

# Design, synthesis, and biological evaluation of novel thieno[3,2-d]pyrimidine derivatives as potent antitumor agents

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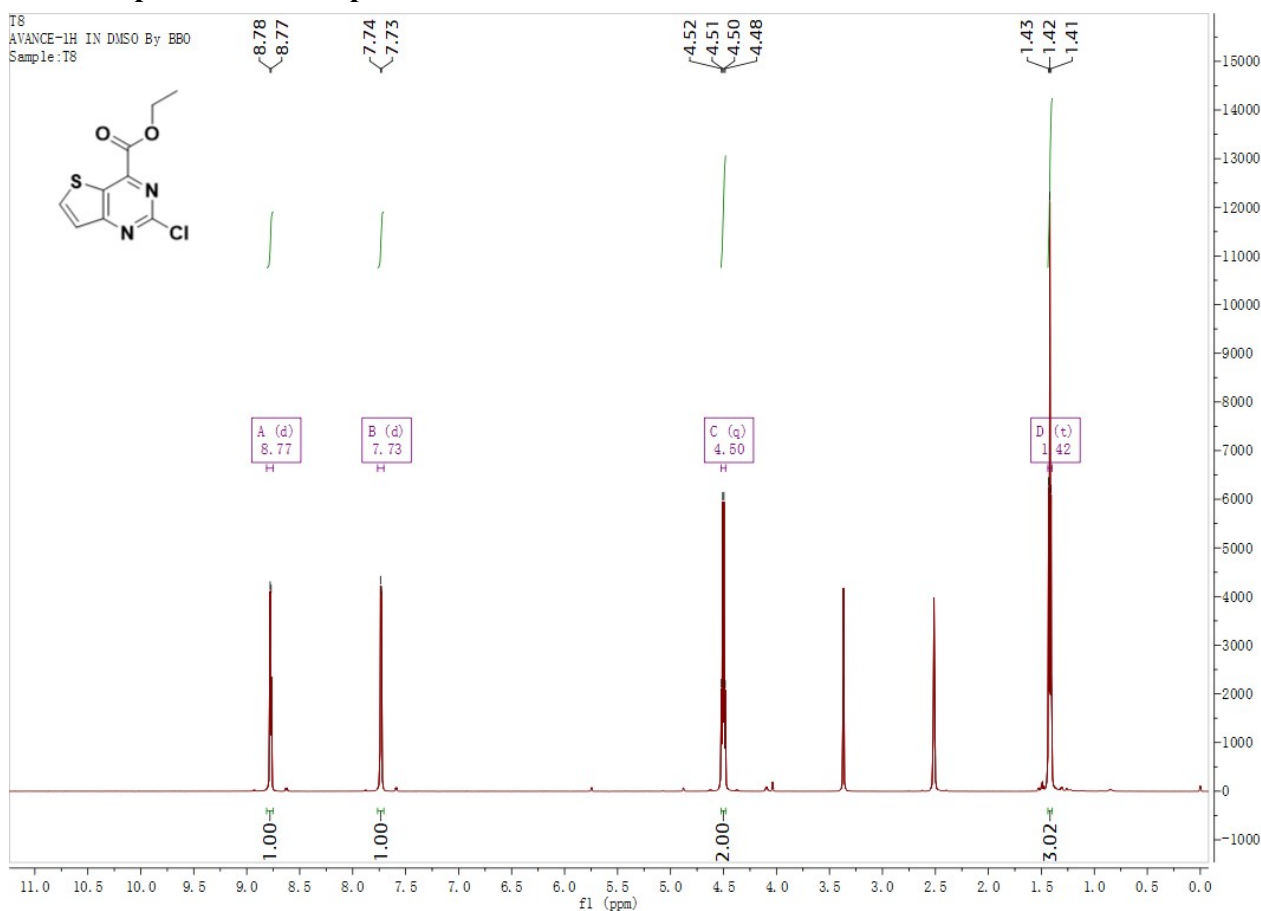
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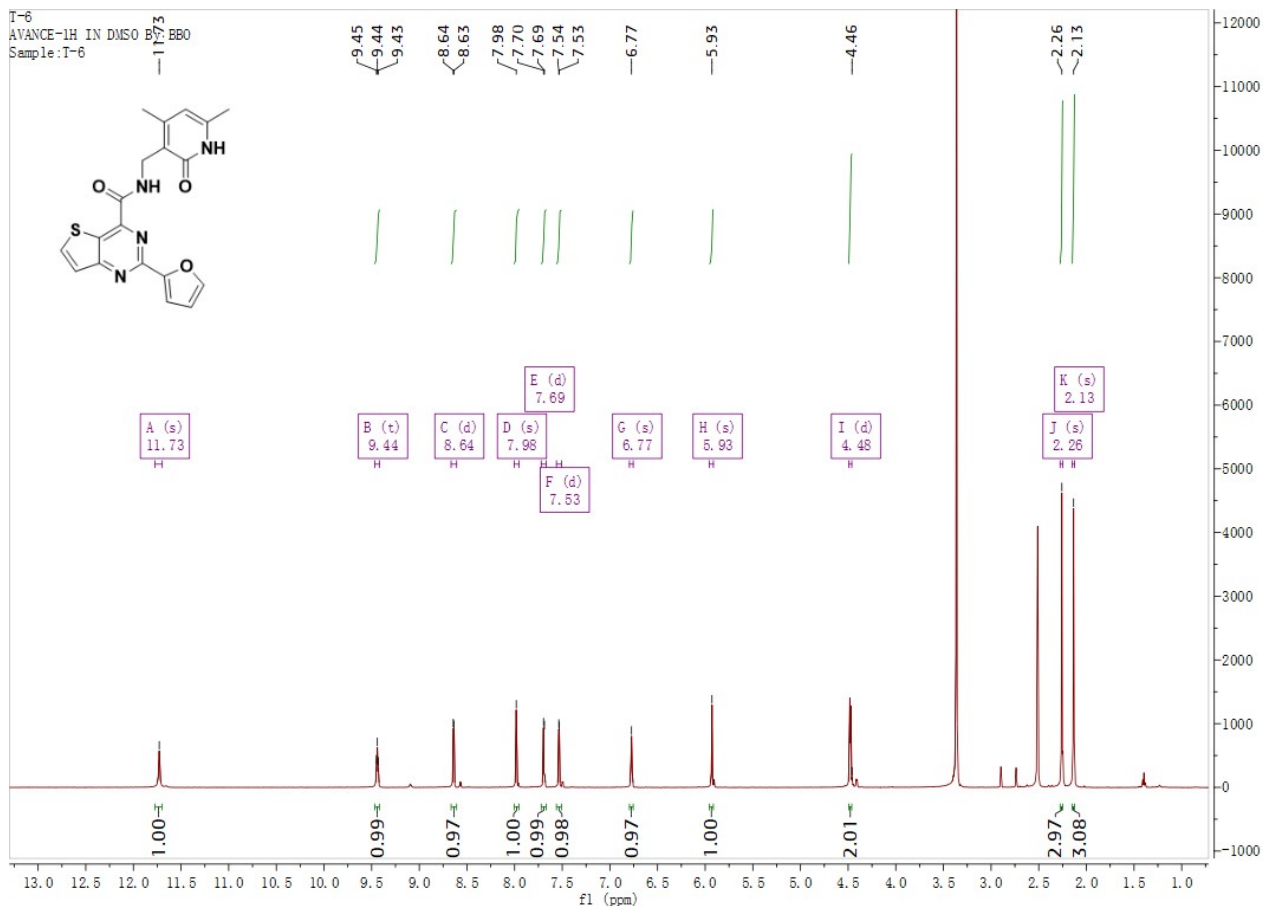
*c: Small Molecular Targeted Drug R&D Engineering Research Center of Liaoning Province, Shenyang, Liaoning 110036, PR China d Shenyang Xingqi Pharmaceutical Co., Ltd*

## supporting information

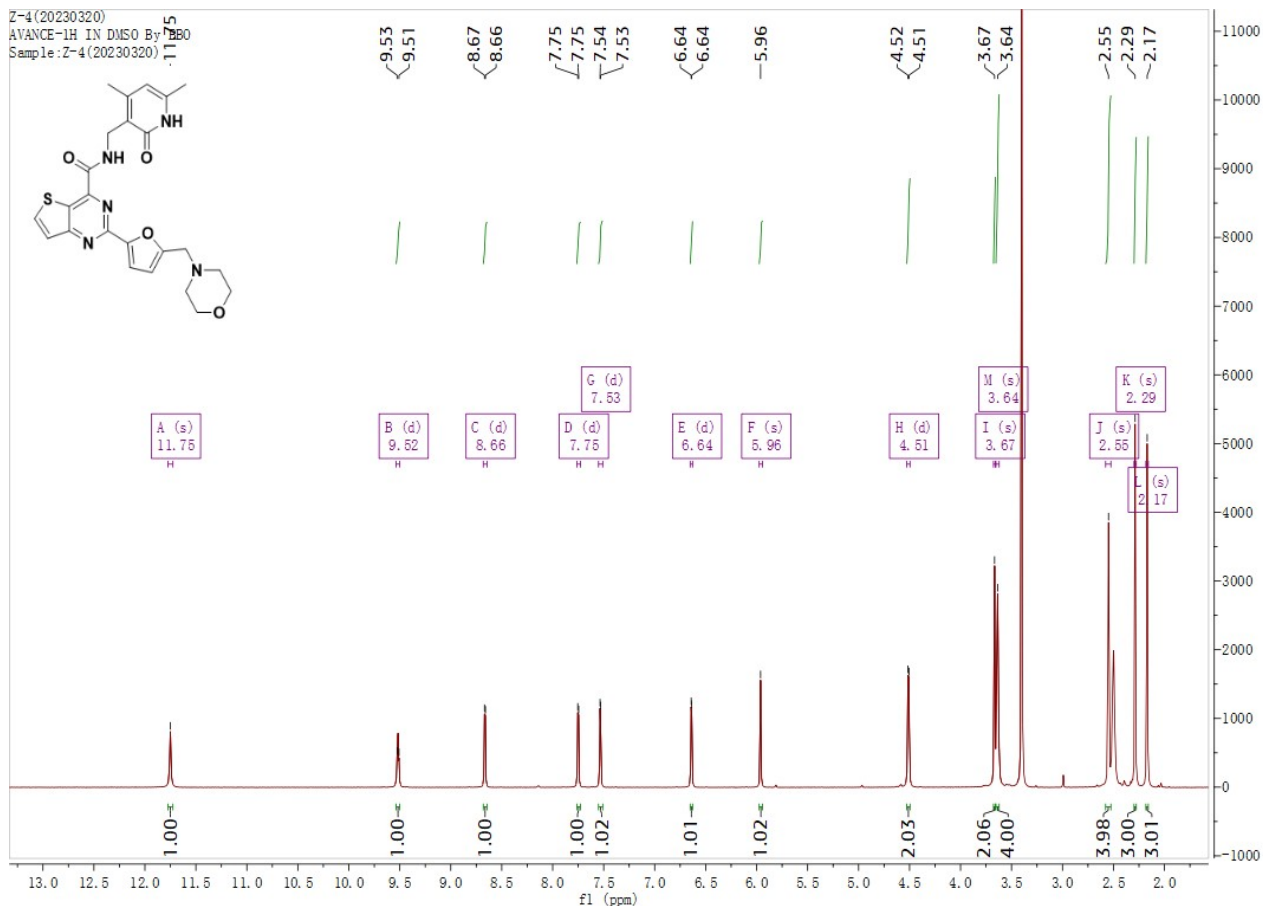
### <sup>1</sup>H NMR spectrum of compound 5



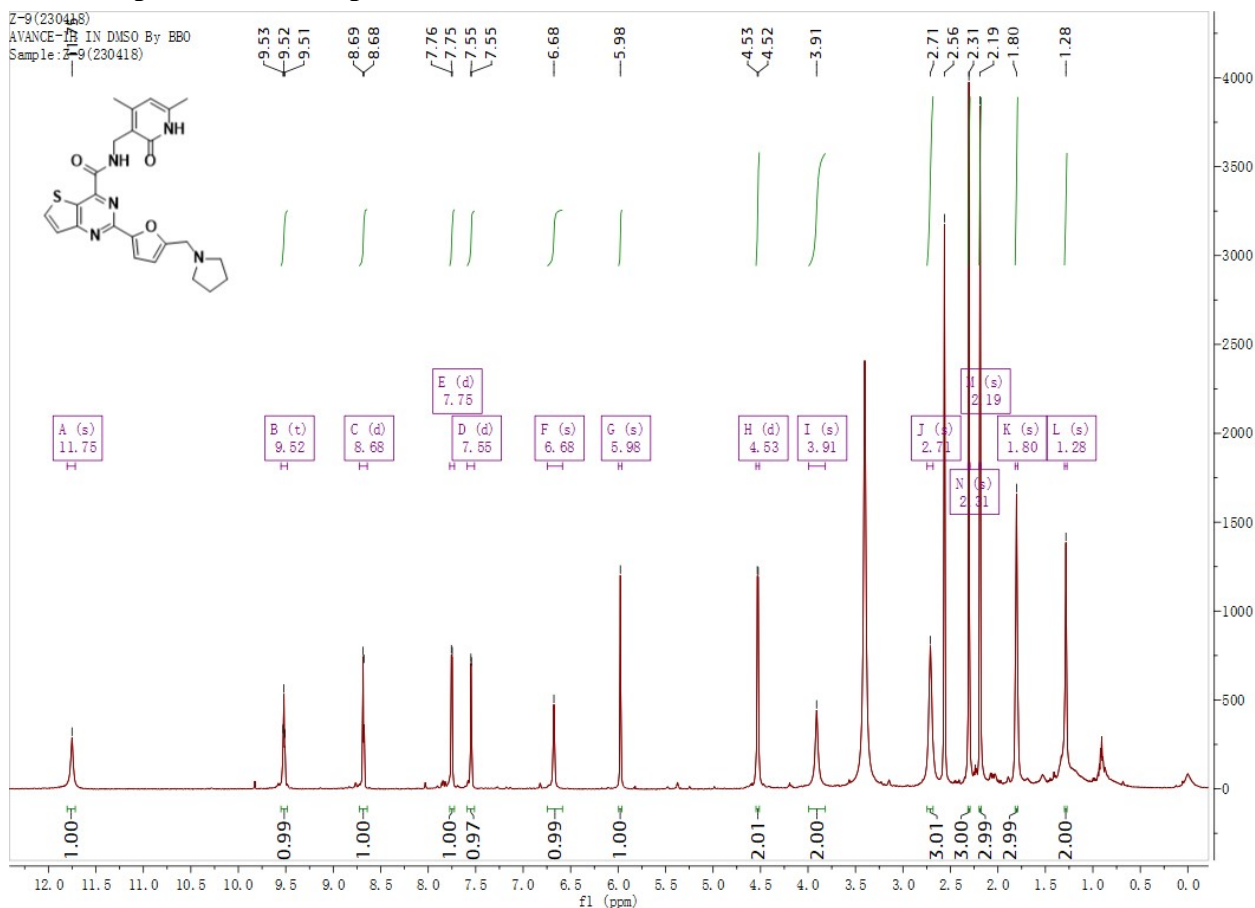
### <sup>1</sup>H NMR spectrum of compound 8a



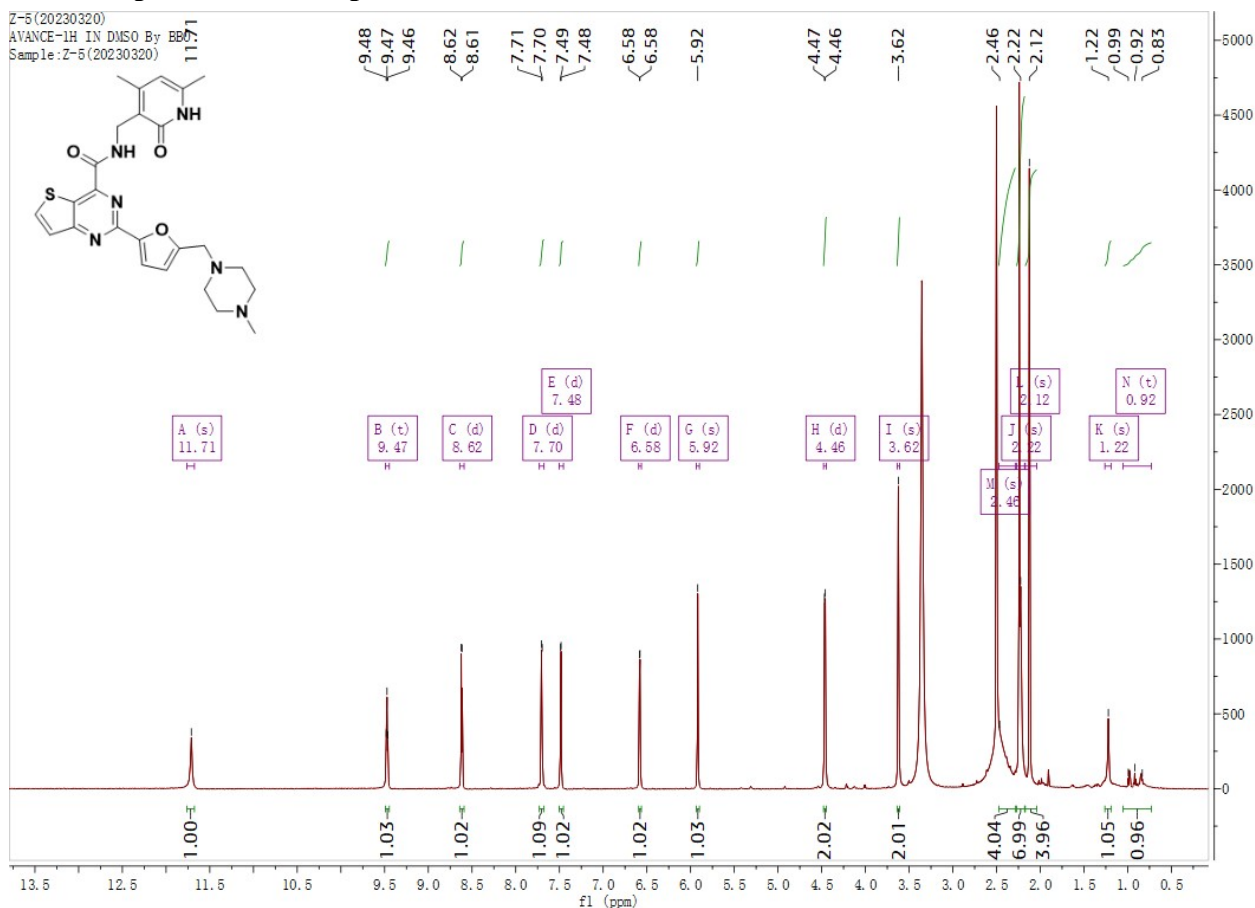
### <sup>1</sup>H NMR spectrum of compound 9a1



