

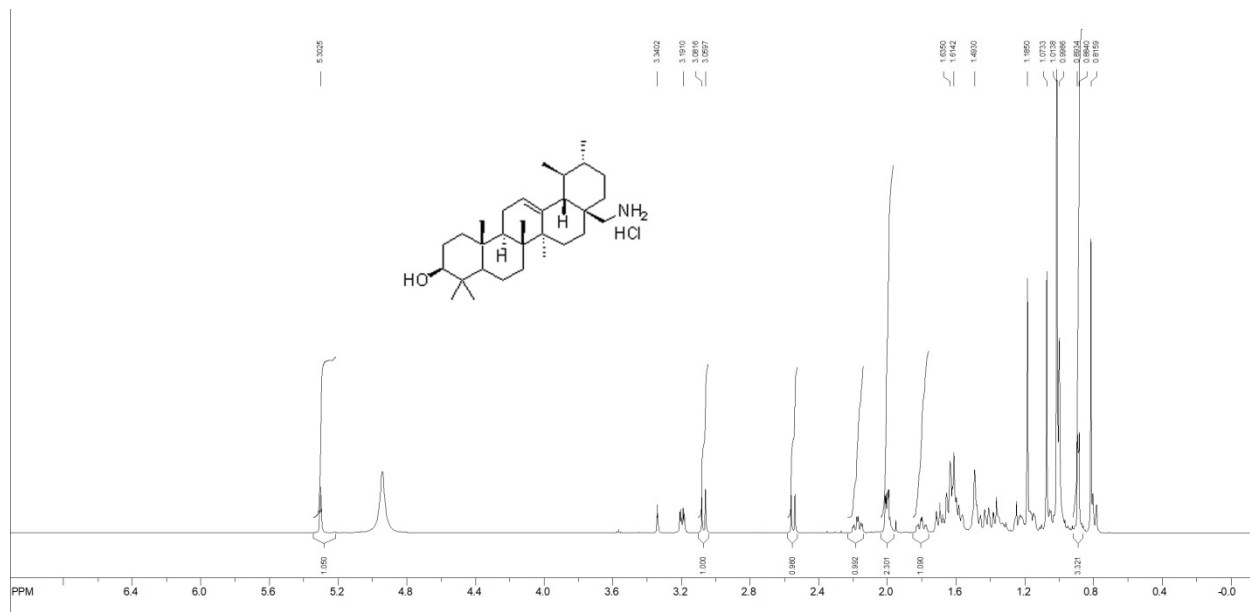
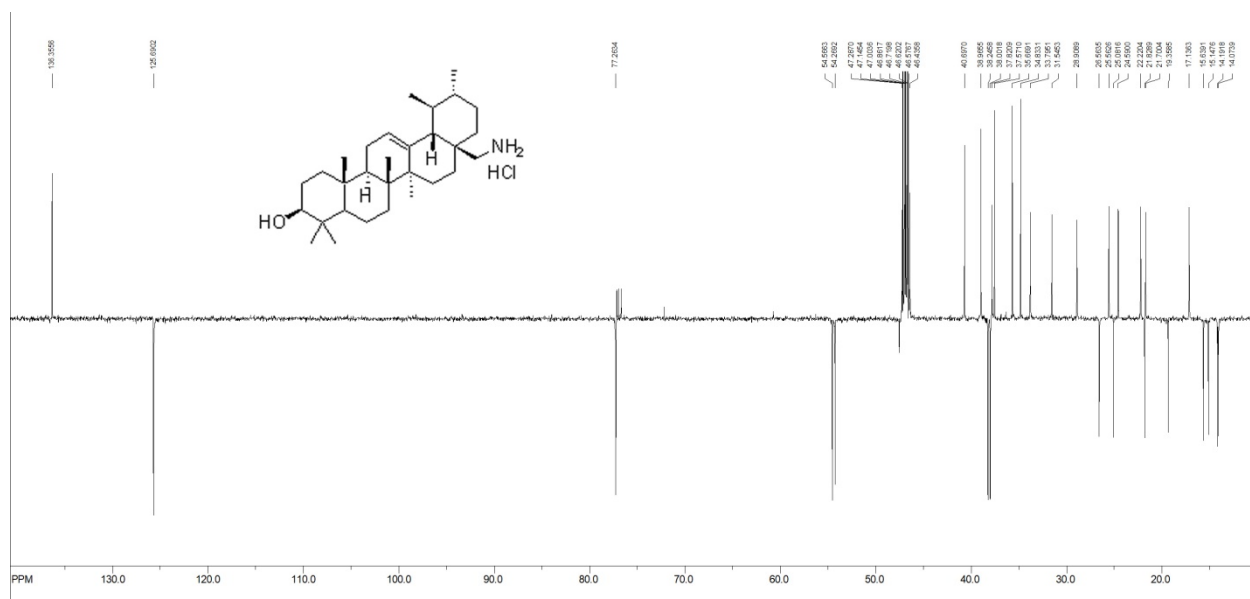
Synthesis of ursane-derived isothiocyanates and study of their reactions with series of amines and ammonia.

Sergey A. Popov^{a*}, Zhiwen Qi^b, Chengzhang Wang^b, Elvira E. Shults^a.

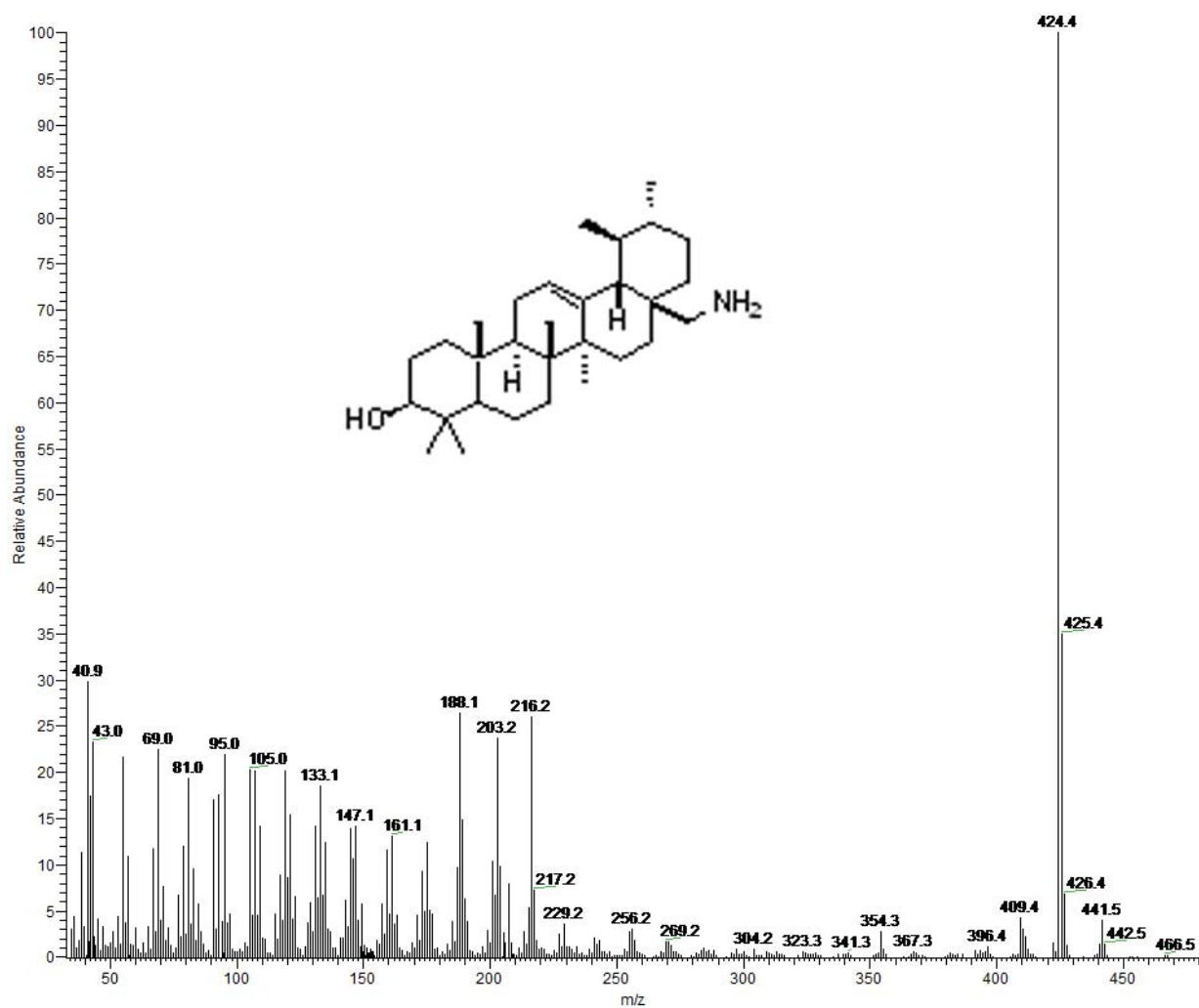
^aNovosibirsk Institute of Organic Chemistry, Acad. Lavrentyev ave. 9, Novosibirsk, 630090, Russia

^bInstitute of Chemical Industry of Forest Products, Chinese Academy of Forestry, Nanjing 210042, China

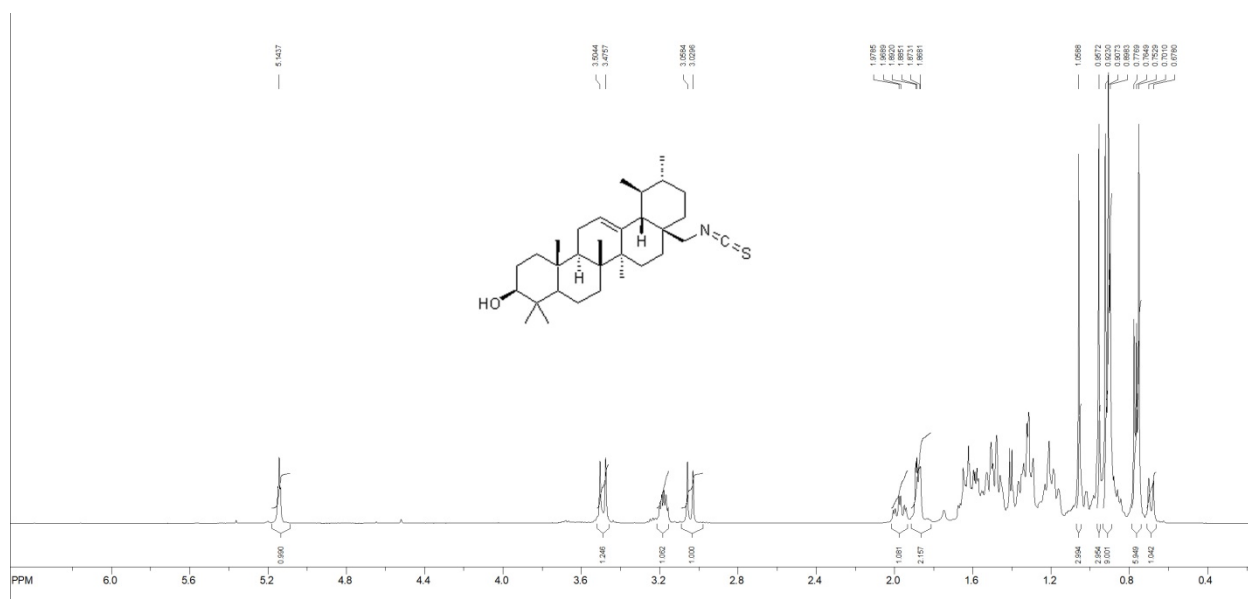
**Corresponding author. E-mail:spopov@nioch.nsc.ru*

3b ^1H NMR spectrum (CDCl_3 – CD_3OD)**3b** ^{13}C NMR spectrum (CDCl_3)

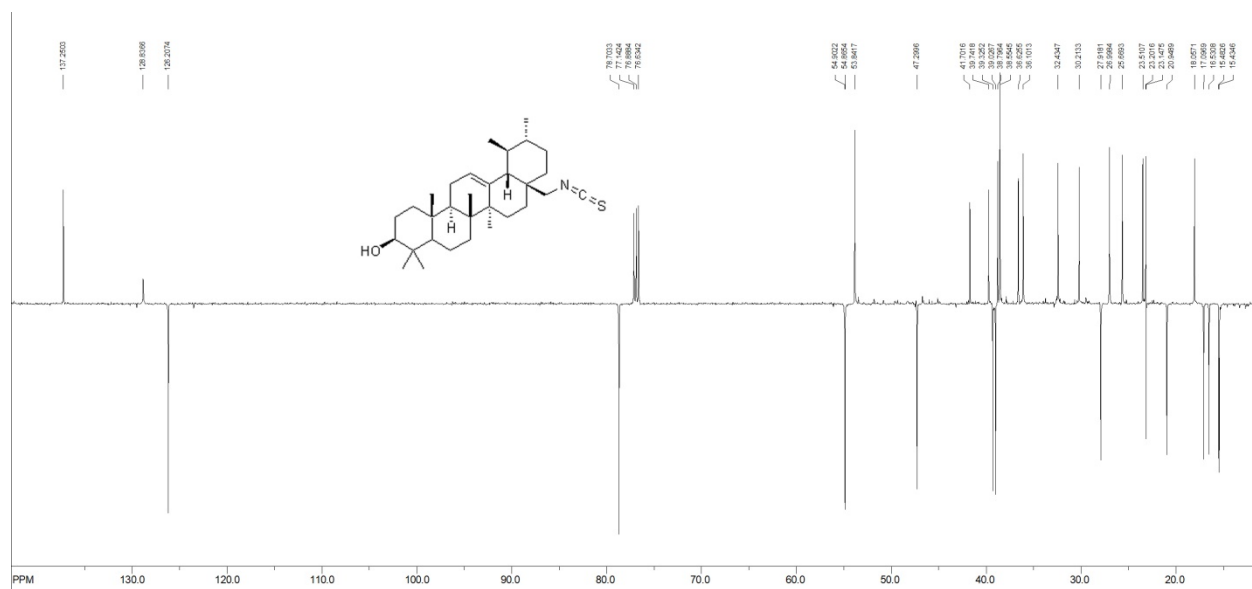
HRMS data of compound **3a**.



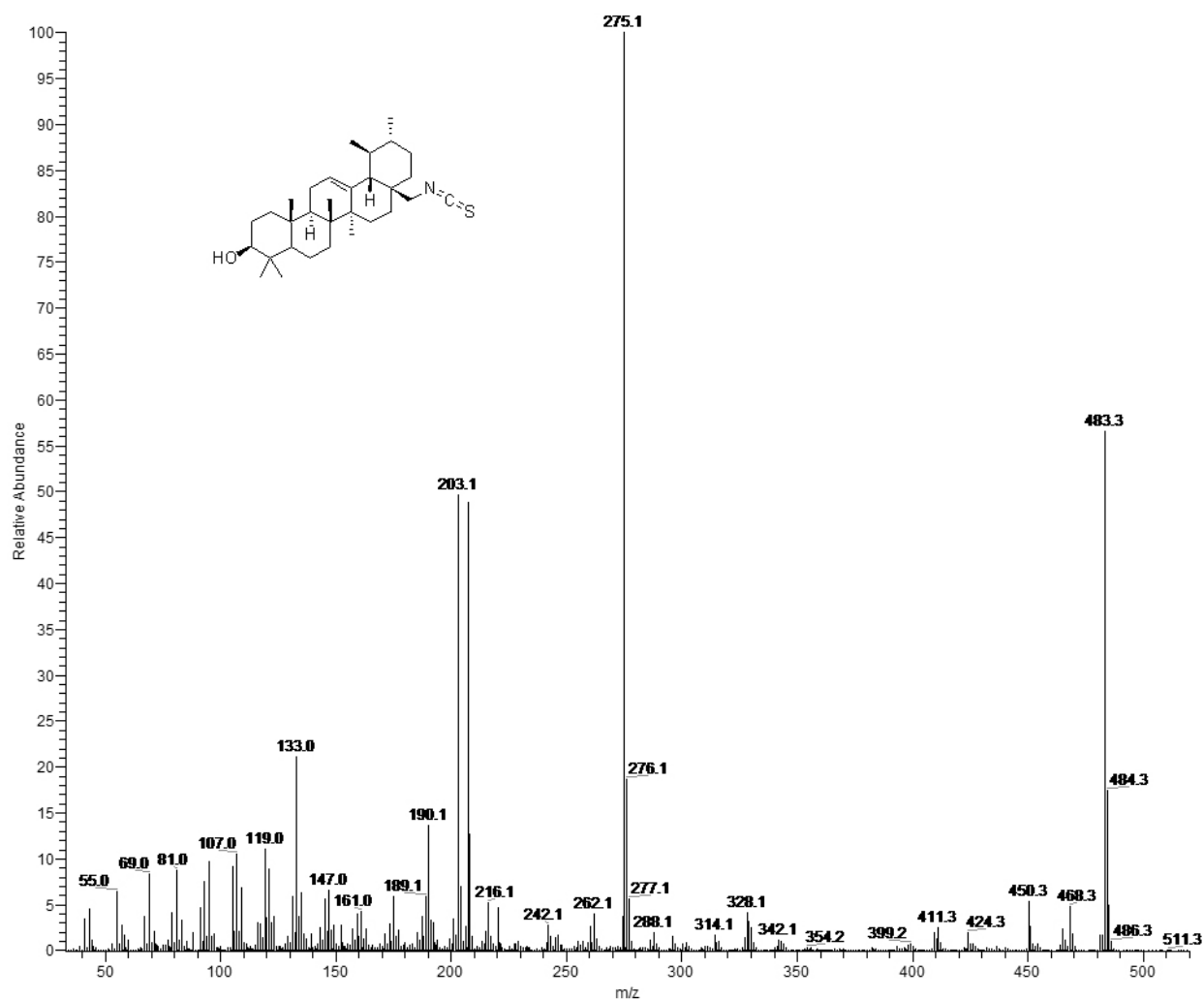
4a ^1H NMR spectrum (CDCl_3)



