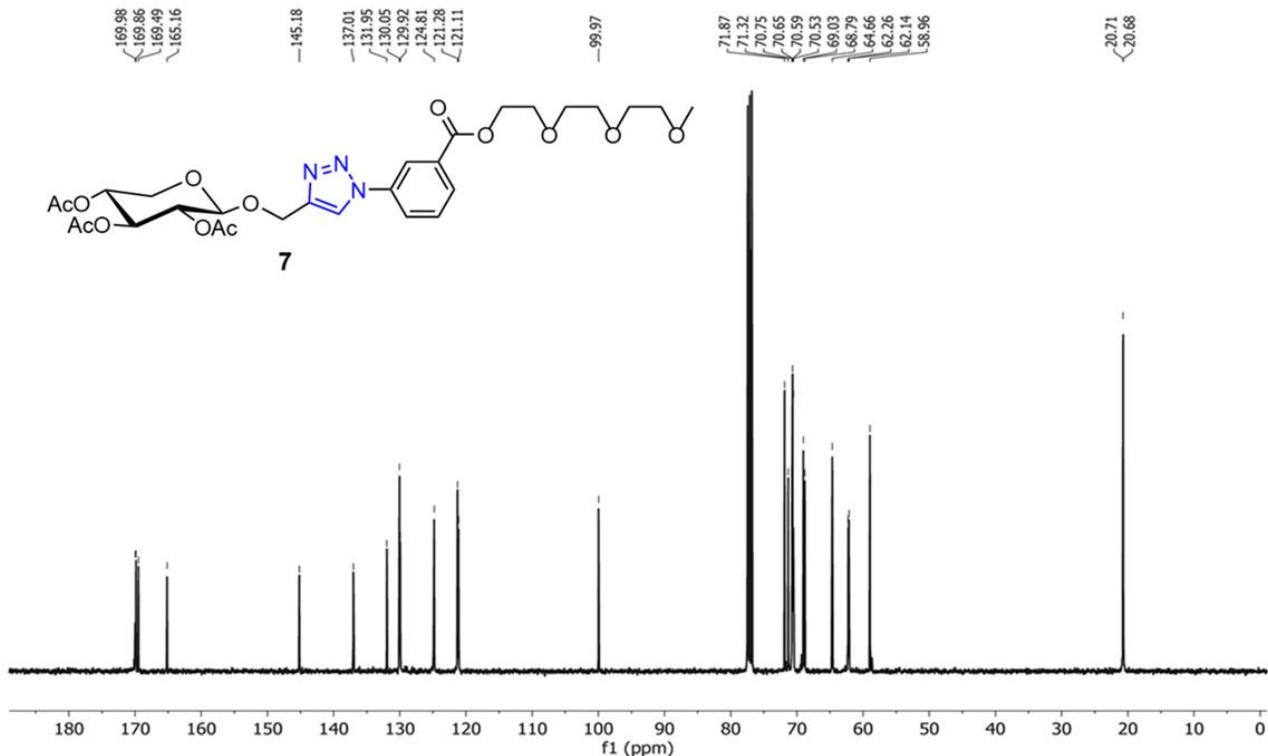
**Figure 3.**  $^1\text{H}$  NMR spectrum of 1,2,3-triazole glucoside **6** ( $\text{CDCl}_3$ , 400 MHz).



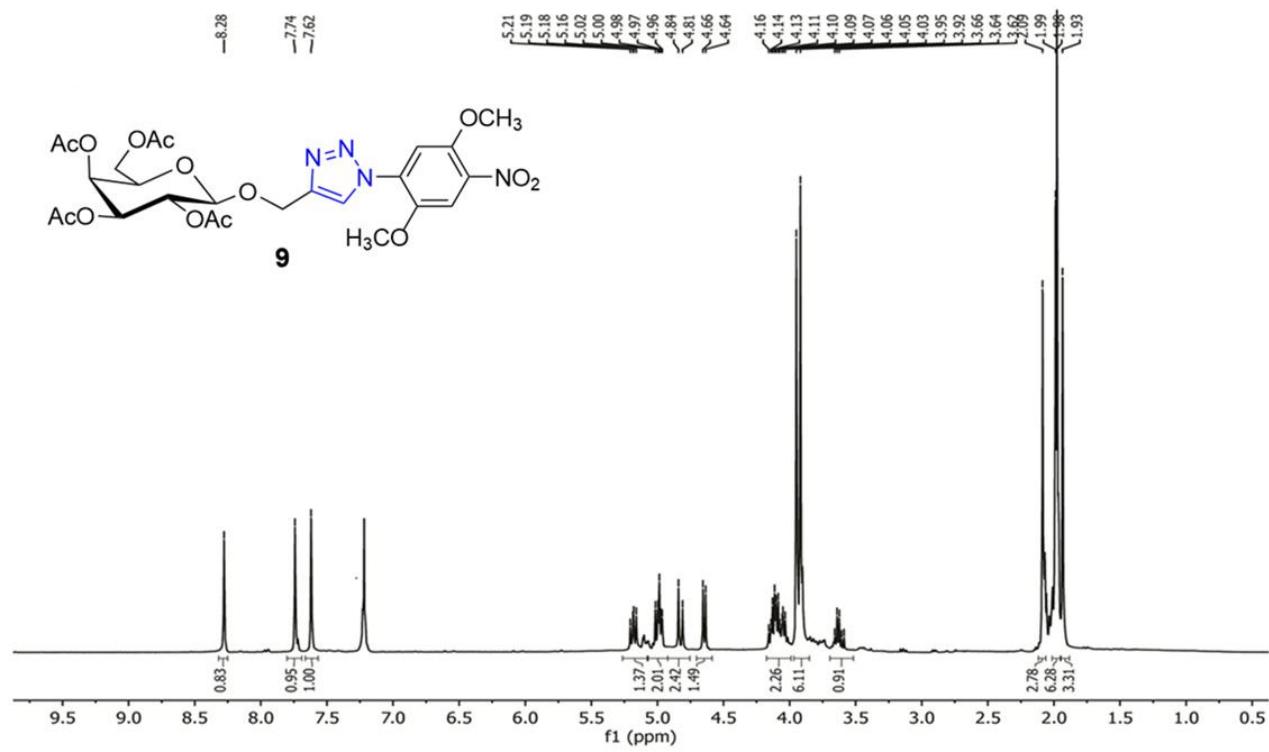
**Figure 4.