

Supplementary material

Novel triazole hybrids of betulin: synthesis and biological activity profile

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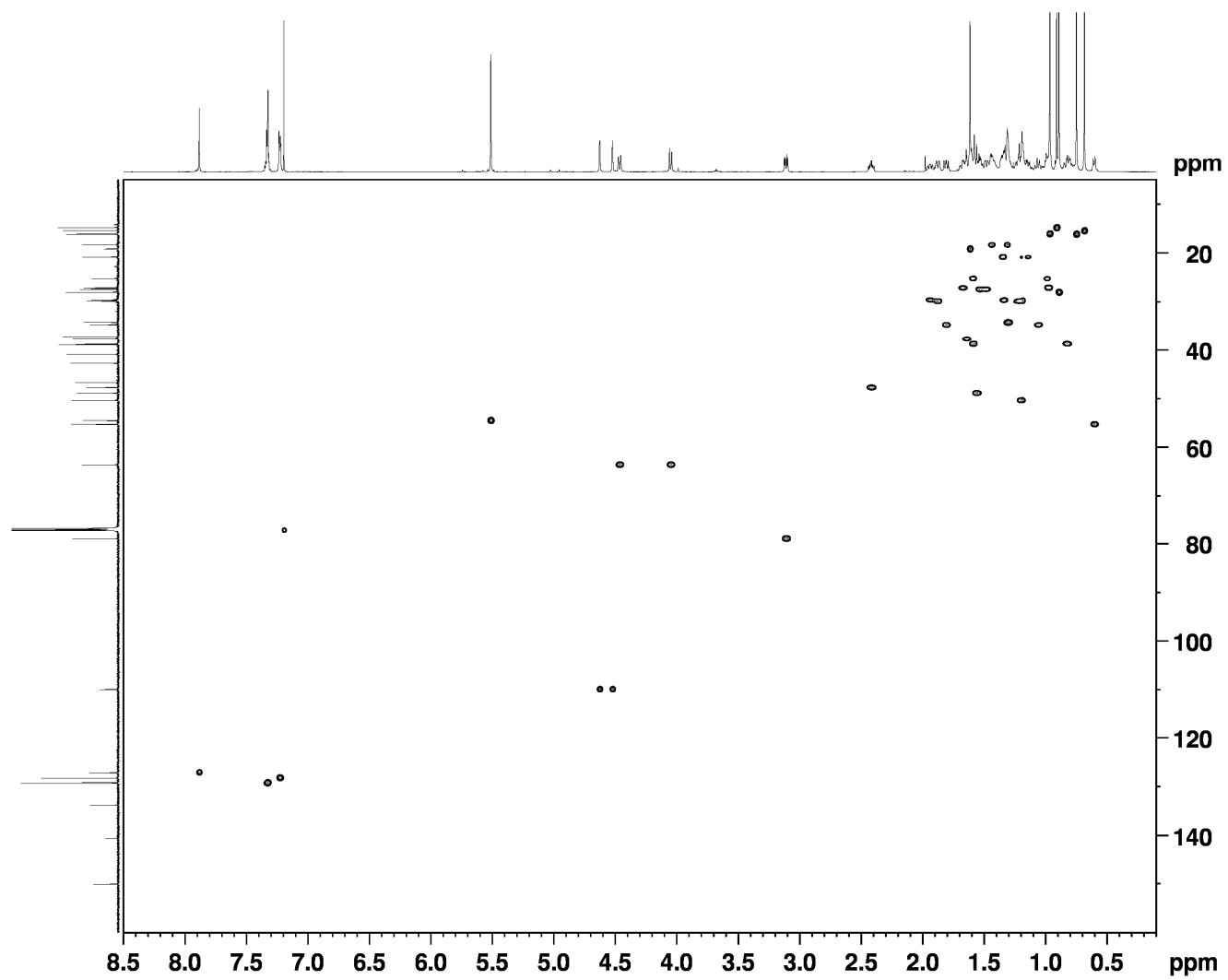


Figure S1 (a): HSQC spectrum of 28-O-(1-Benzyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5a)

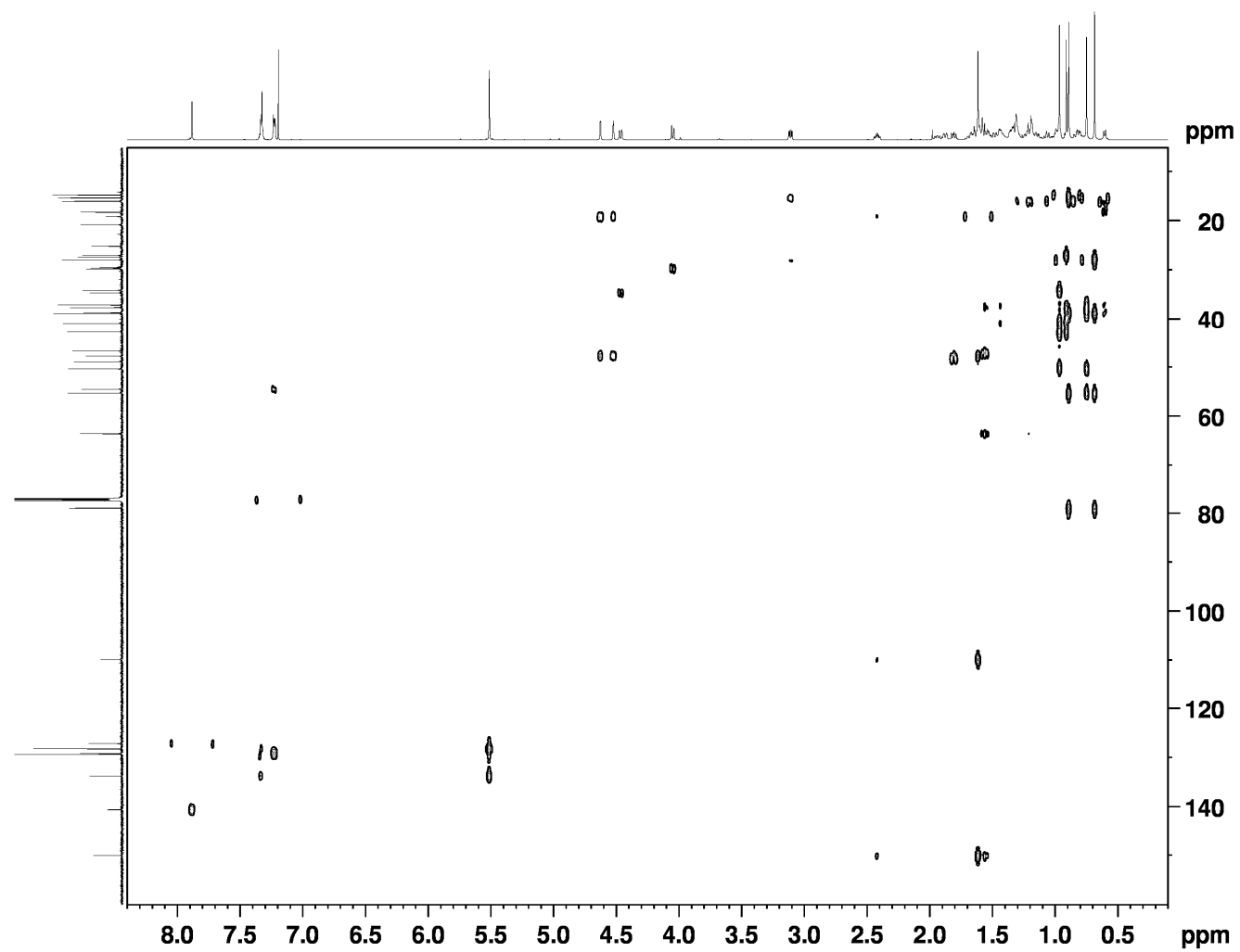


Figure S1 (b): HMBC spectrum of 28-O-(1-Benzyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (**5a**)

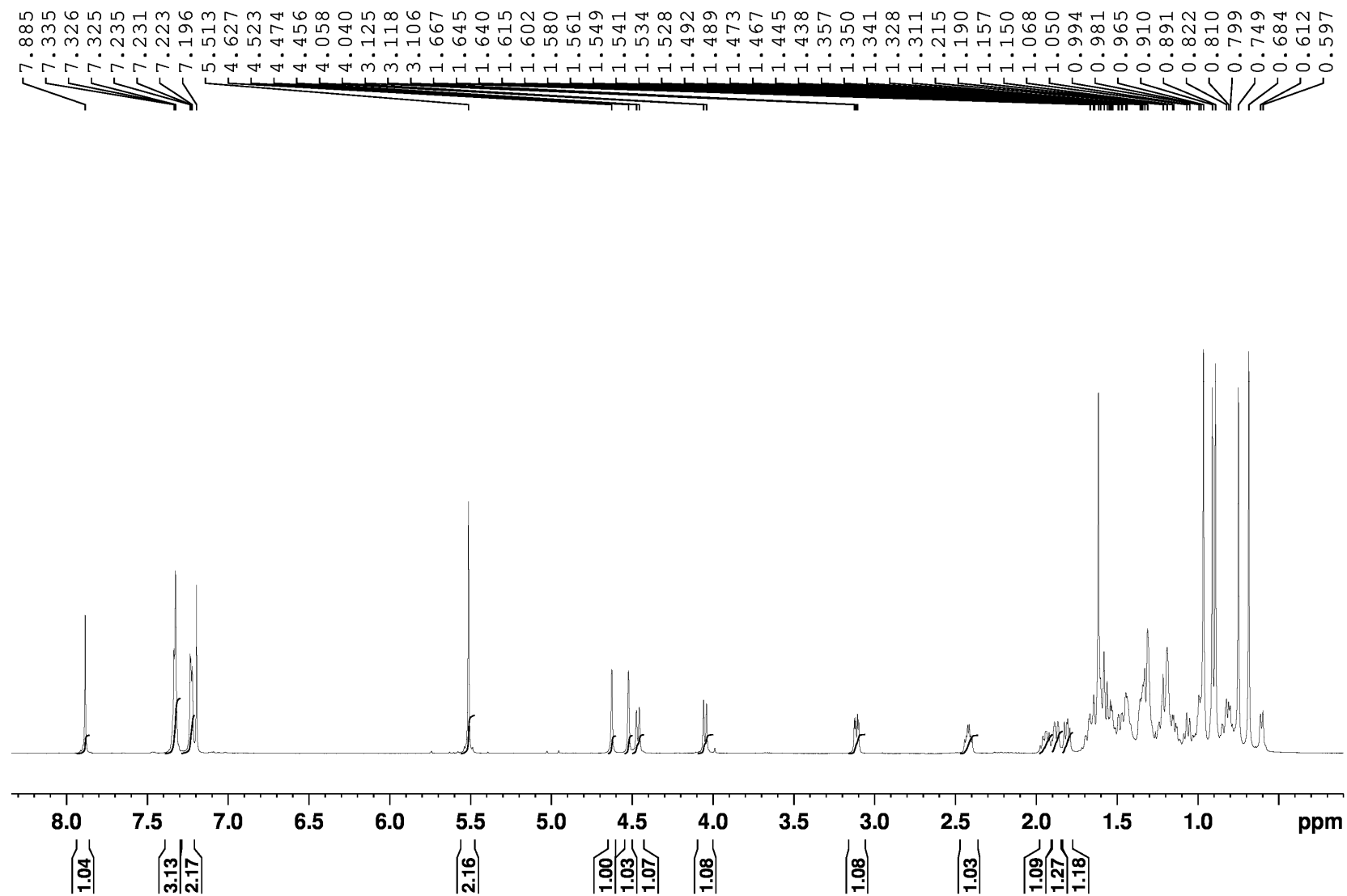


Figure S2 (a): ^1H NMR spectrum of 28-O-(1-Benzyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5a)