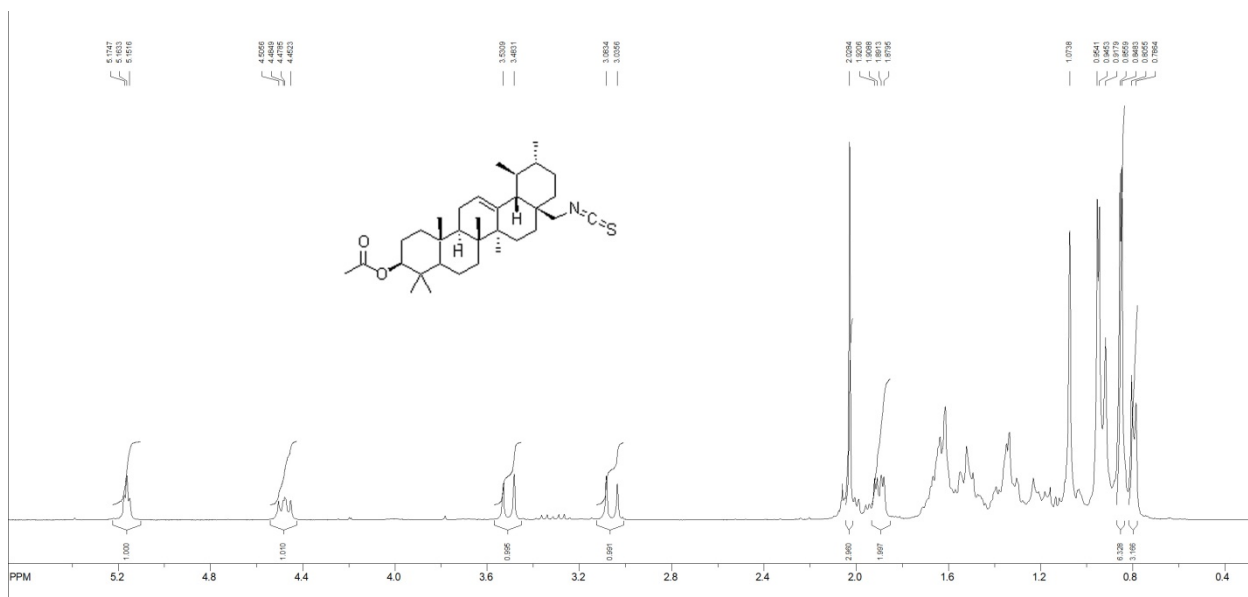
4a ^{13}C NMR spectrum (CDCl_3)



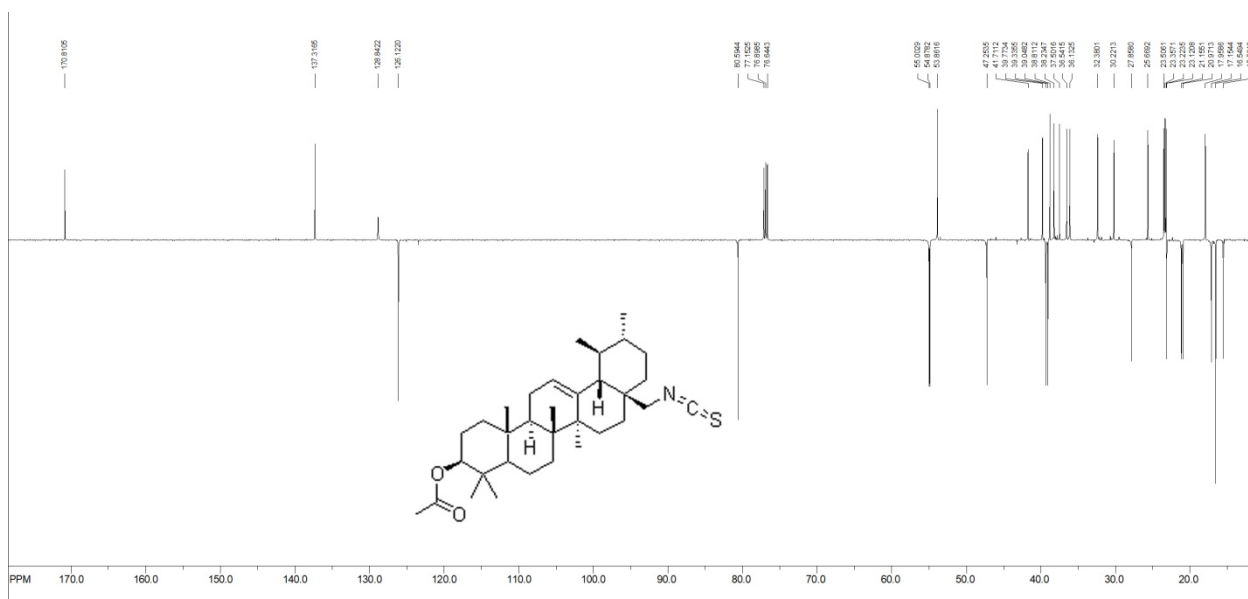
HRMS data of compound 4a.



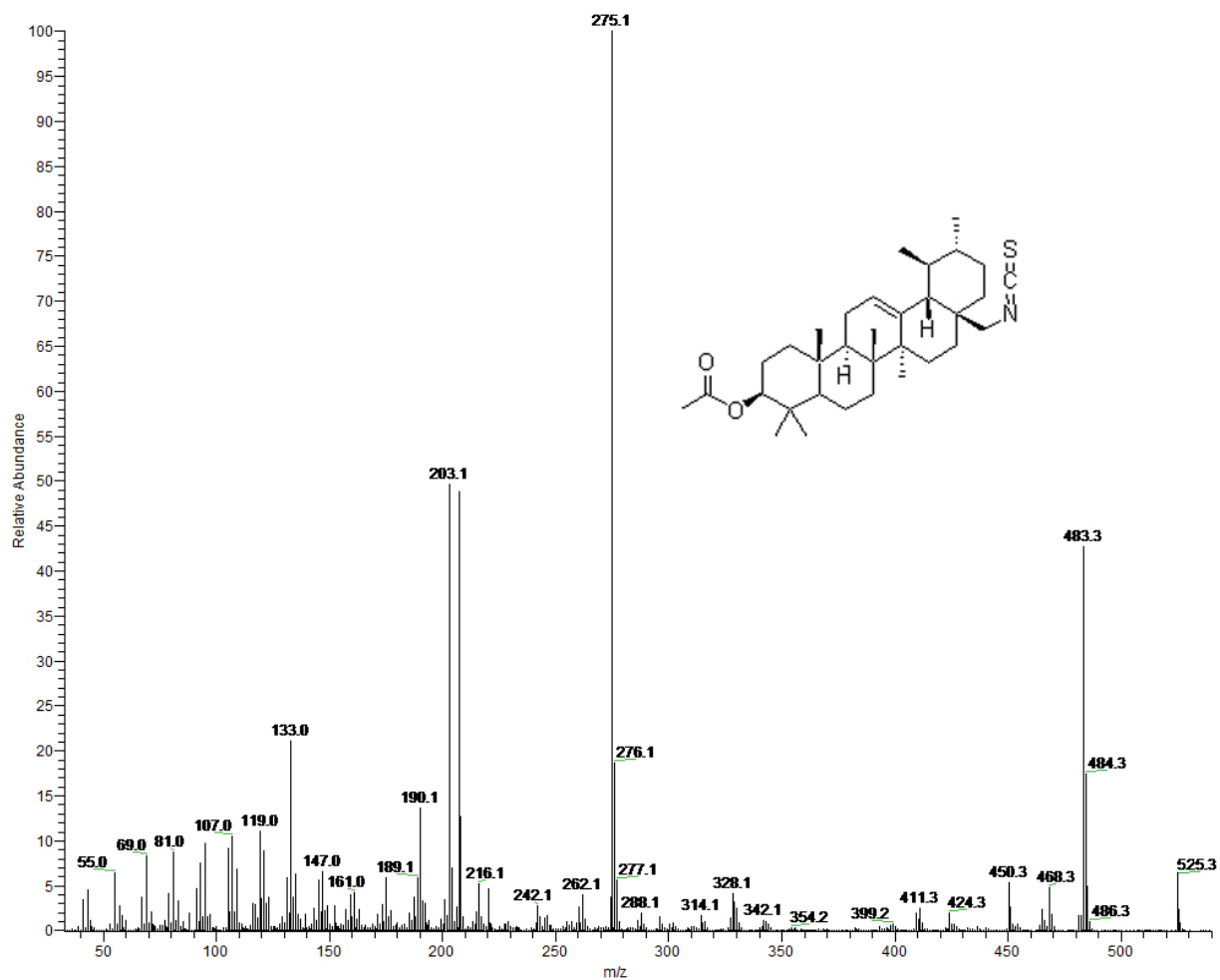
4b ^1H NMR spectrum (CDCl_3)



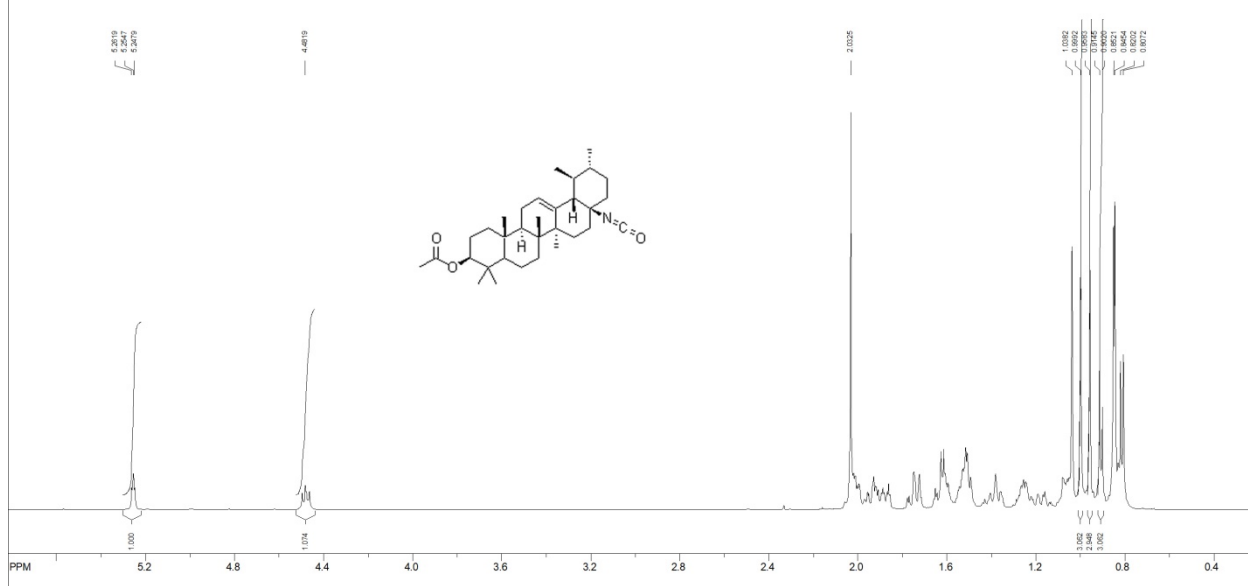
4b ^{13}C NMR spectrum (CDCl_3)

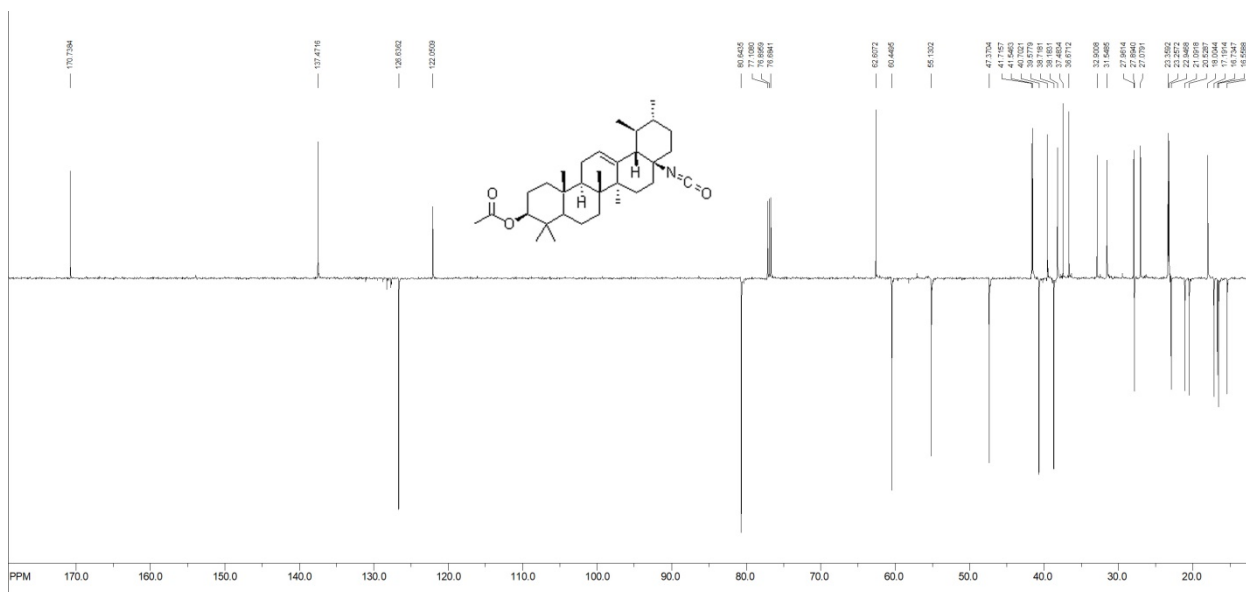
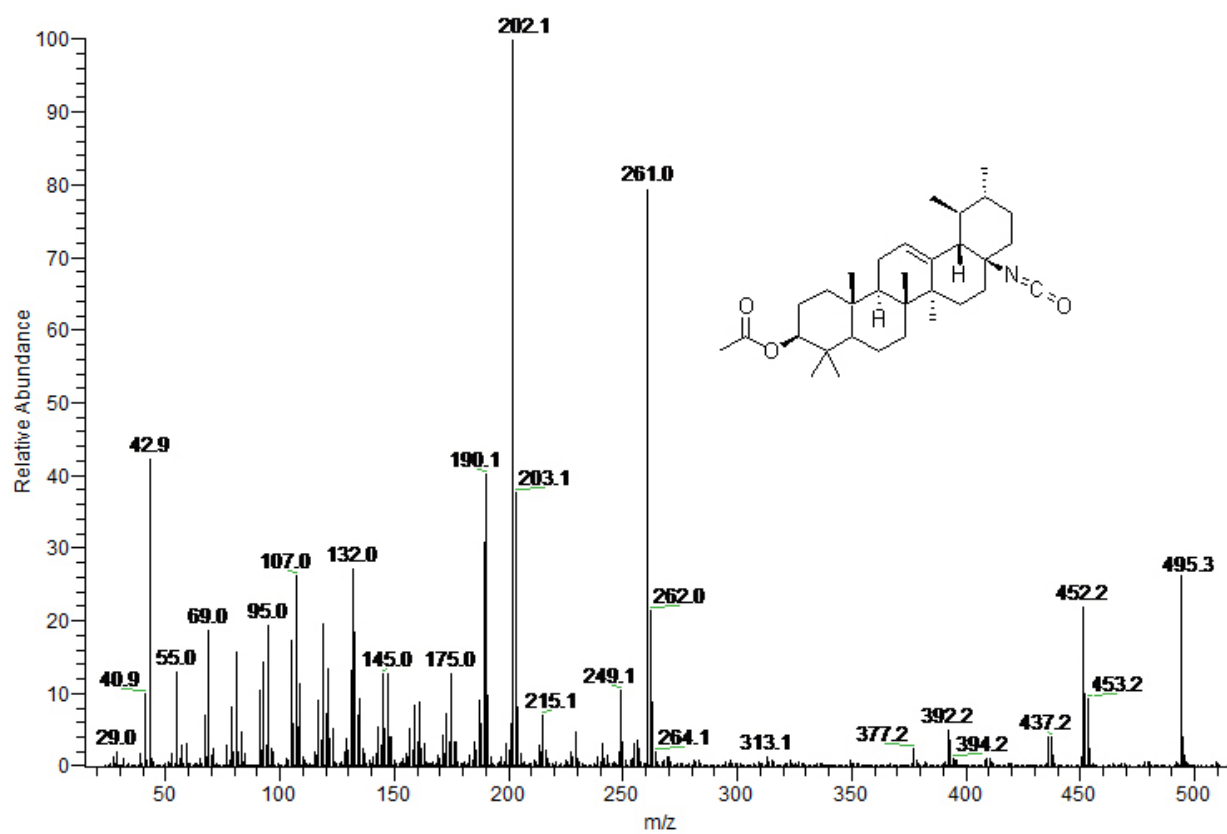