**  $^{13}\text{C}$  NMR spectrum of 1,2,3-triazole glucoside **6** ( $\text{CDCl}_3$ , 100 MHz).



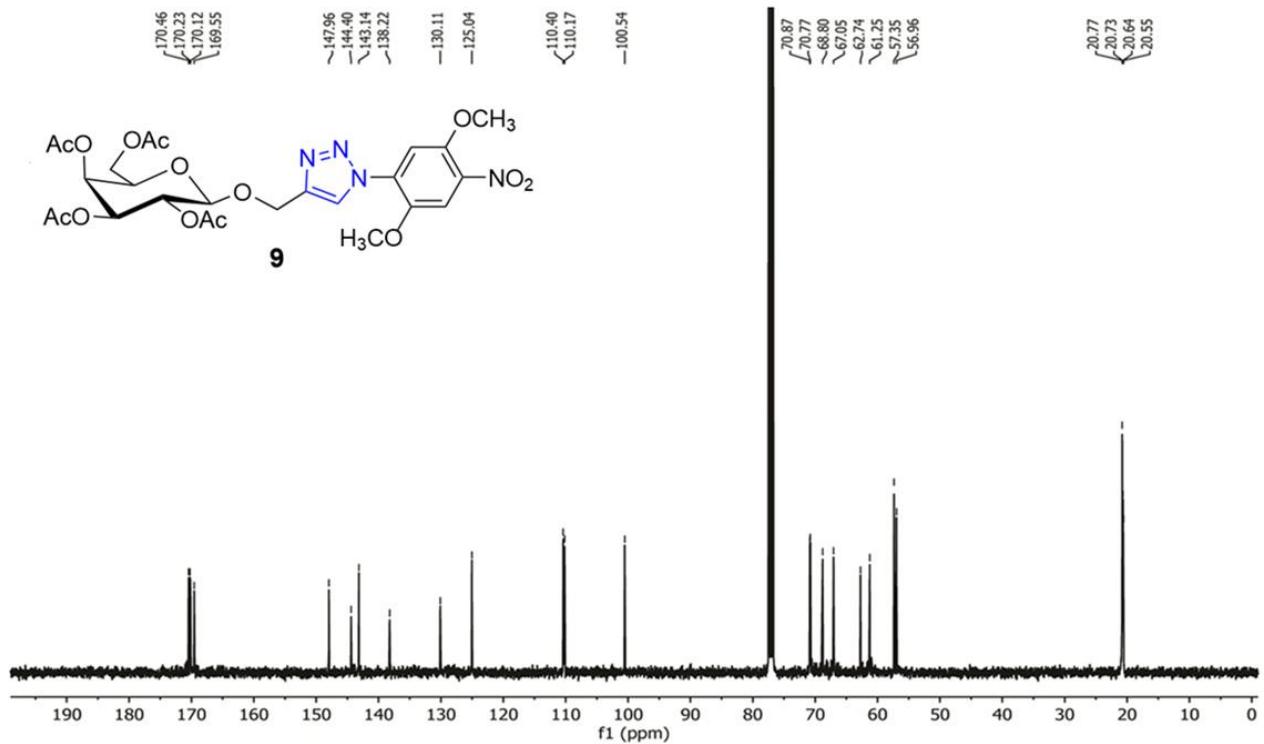
**Figure 5.**  $^1\text{H}$  NMR spectrum of 1,2,3-triazole glucoside **7** ( $\text{CDCl}_3$ , 400 MHz).