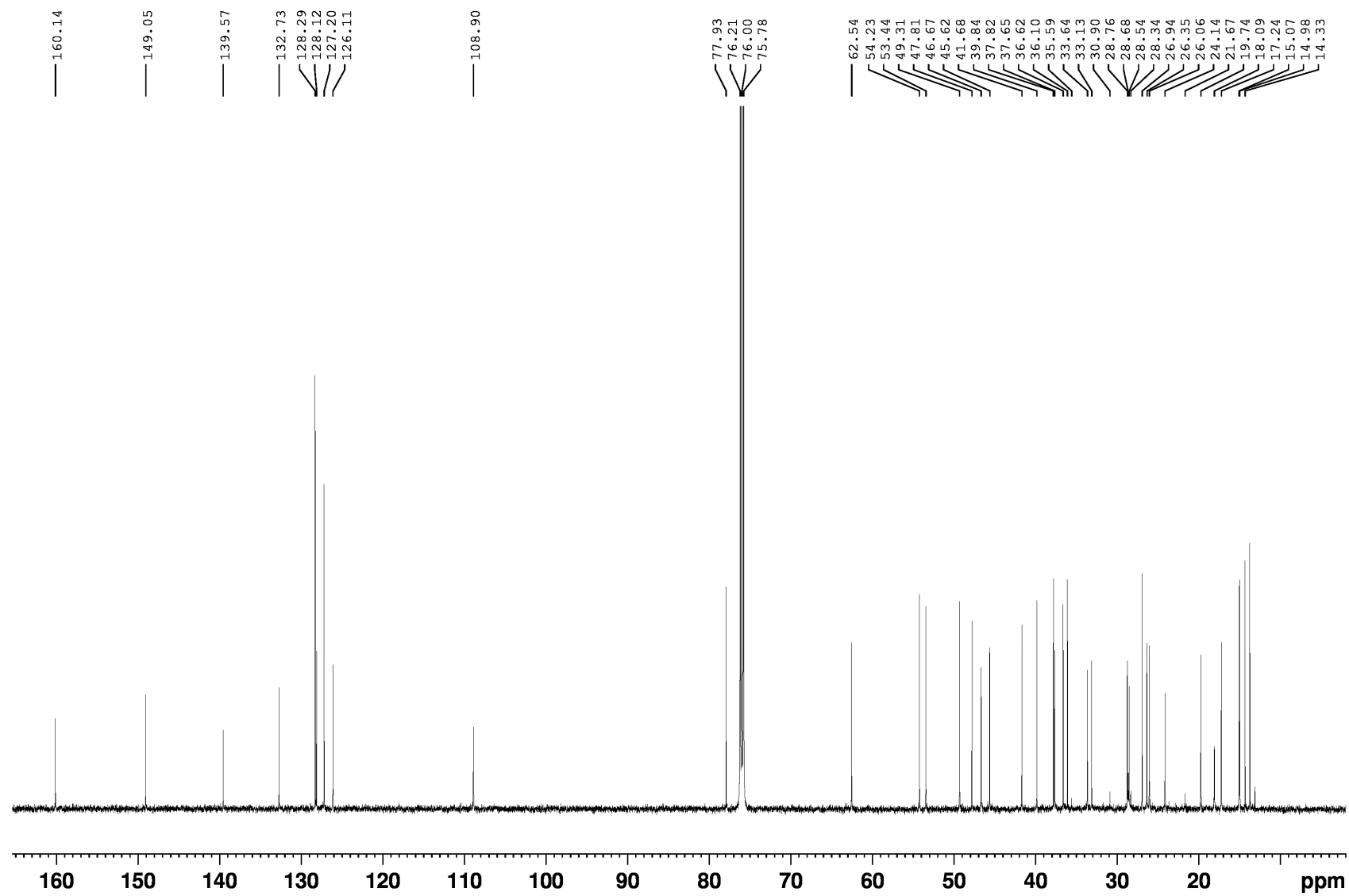


Figure S2 (b): ¹³C NMR spectrum of 28-O-(1-Benzyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5a)

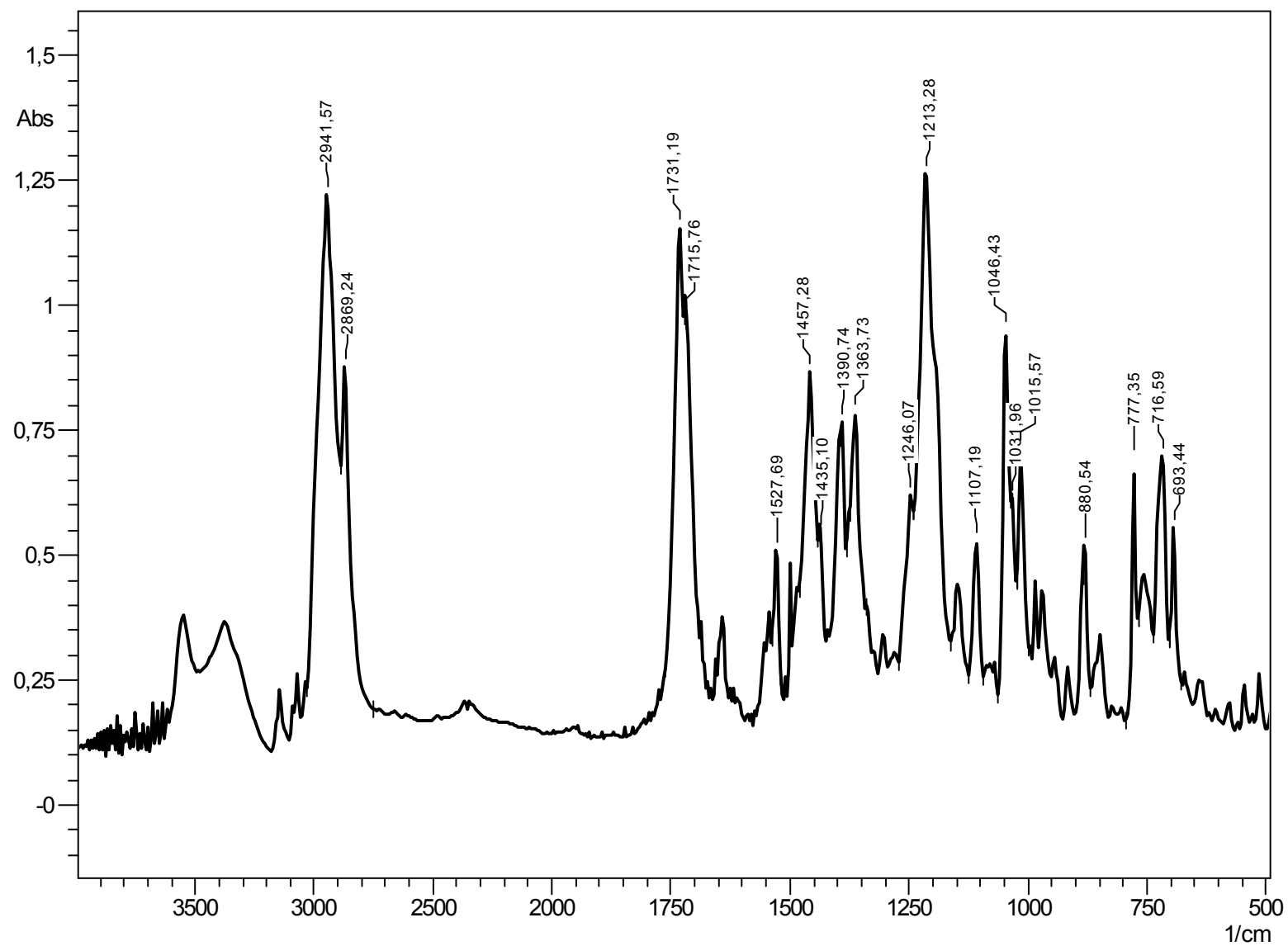


Figure S2 (c): IR spectrum of 28-O-(1-Benzyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5a)

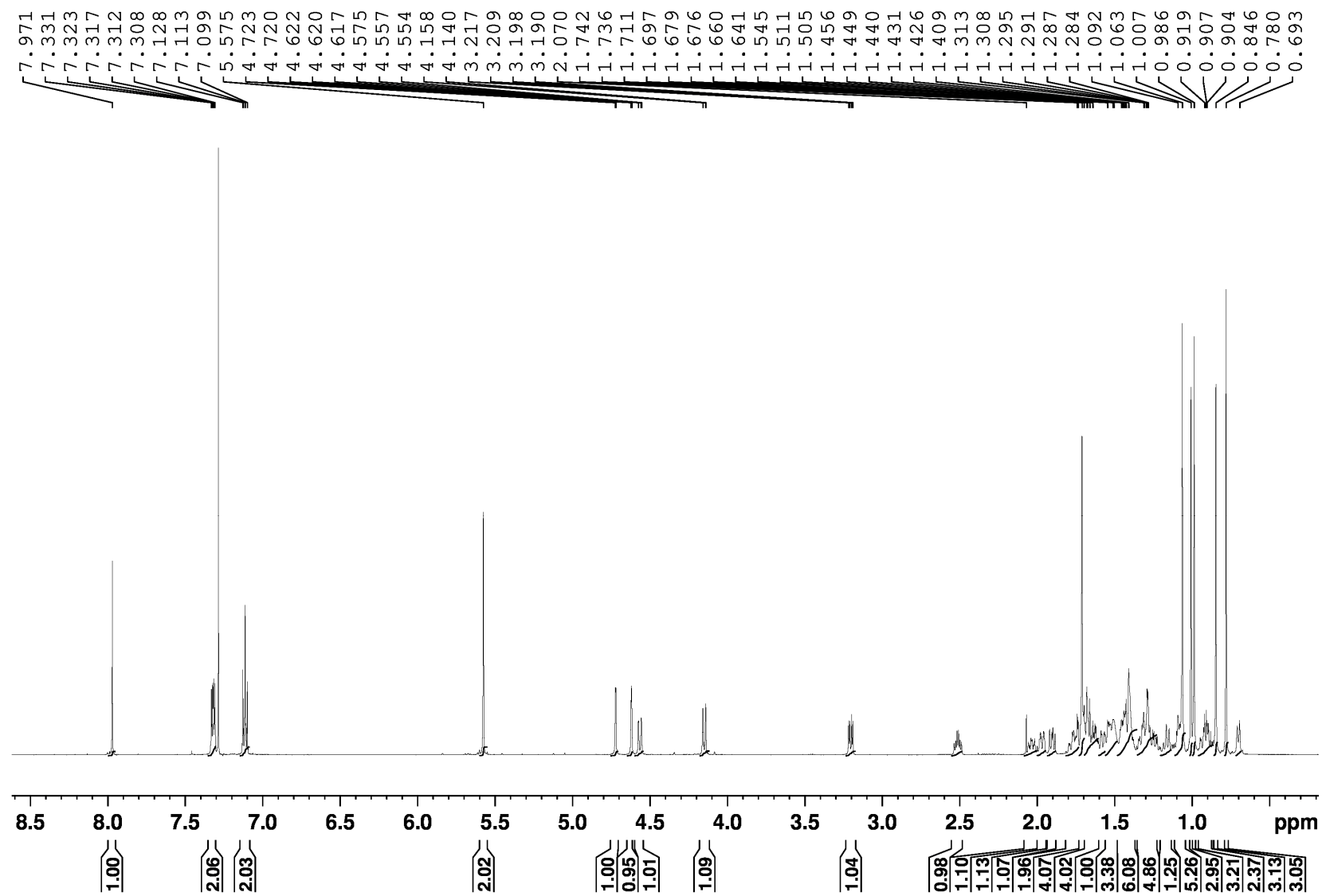


Figure S3 (a): ^1H NMR spectrum of 28-O-{1-(4-Fluorobenzyl)-1H-[1,2,3]-triazol-4-yl}carbonylbetulin (**5b**)