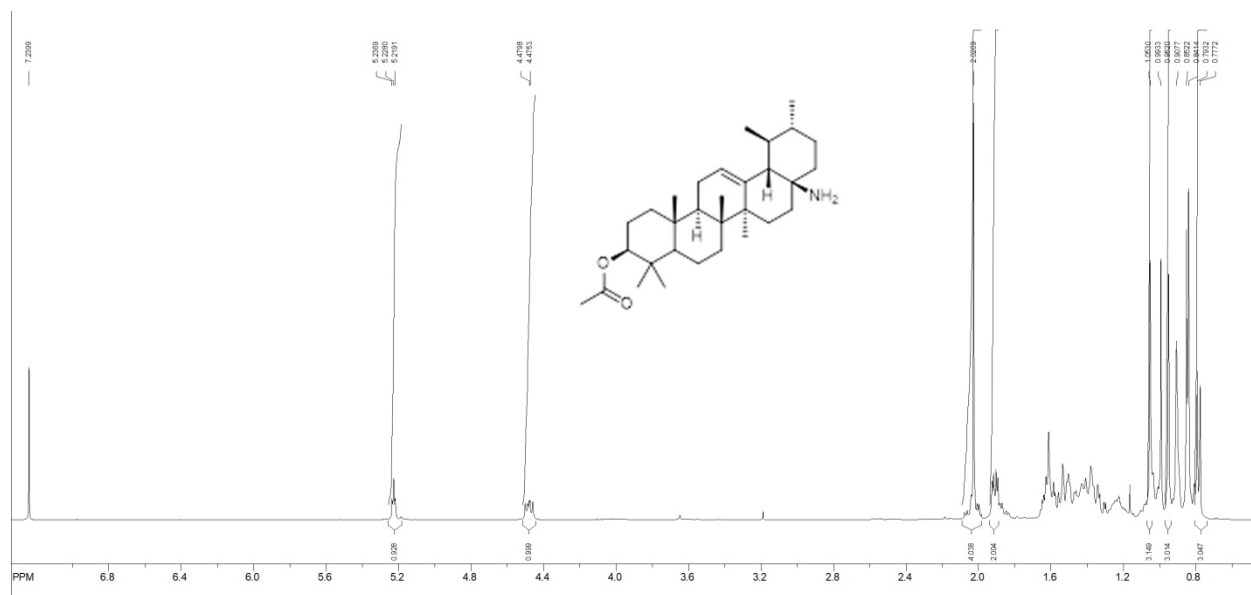
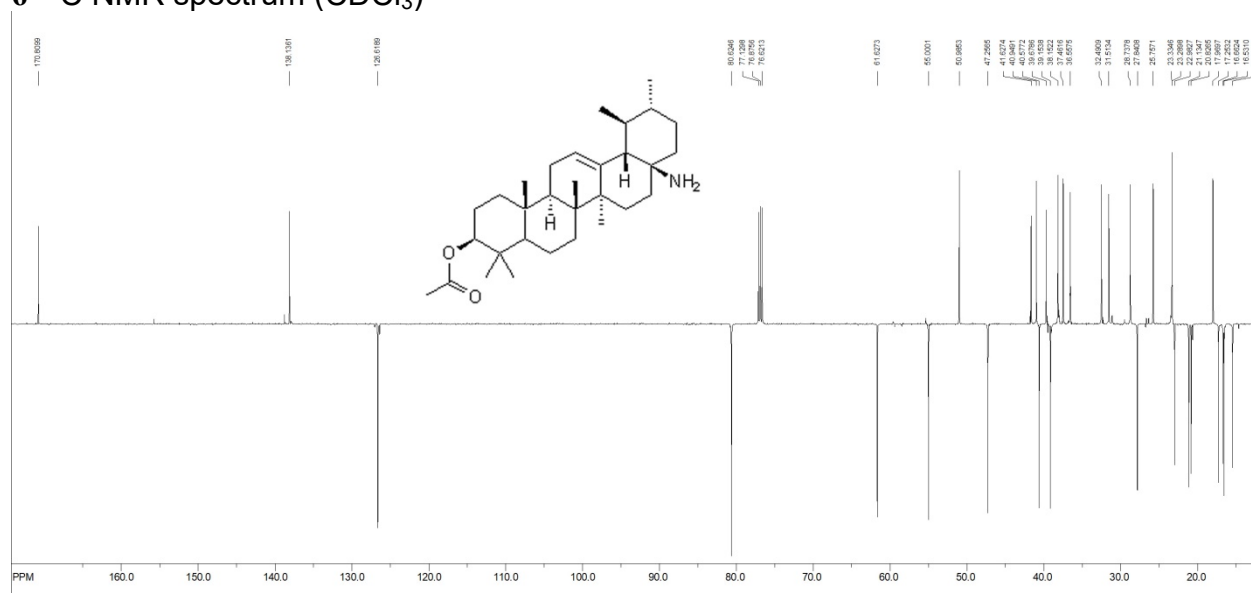
HRMS data of compound **4b**.



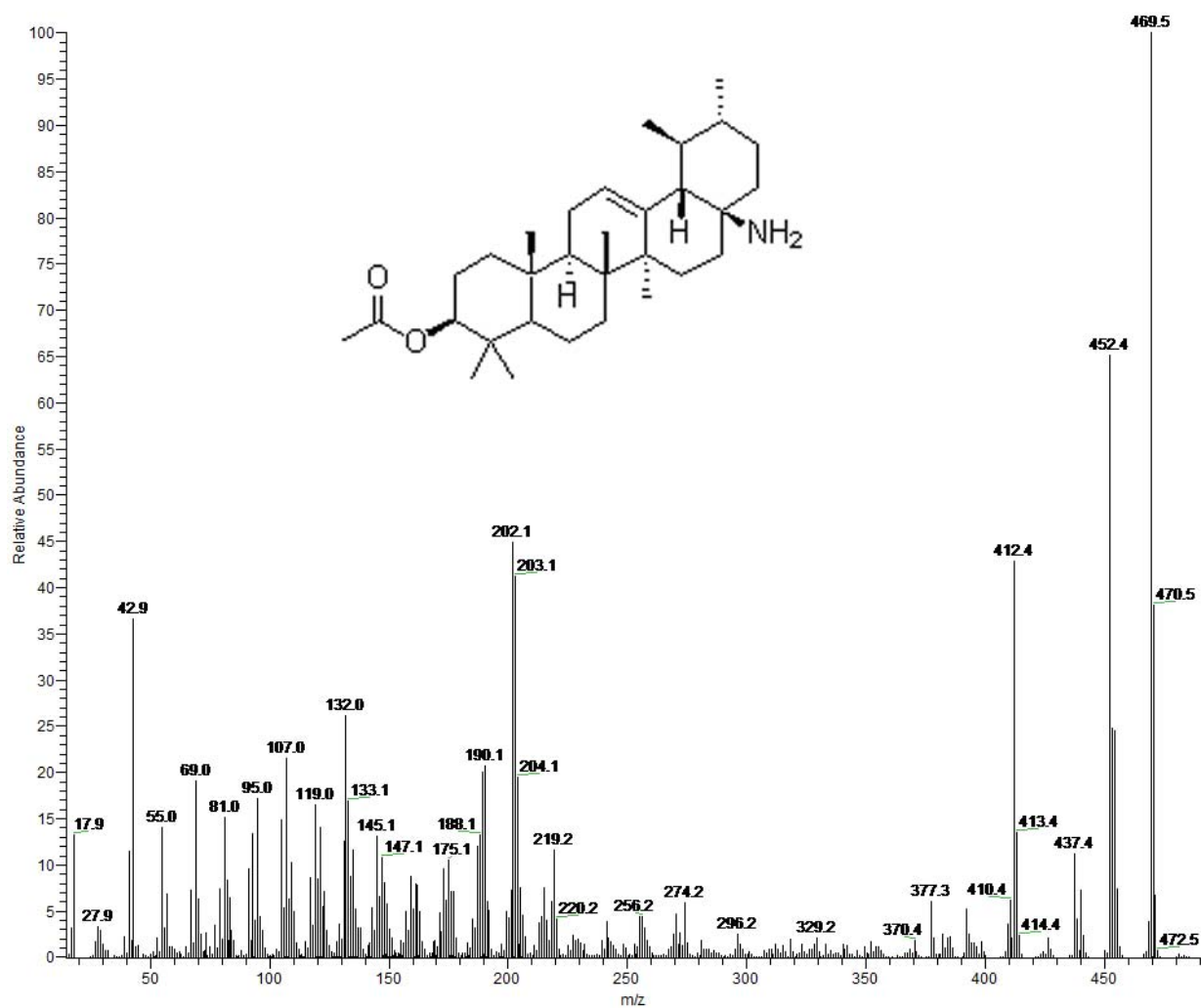
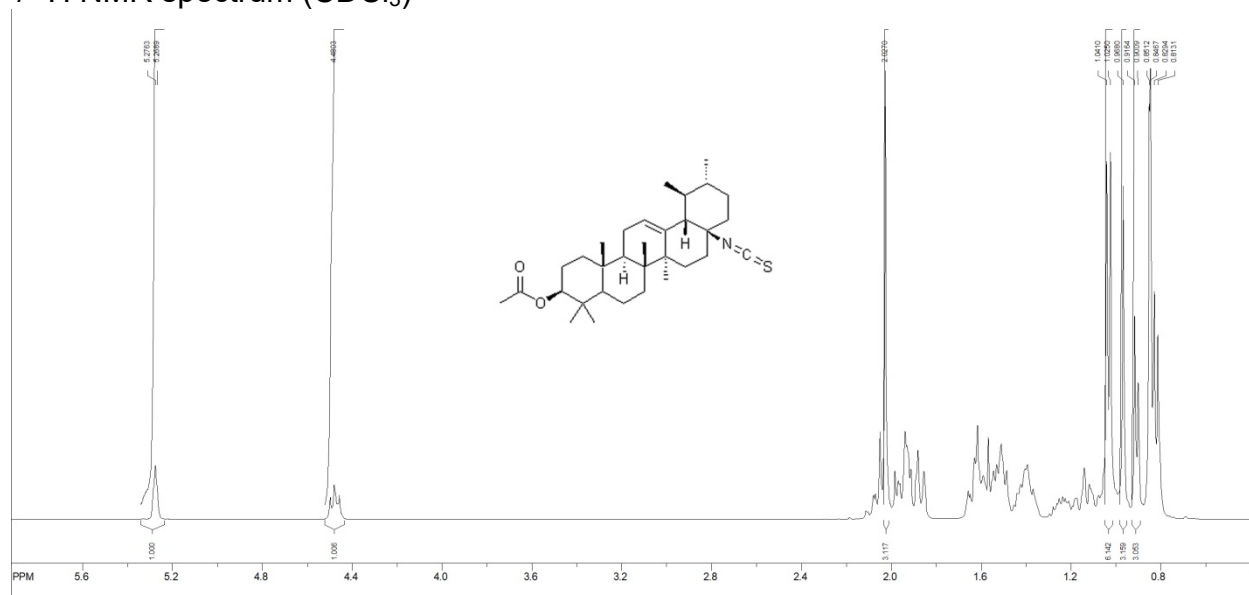
⁵ ¹H NMR spectrum (CDCl₃)

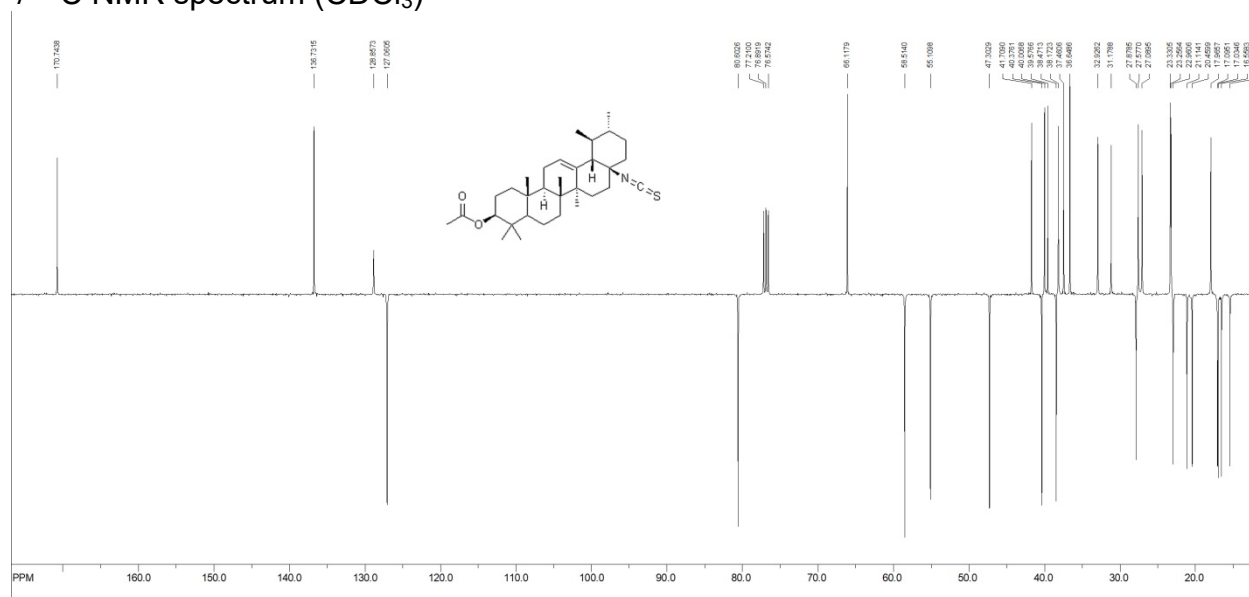


5 ^{13}C NMR spectrum (CDCl_3)HRMS data of compound **5**.

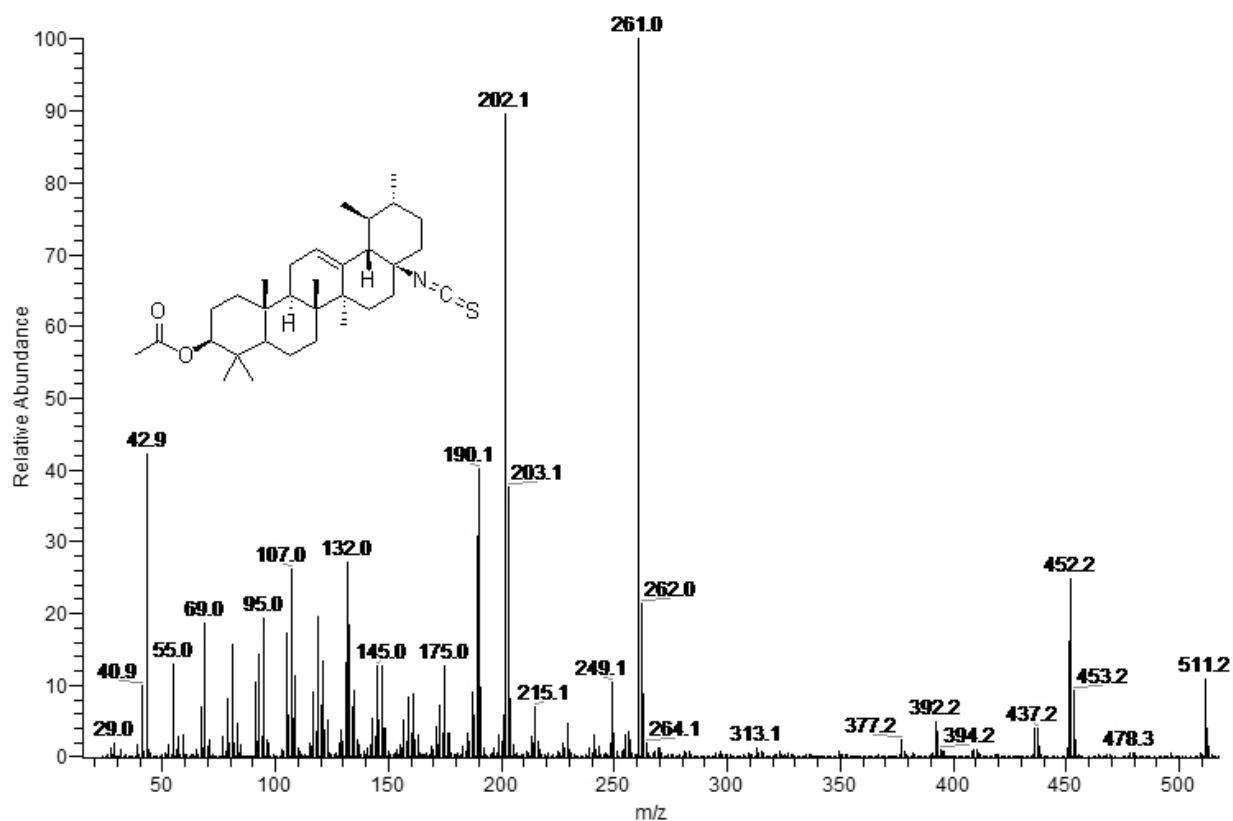
6 ^1H NMR spectrum (CDCl_3)**6** ^{13}C NMR spectrum (CDCl_3)