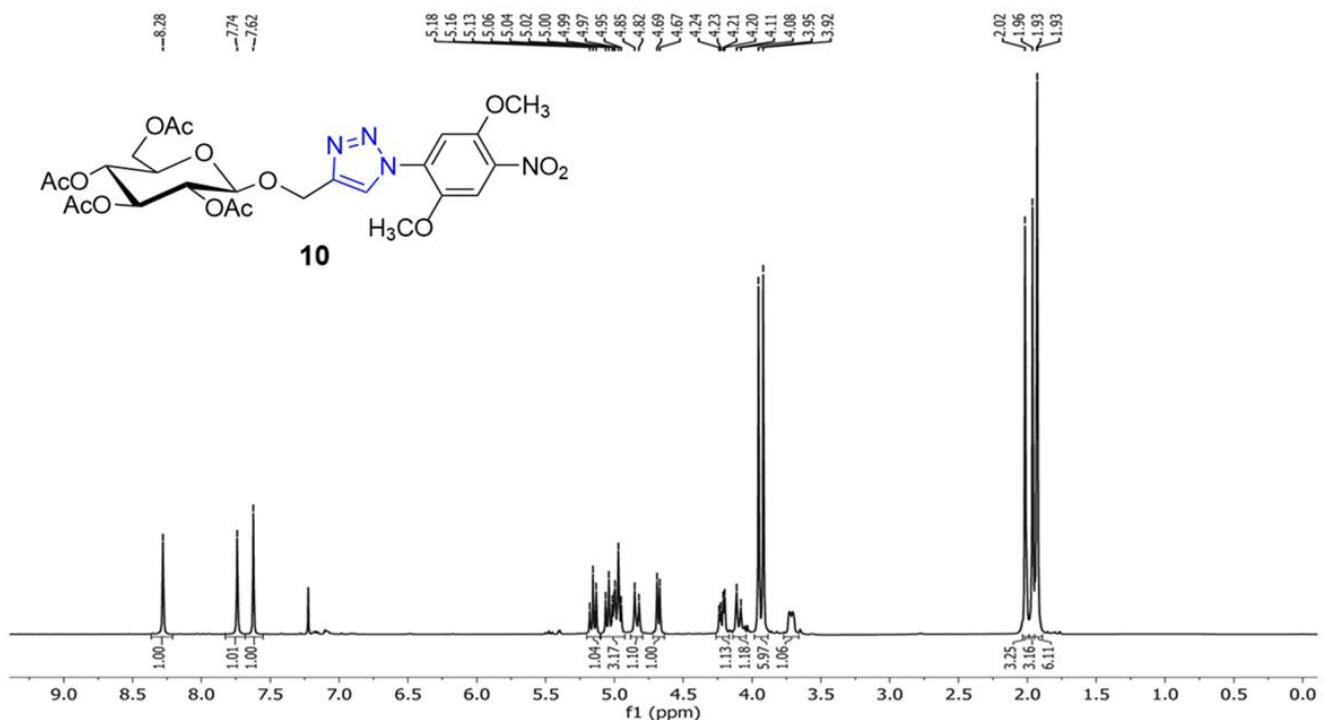
**Figure 6.**  $^{13}\text{C}$  NMR spectrum of 1,2,3-triazole glucoside **7** ( $\text{CDCl}_3$ , 100 MHz).