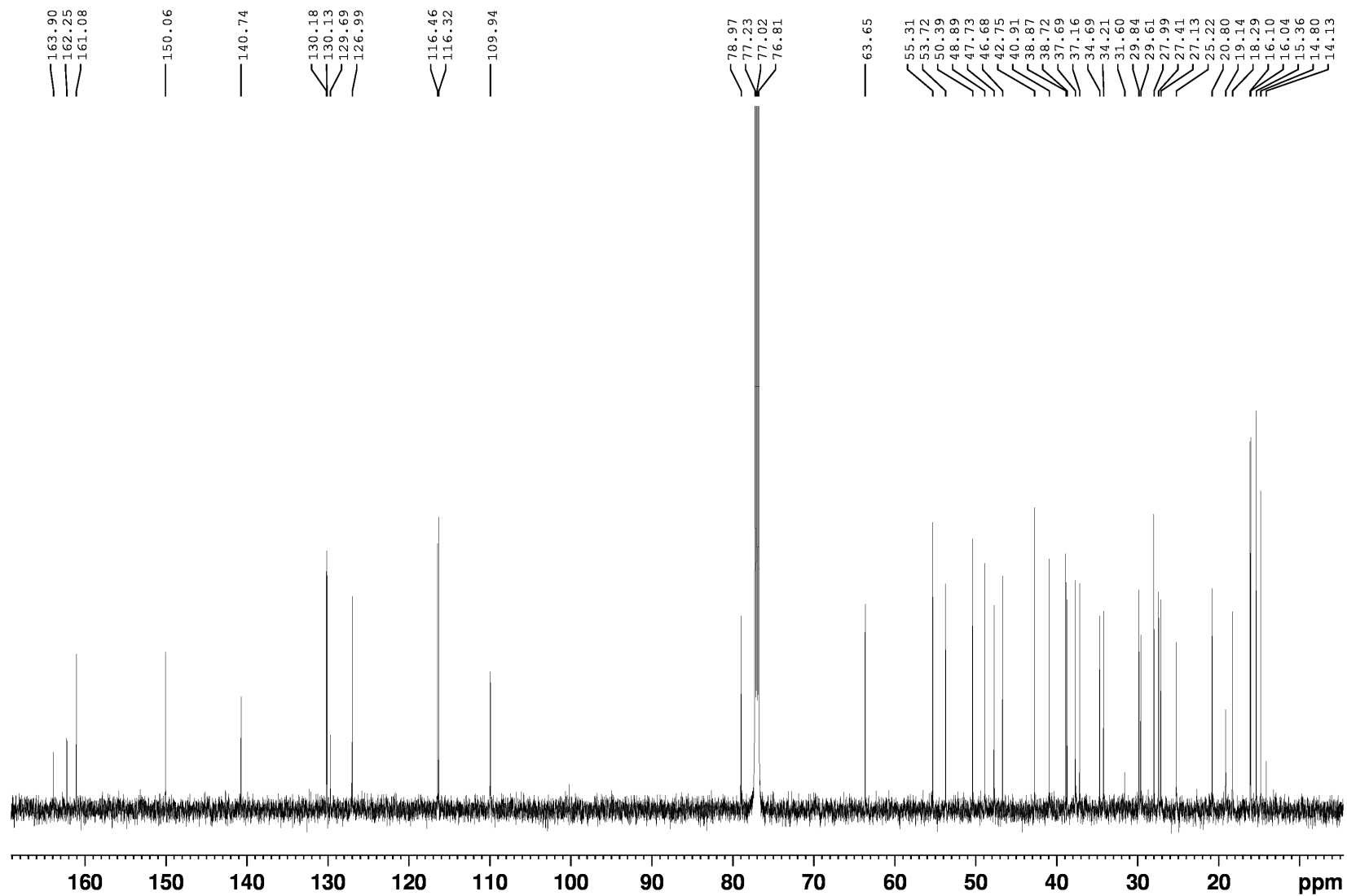


Figure S3 (b): ^{13}C NMR spectrum of 28-O-[1-(4-Fluorobenzyl)-1H-[1,2,3]-triazol-4-yl]carbonylbetulins (**5b**)

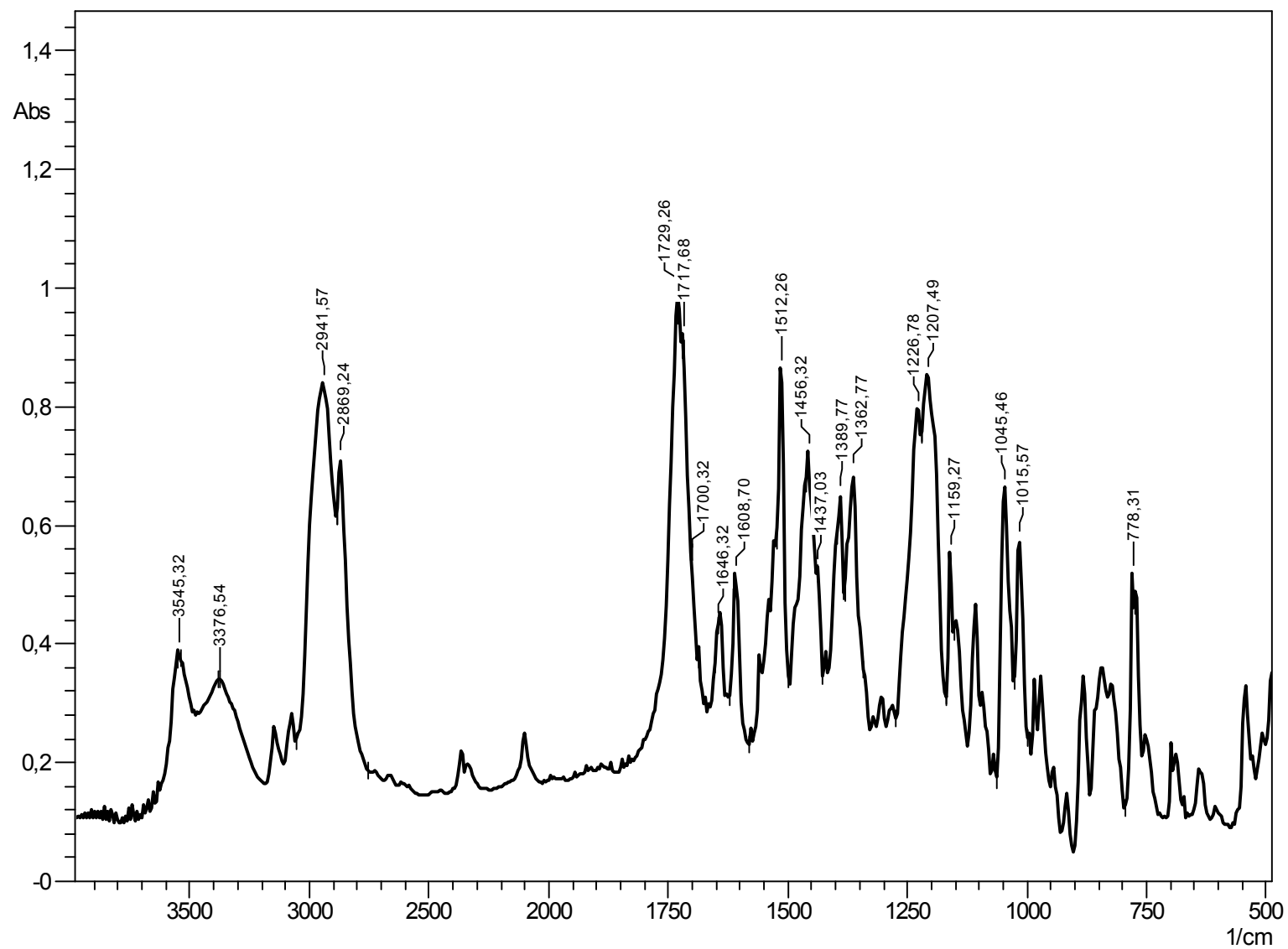


Figure S3 (c): IR spectrum of 28-O-[1-(4-Fluorobenzyl)-1H-[1,2,3]-triazol-4-yl]carbonylbetulins (**5b**)

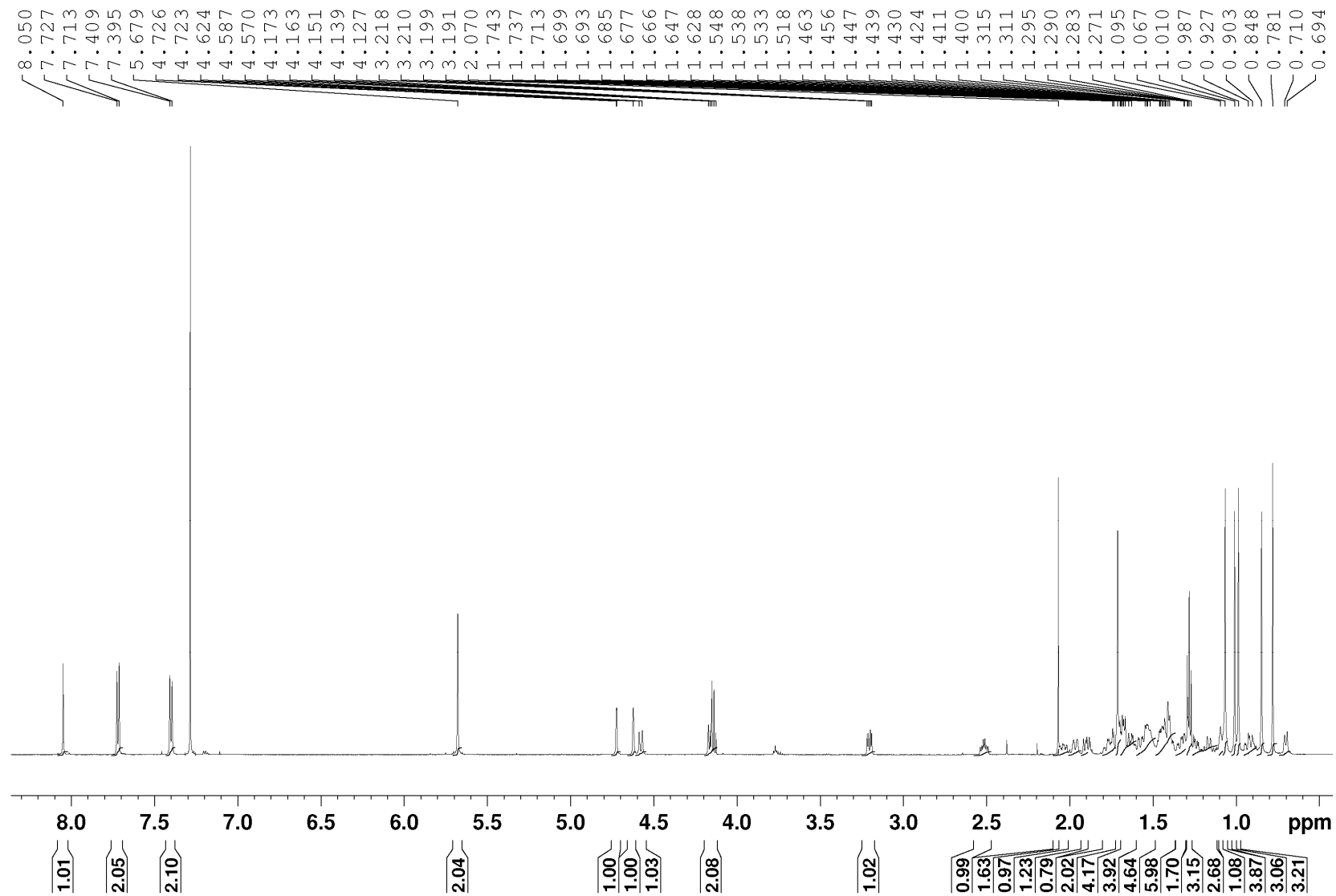


Figure S4 (a): ^1H NMR spectrum of 28-O-{1-(4-Cyanobenzyl)-1H-[1,2,3]-triazol-4-yl}carbonylbetulin (**5c**)