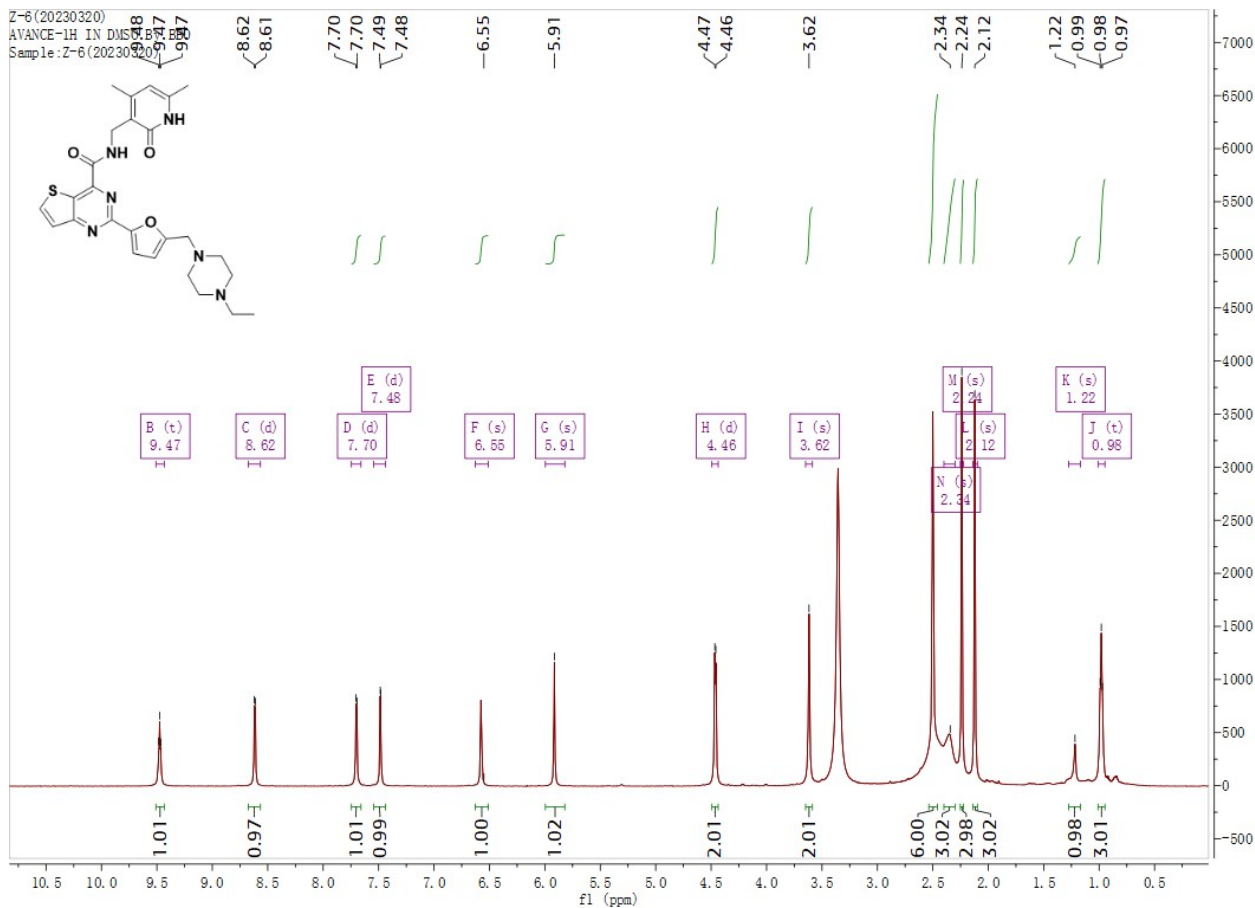
### <sup>1</sup>H NMR spectrum of compound 9a2



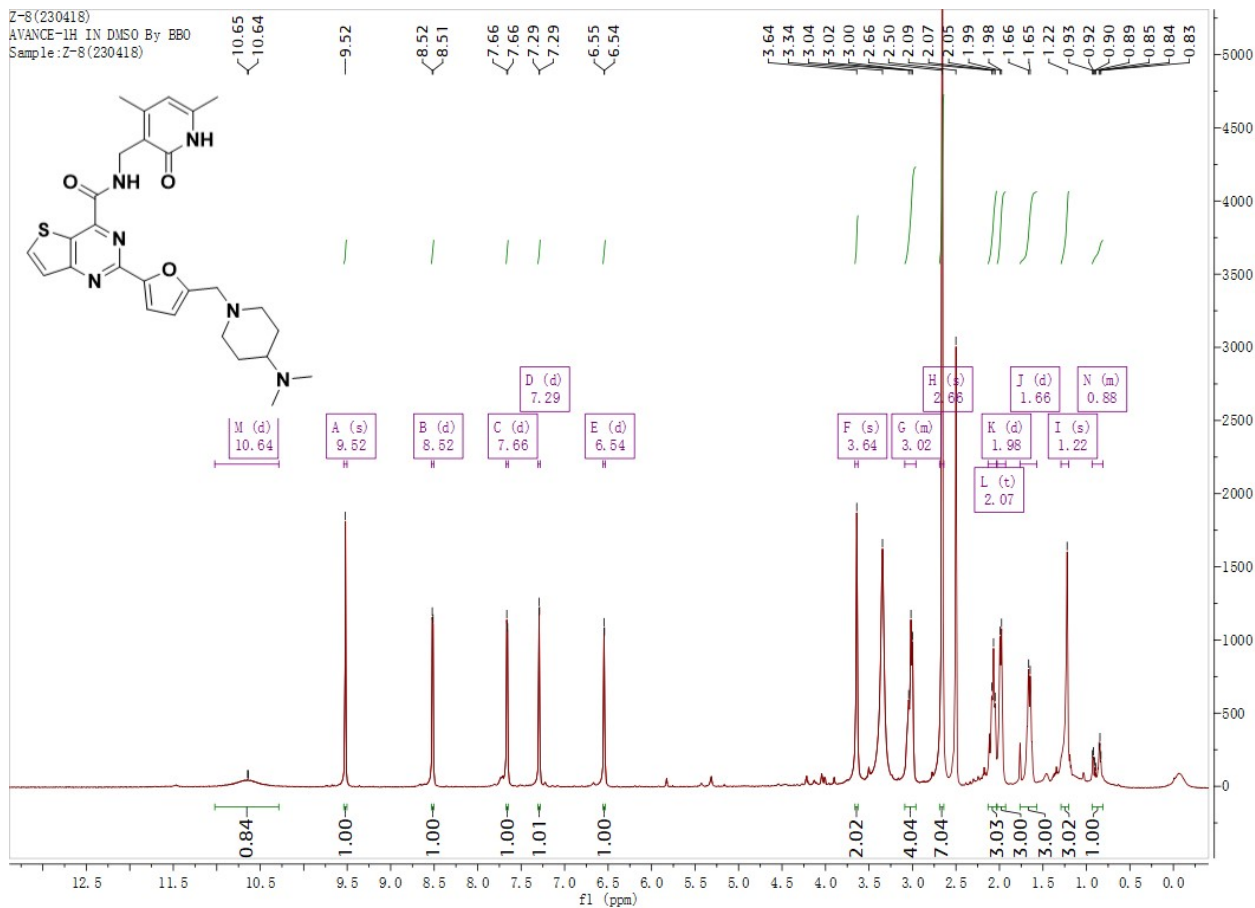
### <sup>1</sup>H NMR spectrum of compound 9a3



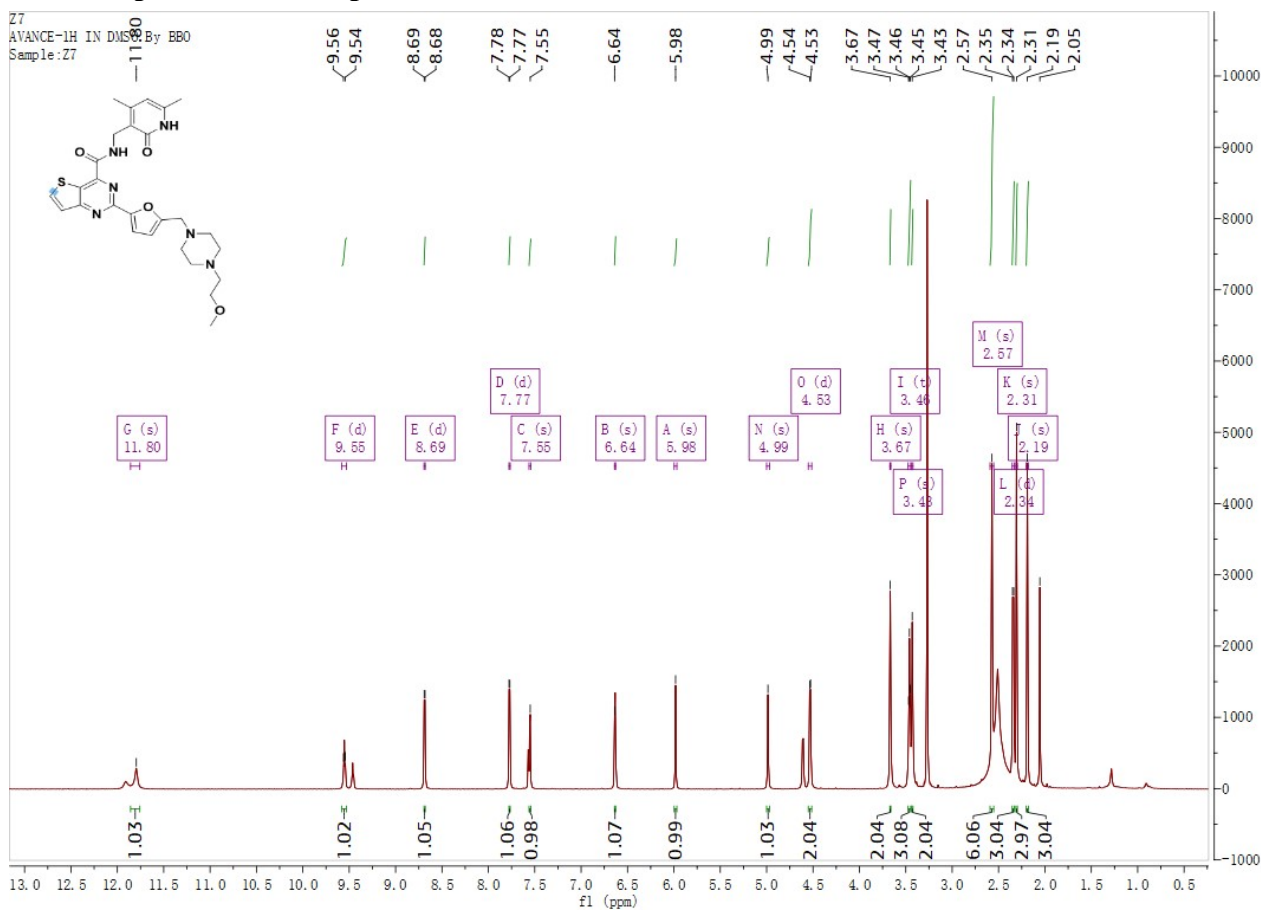
### <sup>1</sup>H NMR spectrum of compound 9a4



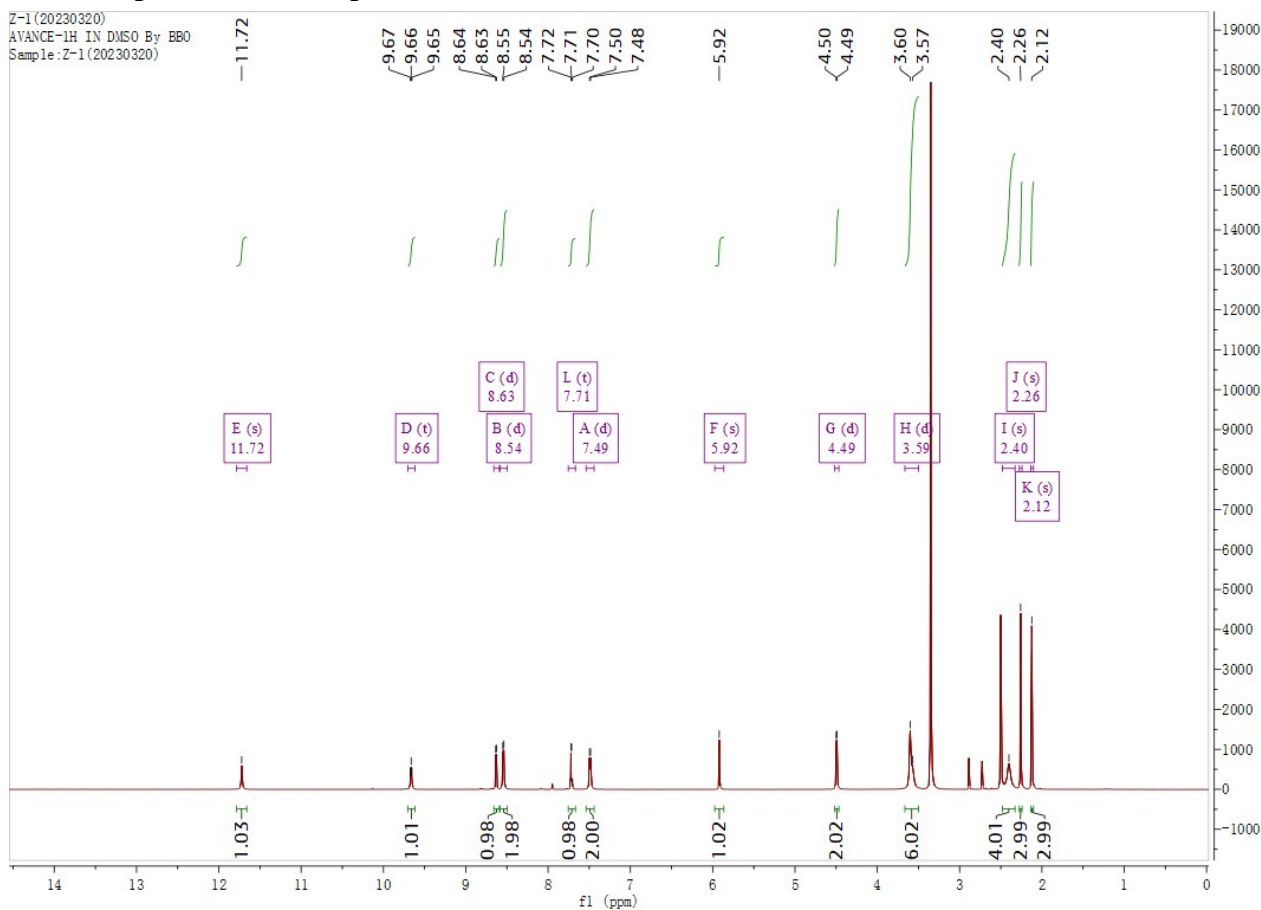
### <sup>1</sup>H NMR spectrum of compound 9a5