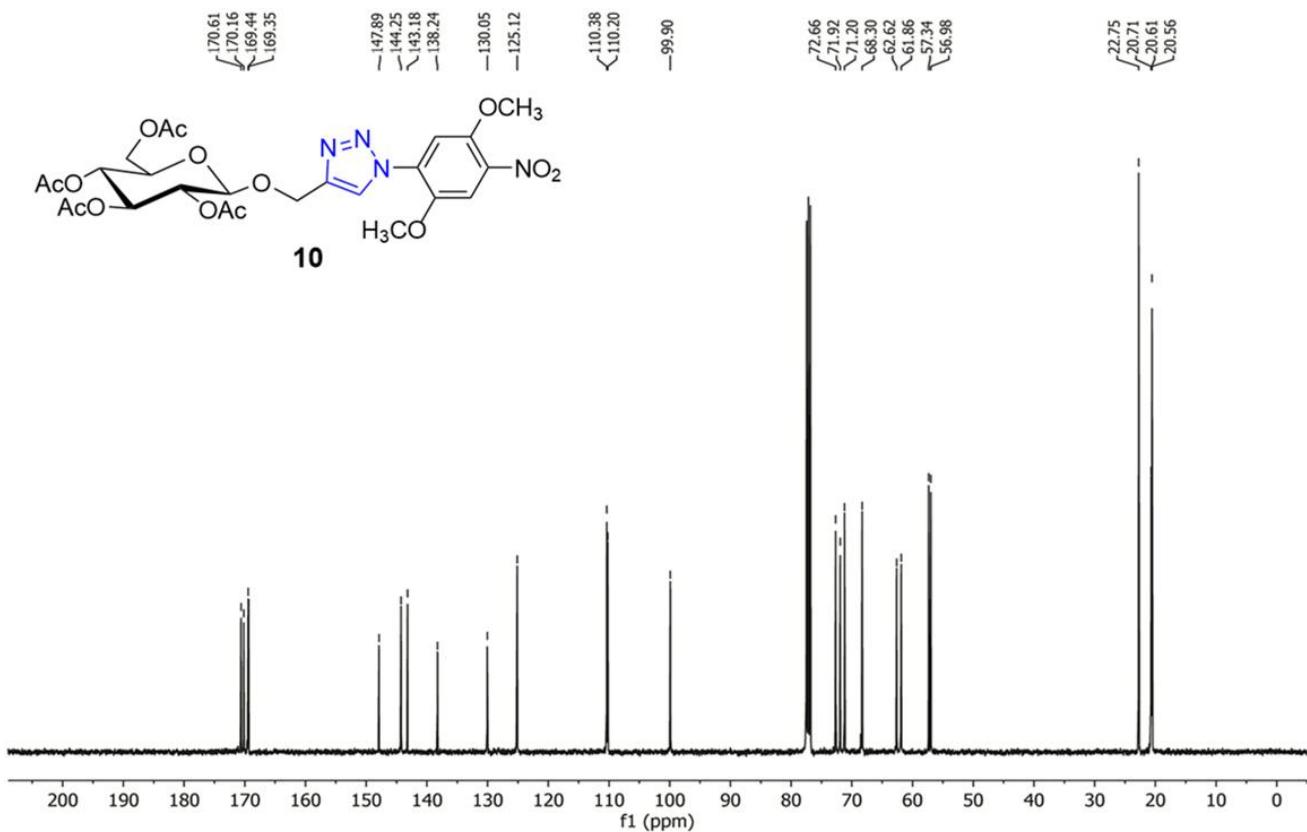
**Figure 7.** <sup>1</sup>H NMR spectrum of 1,2,3-triazole glucoside **9** (CDCl<sub>3</sub>, 400 MHz).