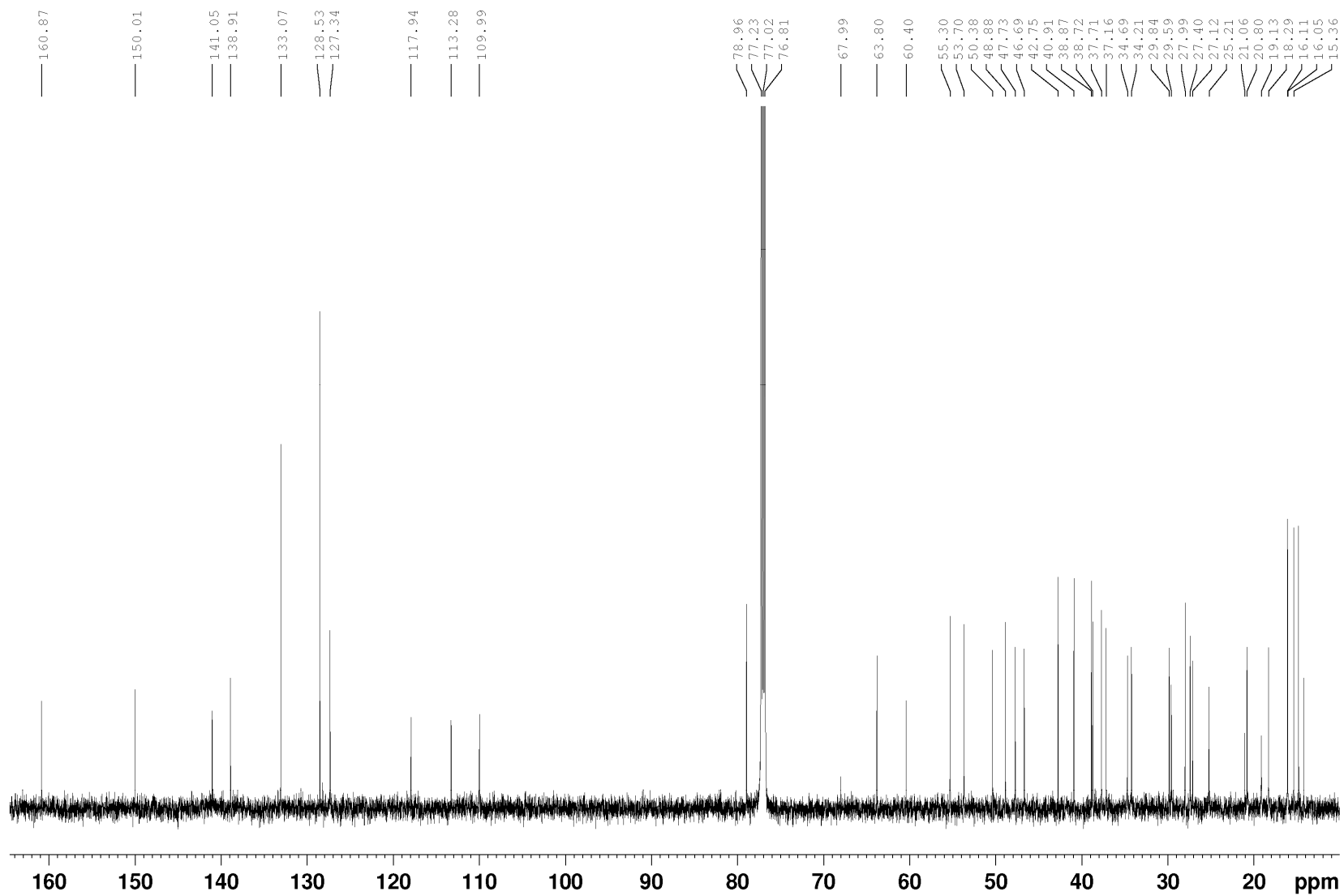


Figure S4 (b): ¹³C NMR spectrum of 28-O-{1-(4-Cyanobenzyl)-1H-[1,2,3]-triazol-4-yl}carbonylbetulin (5c)

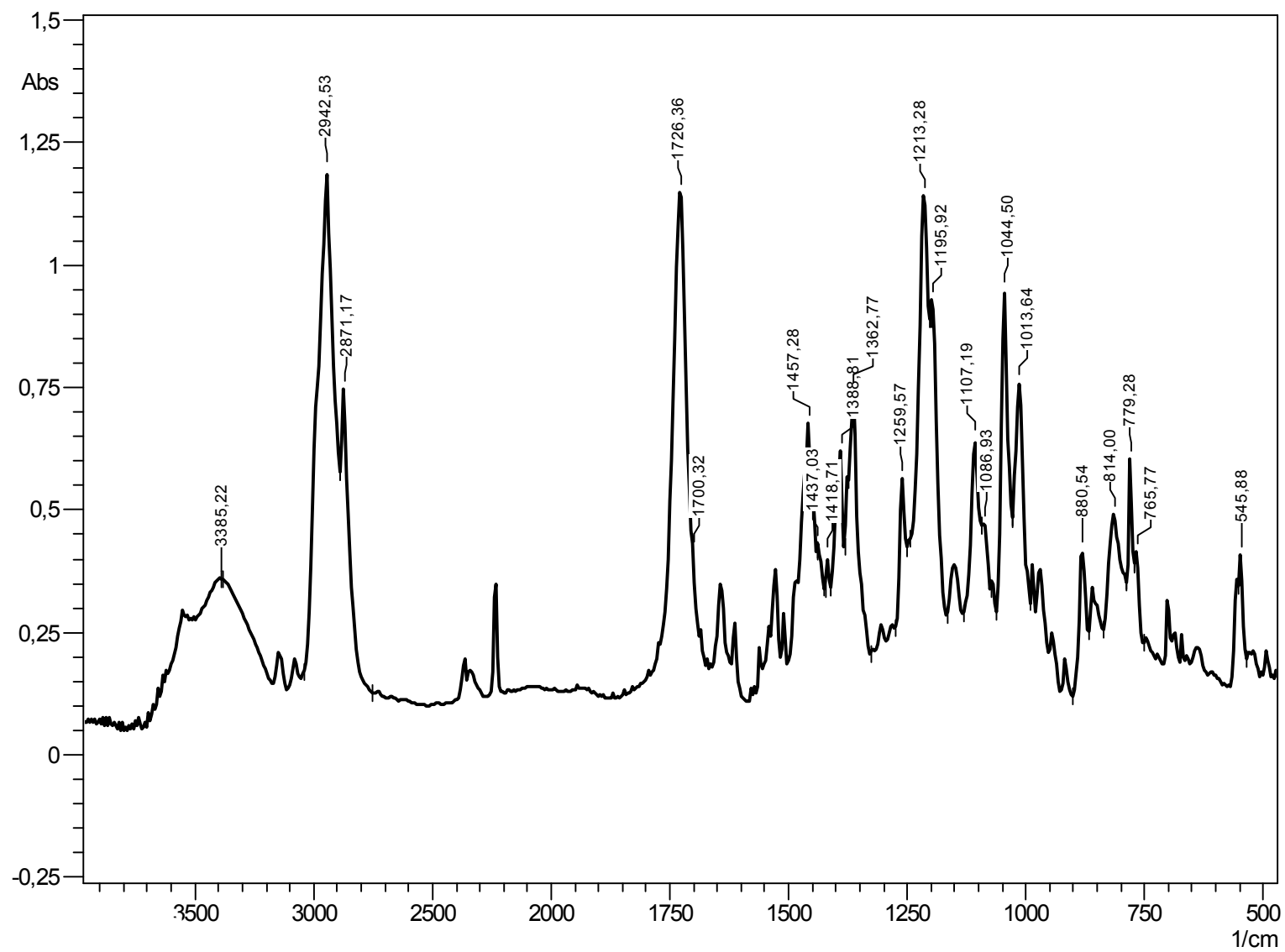


Figure S4 (c): IR spectrum of 28-O-[1-(4-Cyanobenzyl)-1H-[1,2,3]-triazol-4-yl]carbonylbetulin (5c)

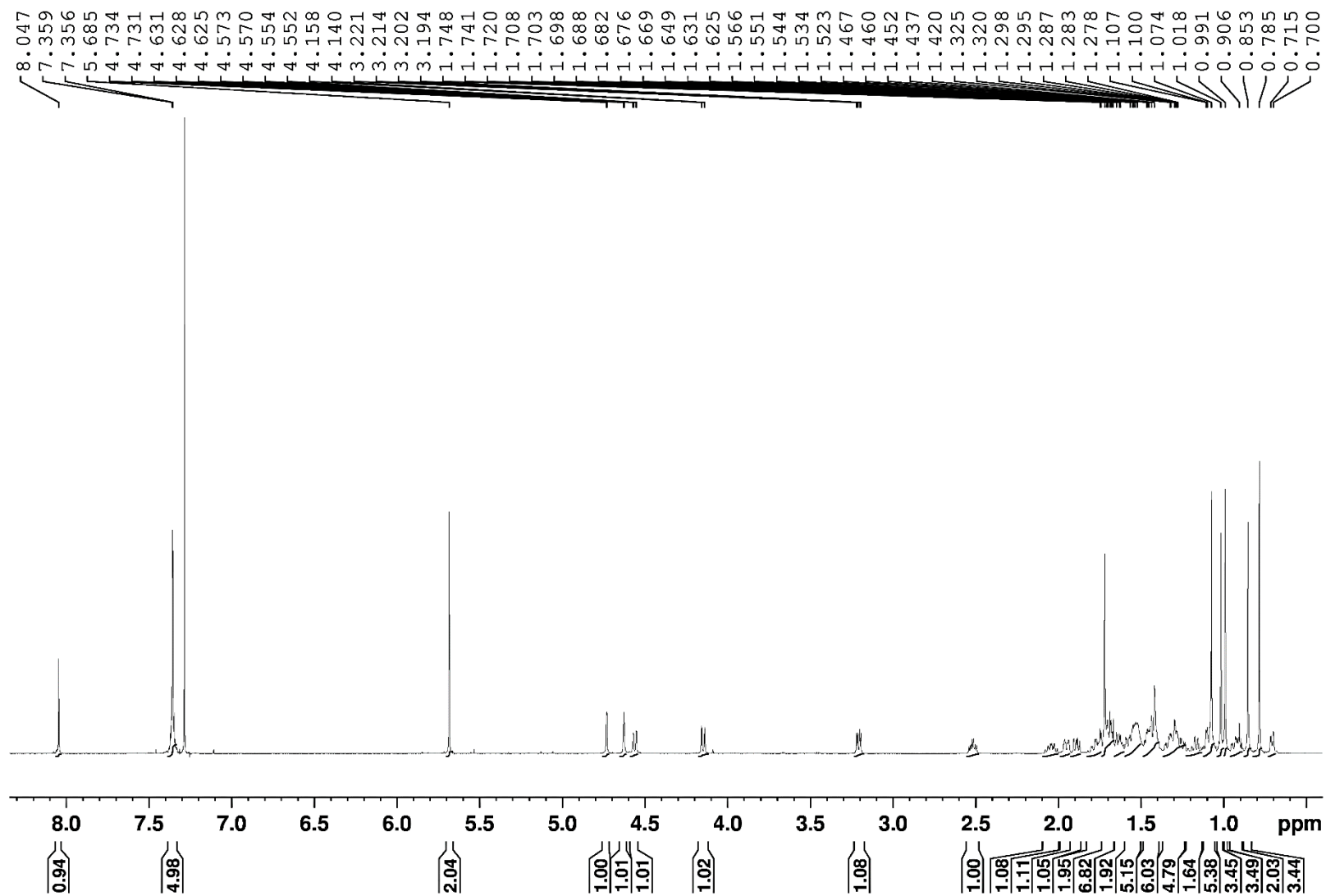


Figure S5 (a): ¹H NMR spectrum of 28-O-(1-Phenylthiomethyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5d)