### <sup>1</sup>H NMR spectrum of compound 9a6

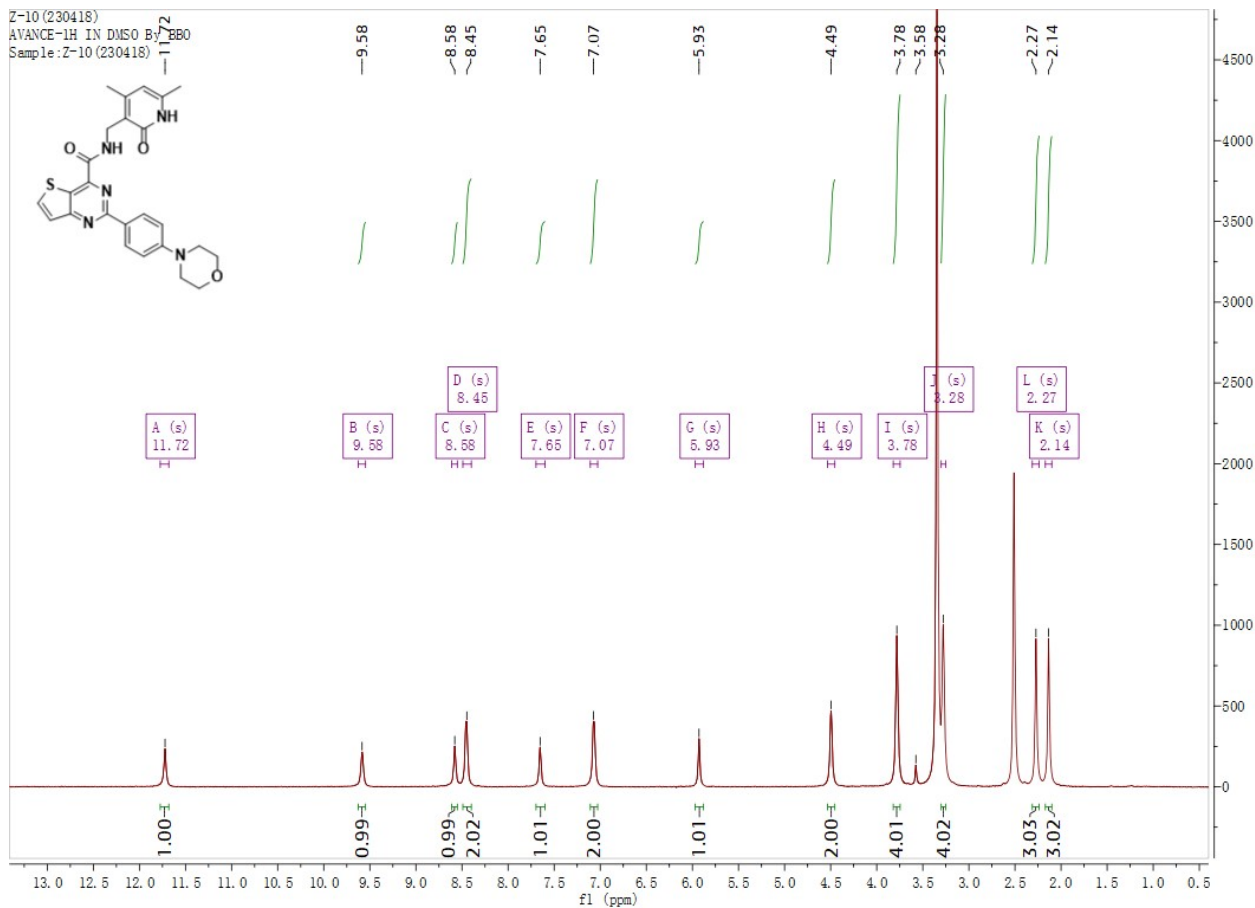


### <sup>1</sup>H NMR spectrum of compound 12a

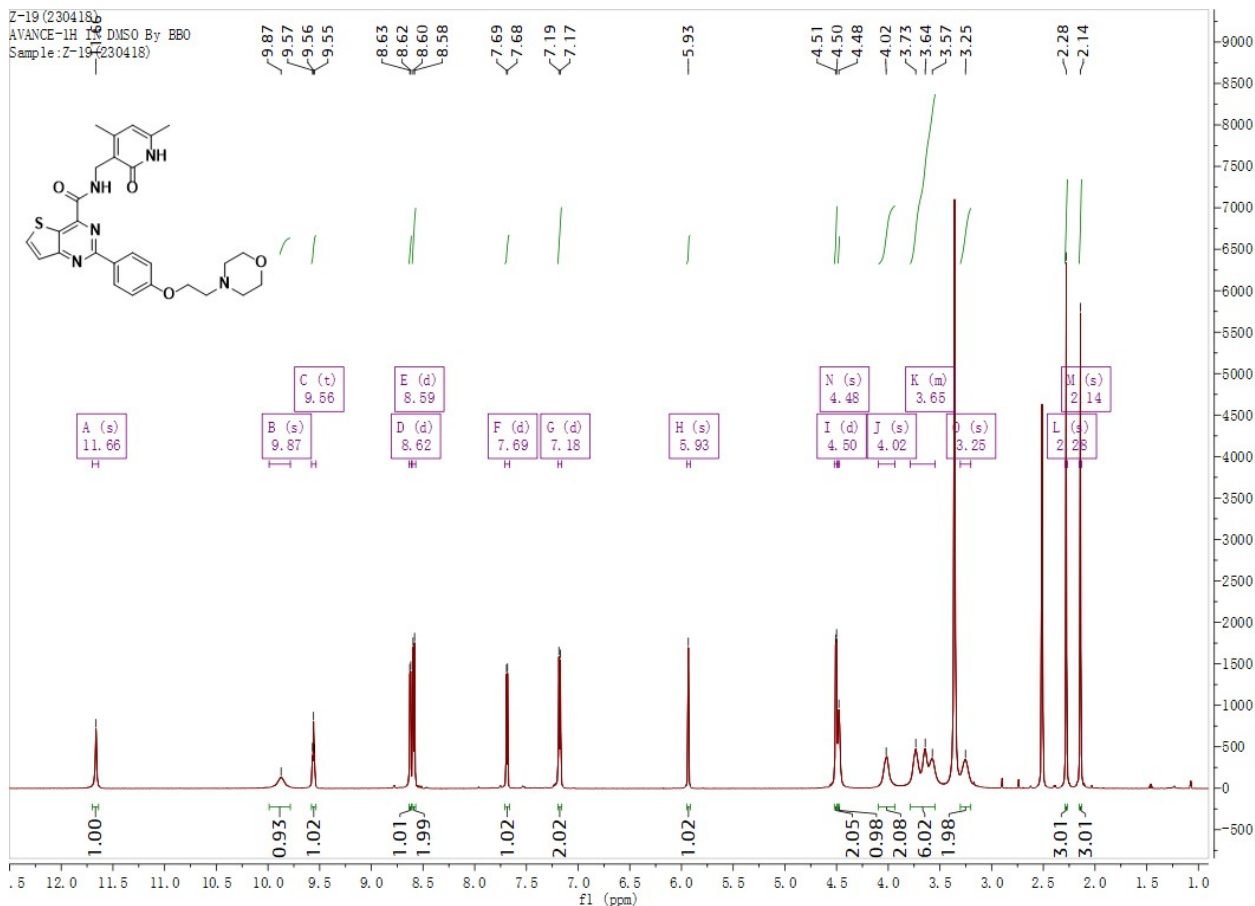




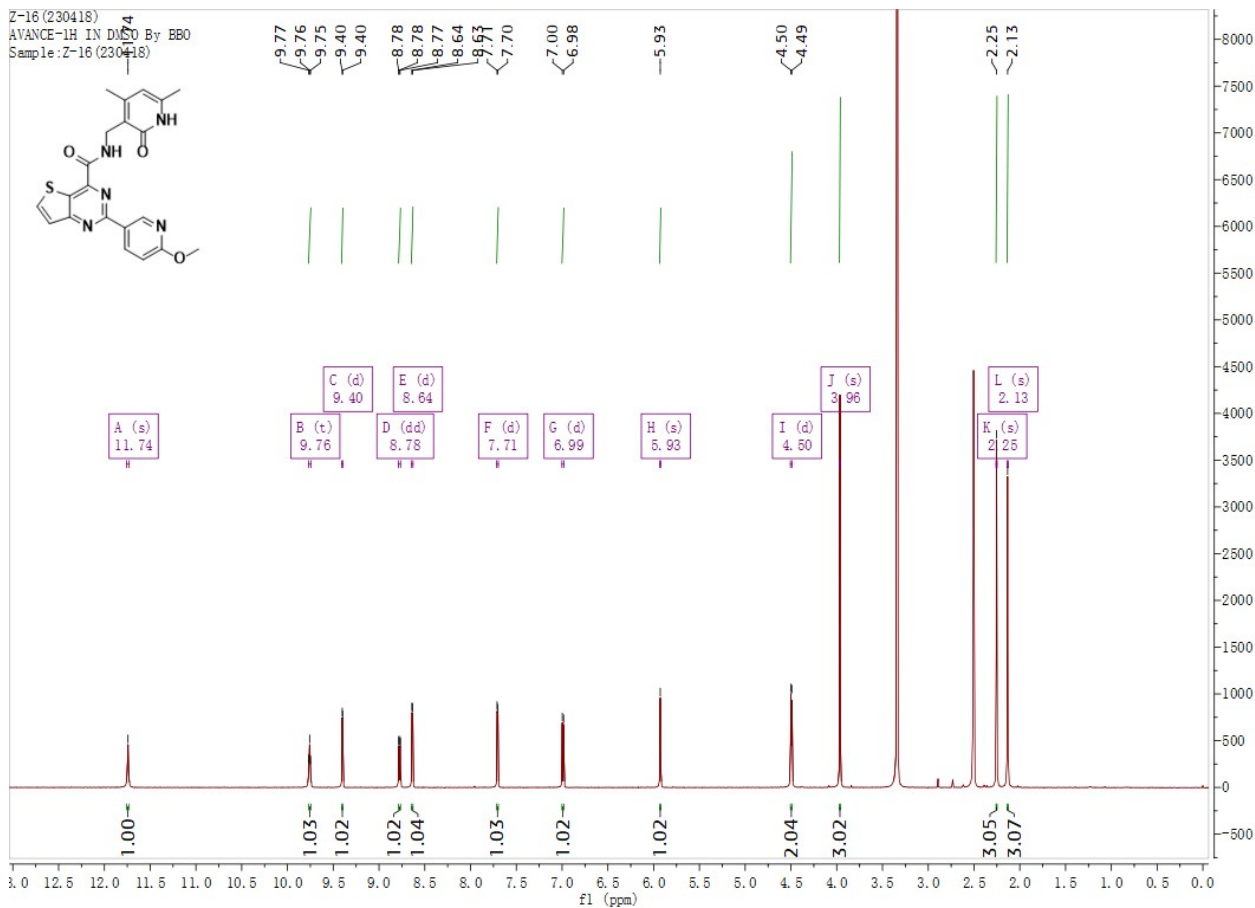
### <sup>1</sup>H NMR spectrum of compound 12b



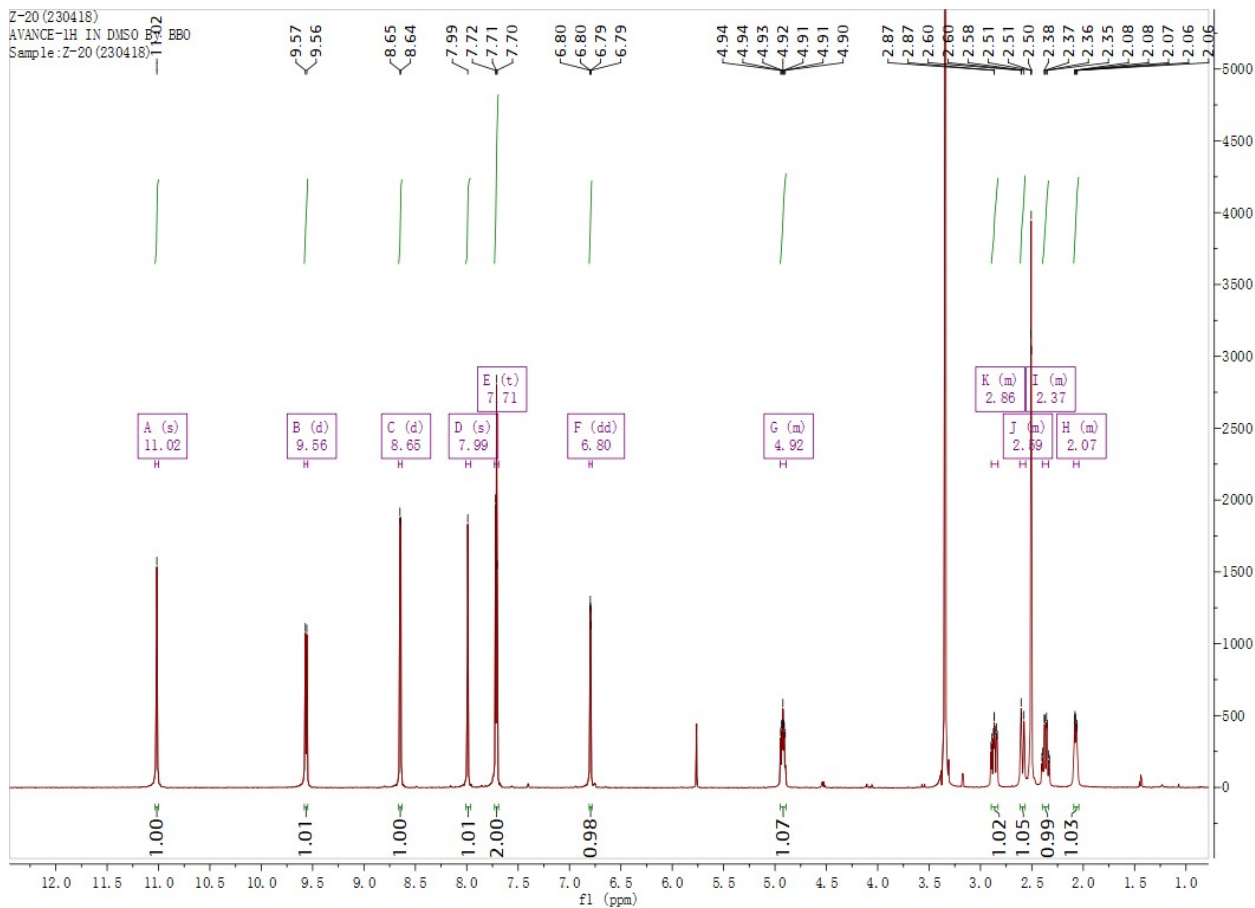
### <sup>1</sup>H NMR spectrum of compound 12c



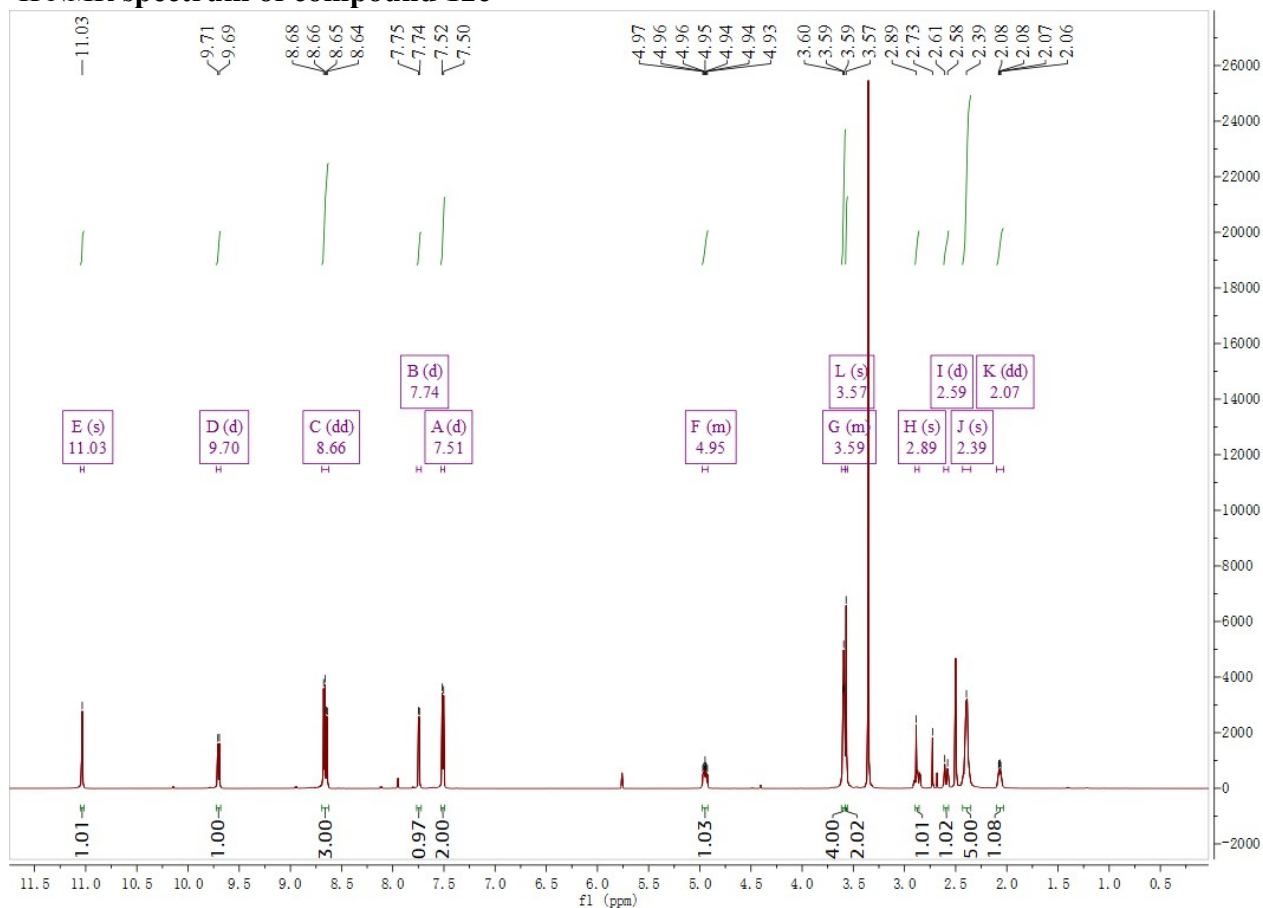
### <sup>1</sup>H NMR spectrum of compound 12d



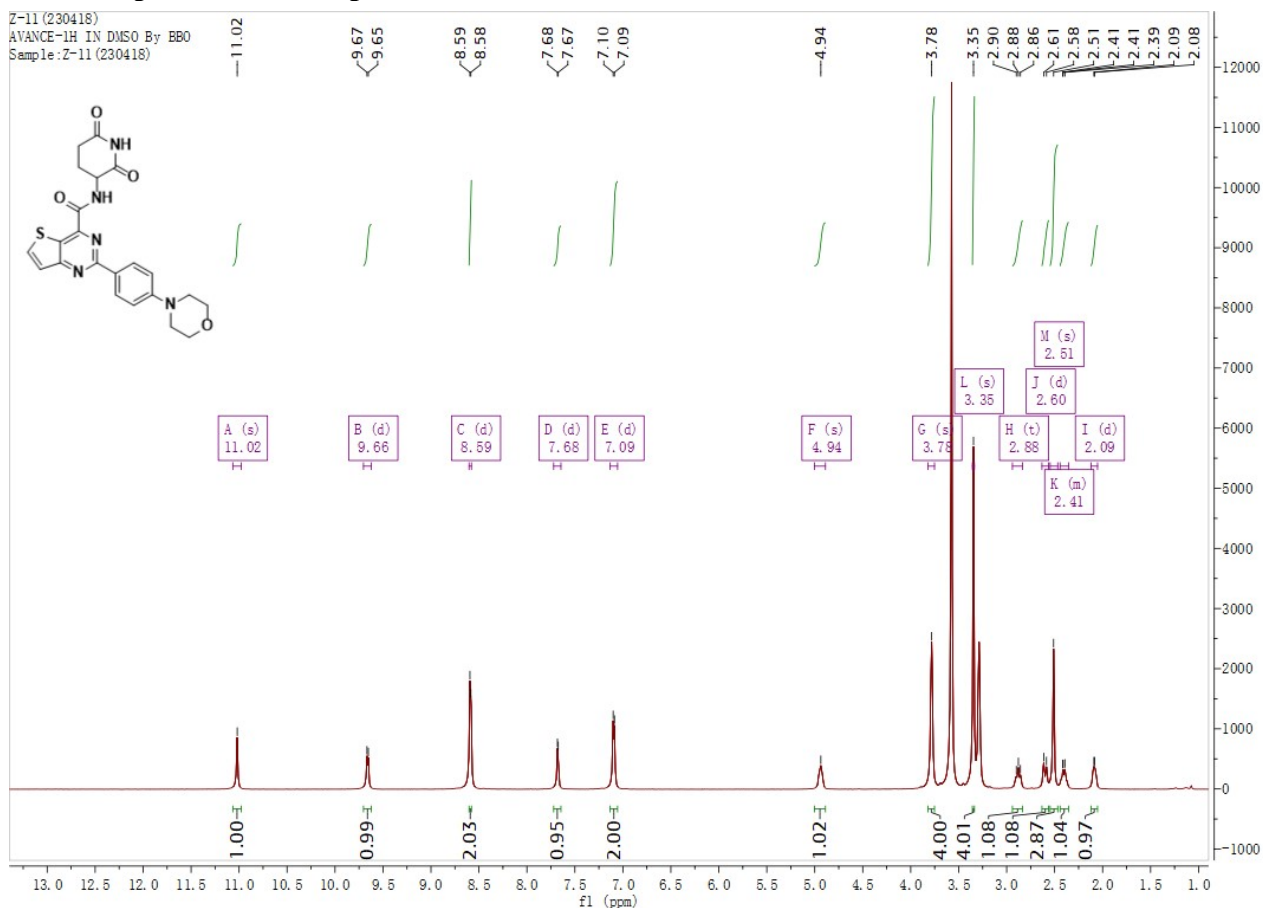
### <sup>1</sup>H NMR spectrum of compound 8b