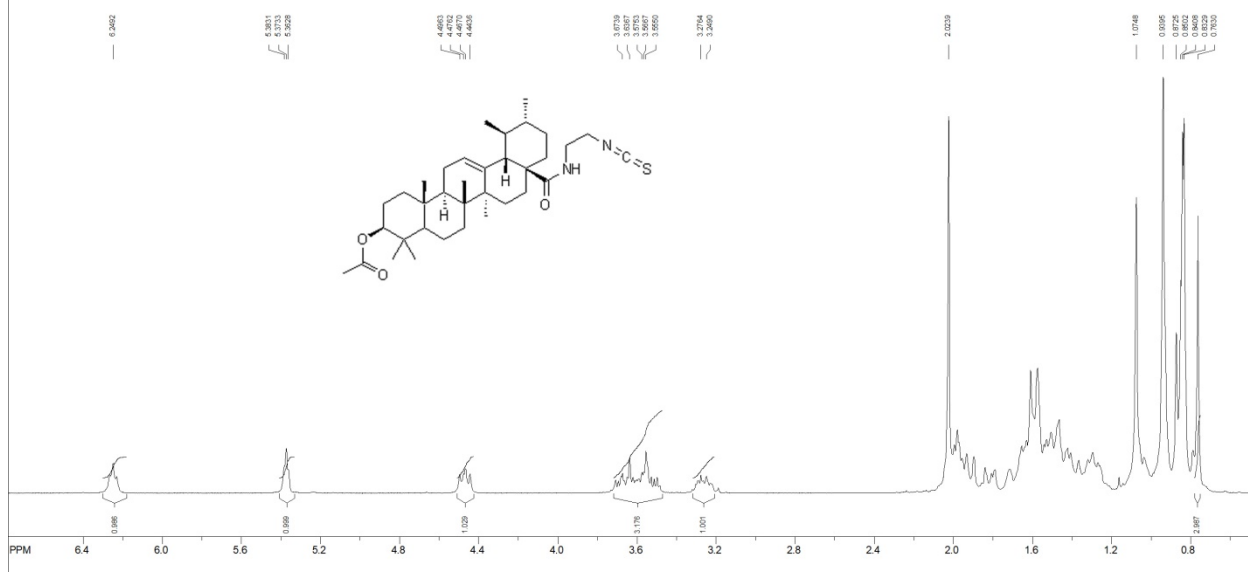
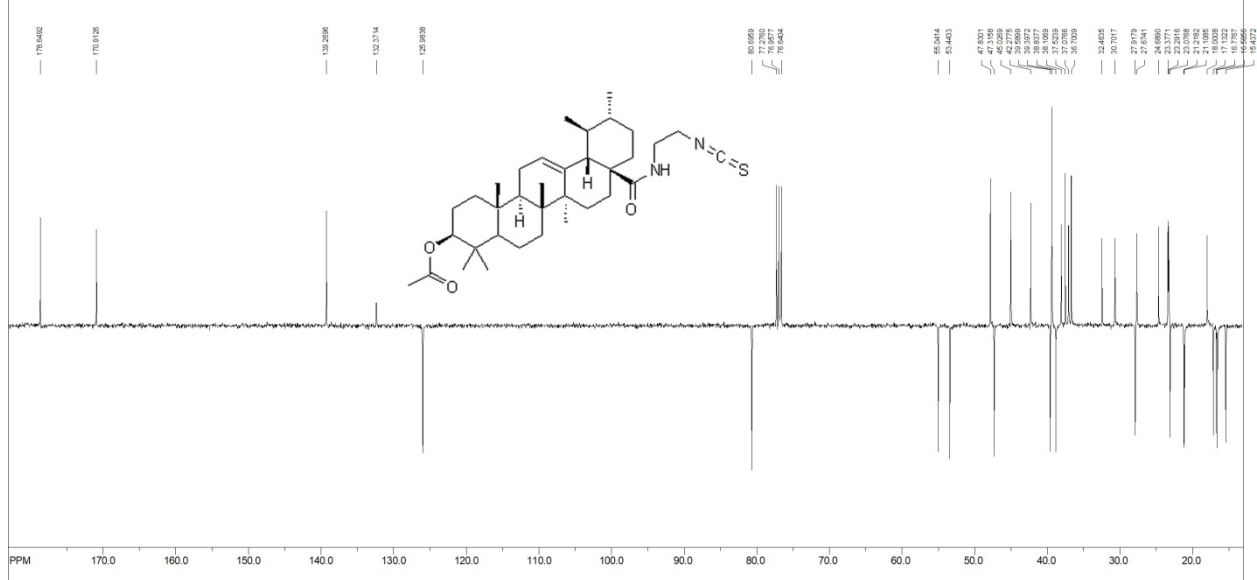
HRMS data of compound 6.

 ^1H NMR spectrum (CDCl_3)

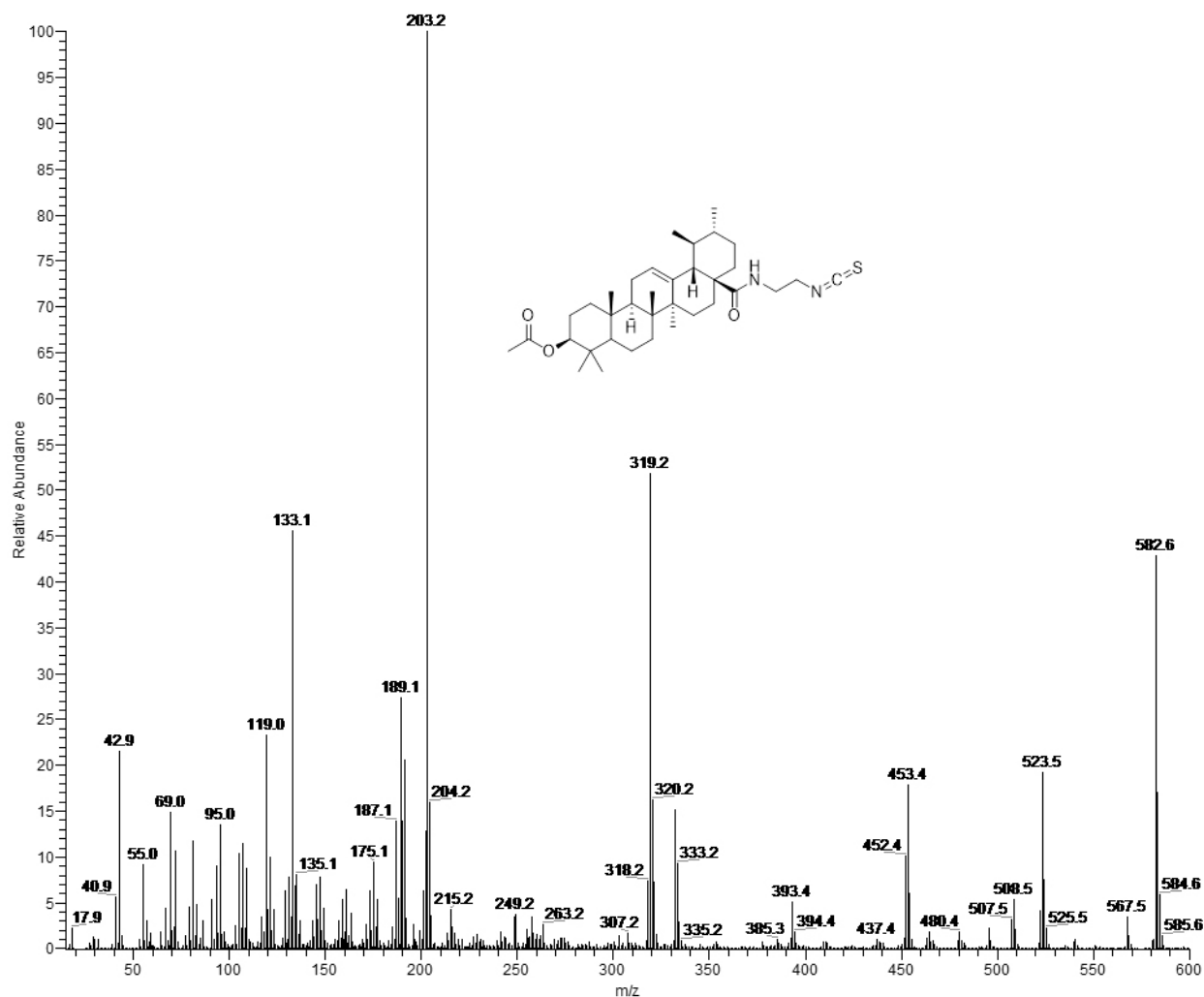
7 ^{13}C NMR spectrum (CDCl_3)

HRMS data of compound 7.

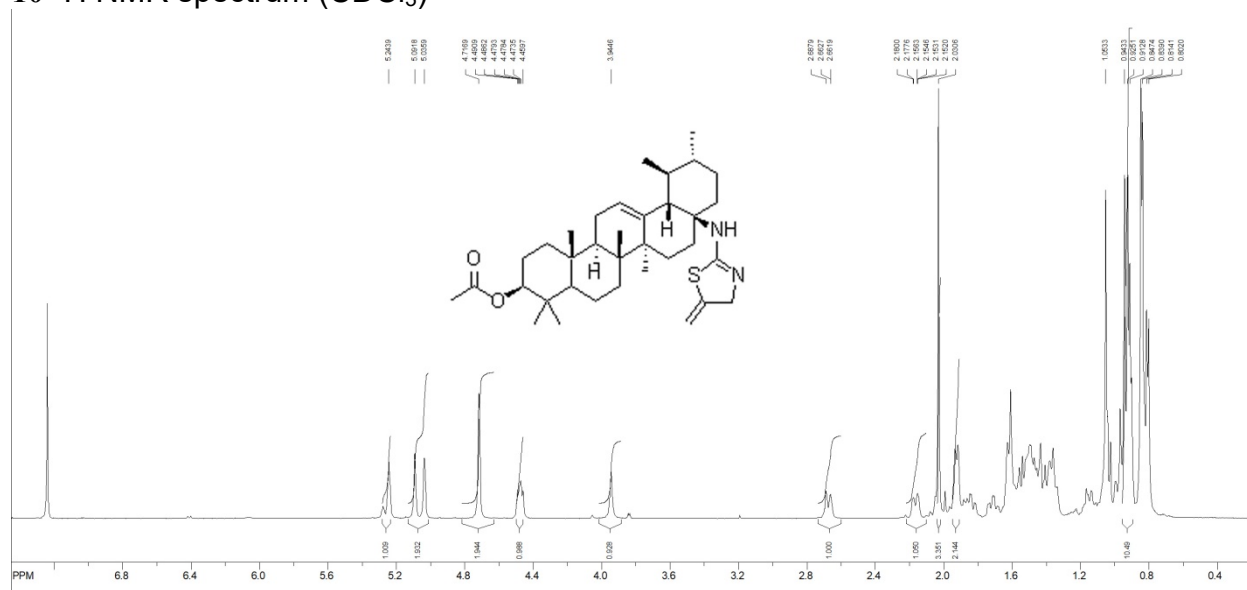


9 ^1H NMR spectrum (CDCl_3)**9** ^{13}C NMR spectrum (CDCl_3)

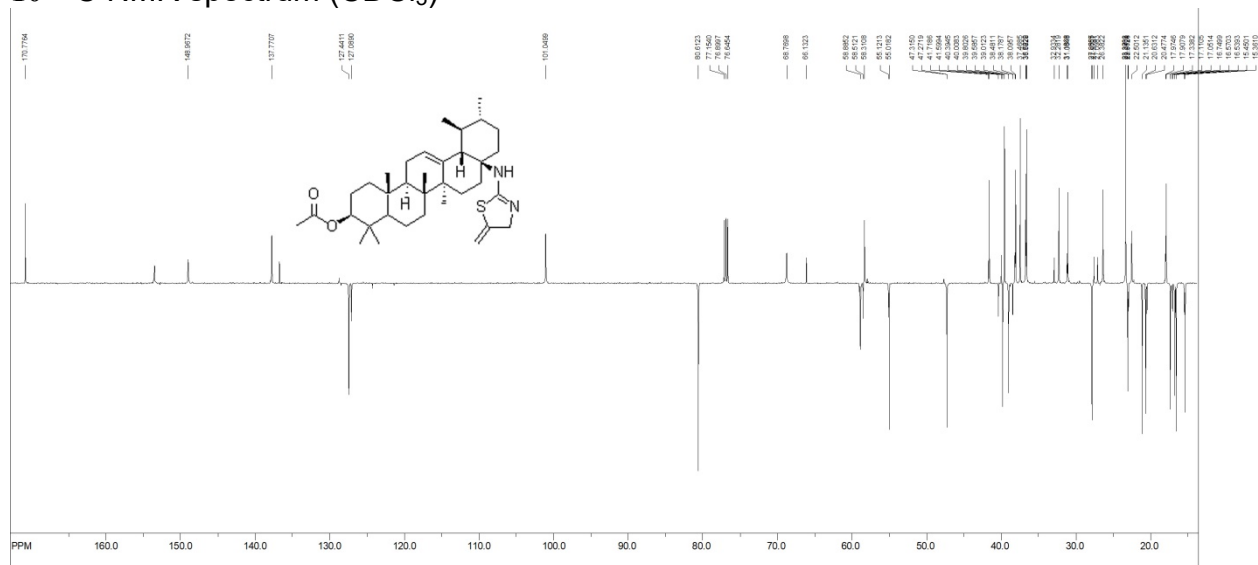
HRMS data of compound 9.



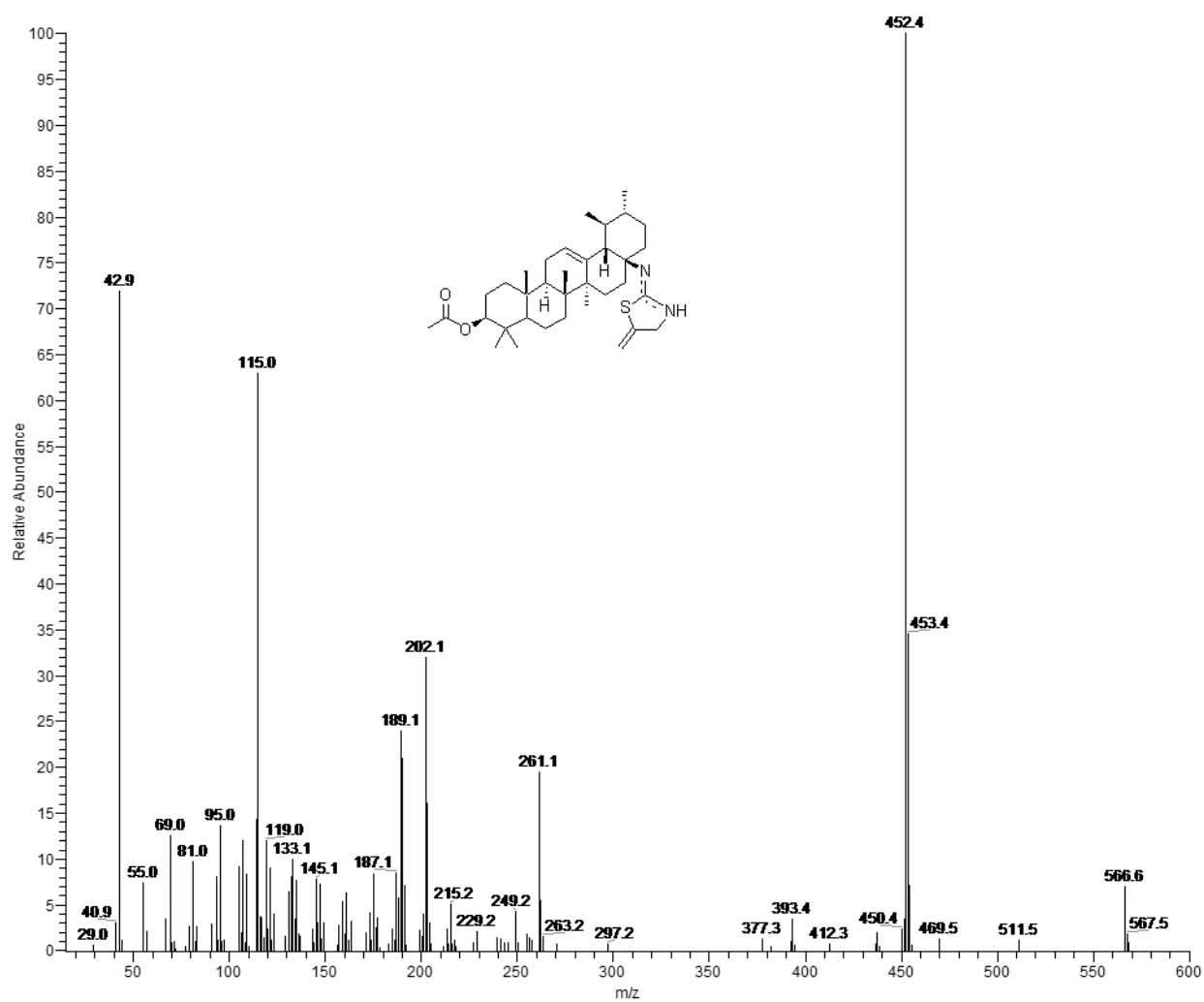
10 ¹H NMR spectrum (CDCl₃)