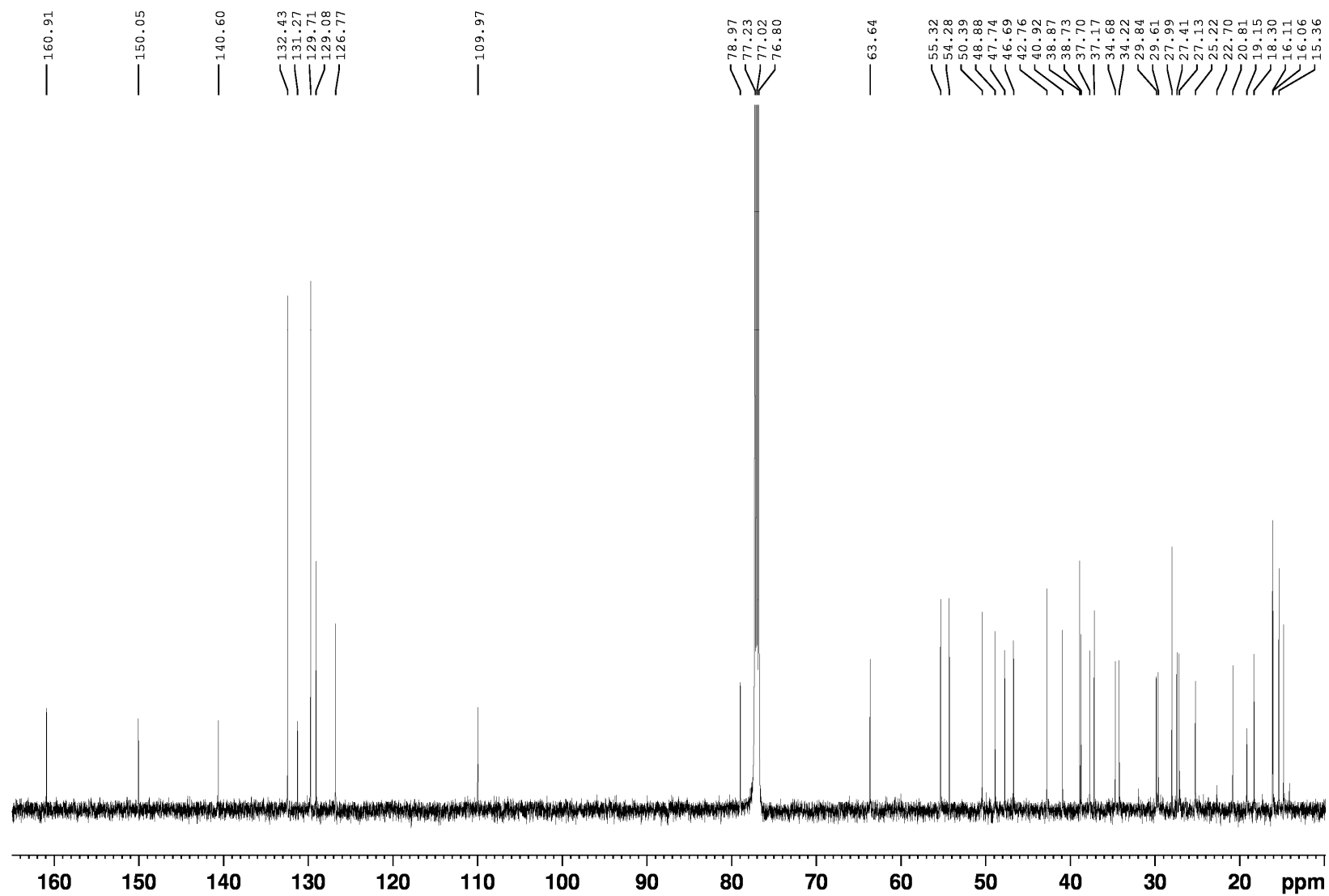


Figure S5 (b): ¹³C NMR spectrum of 28-O-(1-Phenylthiomethyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5d)

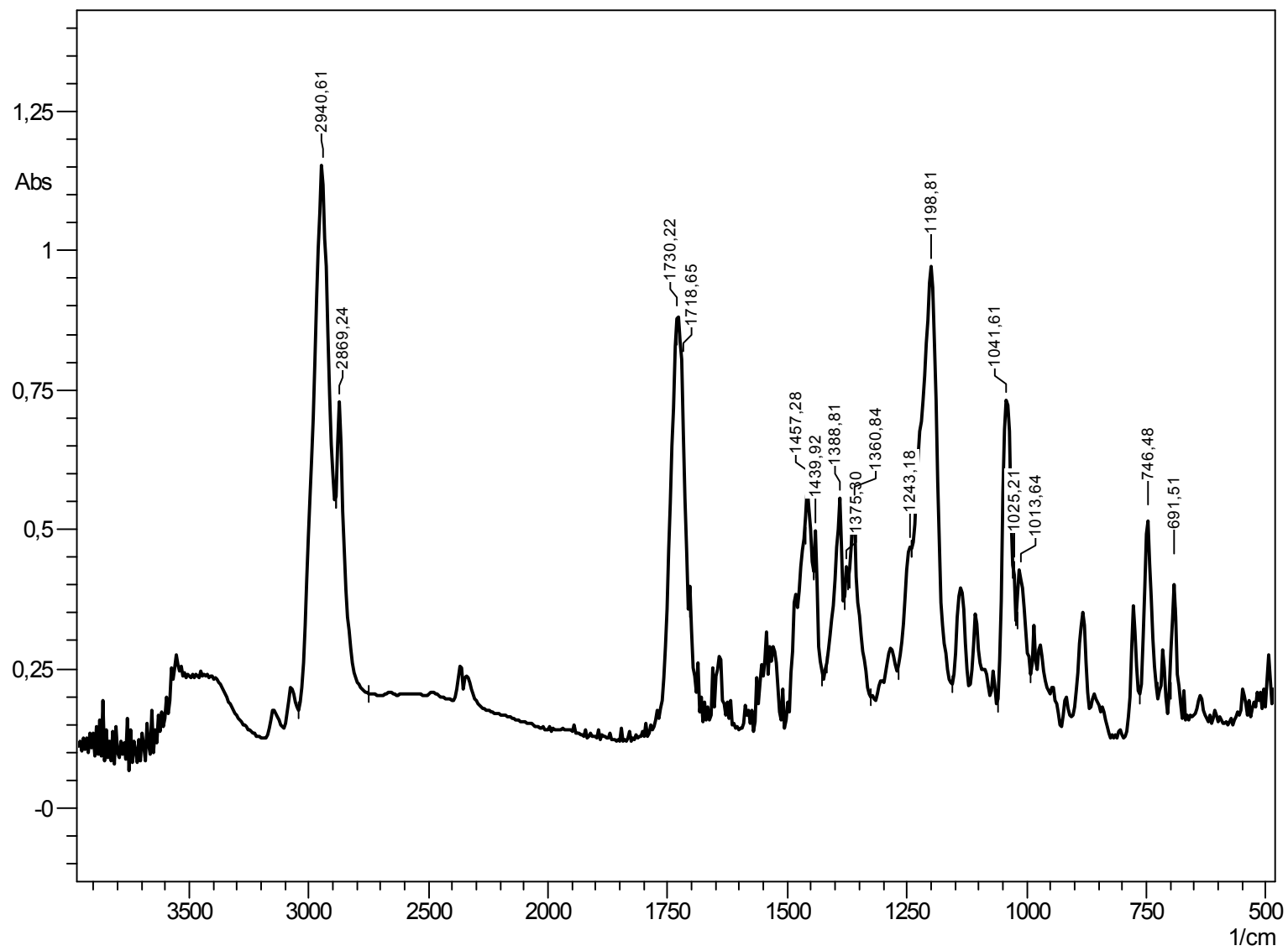


Figure S5 (c): IR spectrum of 28-O-(1-Phenylthiomethyl-1H-[1,2,3]-triazol-4-yl)carbonylbetulin (5d)