### <sup>1</sup>H NMR spectrum of compound 12e

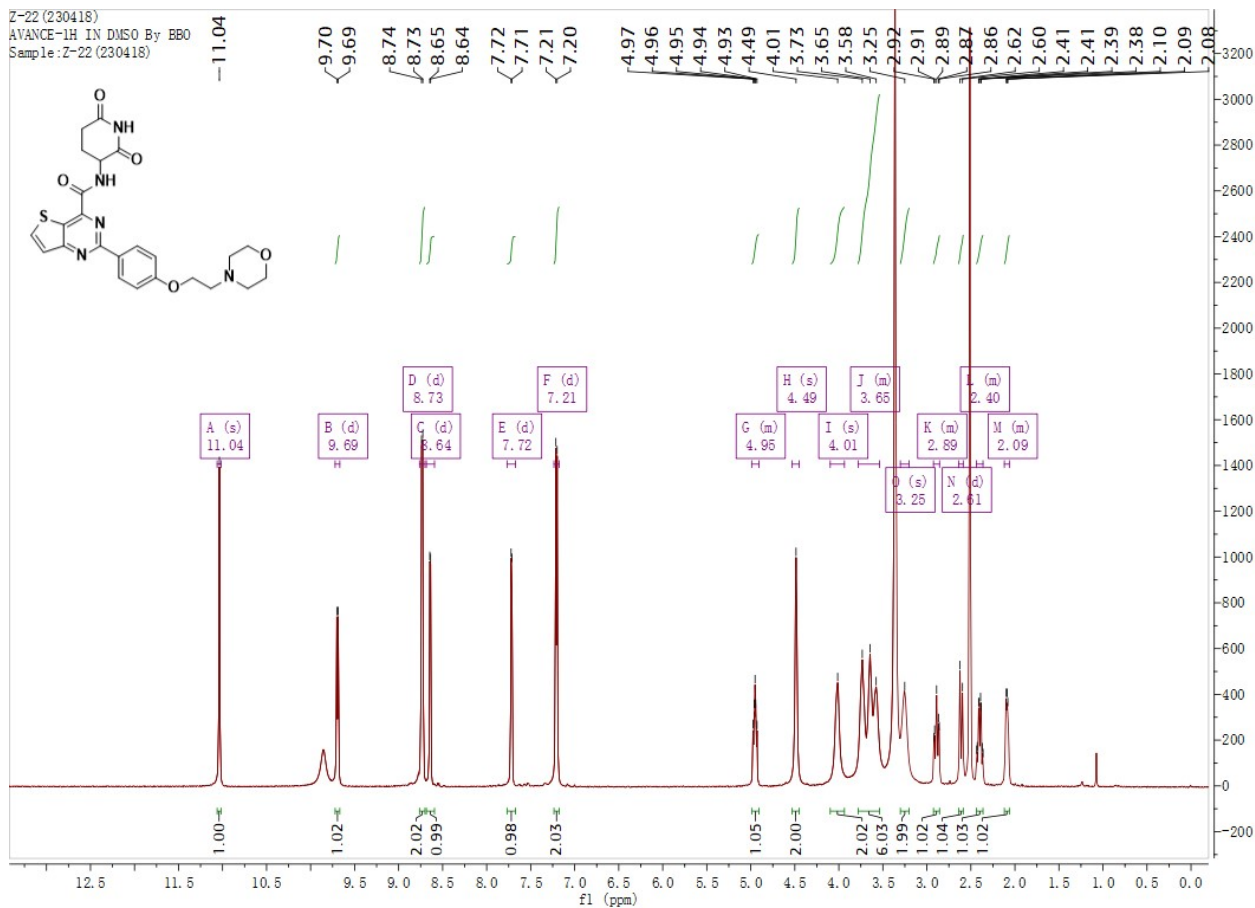


### <sup>1</sup>H NMR spectrum of compound 12f

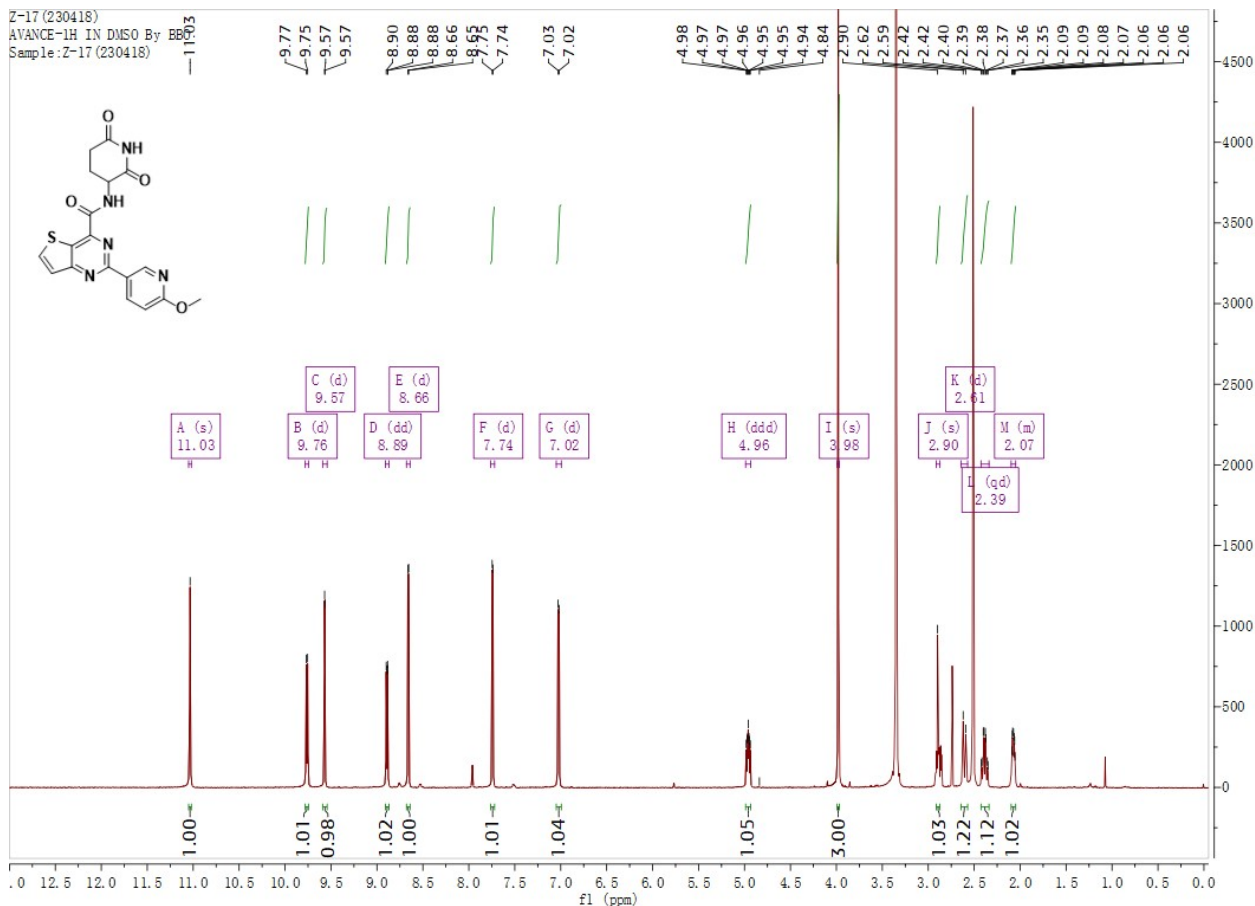




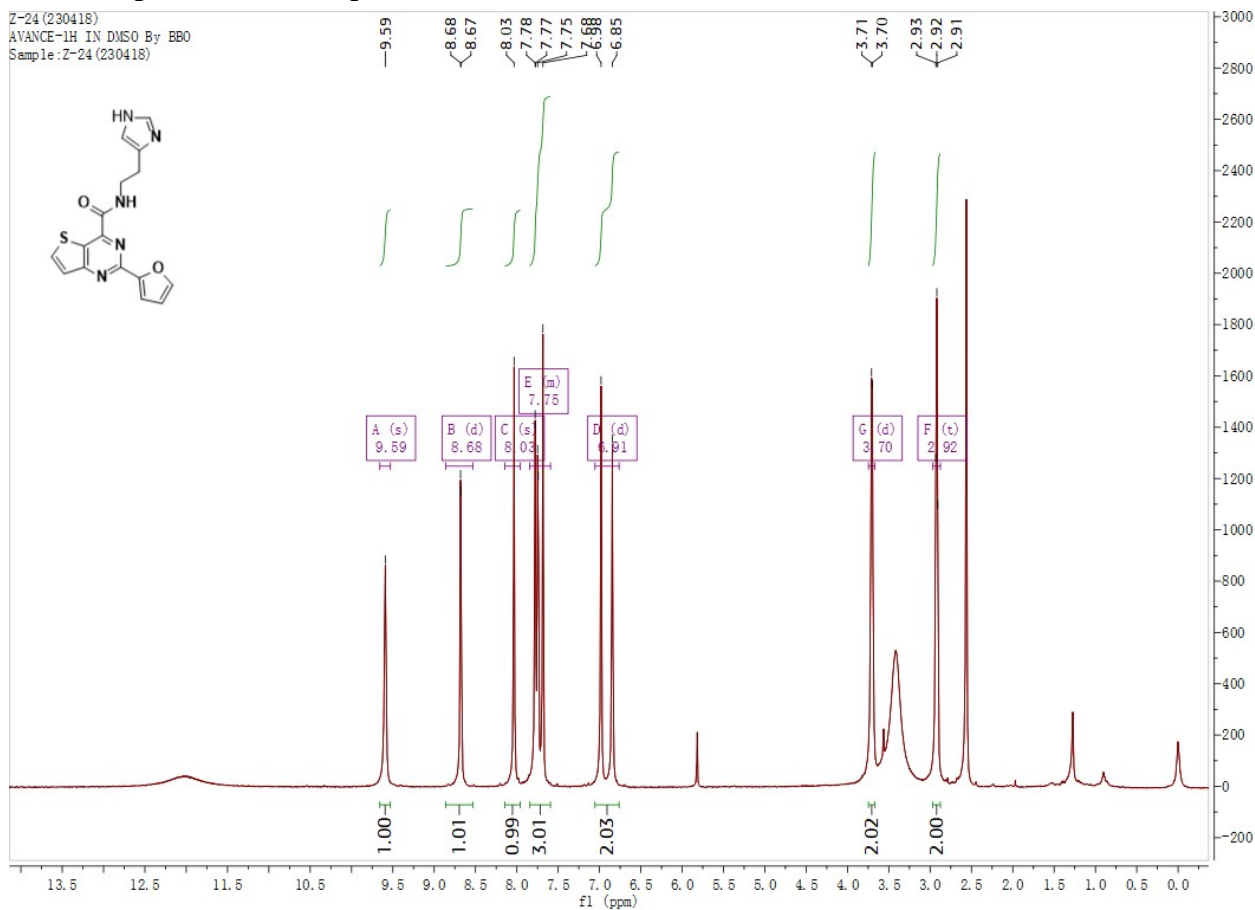
# <sup>1</sup>H NMR spectrum of compound 12g



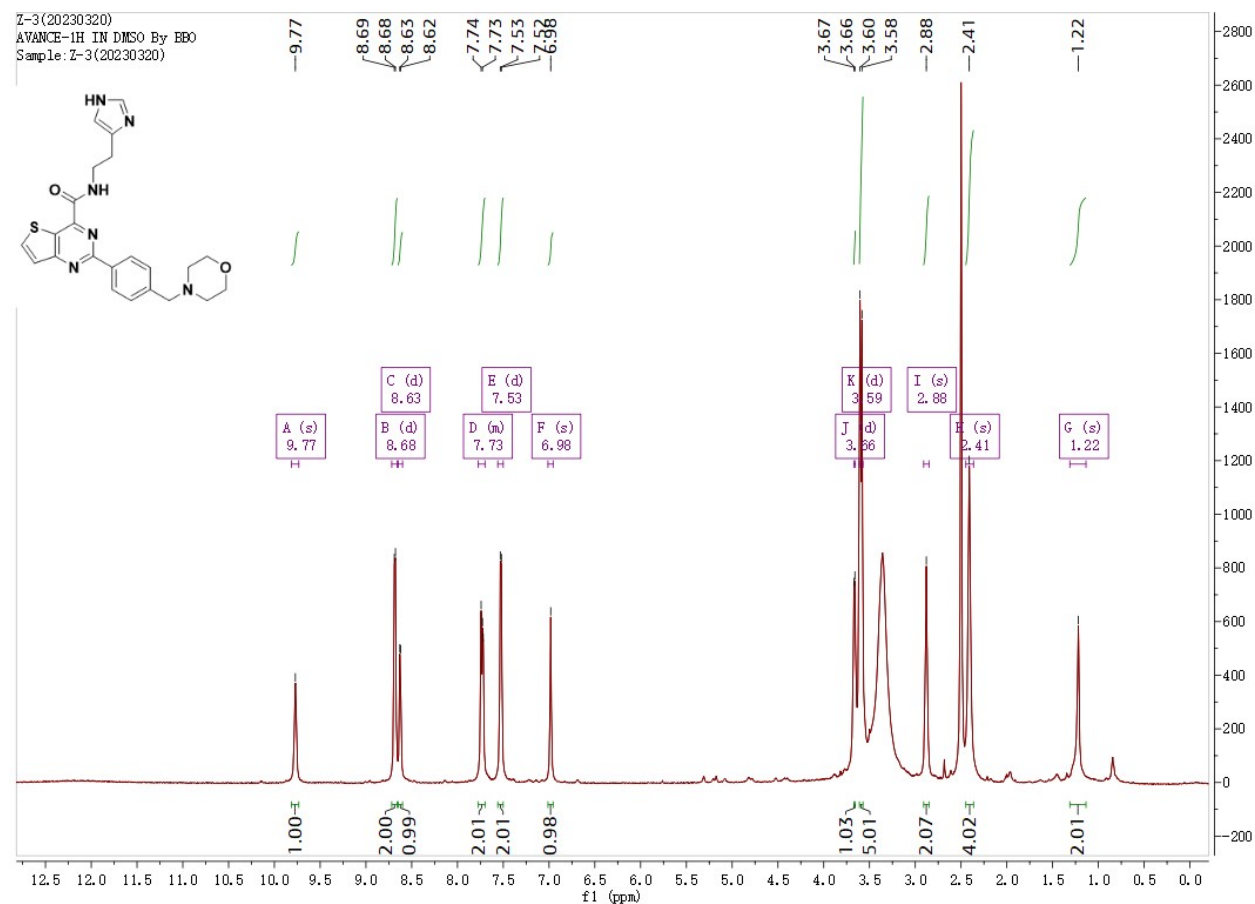
# <sup>1</sup>H NMR spectrum of compound 12h



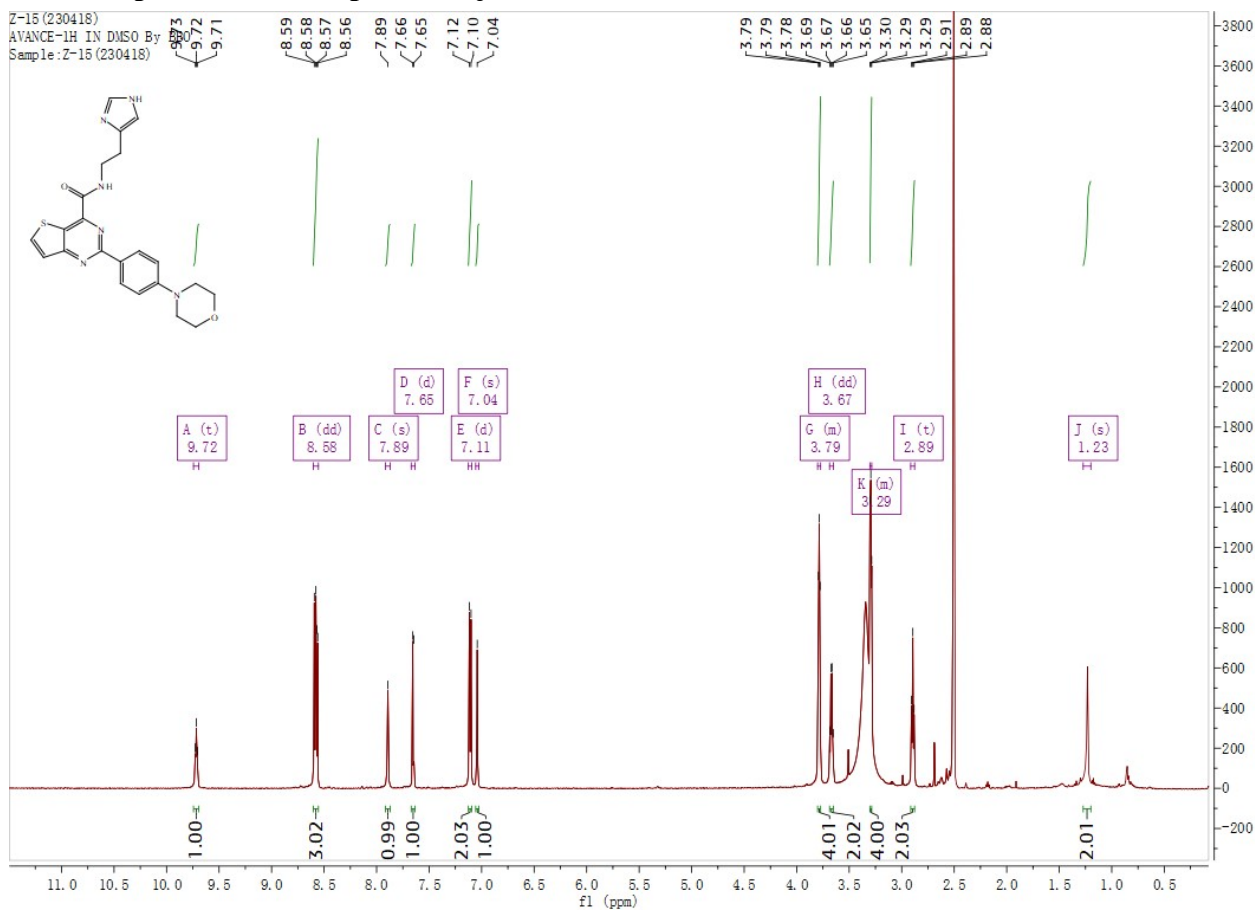
### <sup>1</sup>H NMR spectrum of compound 8c



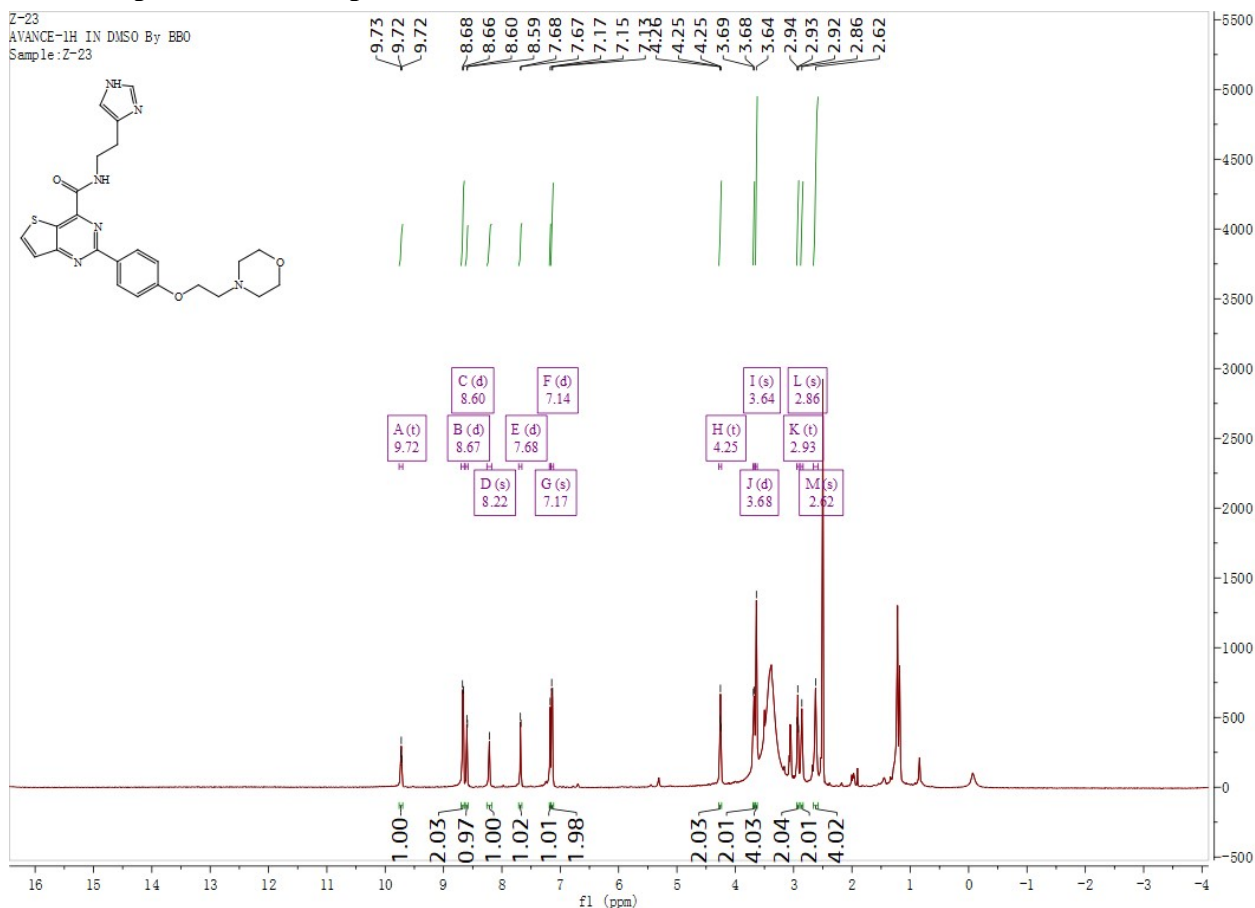
### <sup>1</sup>H NMR spectrum of compound 12i



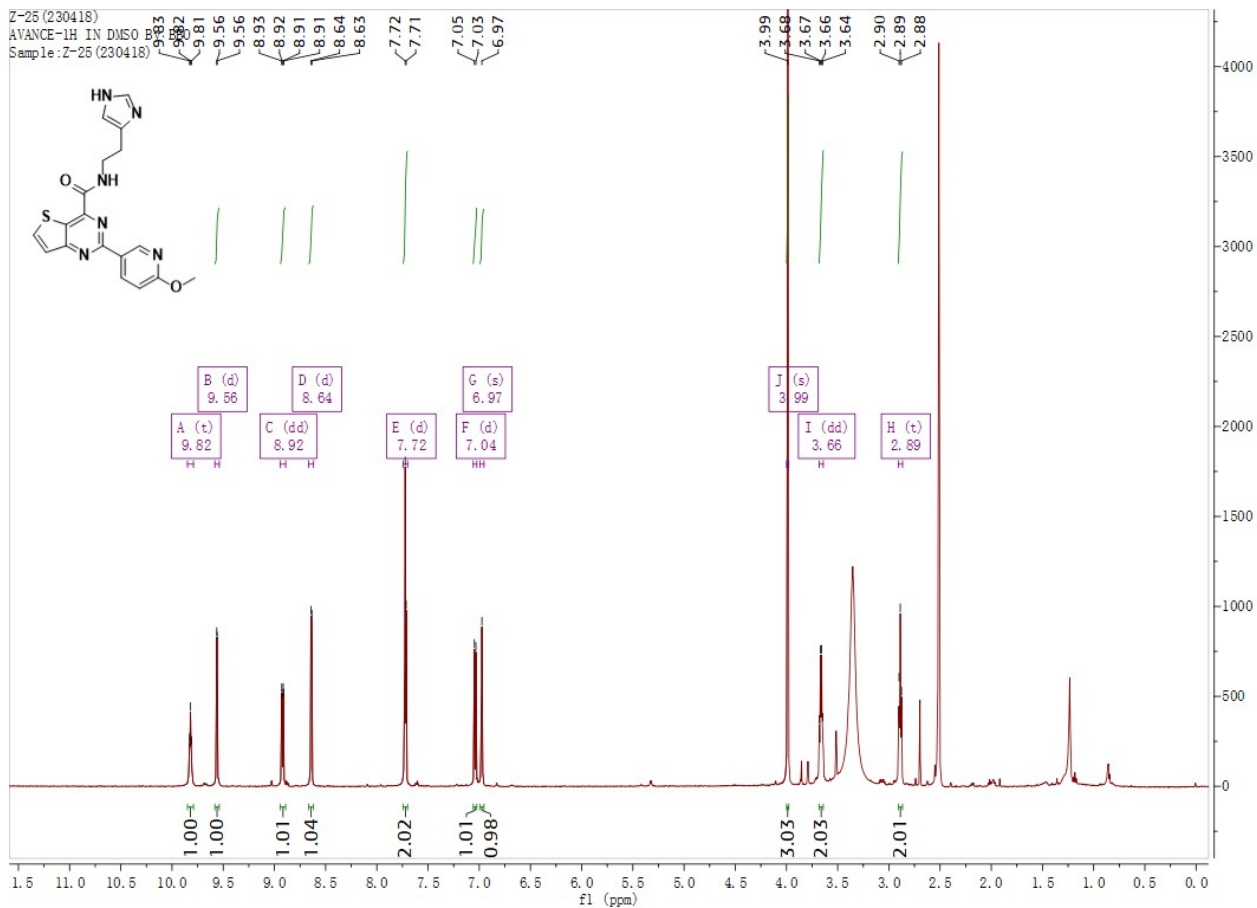
### <sup>1</sup>H NMR spectrum of compound 12j