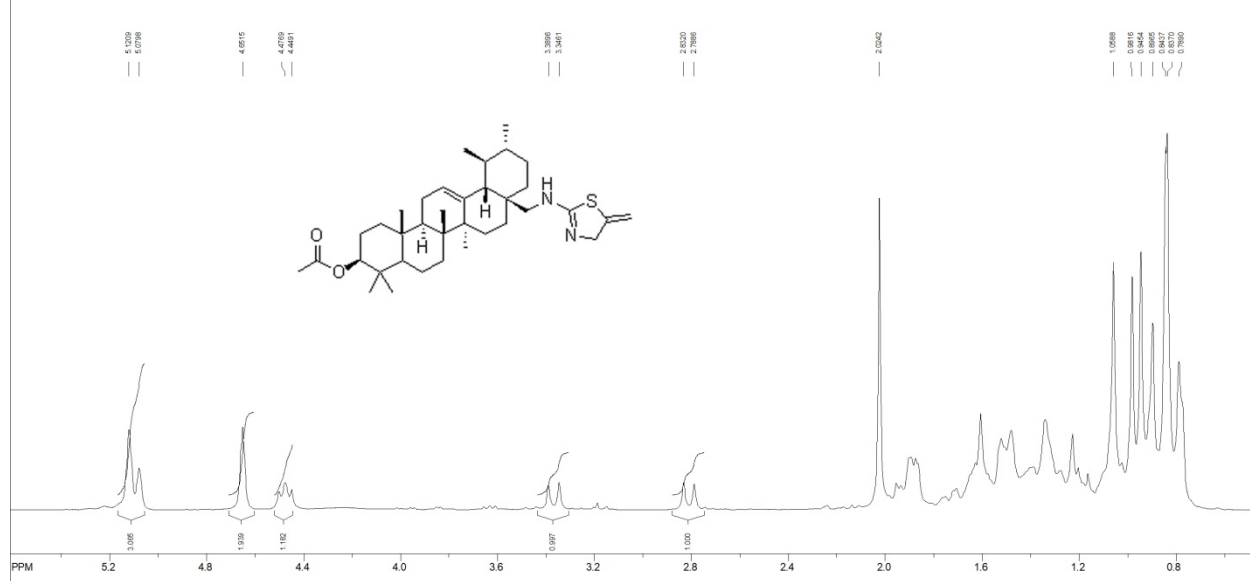


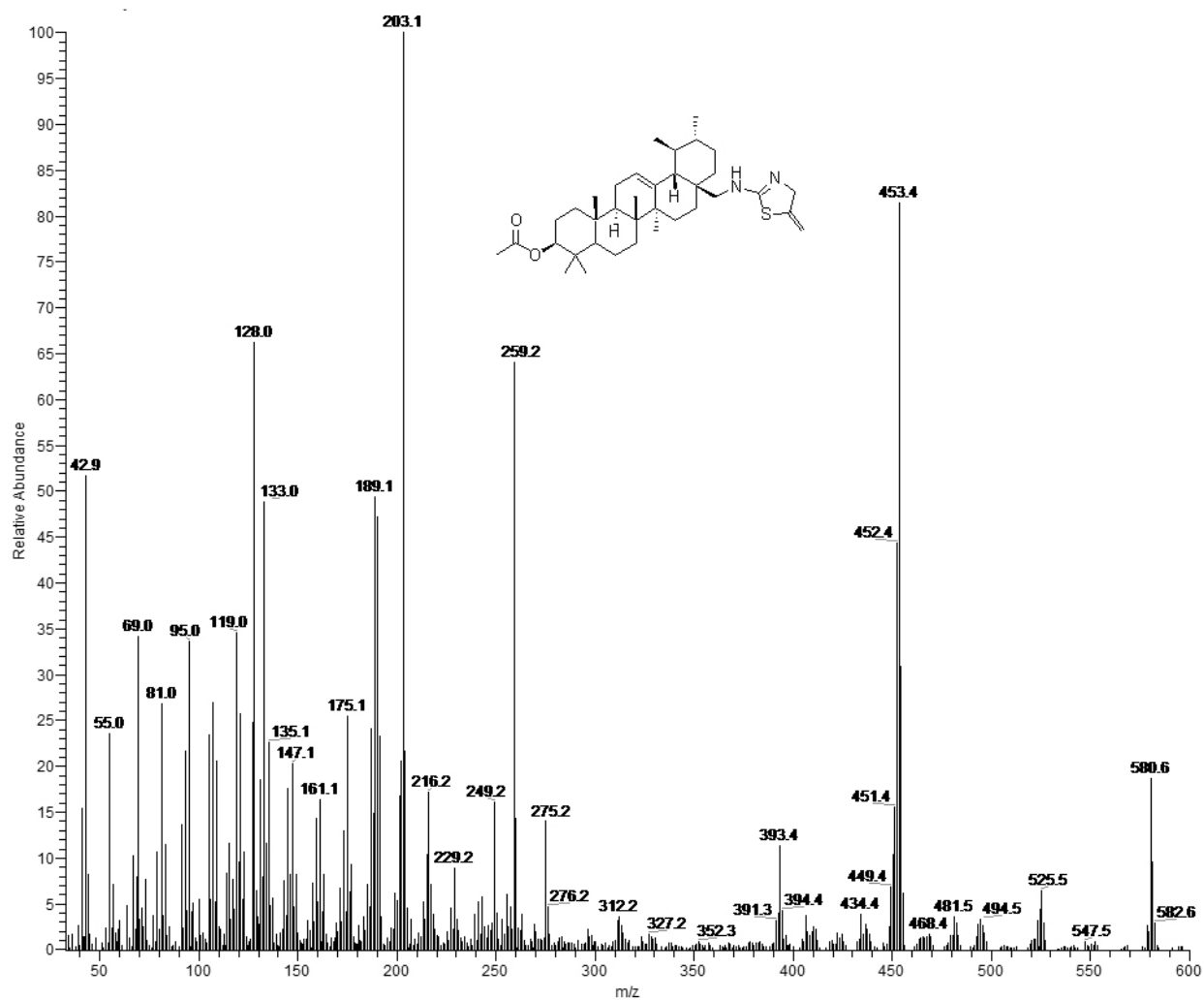
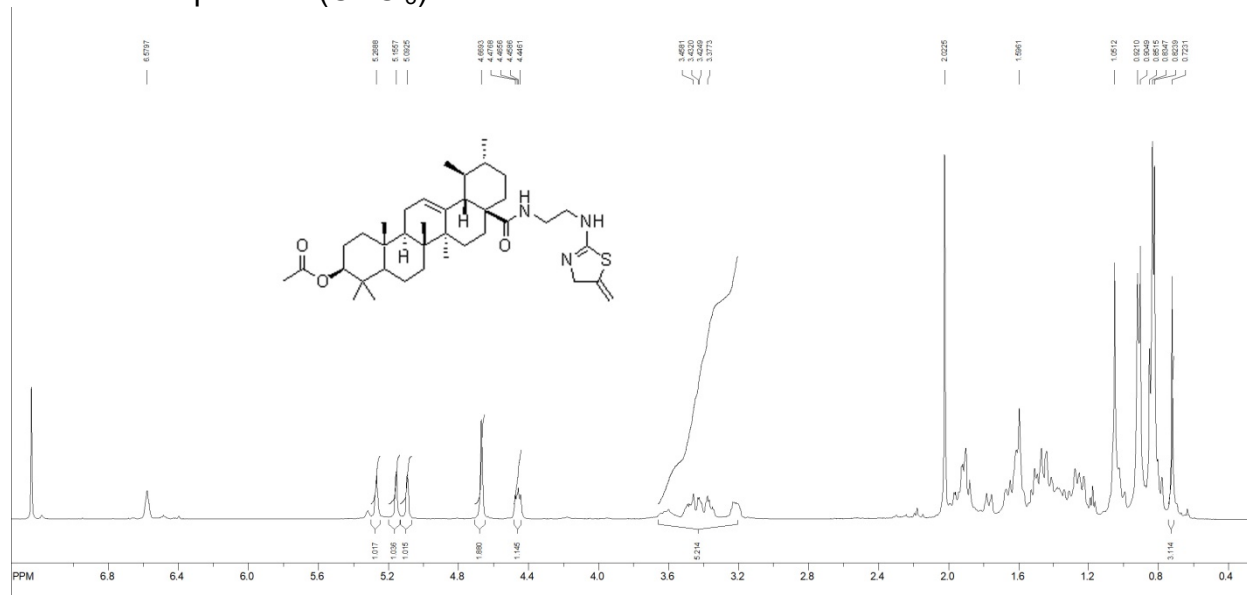
10 ^{13}C NMR spectrum (CDCl_3)



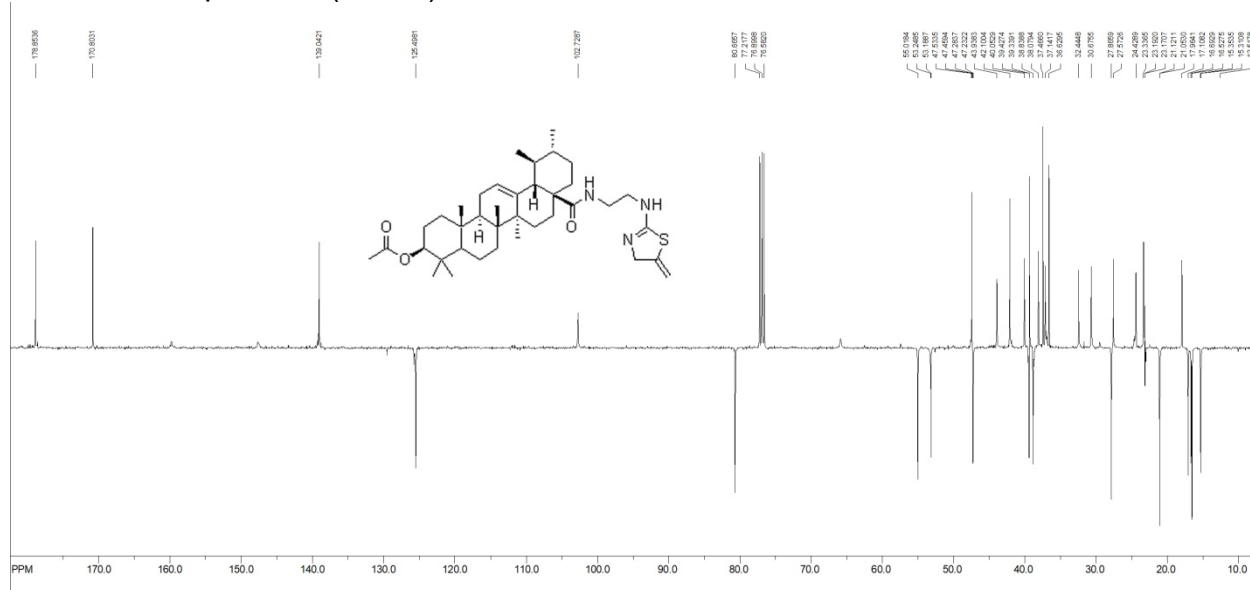
HRMS data of compound 10.



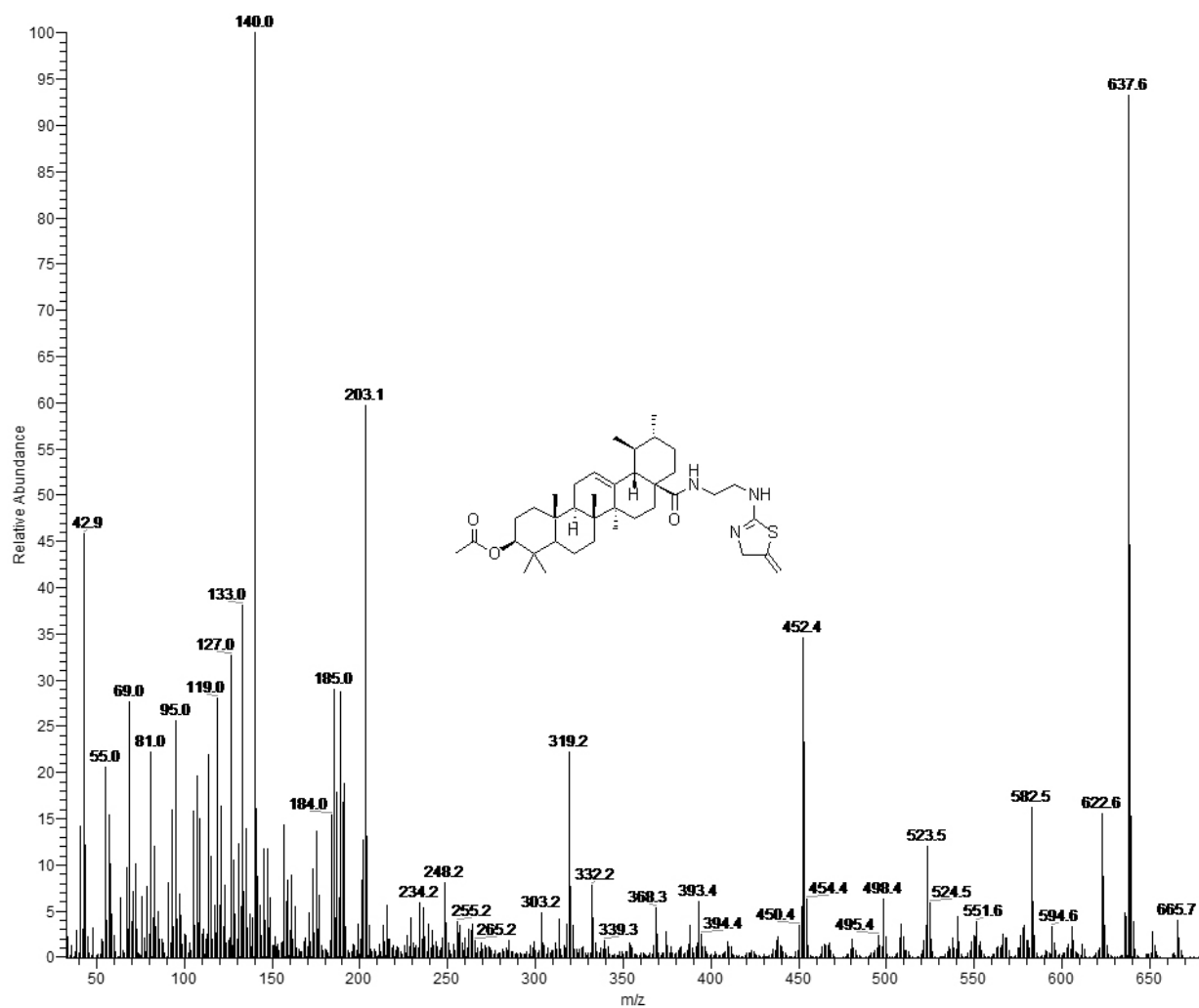
11 ^1H NMR spectrum (CDCl_3)**11** ^{13}C NMR spectrum (CDCl_3)

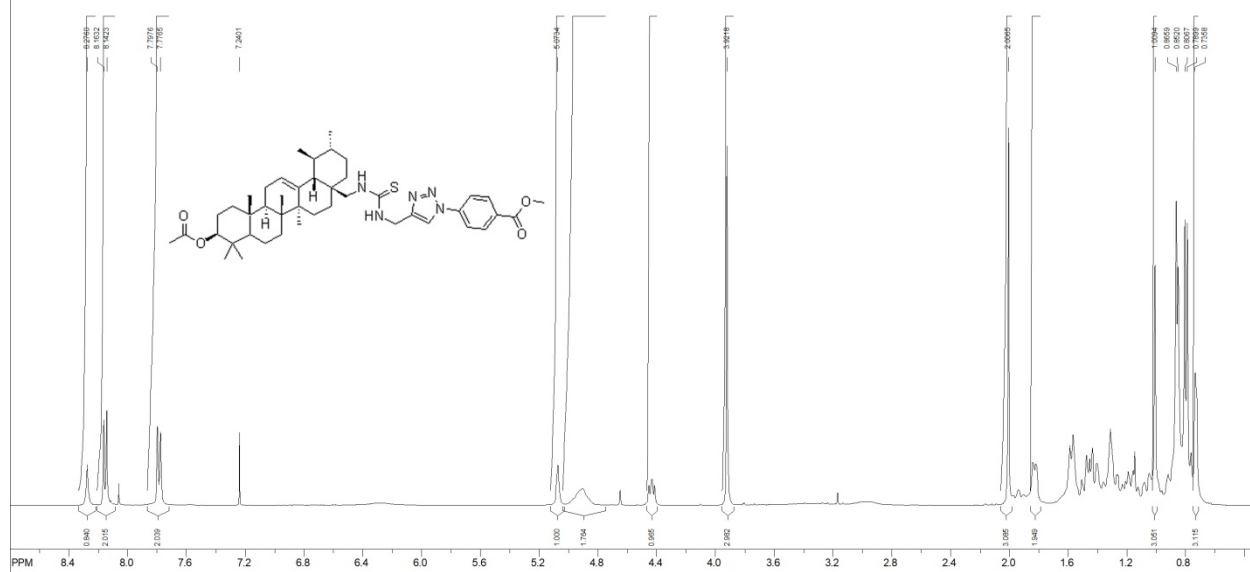
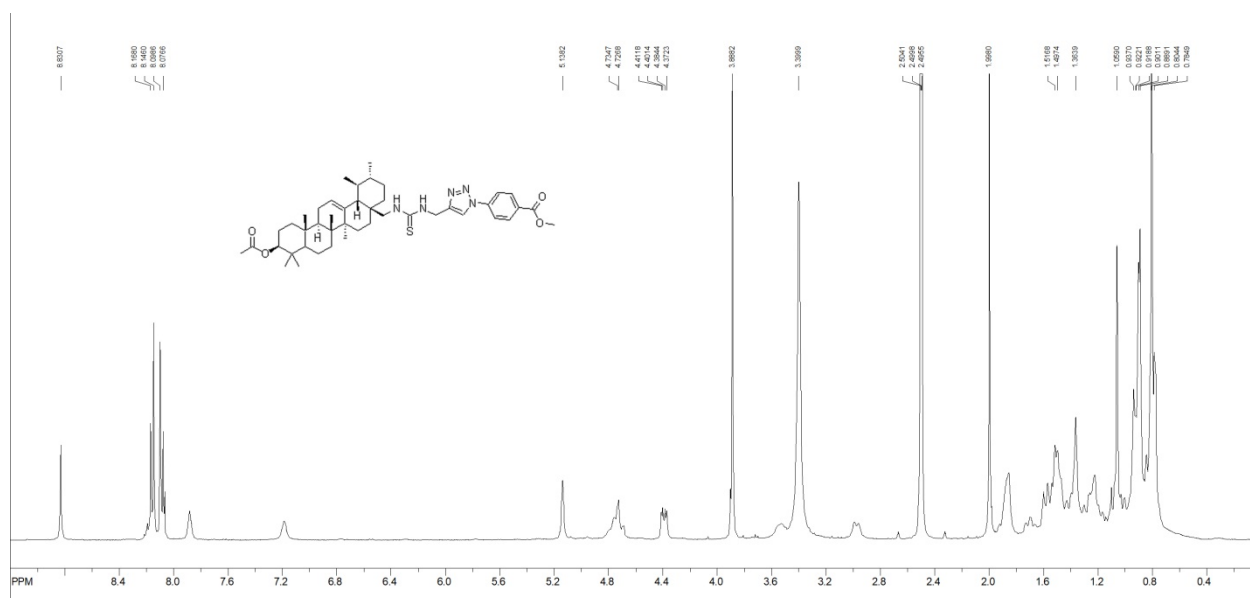
HRMS data of compound **11**.12 ^1H NMR spectrum (CDCl_3)