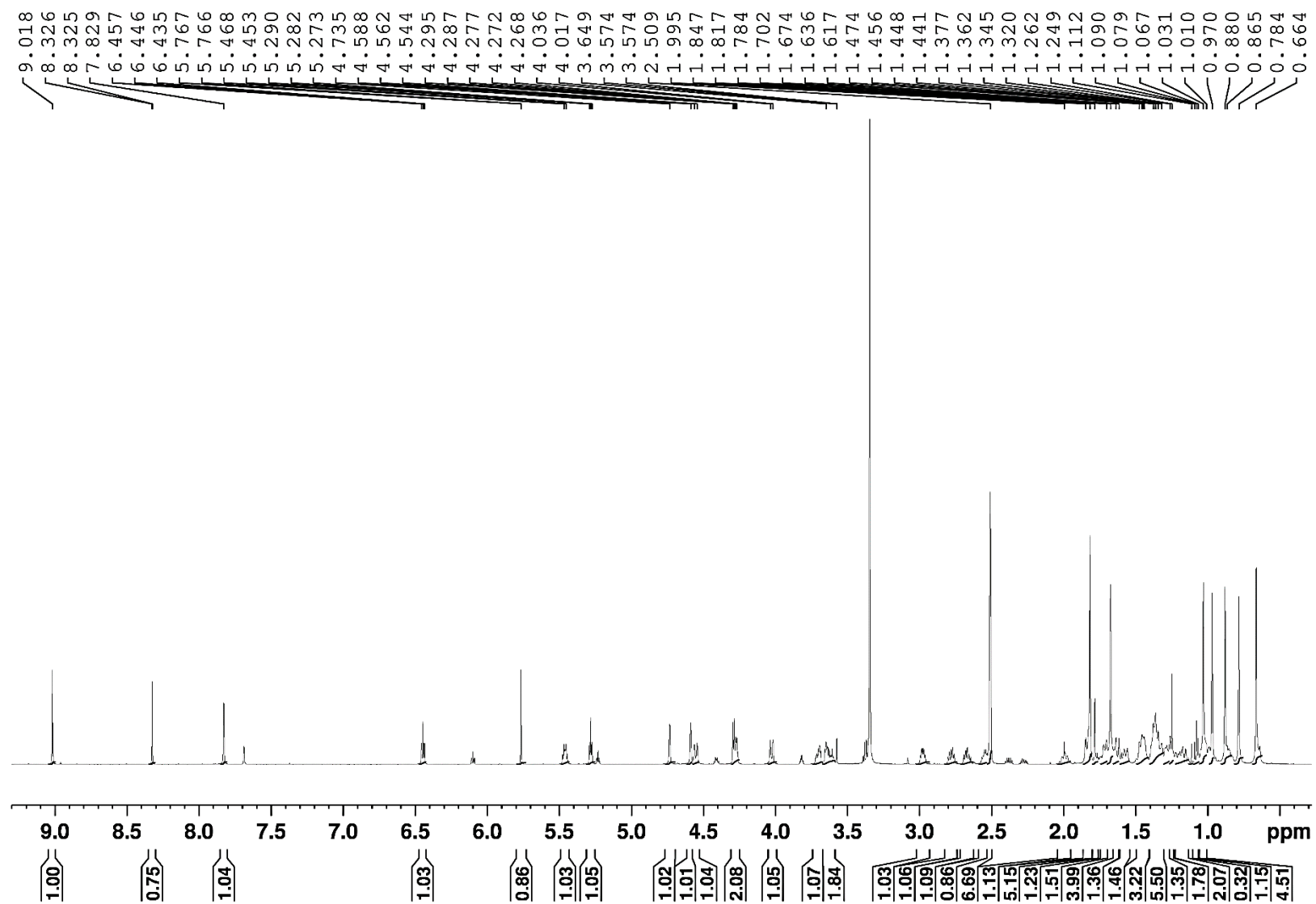


Figure S6 (a): ¹H NMR spectrum of 28-O-{1-(3'-Deoxythymidine-5'-yl)-1H-[1,2,3]-triazol-4-yl}carbonylbetulin (5e)

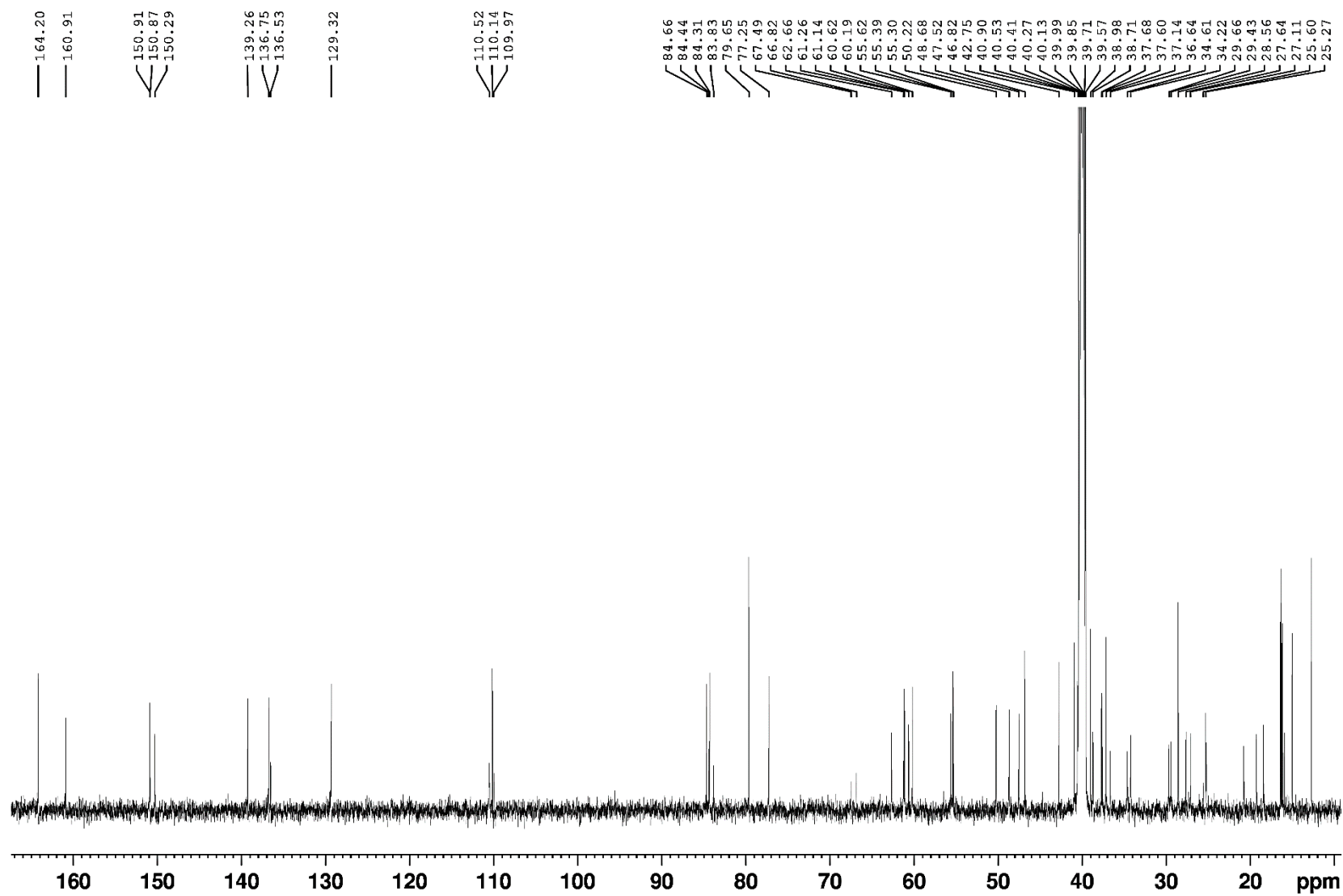


Figure S6 (b): ^{13}C NMR spectrum of 28-O-[1-(3'-Deoxythymidine-5'-yl)-1H-[1,2,3]-triazol-4-yl]carbonylbutelin (5e)

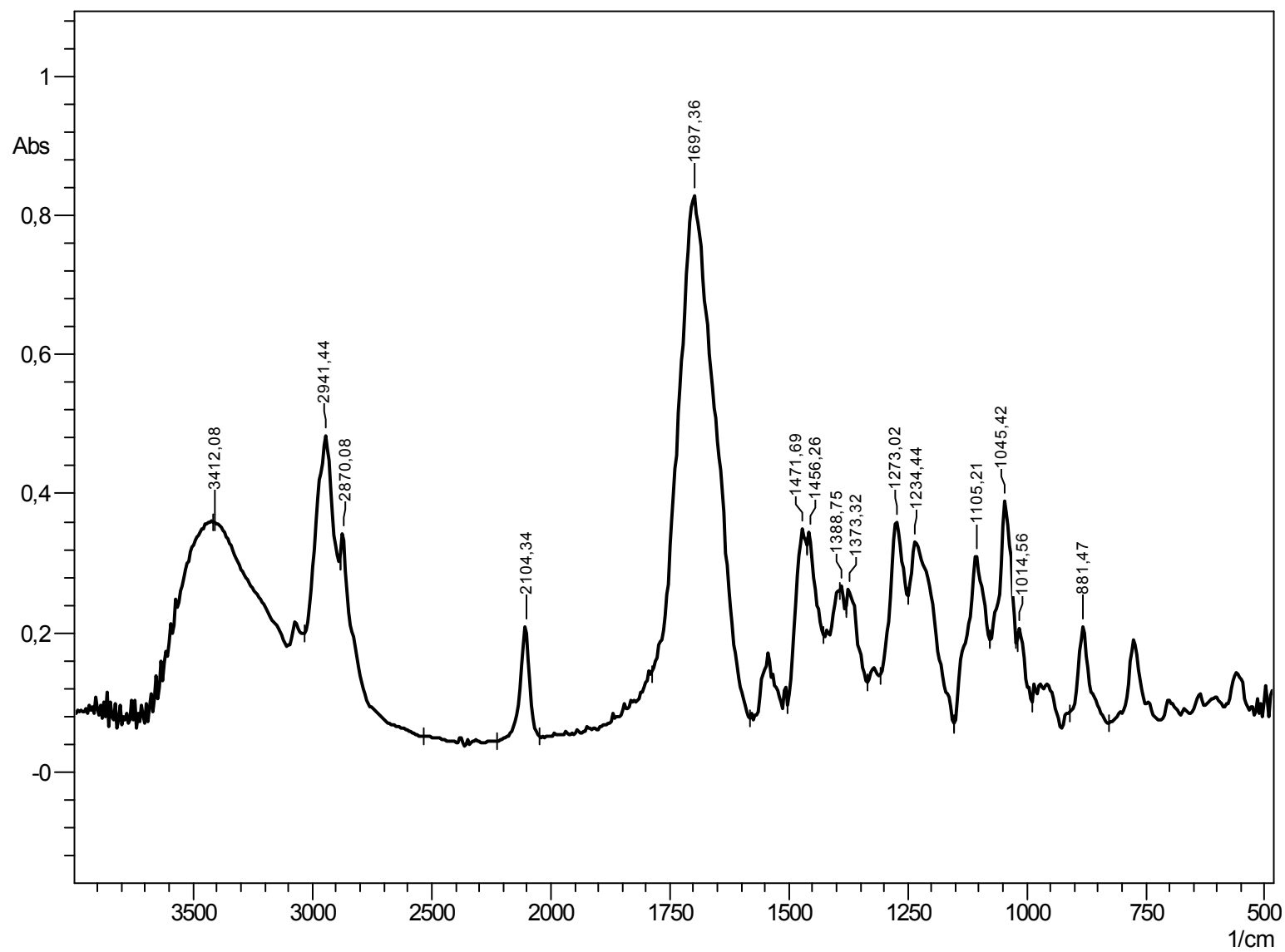


Figure S6 (c): IR spectrum of 28-O-[1-(3'-Deoxythymidine-5'-yl)-1H-[1,2,3]-triazol-4-yl]carbonylbetulin (**5e**)