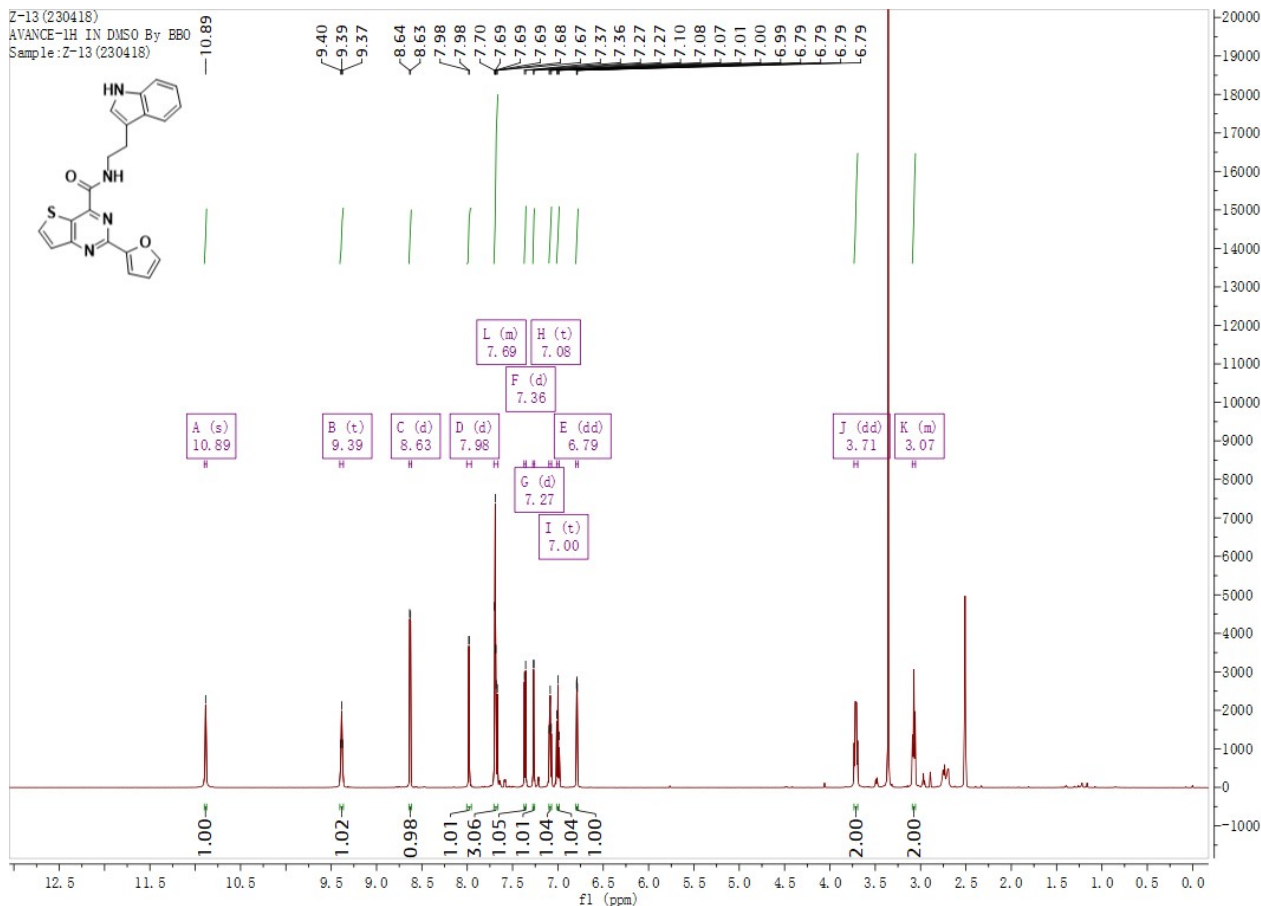
### <sup>1</sup>H NMR spectrum of compound 12k



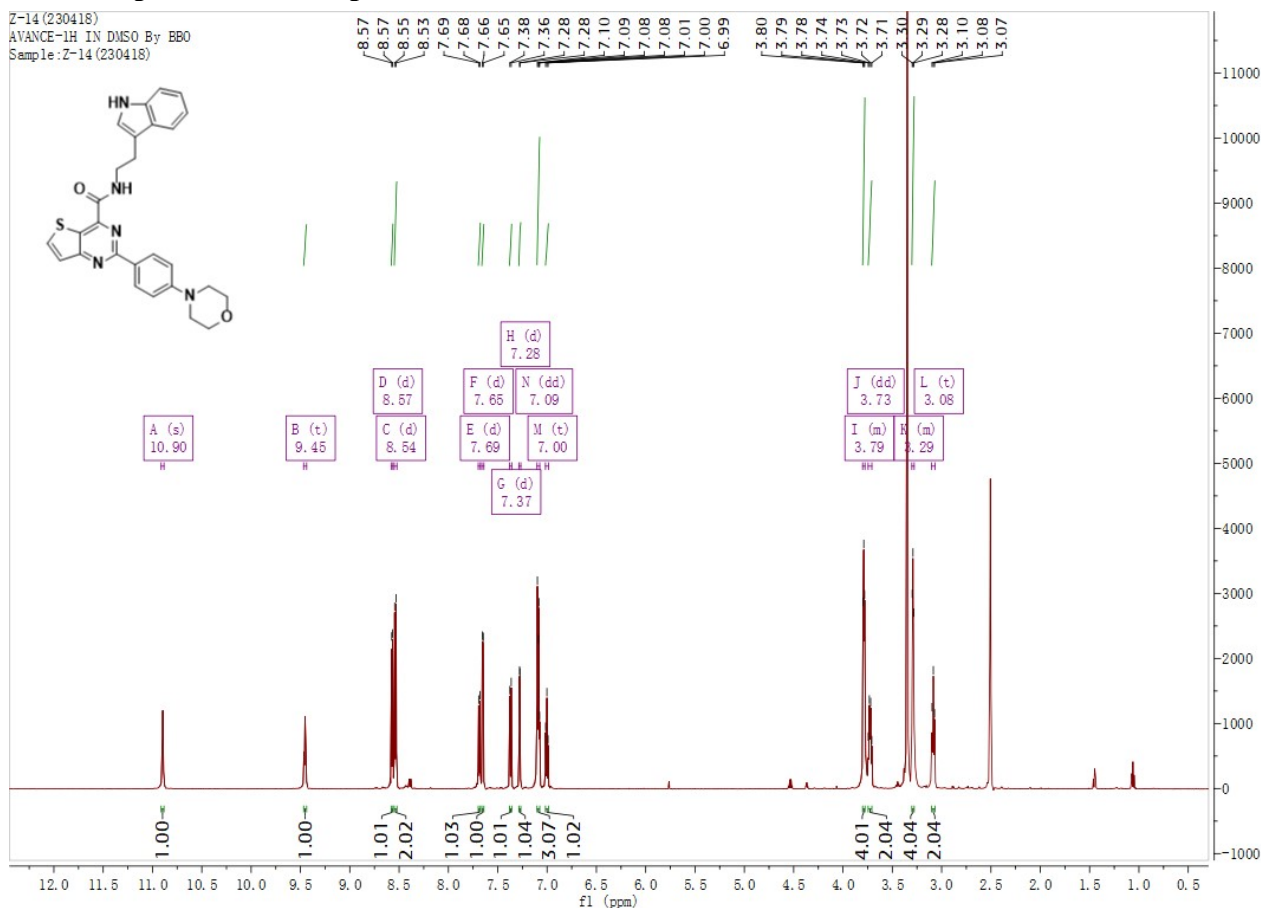
### <sup>1</sup>H NMR spectrum of compound 12l



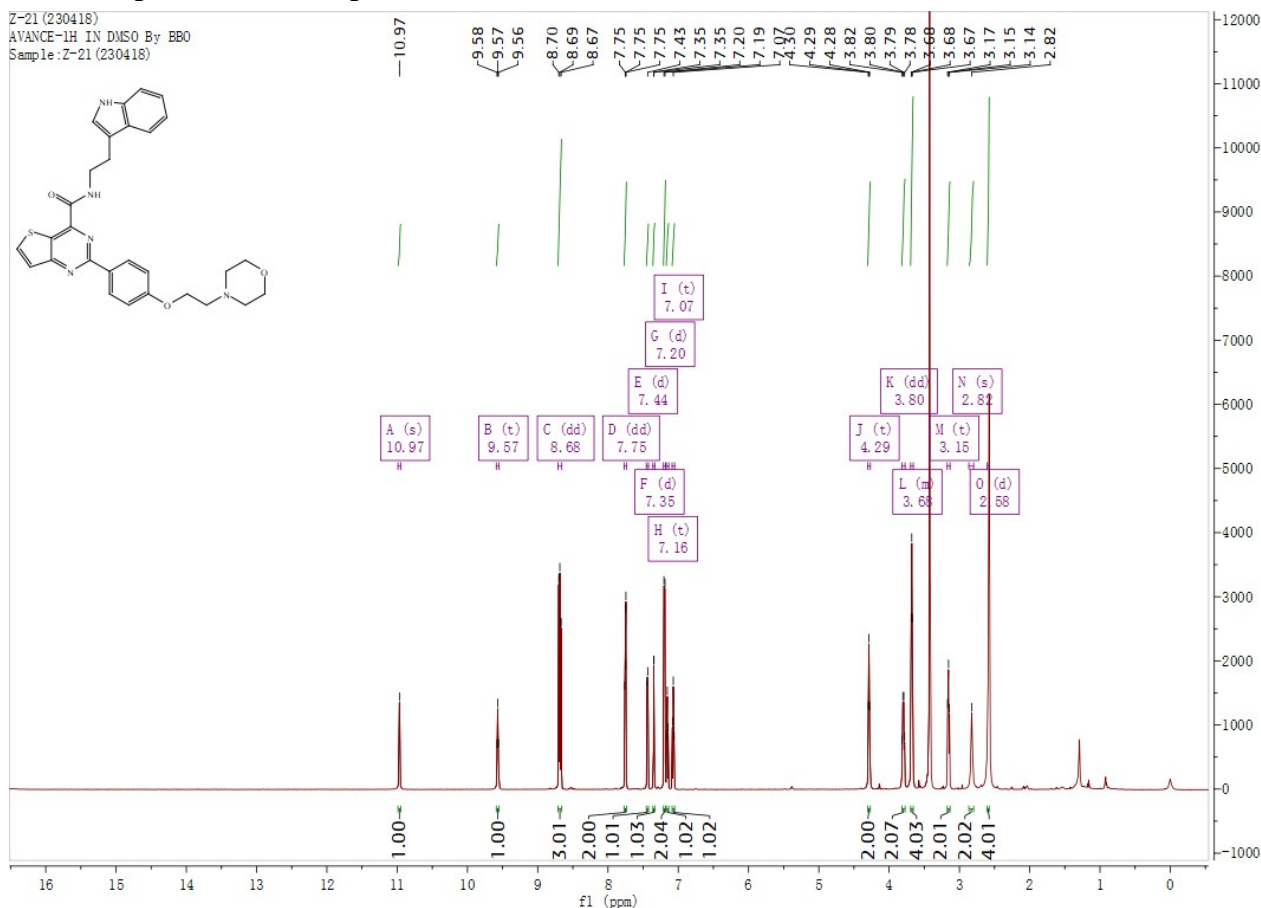
### <sup>1</sup>H NMR spectrum of compound 8d



### <sup>1</sup>H NMR spectrum of compound 12m

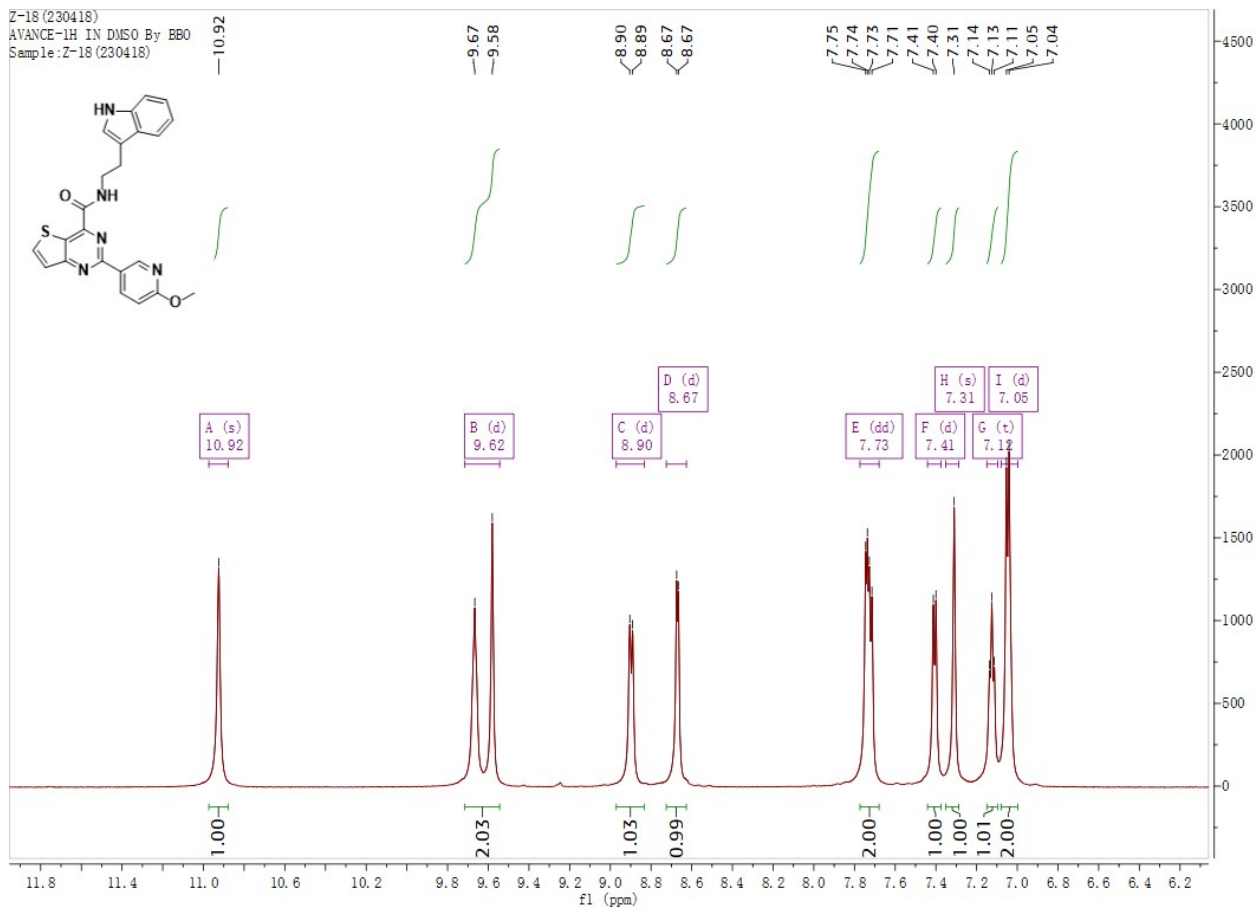


### <sup>1</sup>H NMR spectrum of compound 12n

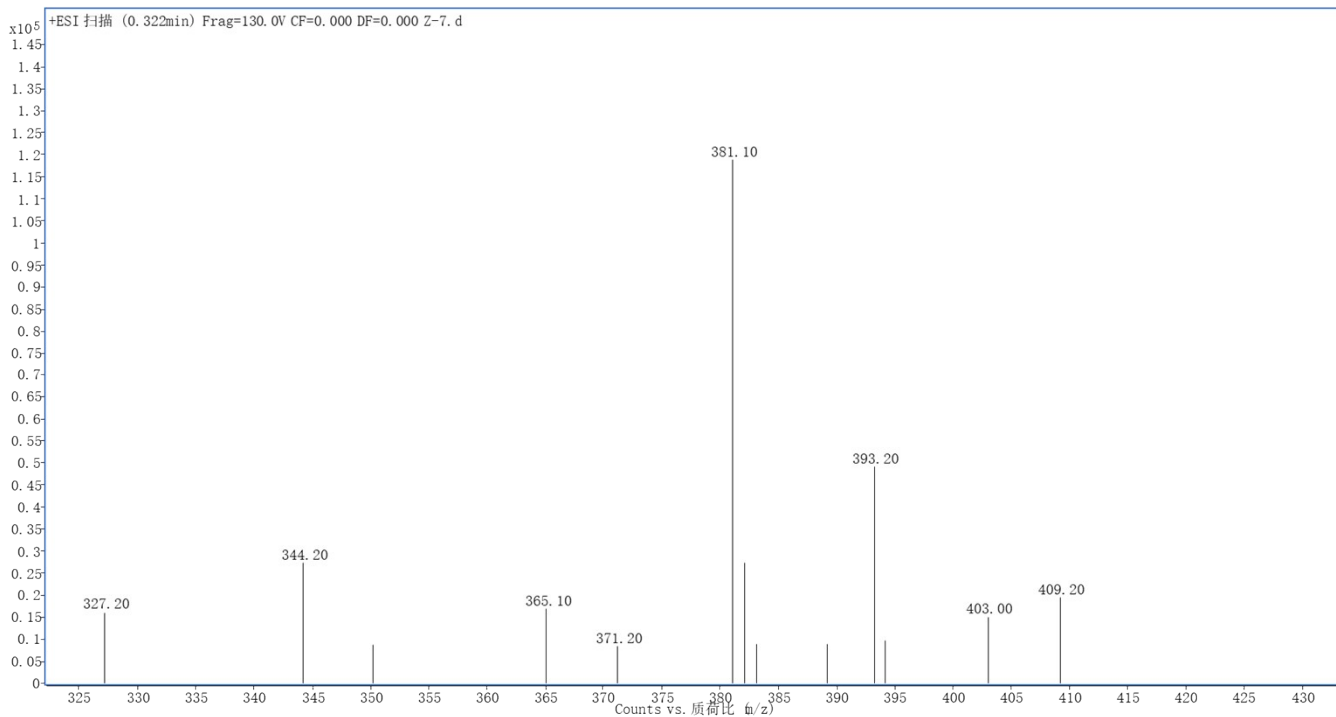




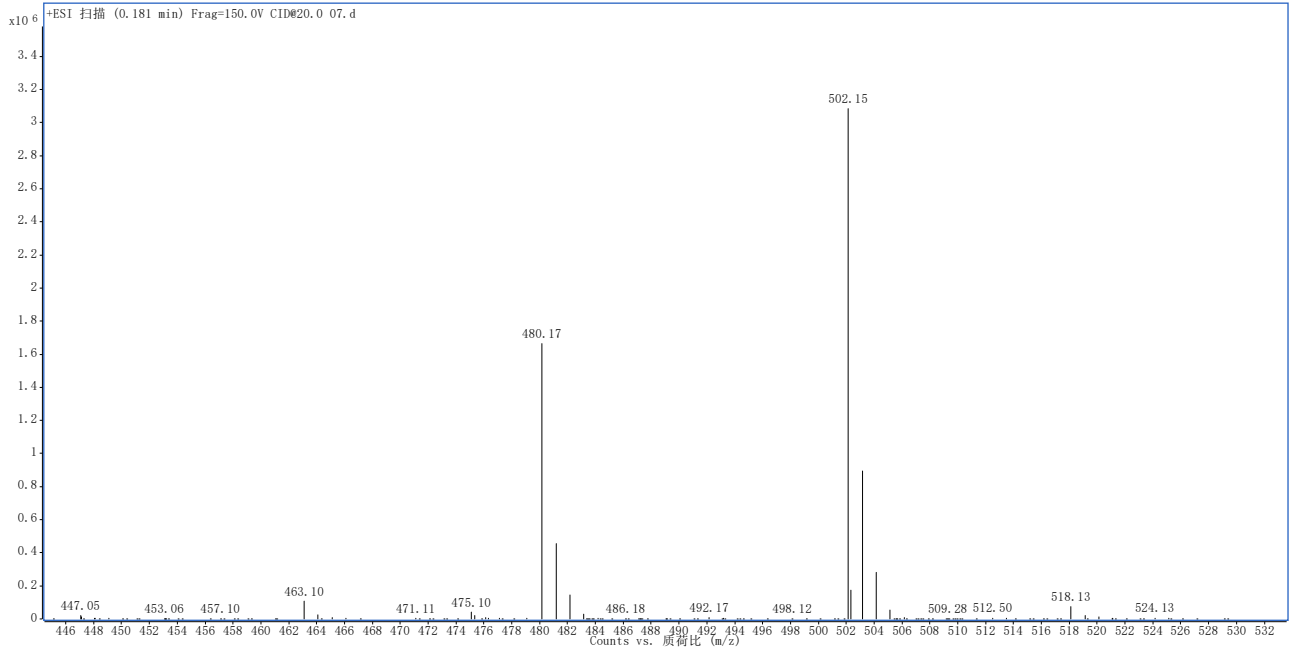
# <sup>1</sup>H NMR spectrum of compound 12o