12 ^{13}C NMR spectrum (CDCl_3)

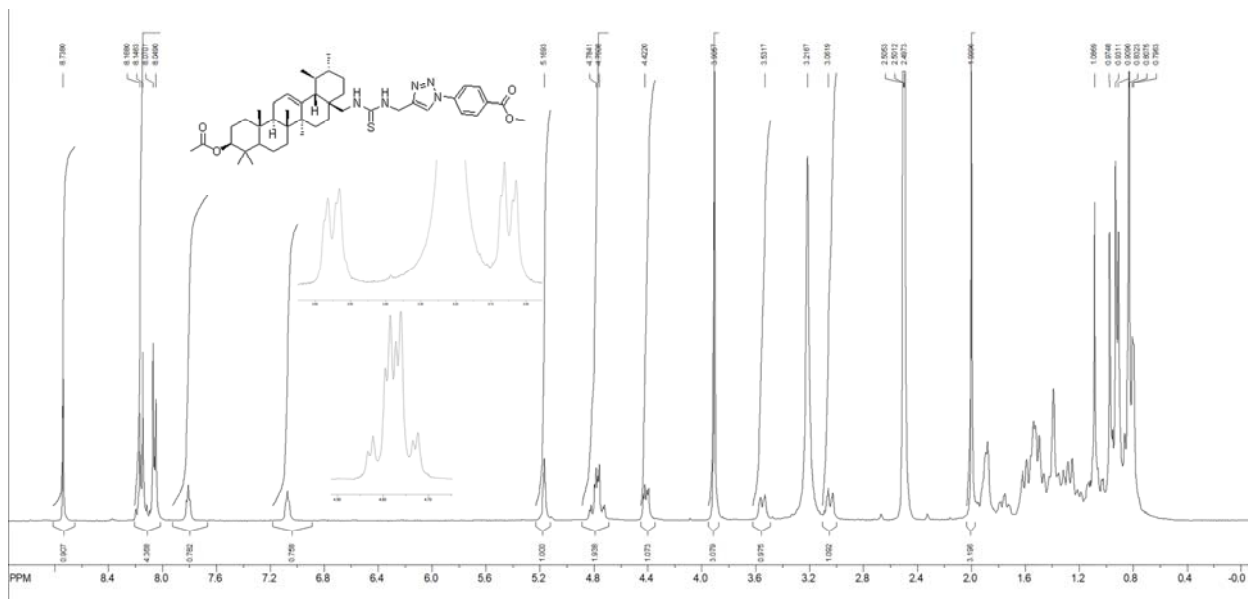


HRMS data of compound 12.

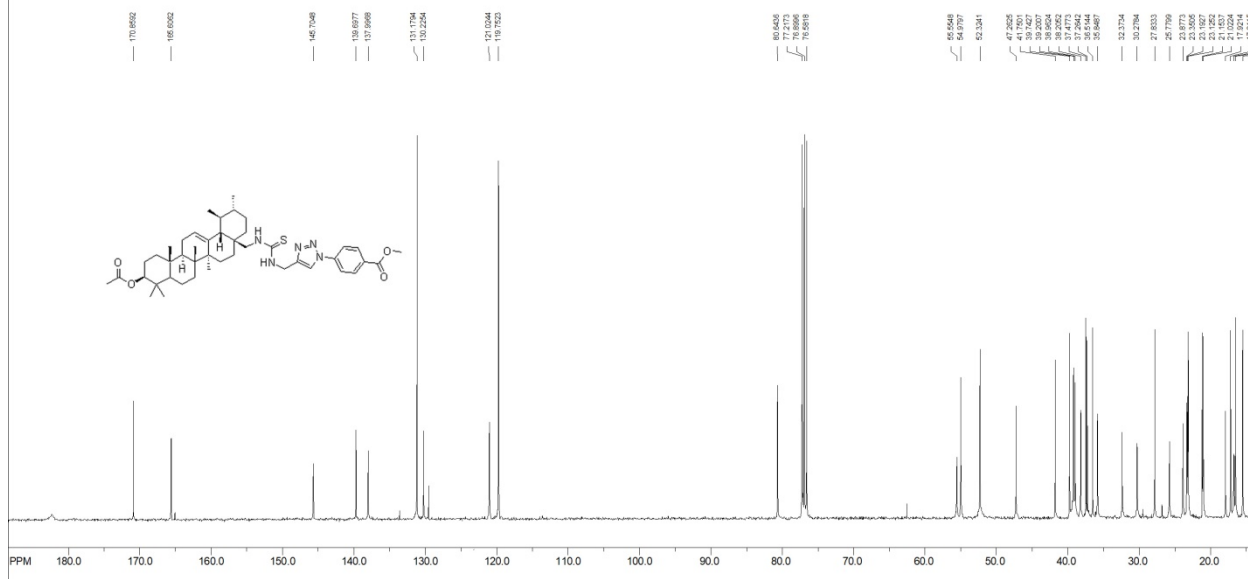


17a ¹H NMR spectrum (CDCl₃)17a ¹H NMR spectrum (DMSO-d₆, 20°C)

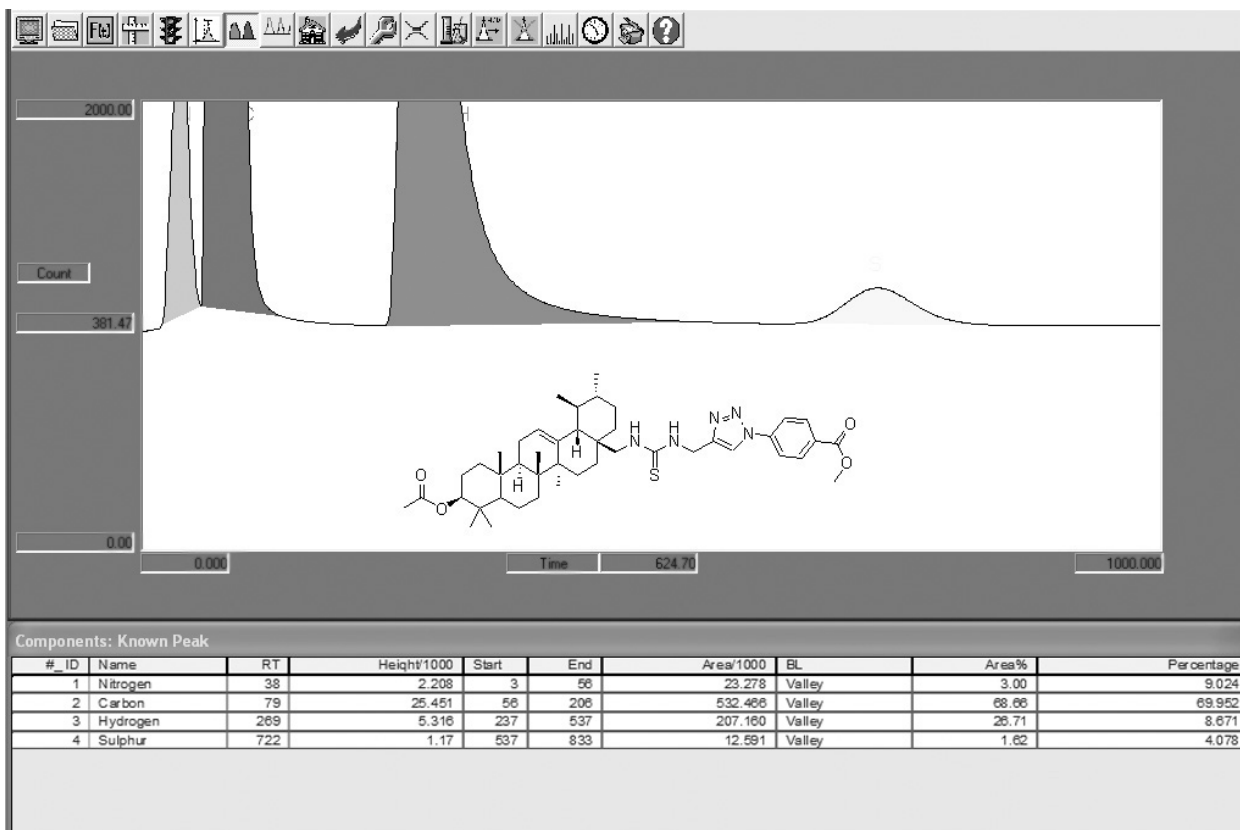
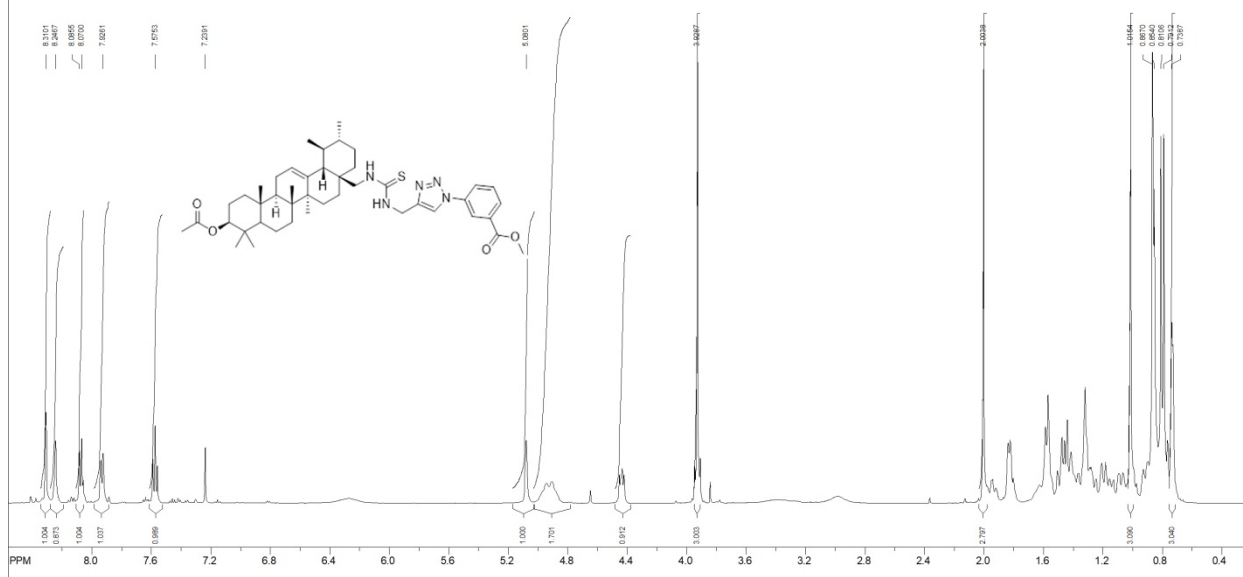
17a ^1H NMR spectrum (DMSO- d_6 , 70°C)



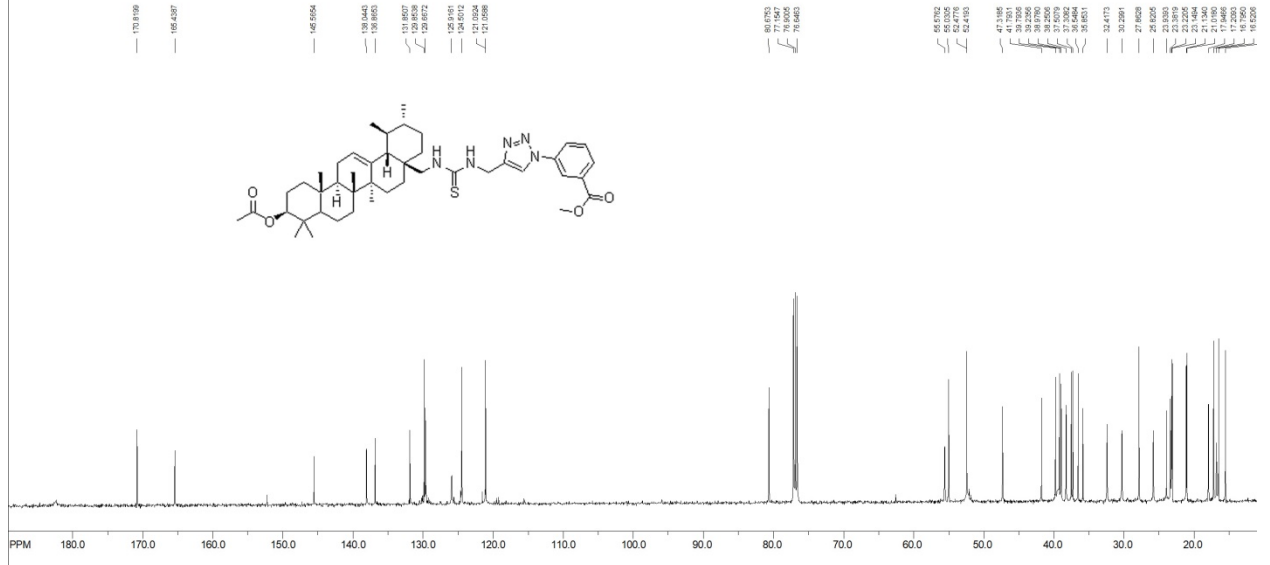
17a ^{13}C NMR spectrum (CDCl_3)



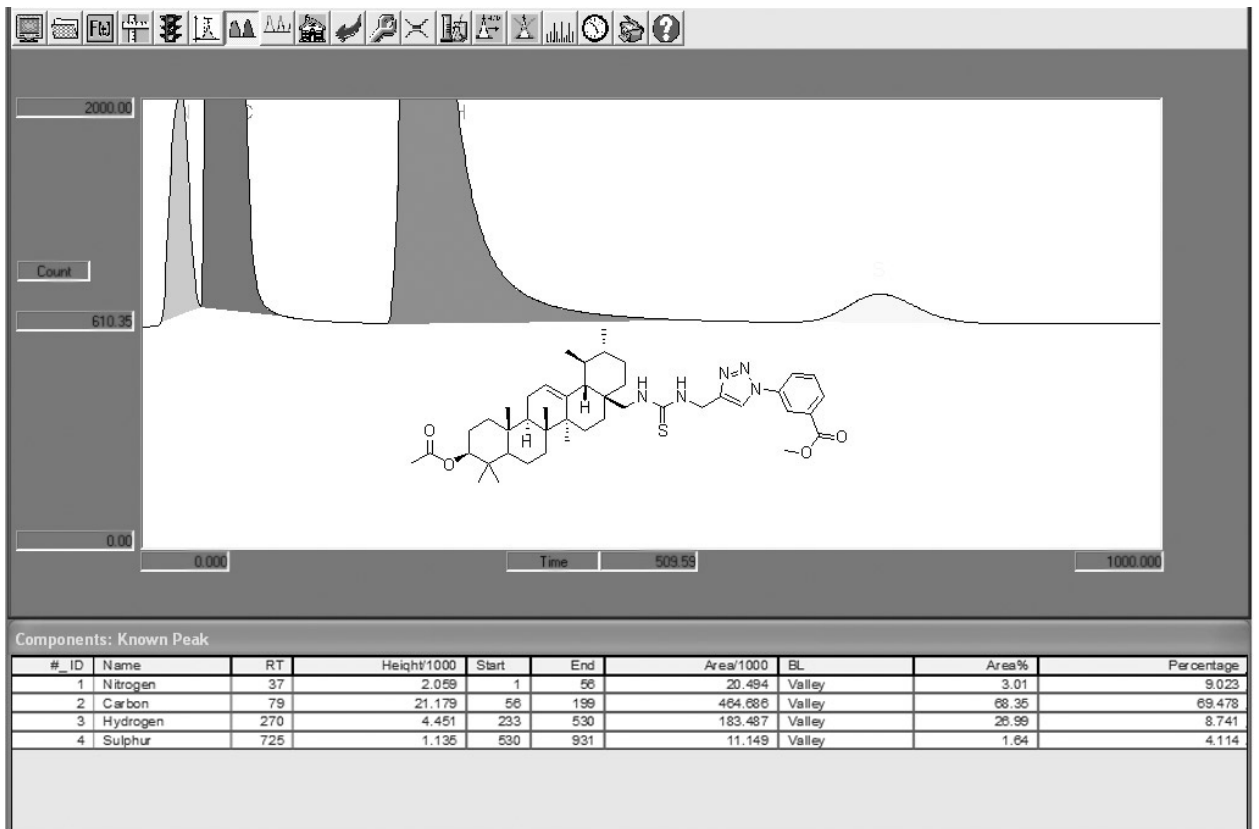
Elemental analysis data of 17a

17b ^1H NMR spectrum (CDCl_3)