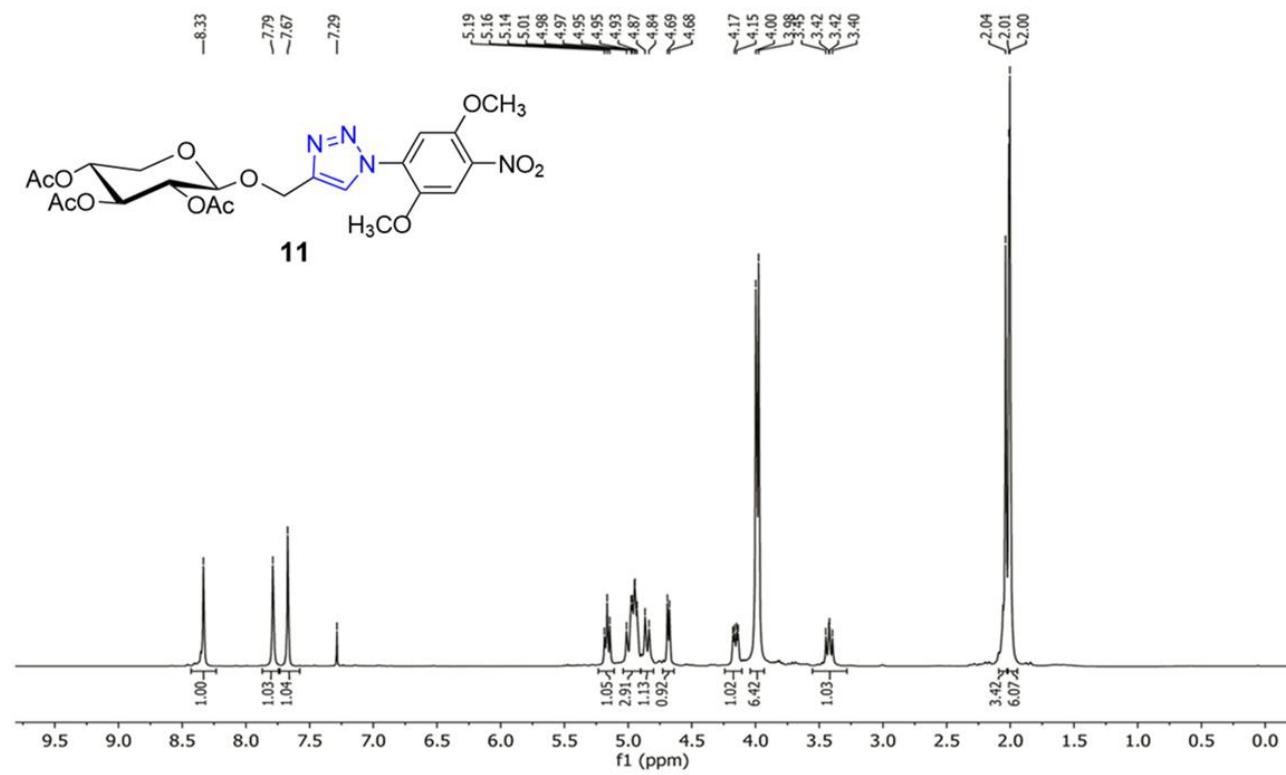
**Figure 8.** <sup>13</sup>C NMR spectrum of 1,2,3-triazole glucoside **9** (CDCl<sub>3</sub>, 100 MHz).



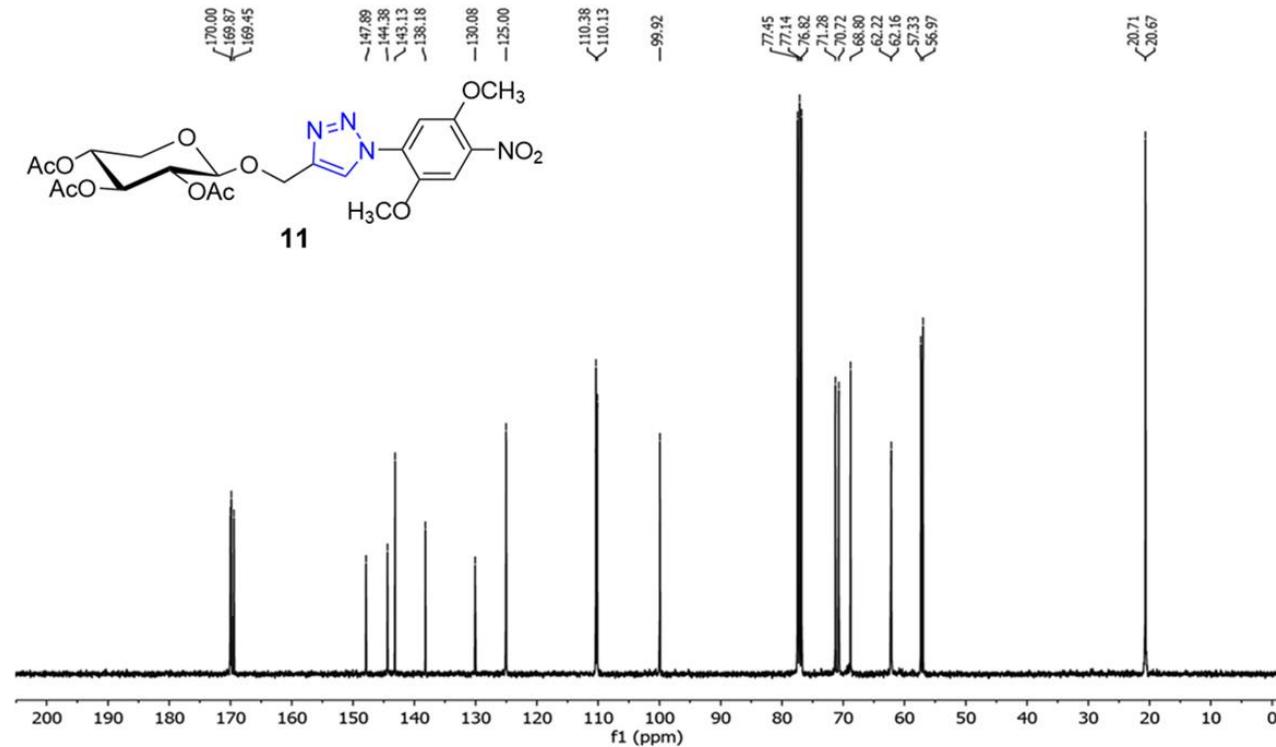
**Figure 9.**  $^1\text{H}$  NMR spectrum of 1,2,3-triazole glucoside **10** ( $\text{CDCl}_3$ , 400 MHz).



**Figure 10.**  $^{13}\text{C}$  NMR spectrum of 1,2,3-triazole glucoside **10** ( $\text{CDCl}_3$ , 100 MHz).



**Figure 11.**  $^1\text{H}$  NMR spectrum of 1,2,3-triazole glucoside **11** ( $\text{CDCl}_3$ , 400 MHz).



**Figure 12.**  $^{13}\text{C}$  NMR spectrum of 1,2,3-triazole glucoside **11** ( $\text{CDCl}_3$ , 100 MHz).