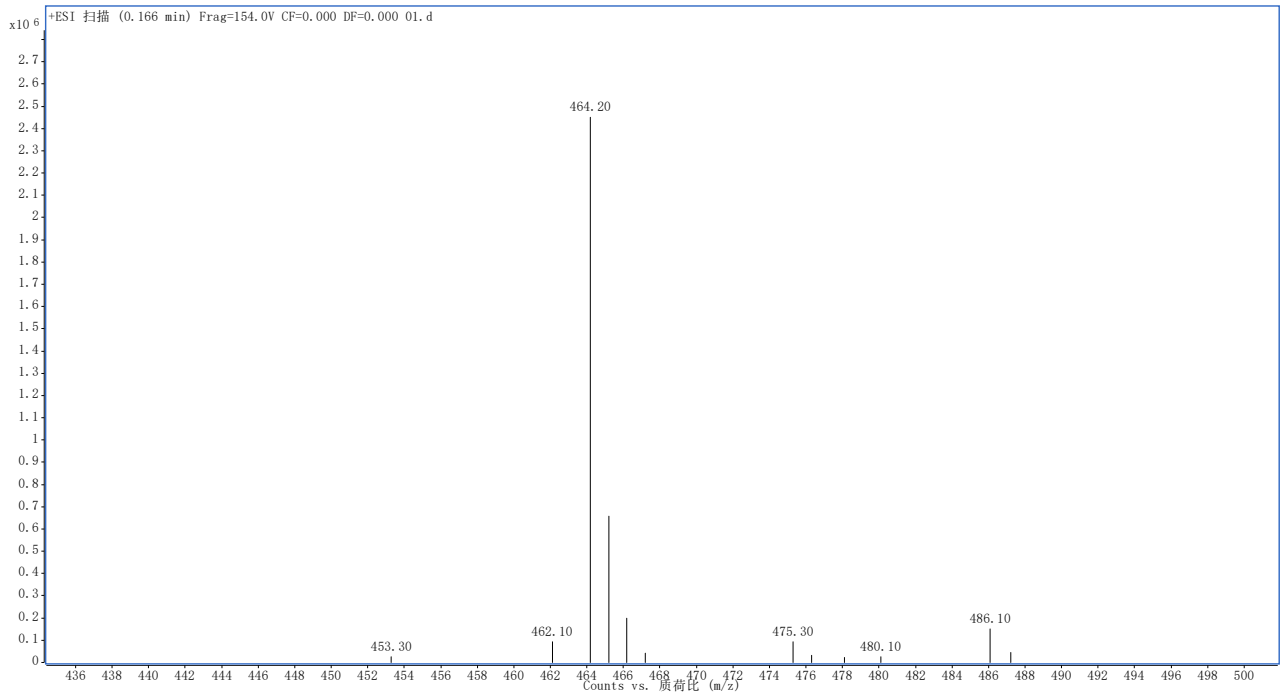
# MS spectrum of compound 8a



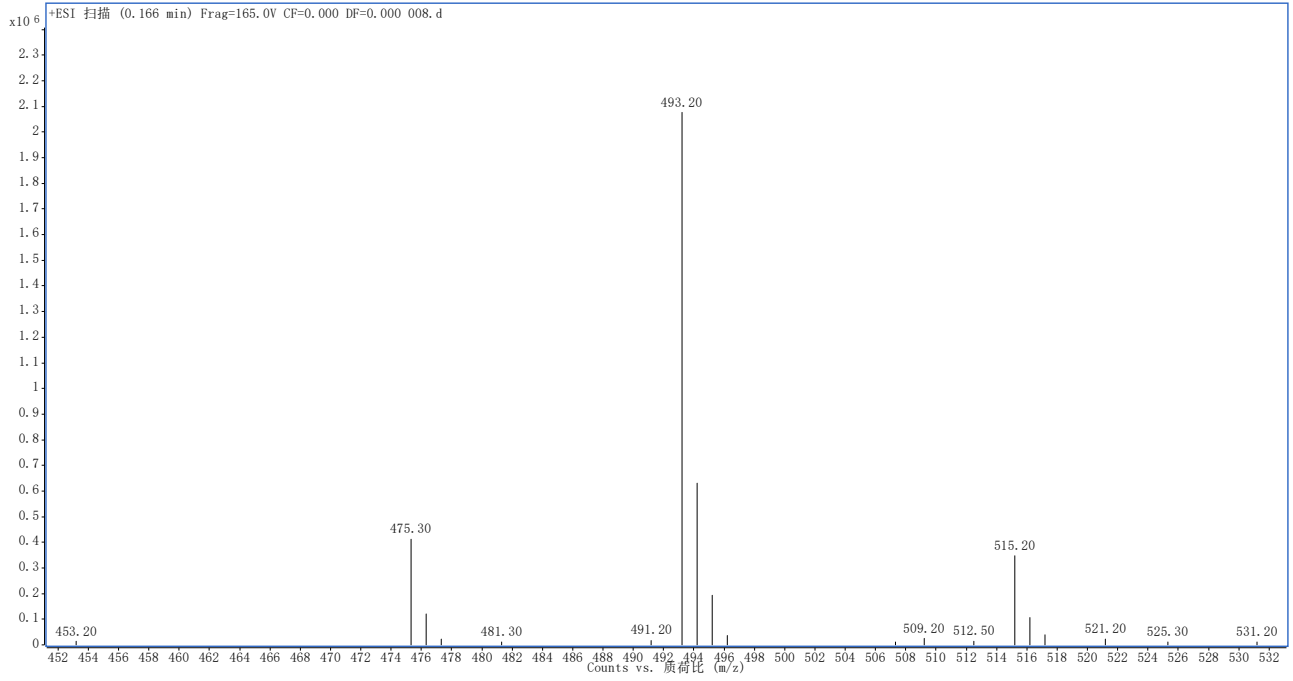
# MS spectrum of compound 9a1



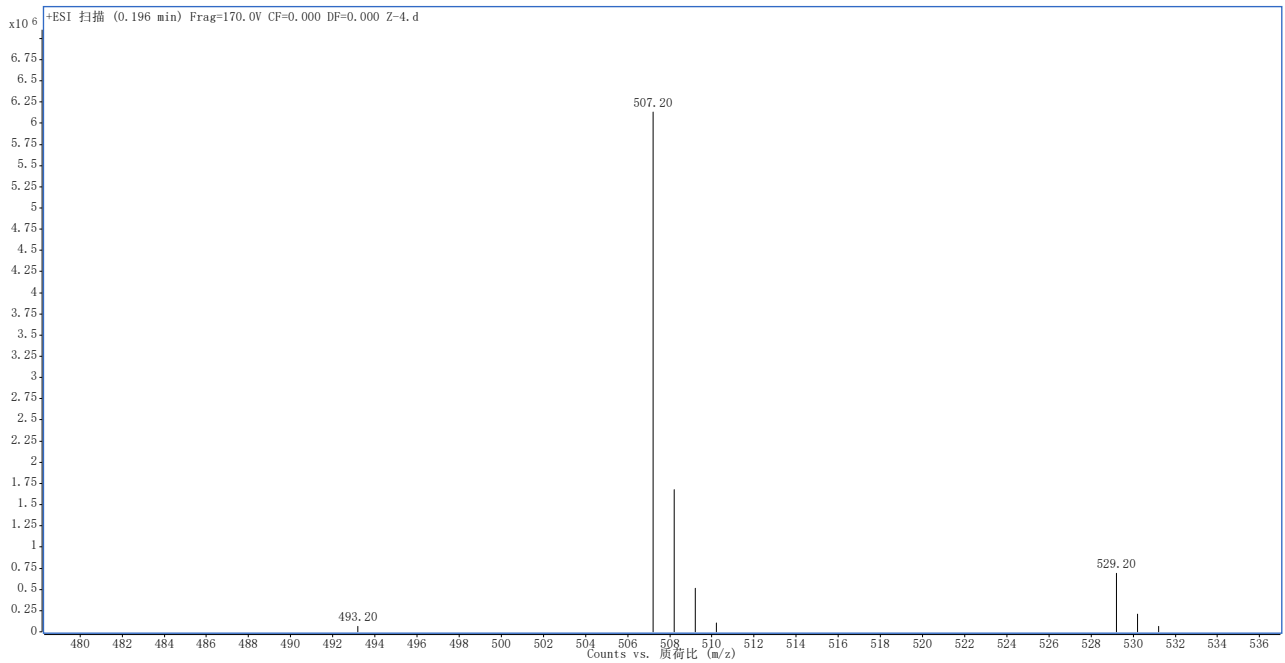
# MS spectrum of compound 9a2



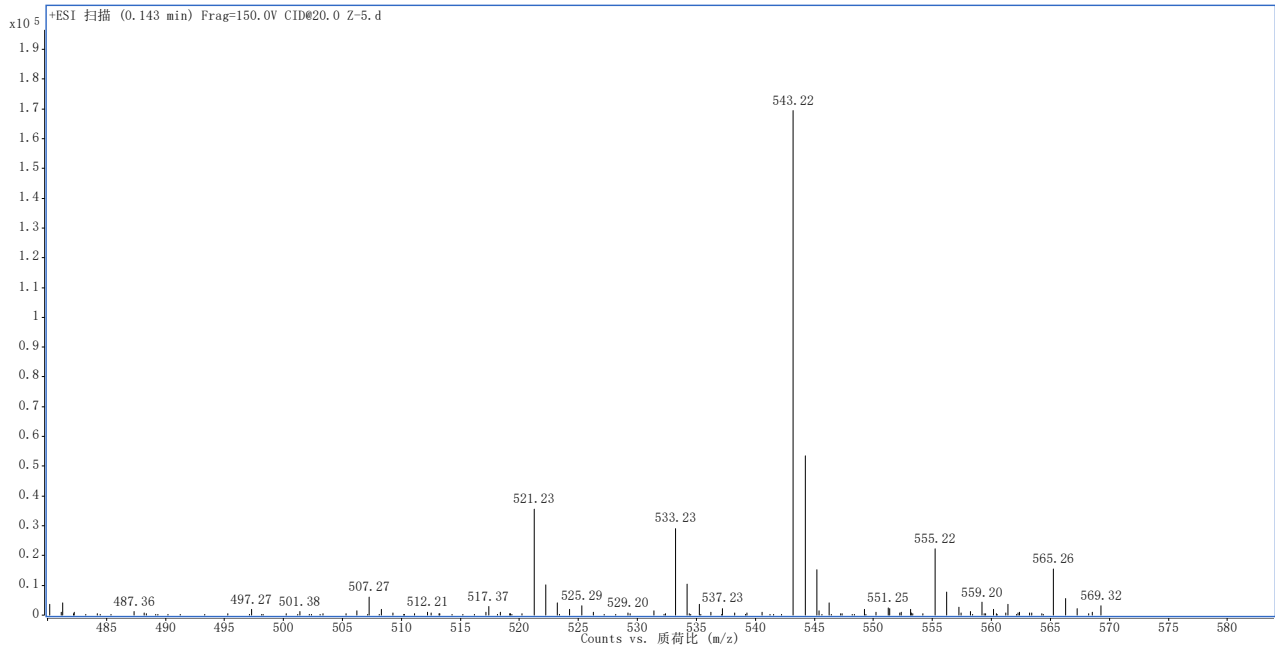
### MS spectrum of compound 9a3



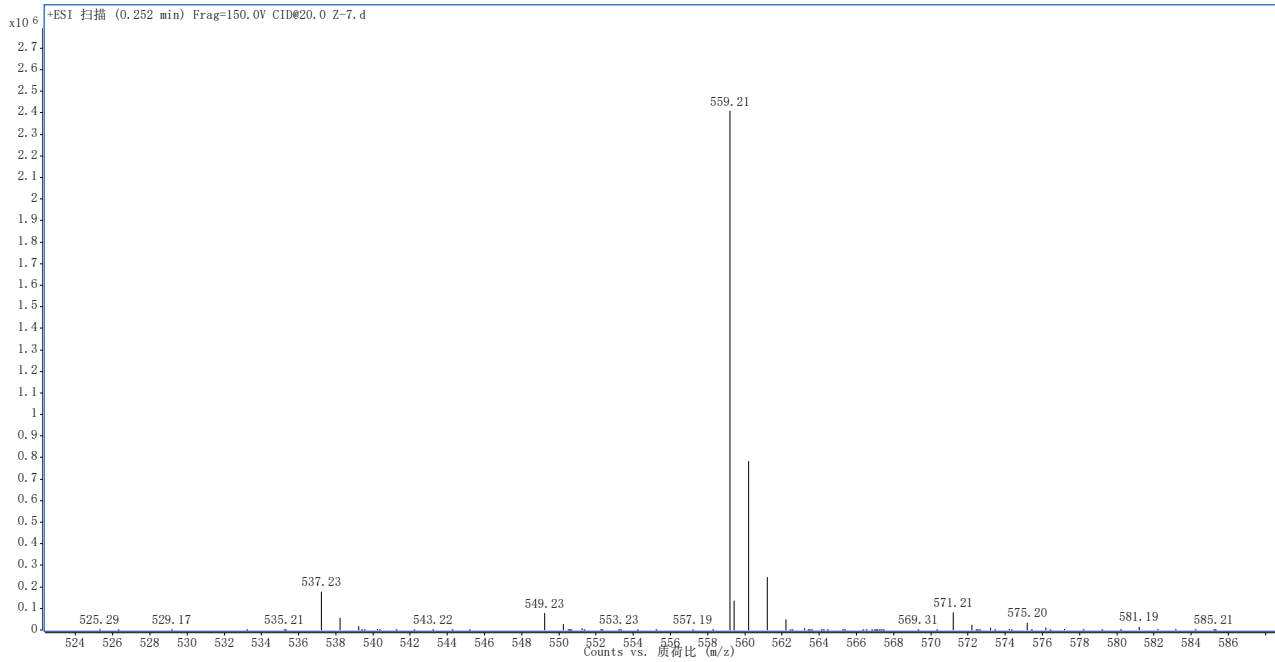
### MS spectrum of compound 9a4



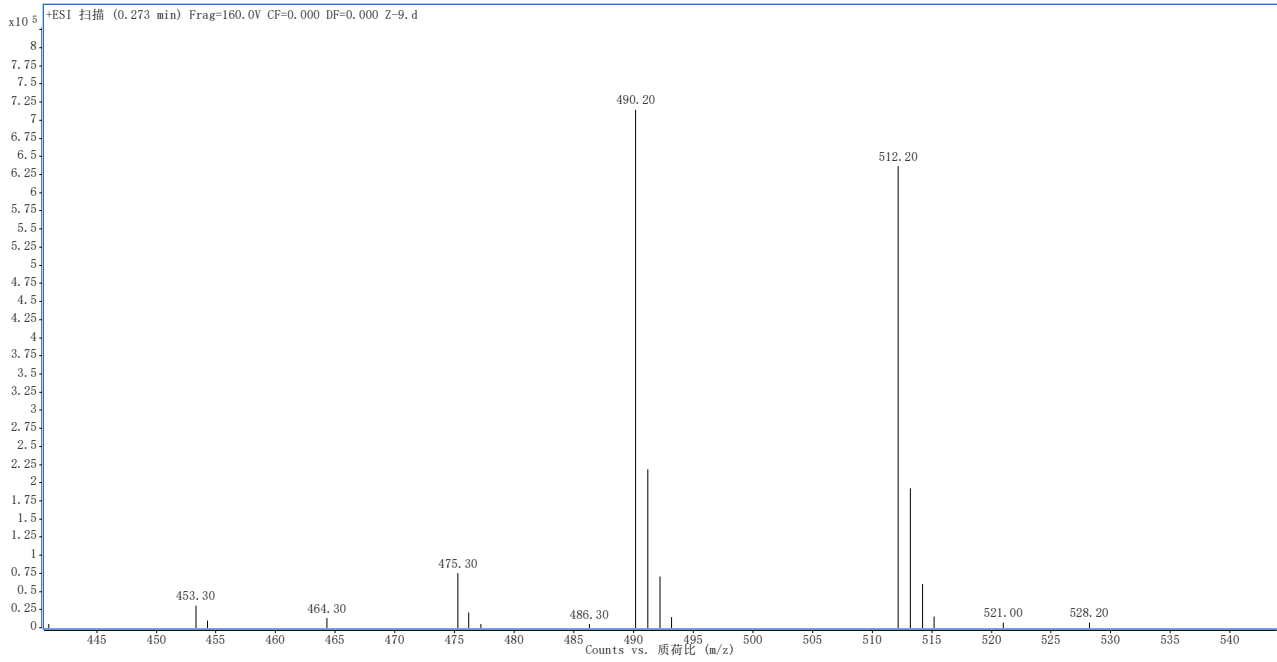
## MS spectrum of compound 9a5



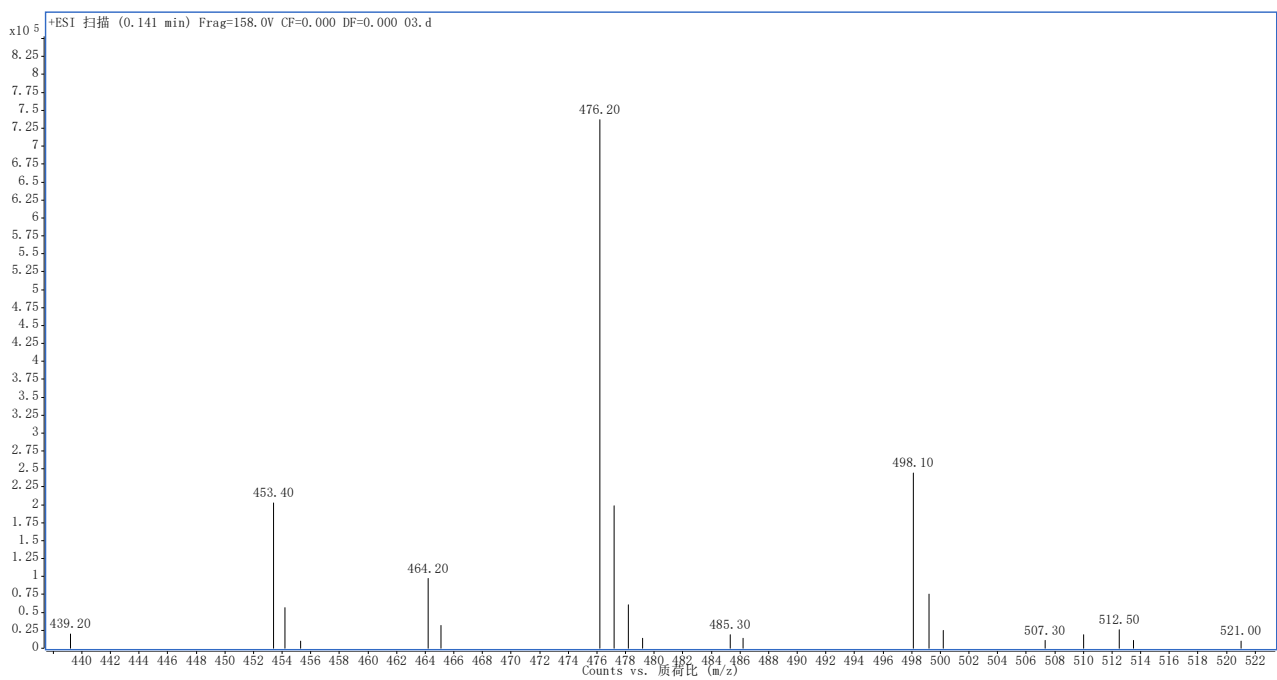