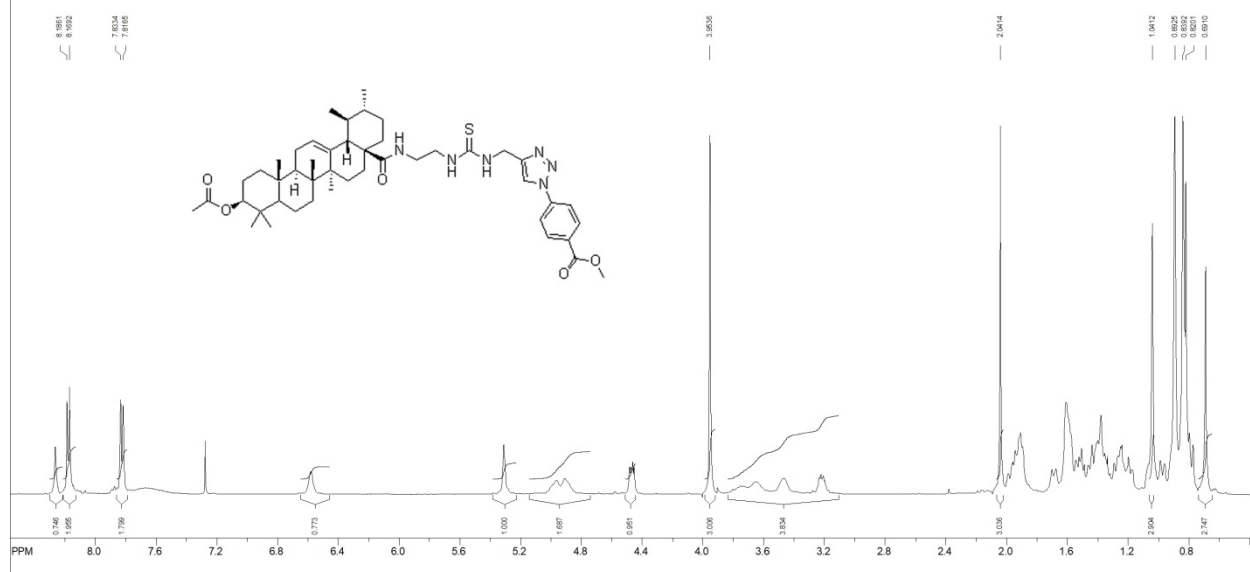
17b ¹³C NMR spectrum (CDCl₃)



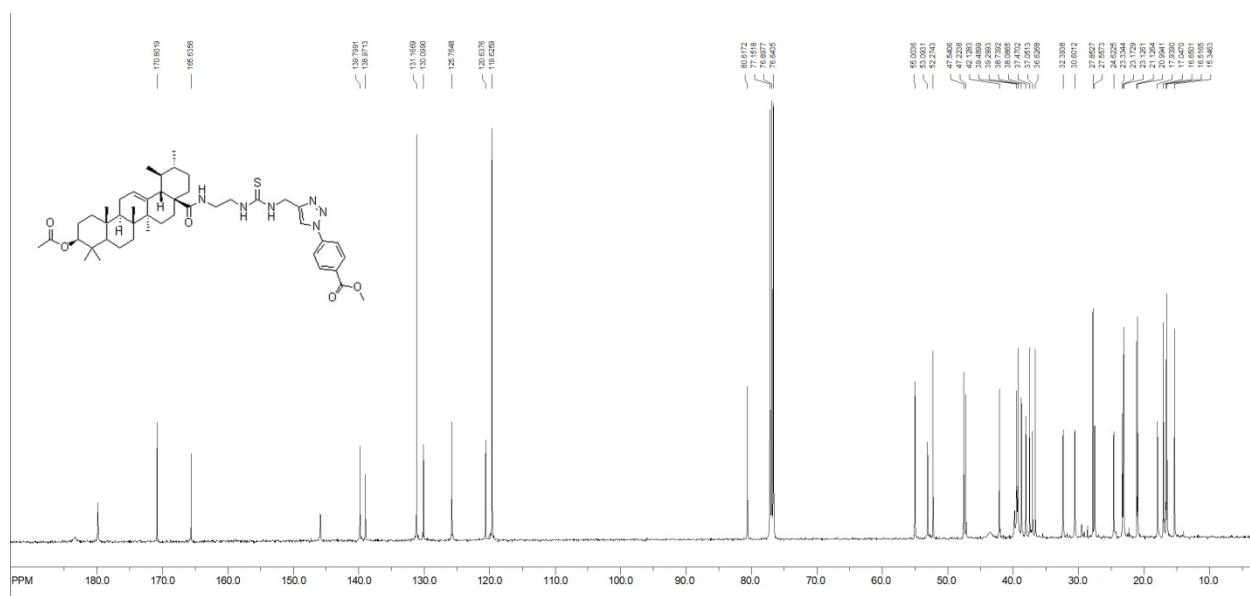
Elemental analysis data of 17b



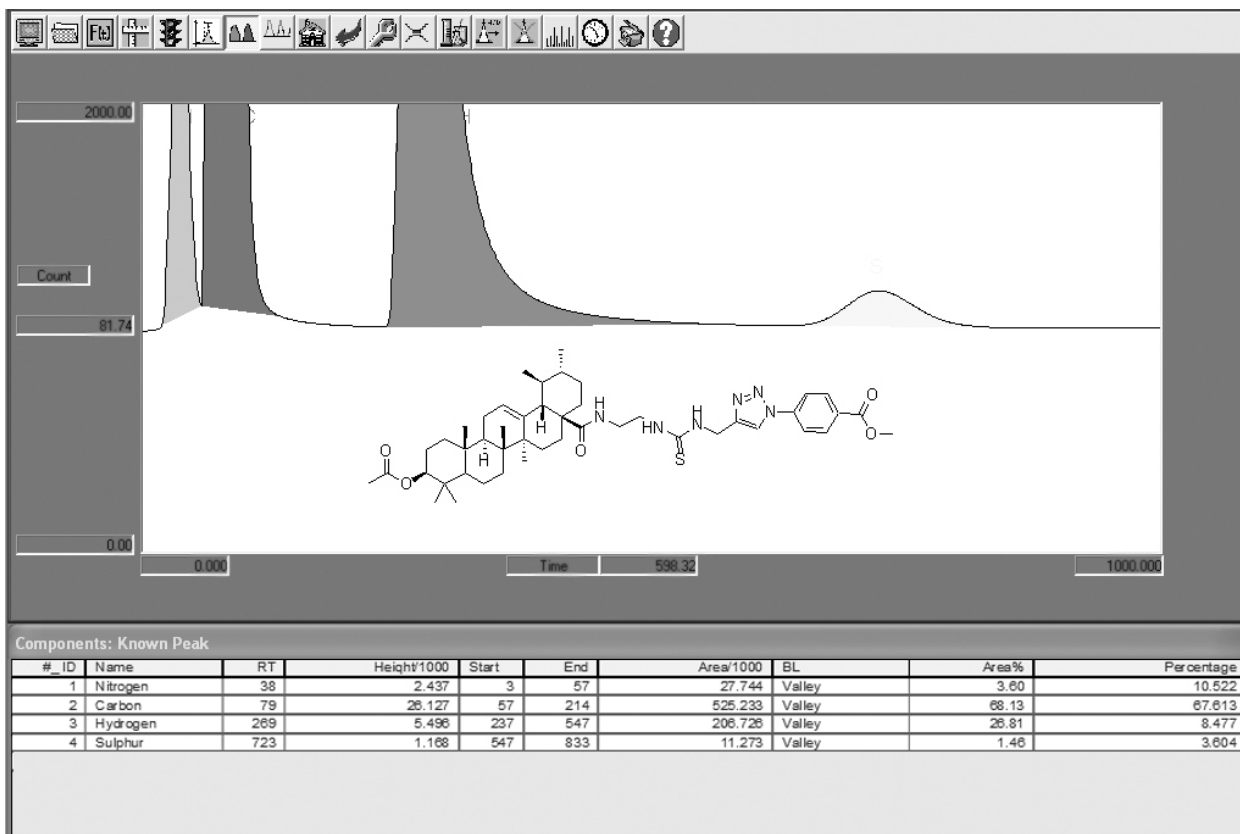
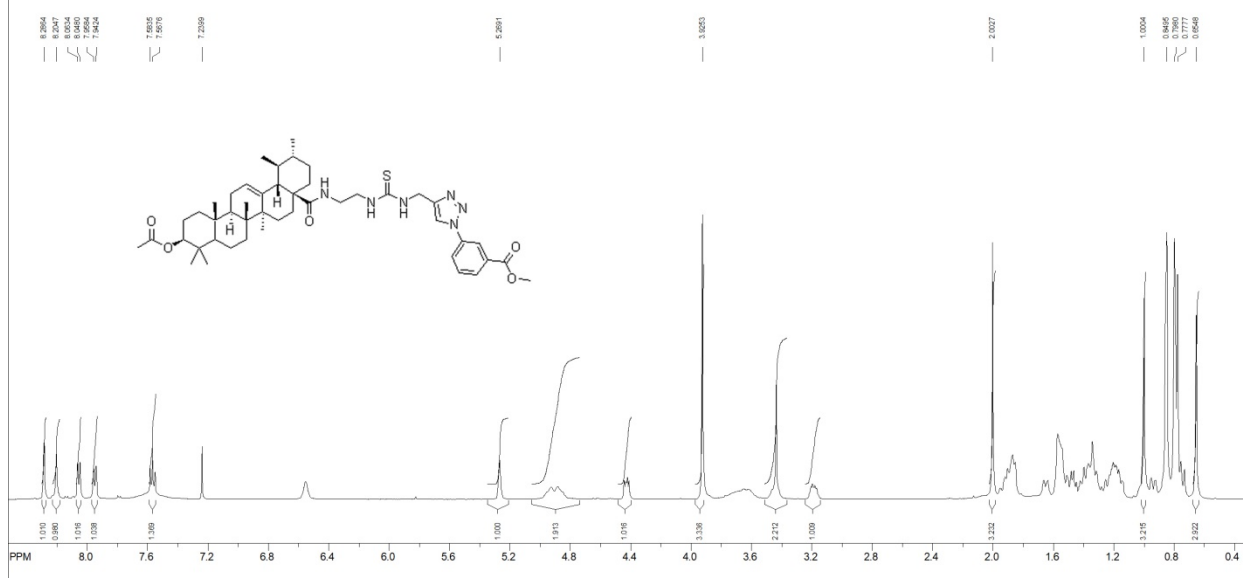
18a ^1H NMR spectrum (CDCl_3)

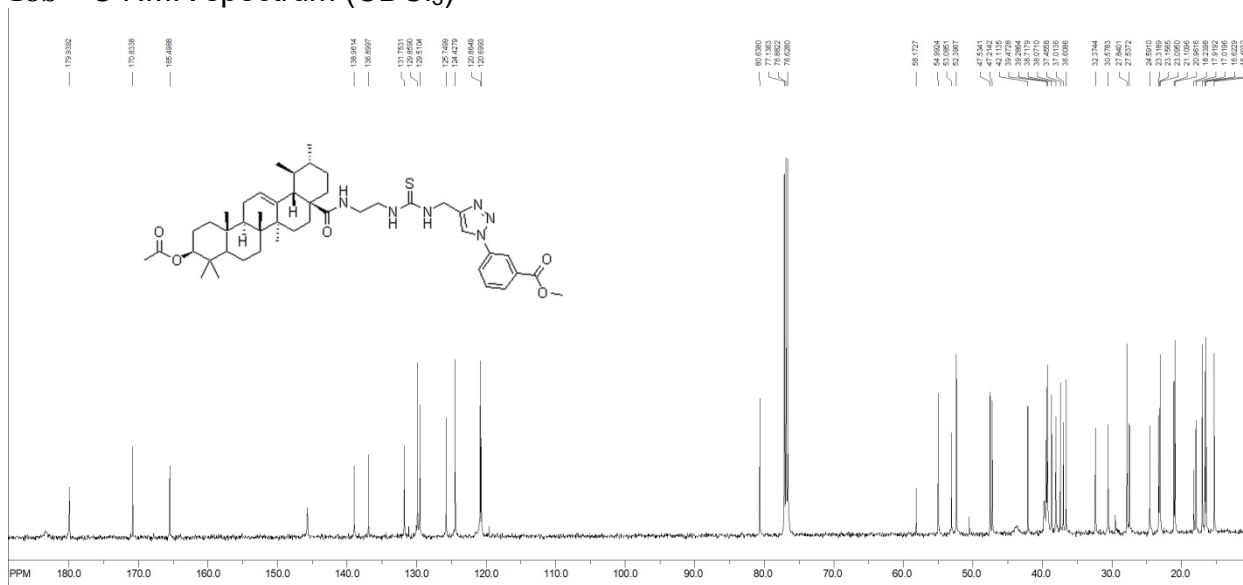


18a ^{13}C NMR spectrum (CDCl_3)