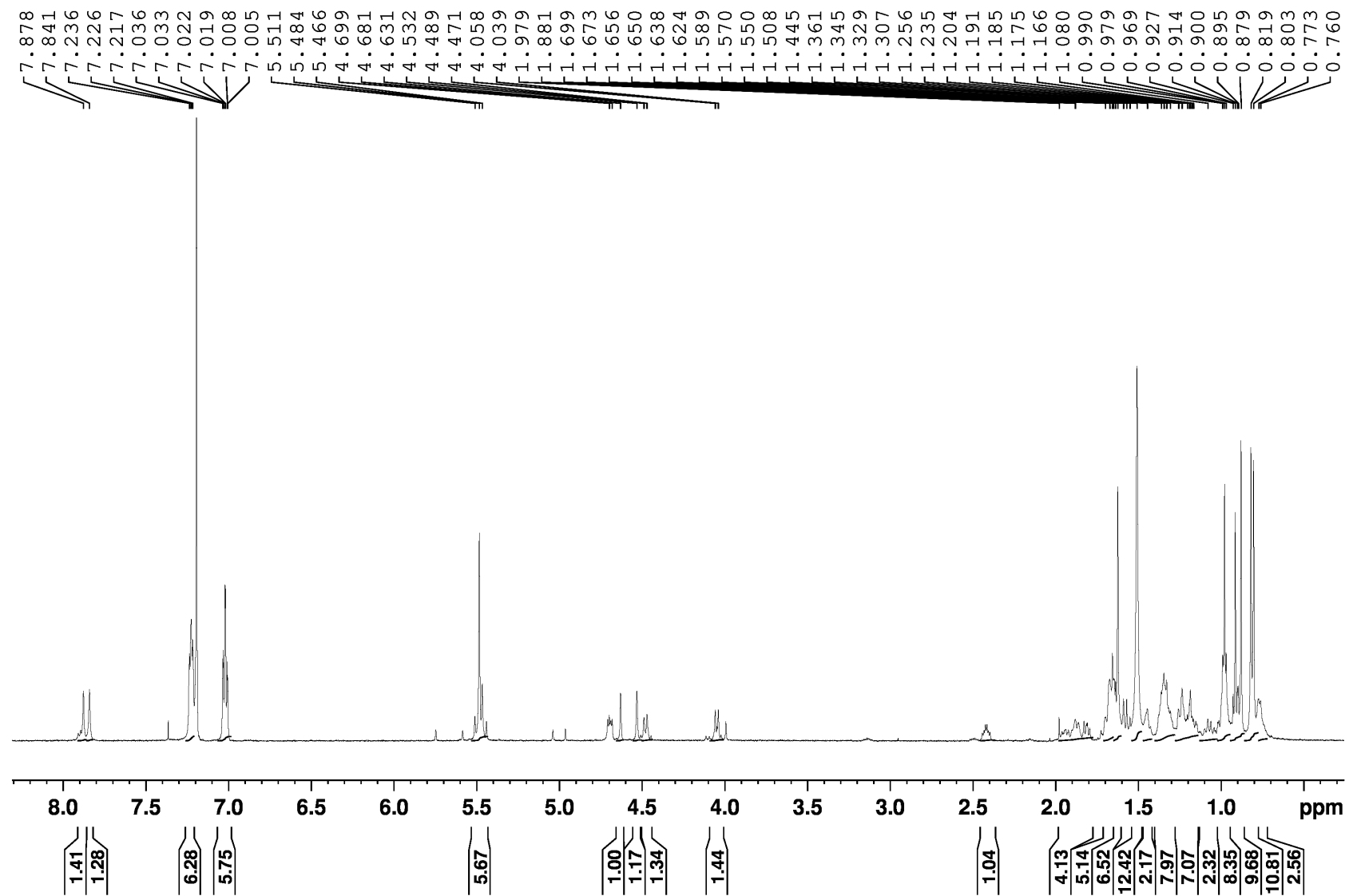


Figure S7 (a): ¹H NMR spectrum of 3,28-O,O'-Di{1-(4-fluorobenzyl-1H-[1,2,3]-triazol-4-yl)carbonyl}betulin (6b)

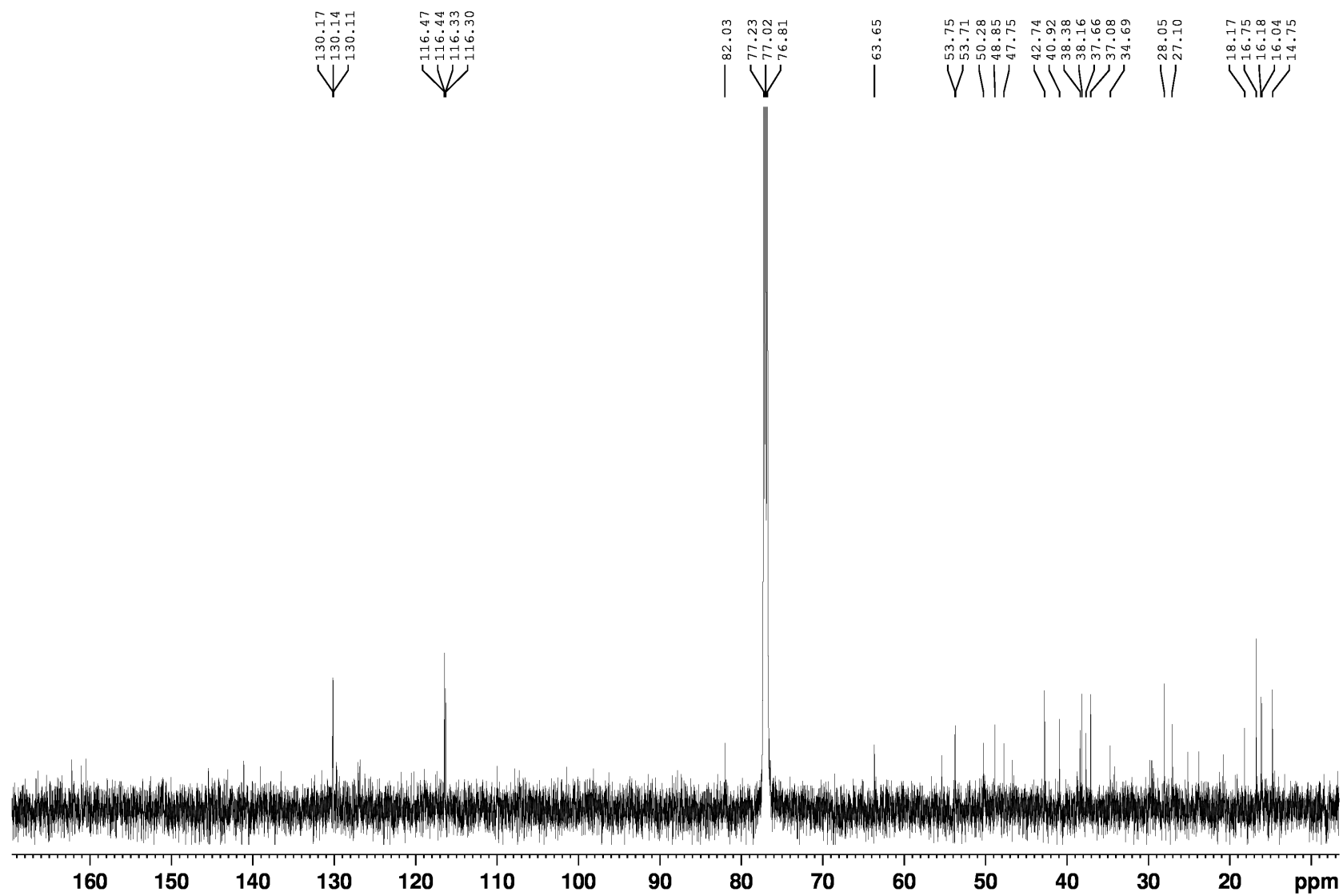


Figure S7 (b): ¹³C NMR spectrum of 3,28-O,O'-Di{1-(4-fluorobenzyl)-1H-[1,2,3]-triazol-4-yl}carbonyl}betulin (6b)

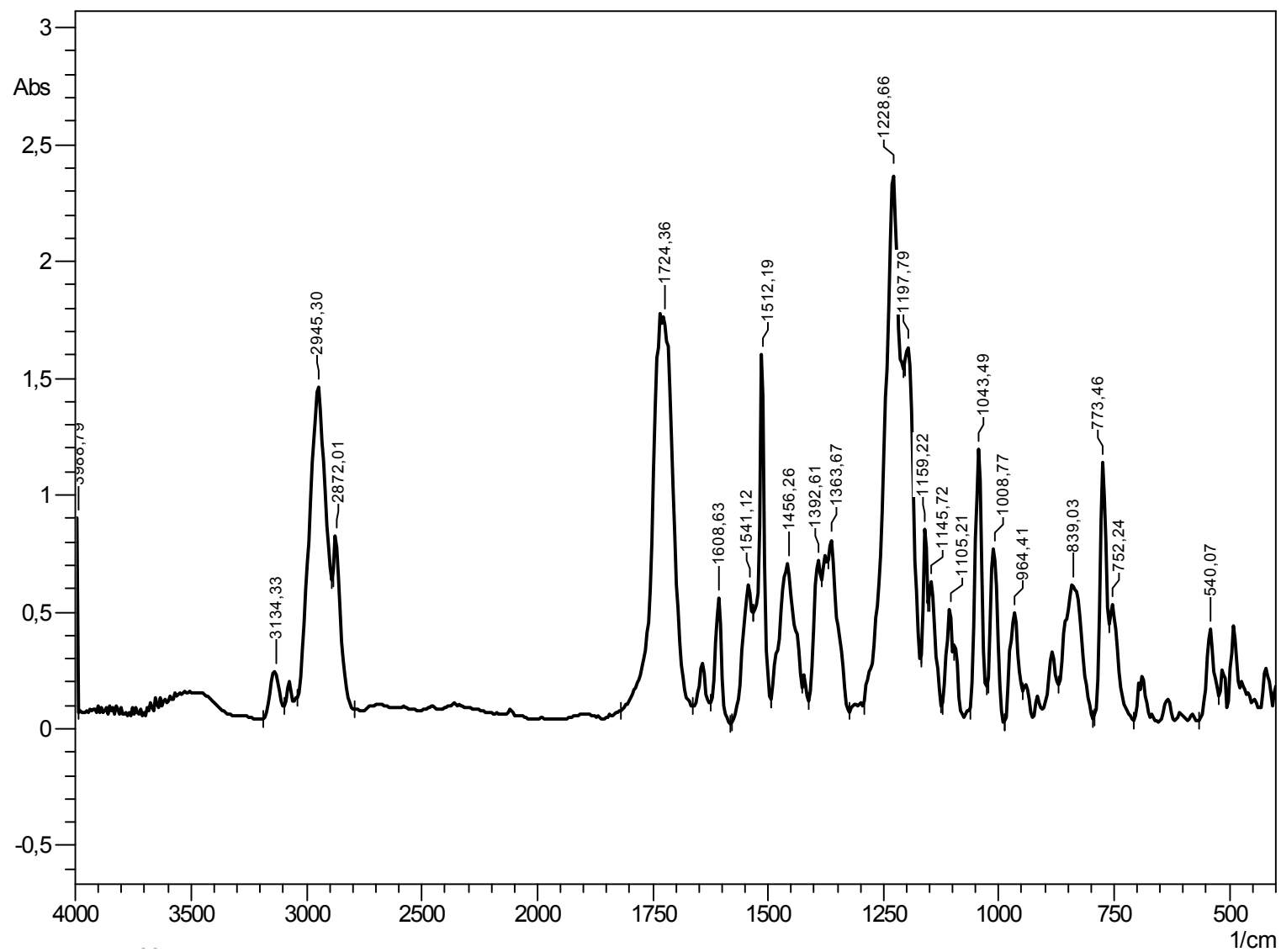


Figure S7 (c): IR spectrum of 3,28-O,O'-Di[1-(4-fluorobenzyl-1H-[1,2,3]-triazol-4-yl)carbonyl]betulin (**6b**)