## MS spectrum of compound 9a6



## MS spectrum of compound 12a

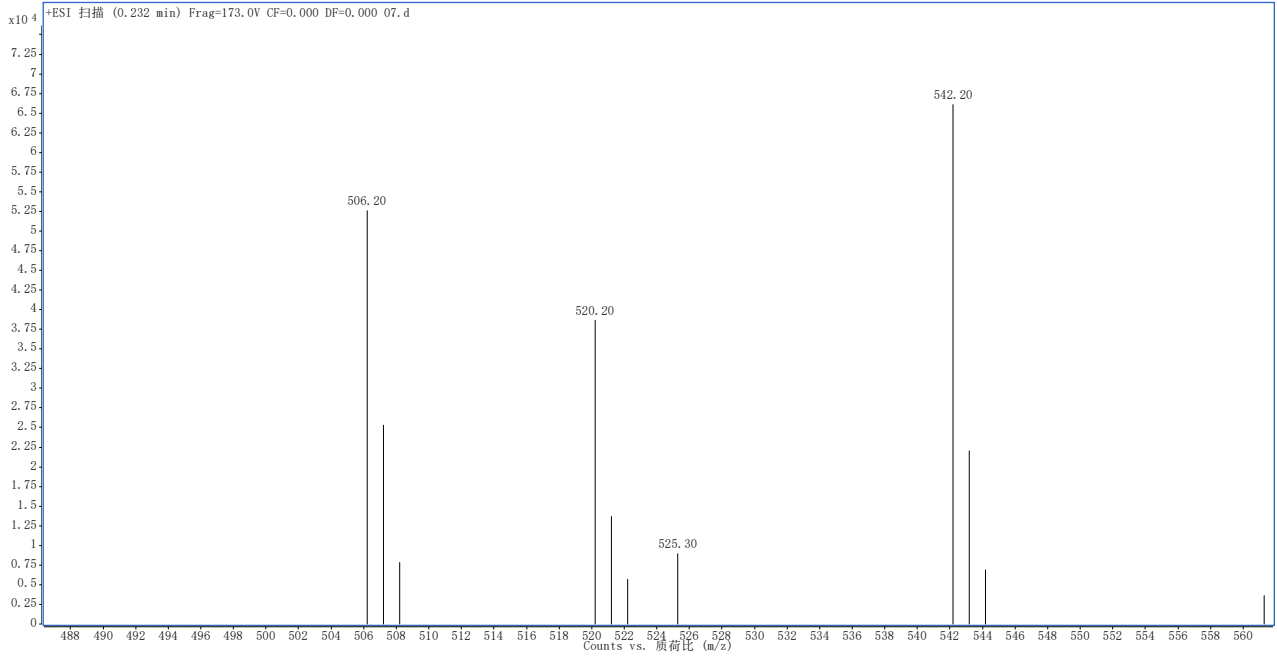


## MS spectrum of compound 12b

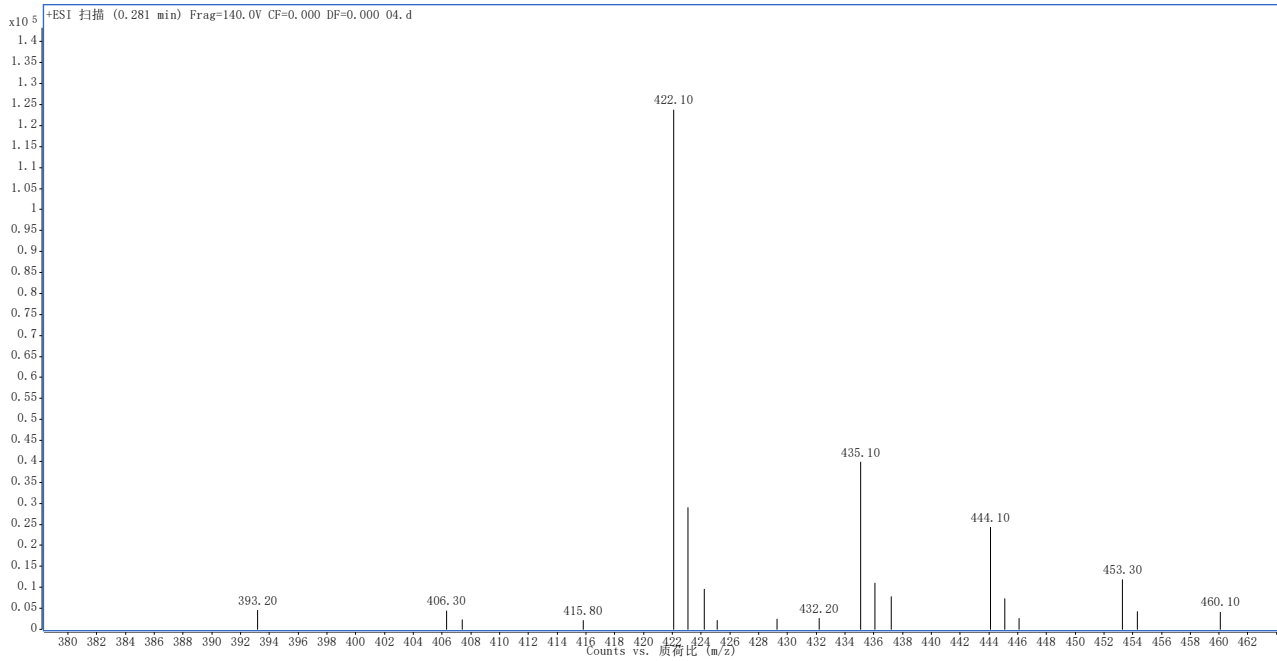




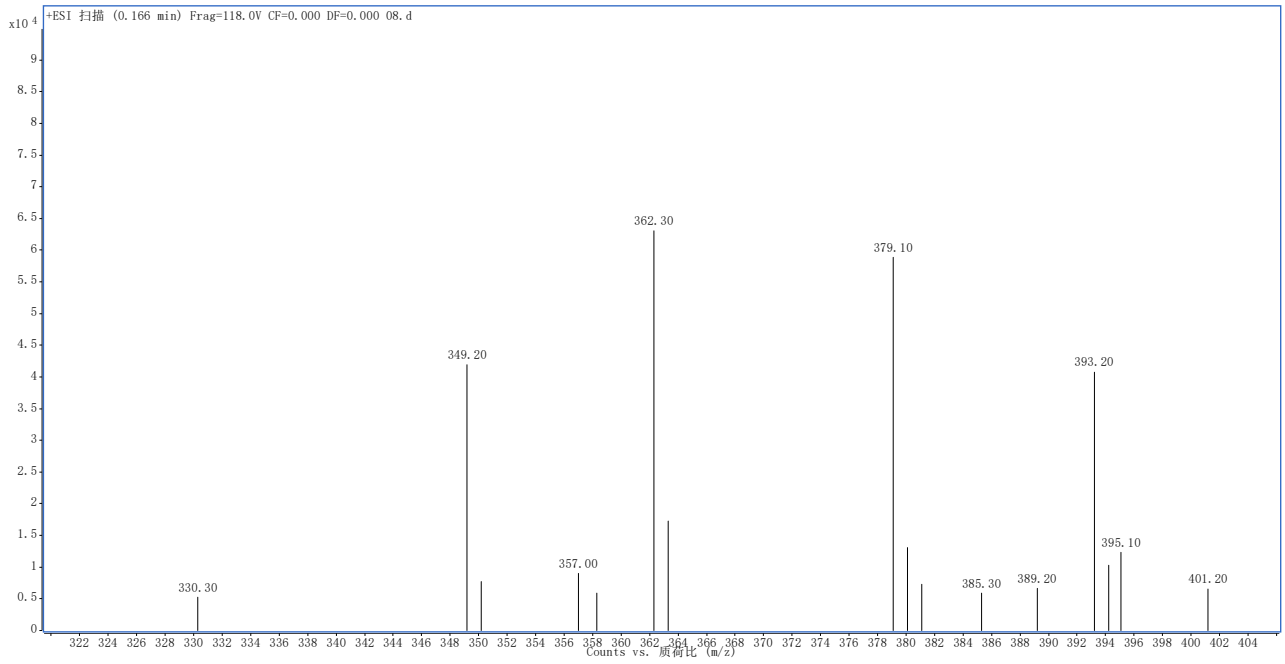
### MS spectrum of compound 12c



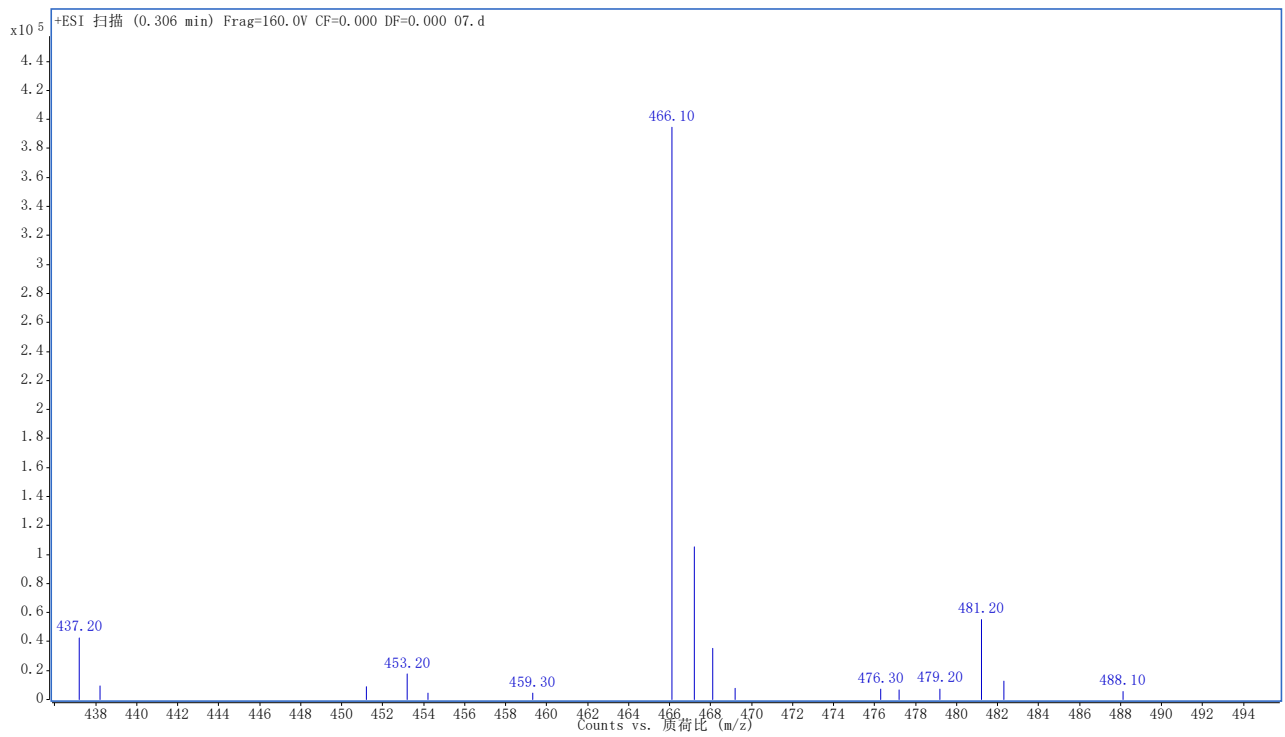
### MS spectrum of compound 12d



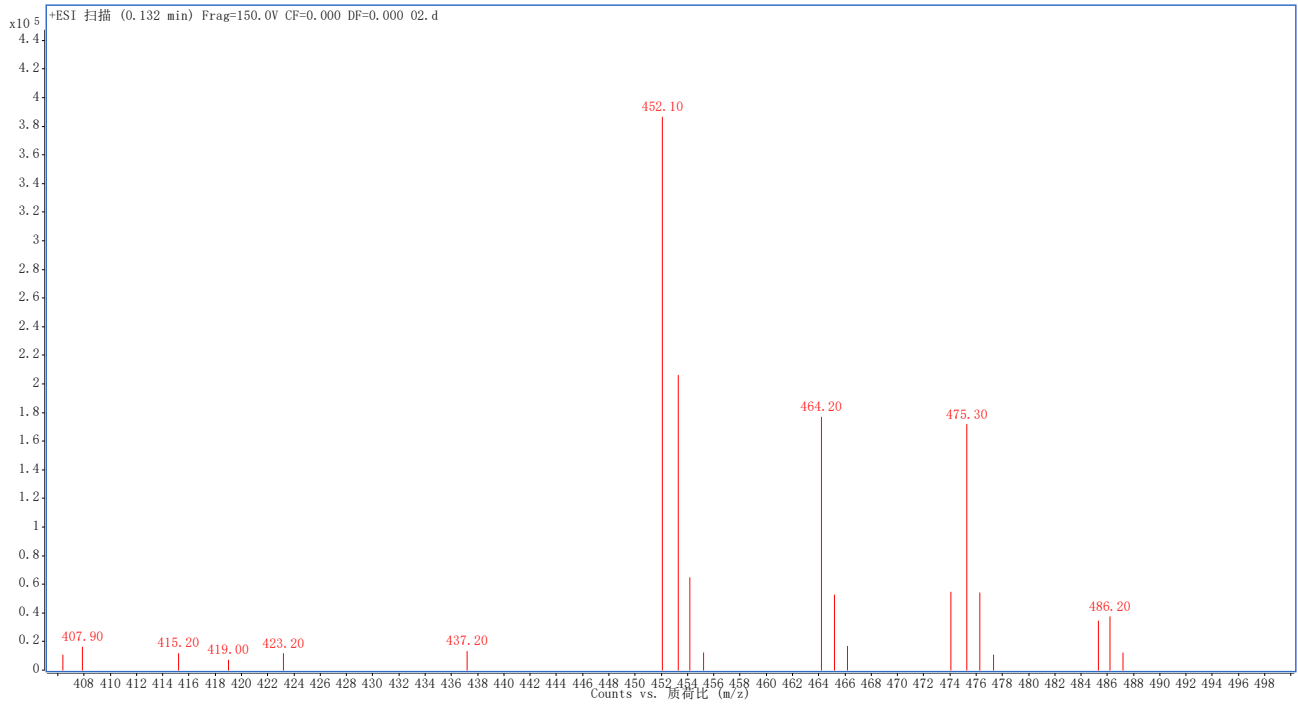
### MS spectrum of compound 8b



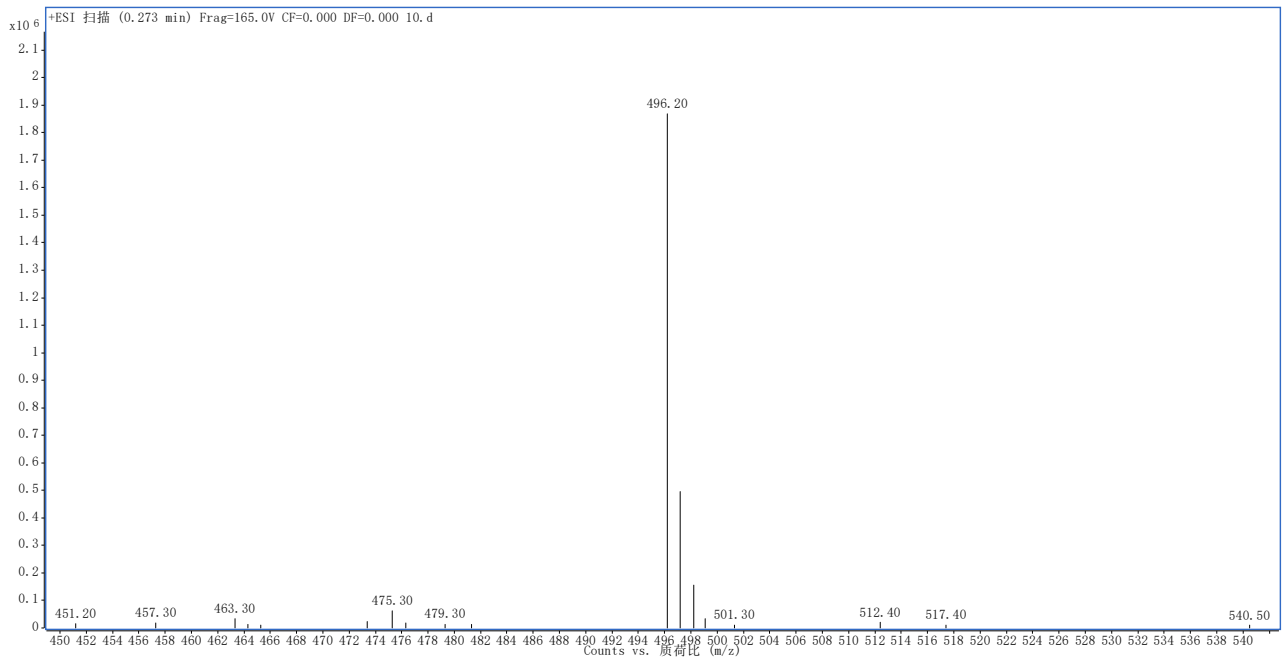
### MS spectrum of compound 12e



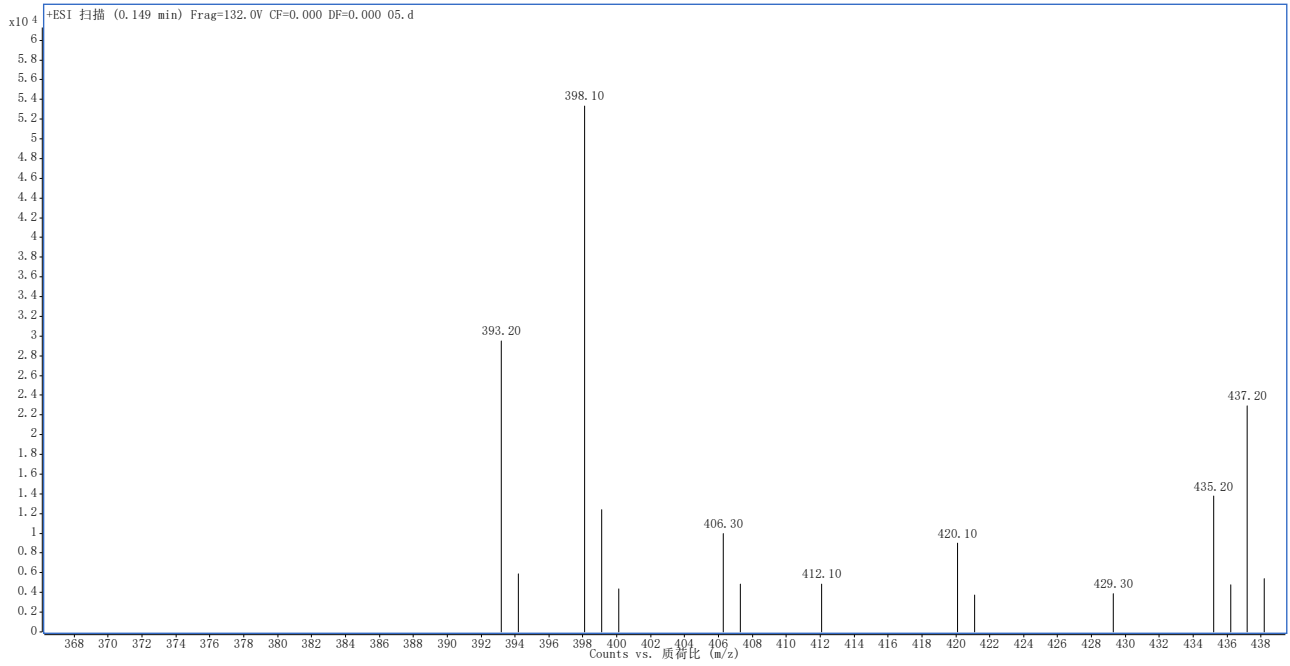