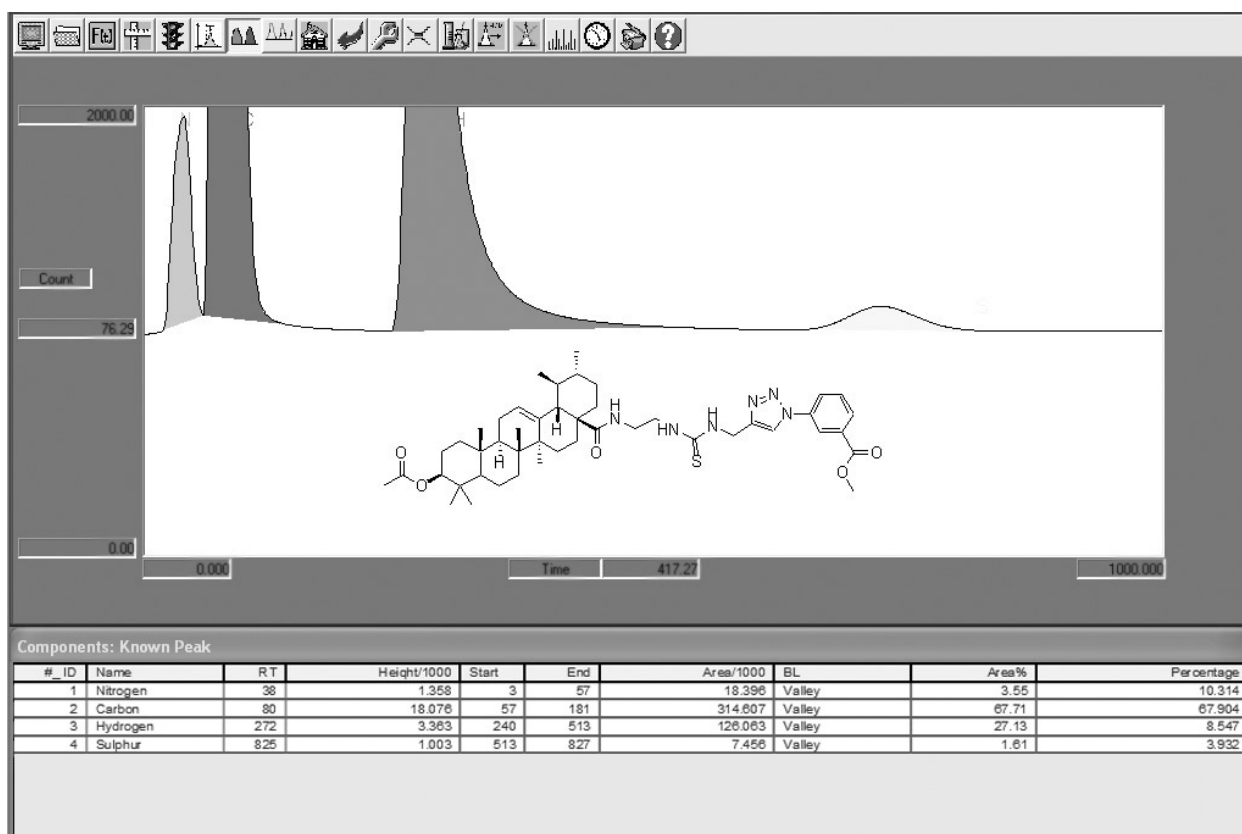


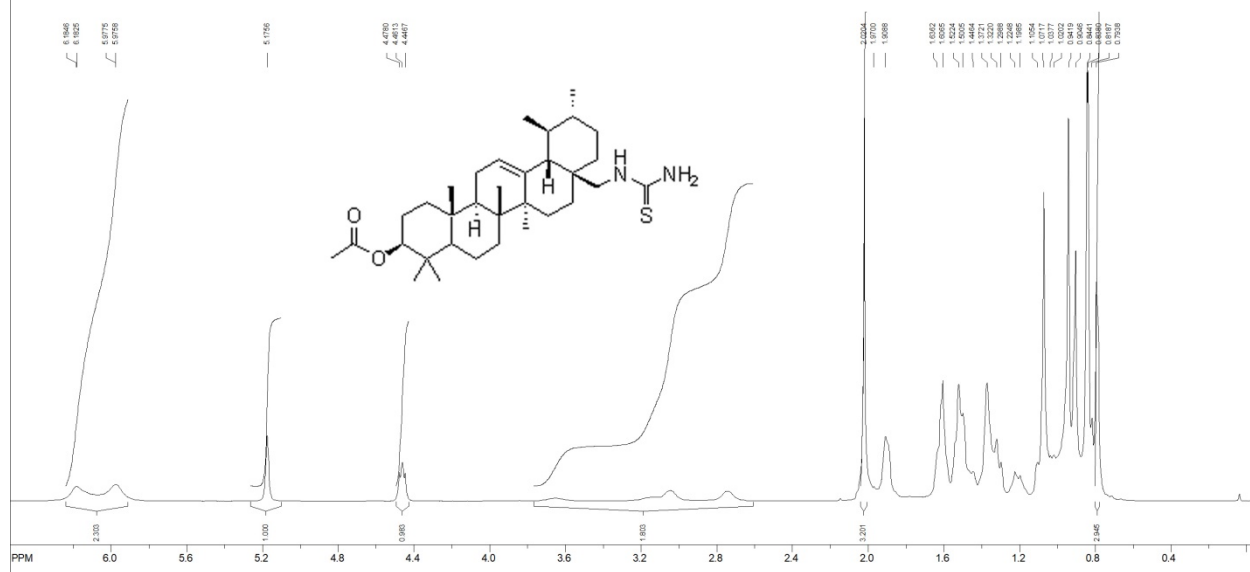
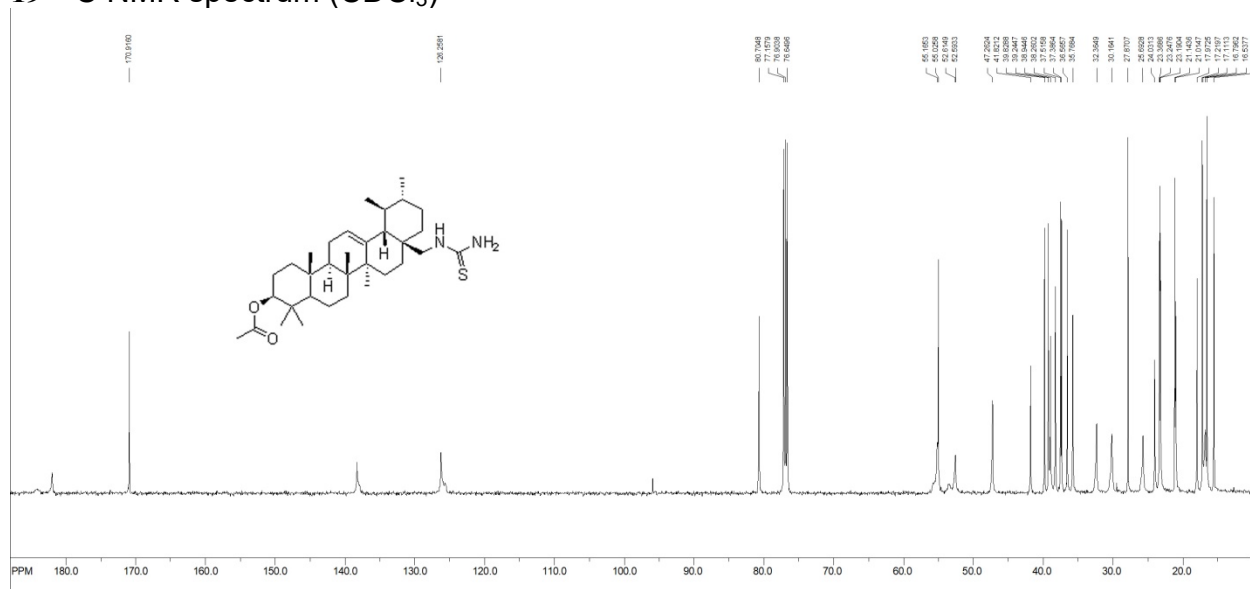
Elemental analysis data of 18a

18b ^1H NMR spectrum (CDCl_3)

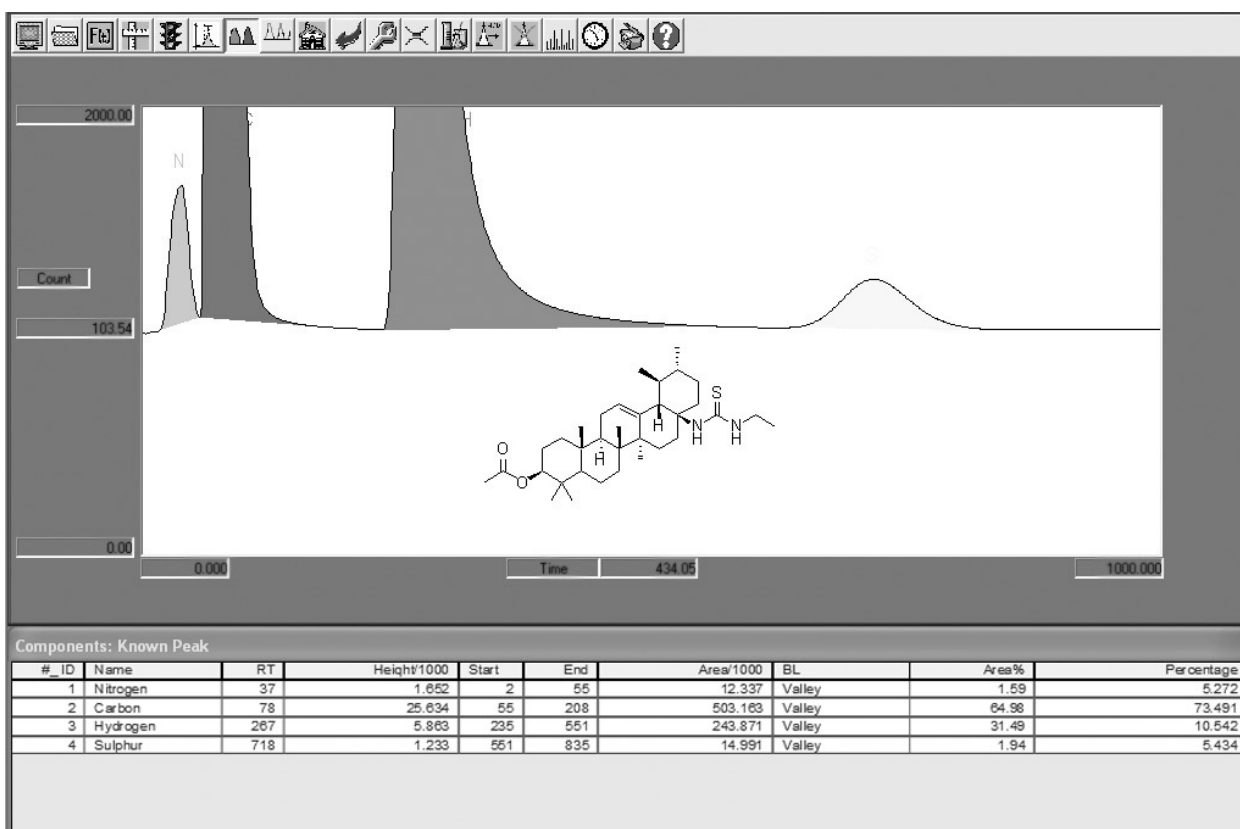
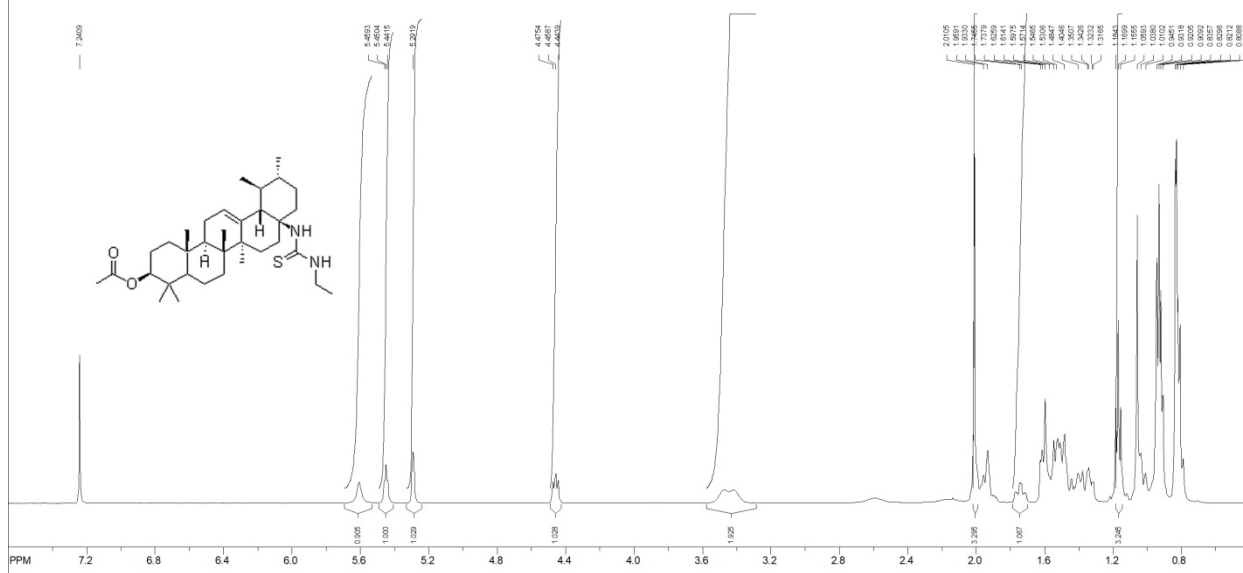
18b ¹³C NMR spectrum (CDCl₃)

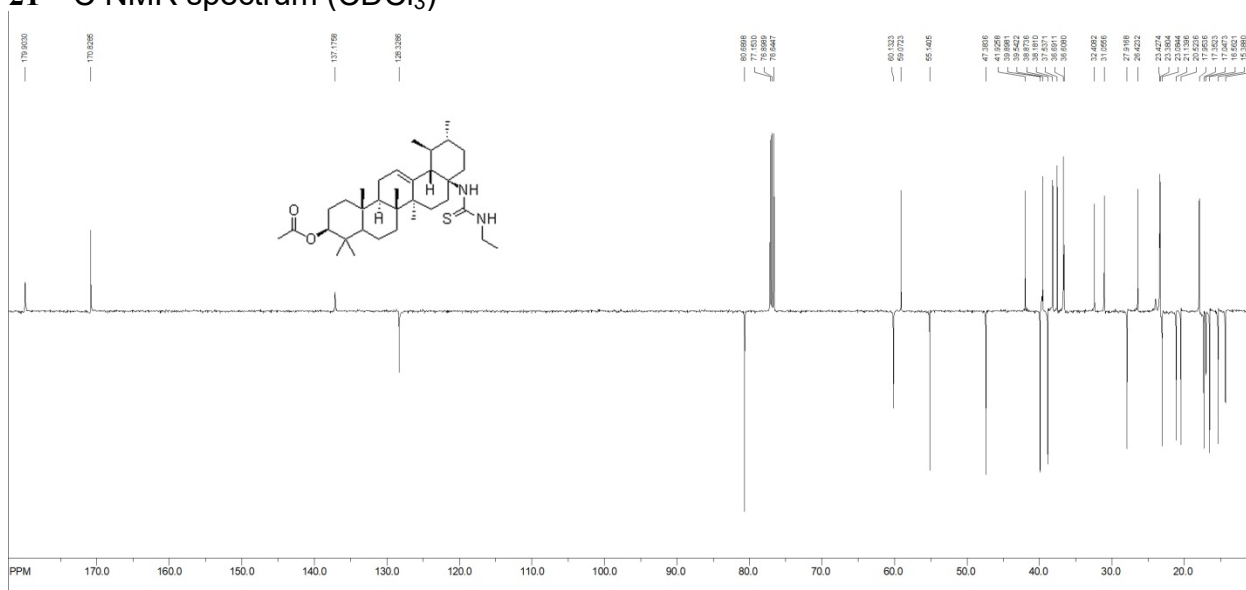
Elemental analysis data of 18b



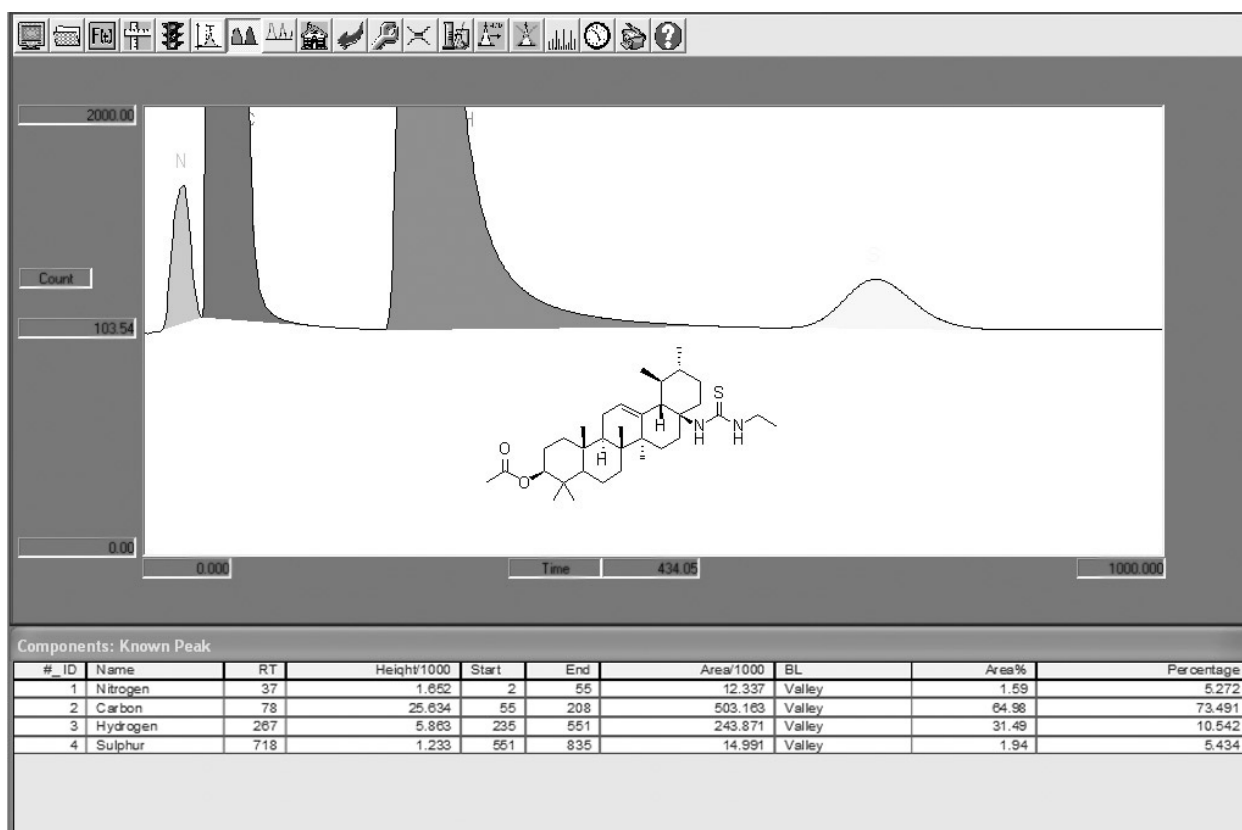
19 ^1H NMR spectrum (CDCl_3)**19** ^{13}C NMR spectrum (CDCl_3)

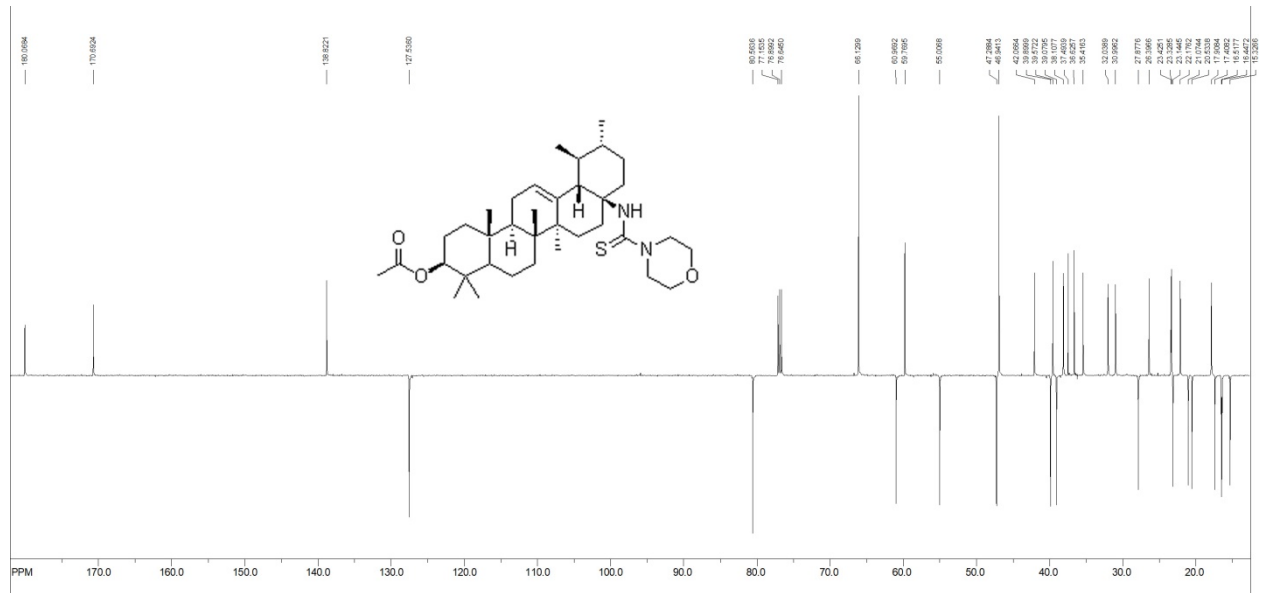
Elemental analysis data of 19

21 ^1H NMR spectrum (CDCl_3)

21 ^{13}C NMR spectrum (CDCl_3)

Elemental analysis data of 21



22 ^1H NMR spectrum (CDCl_3)22 ^{13}C NMR spectrum (CDCl_3)

Elemental analysis data of 22