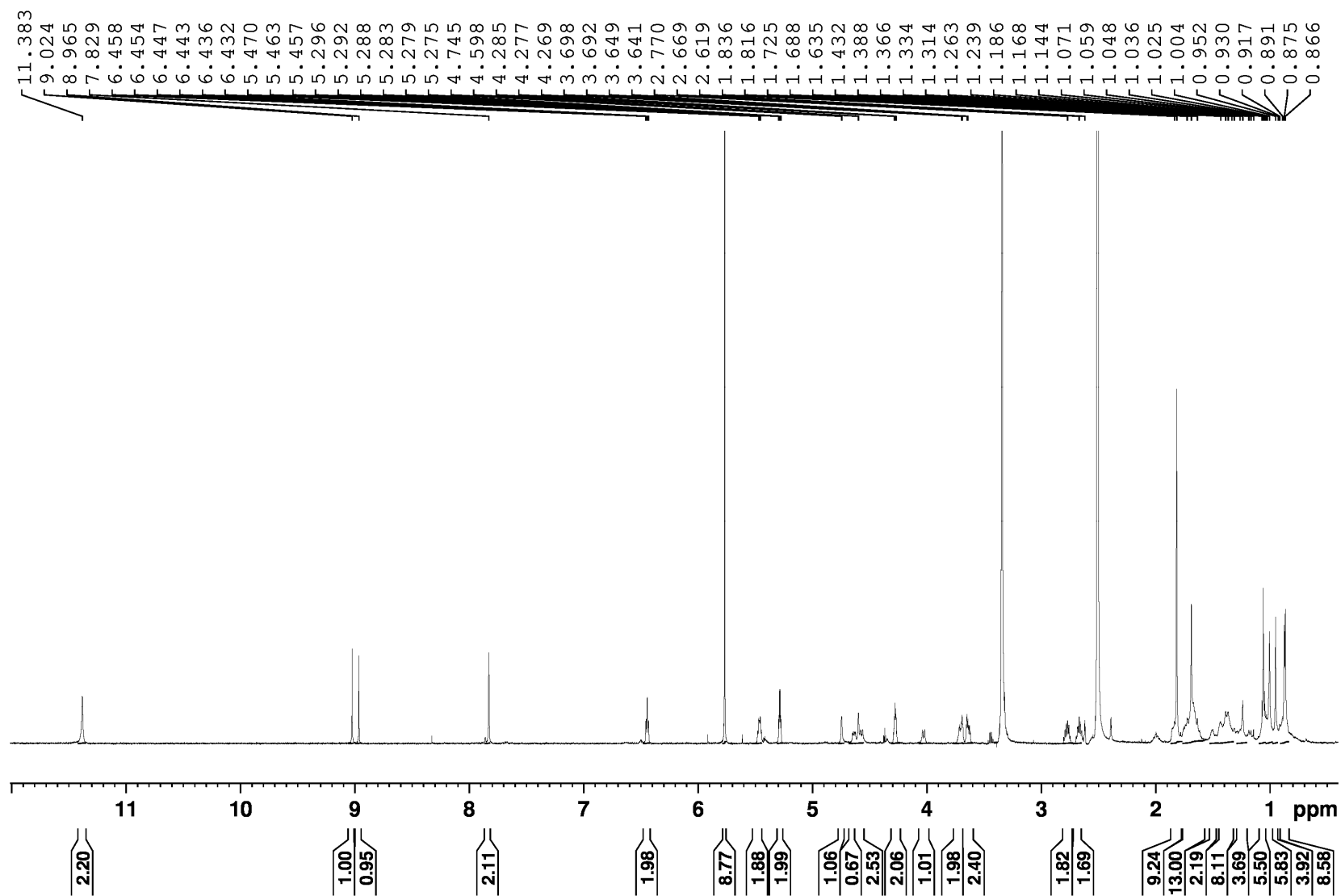


Figure S8 (a): ^1H NMR spectrum of 3,28-O,O'-Di{1-(3-hydroxypropyl-1H-[1,2,3]-triazol-4-yl)carbonyl}betulin (**6h**)

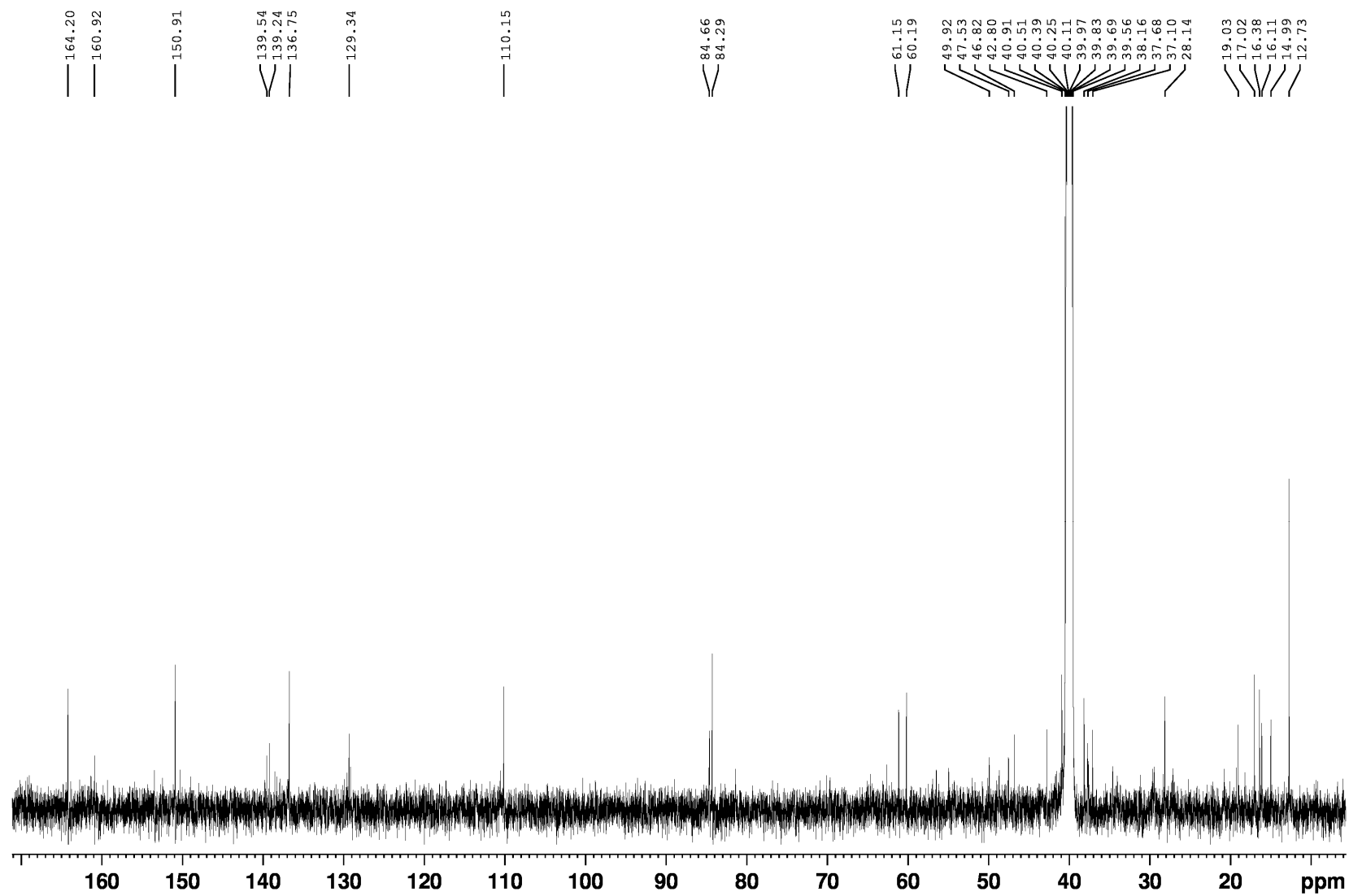


Figure S8 (b): ¹³C NMR spectrum of 3,28-O,O'-Di[1-(3-hydroxypropyl-1H-[1,2,3]-triazol-4-yl)carbonyl]betulin (6h)

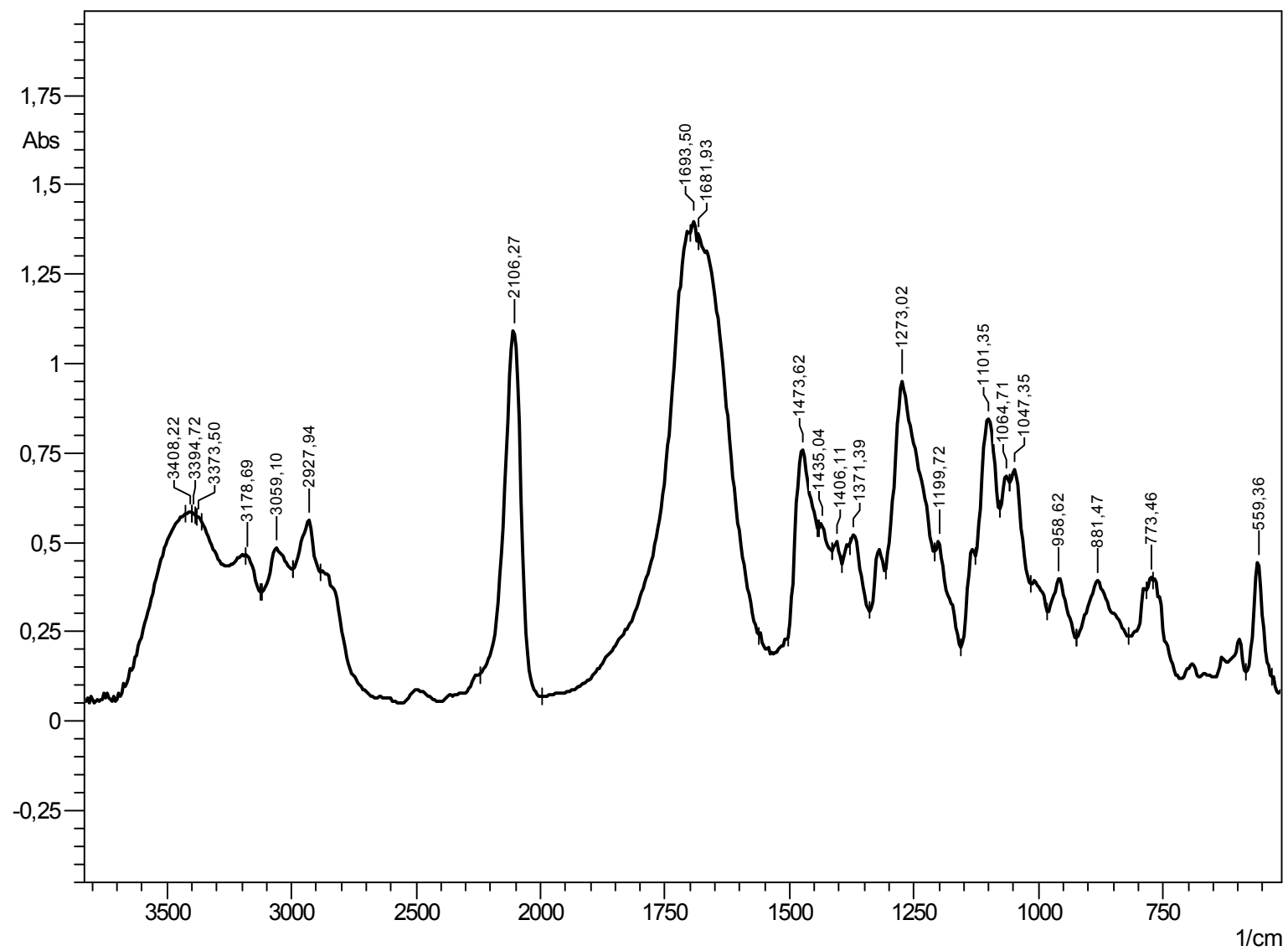


Figure S8 (c): IR spectrum of 3,28-O,O'-Di[1-(3-hydroxypropyl-1H-[1,2,3]-triazol-4-yl)carbonyl]betulin (**6h**)