### MS spectrum of compound 12f



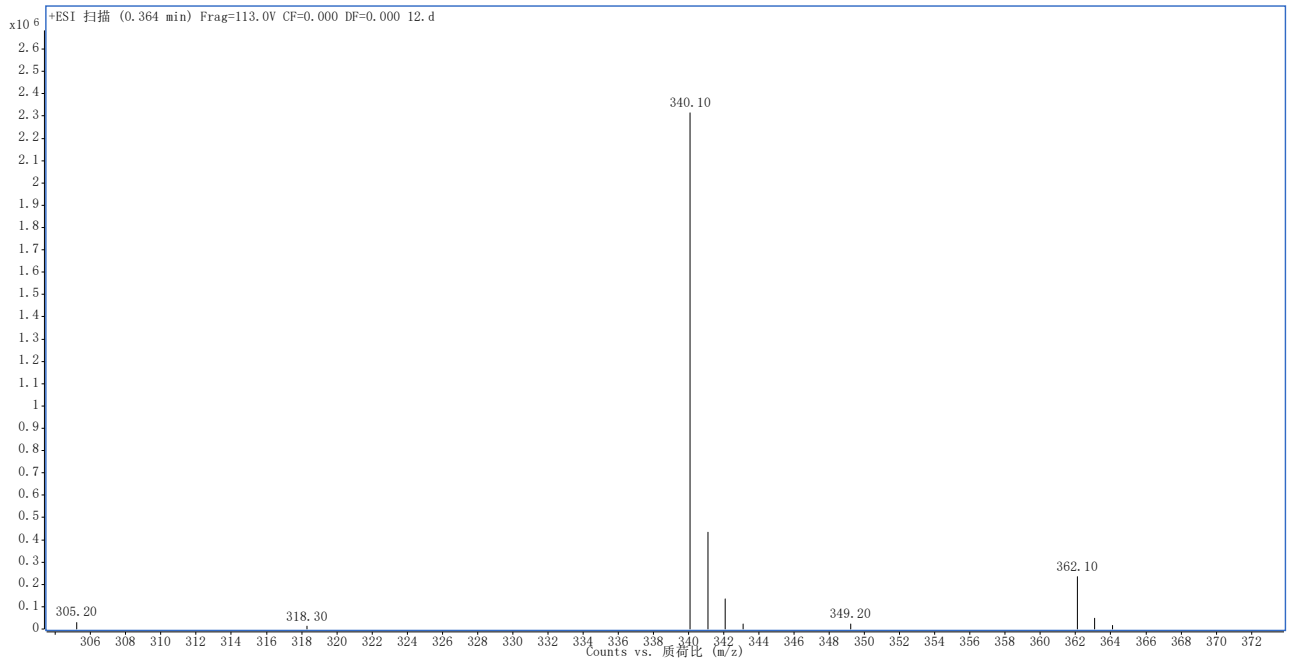
### MS spectrum of compound 12g



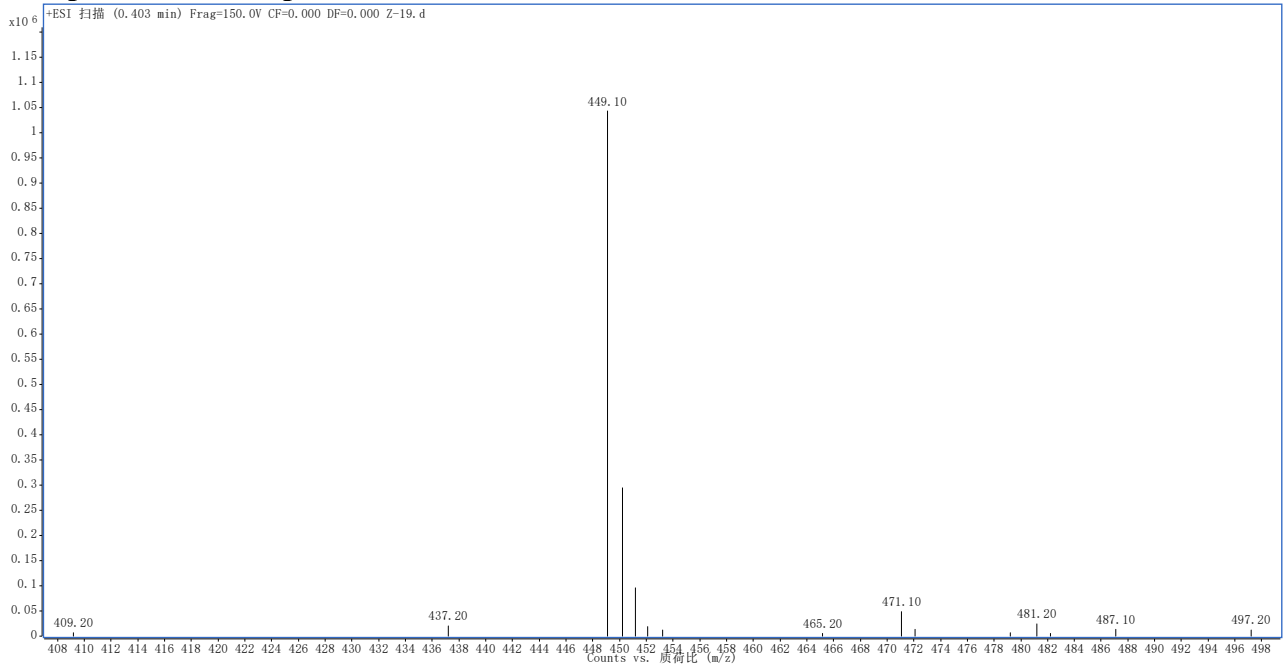
## MS spectrum of compound 12h



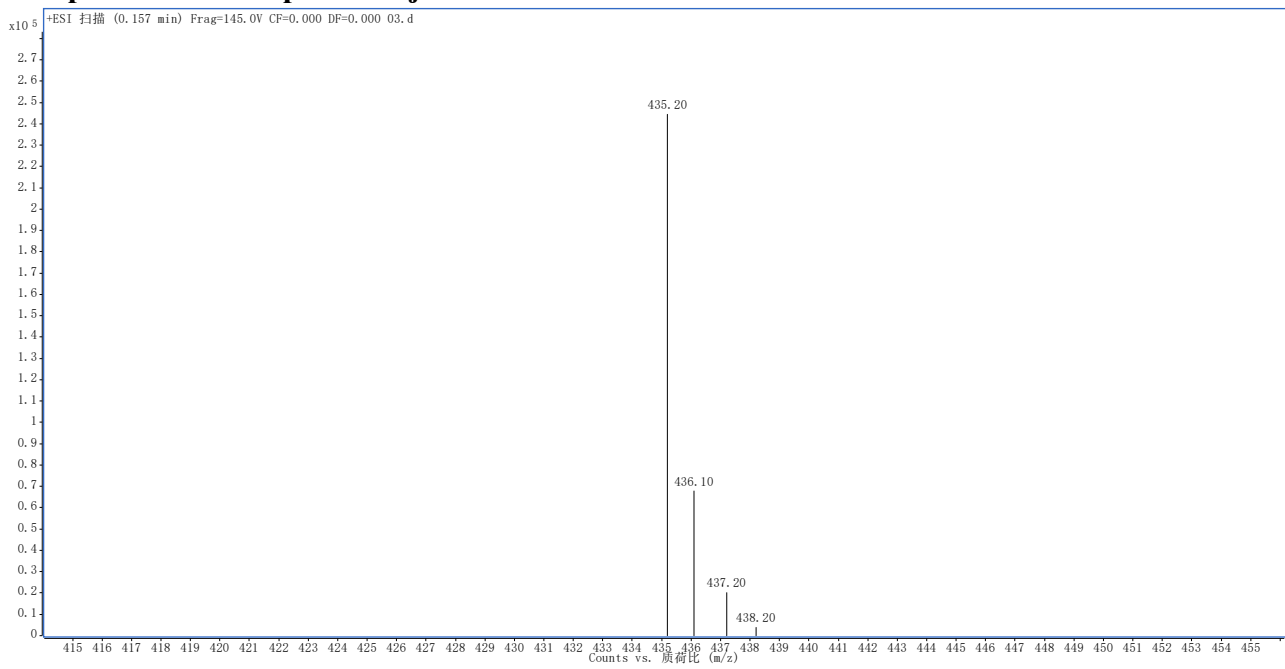
## MS spectrum of compound 8c



### MS spectrum of compound 12i

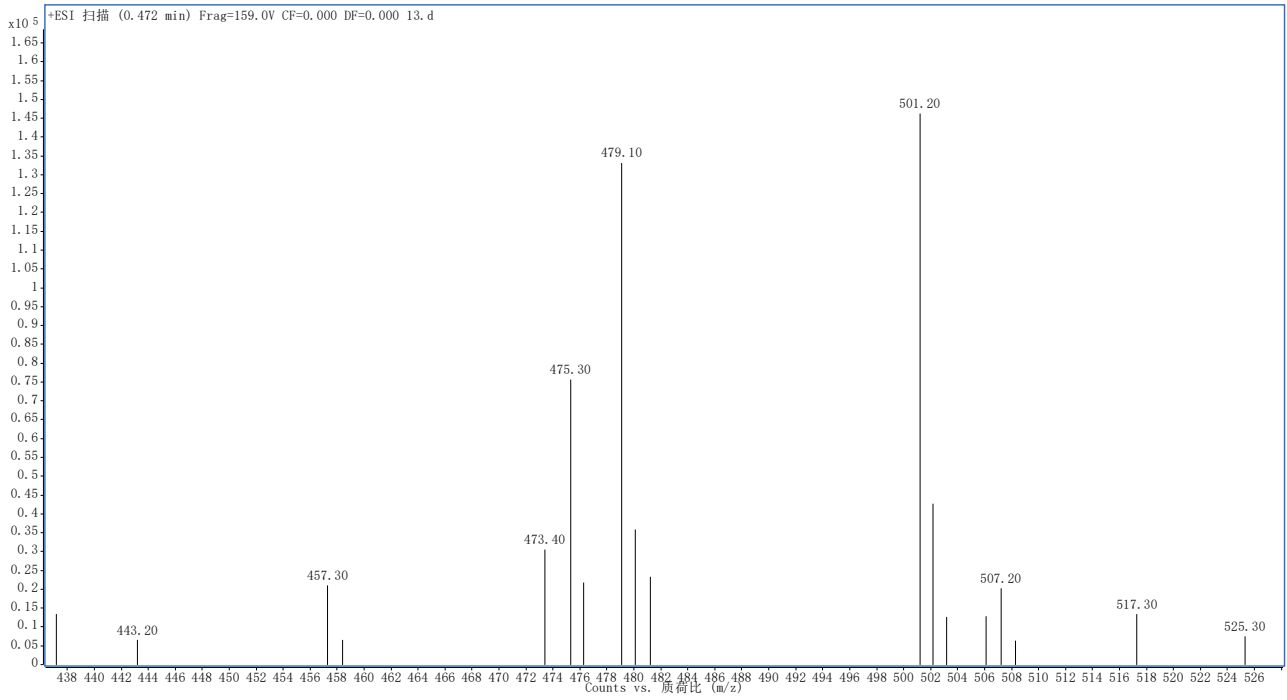


### MS spectrum of compound 12j

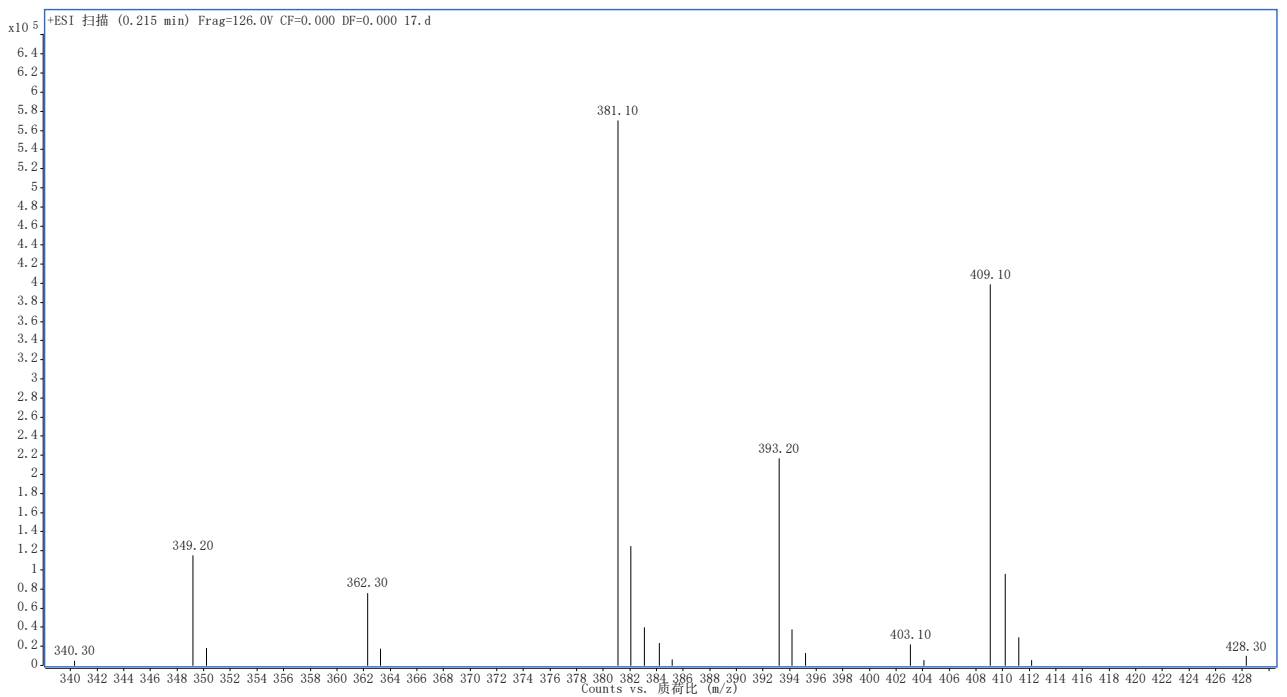




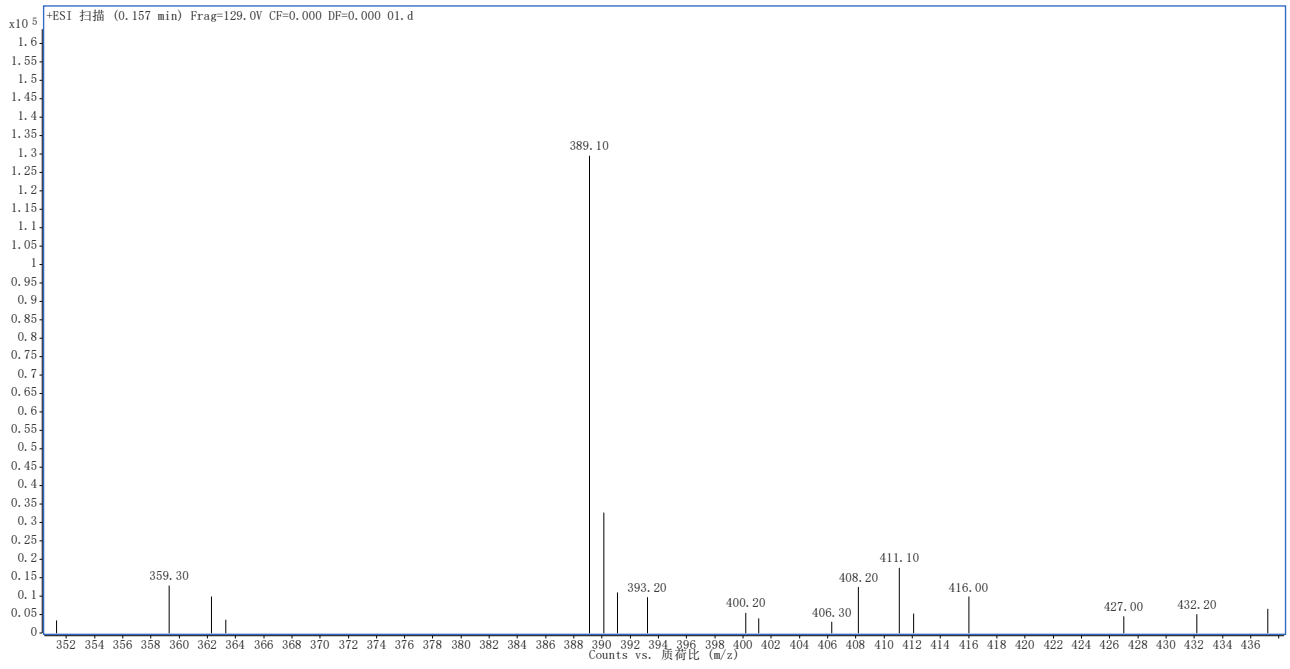
## MS spectrum of compound 12k



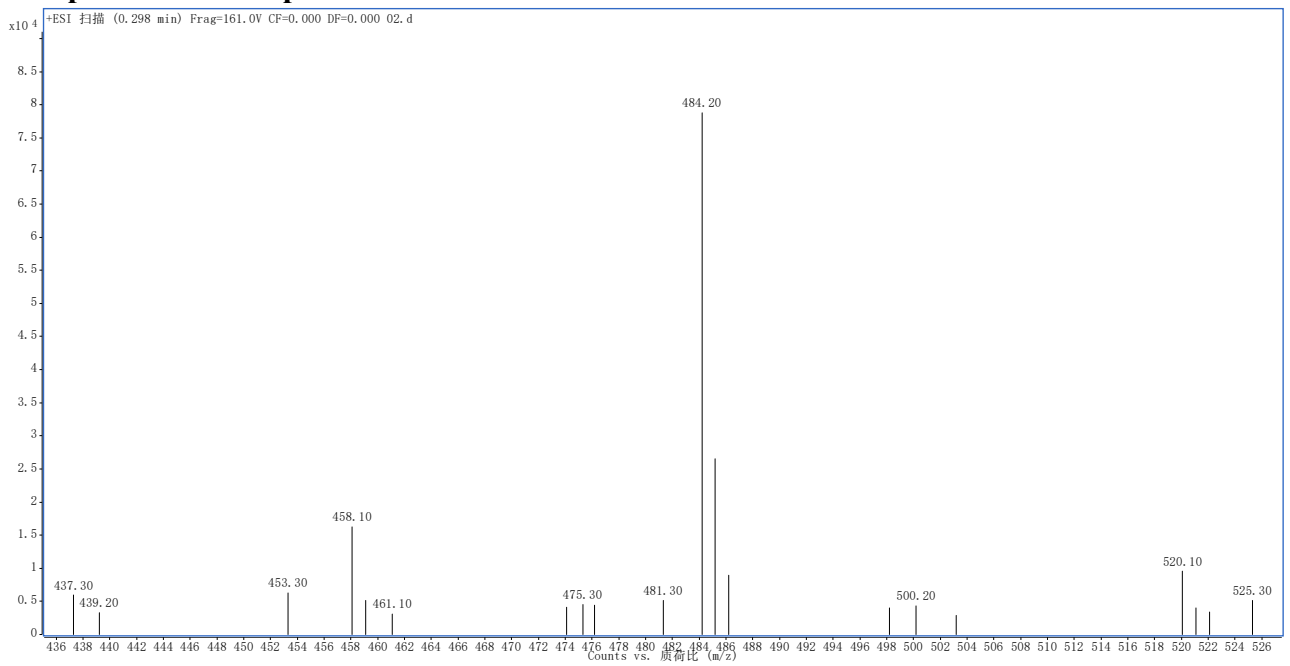
## MS spectrum of compound 12l



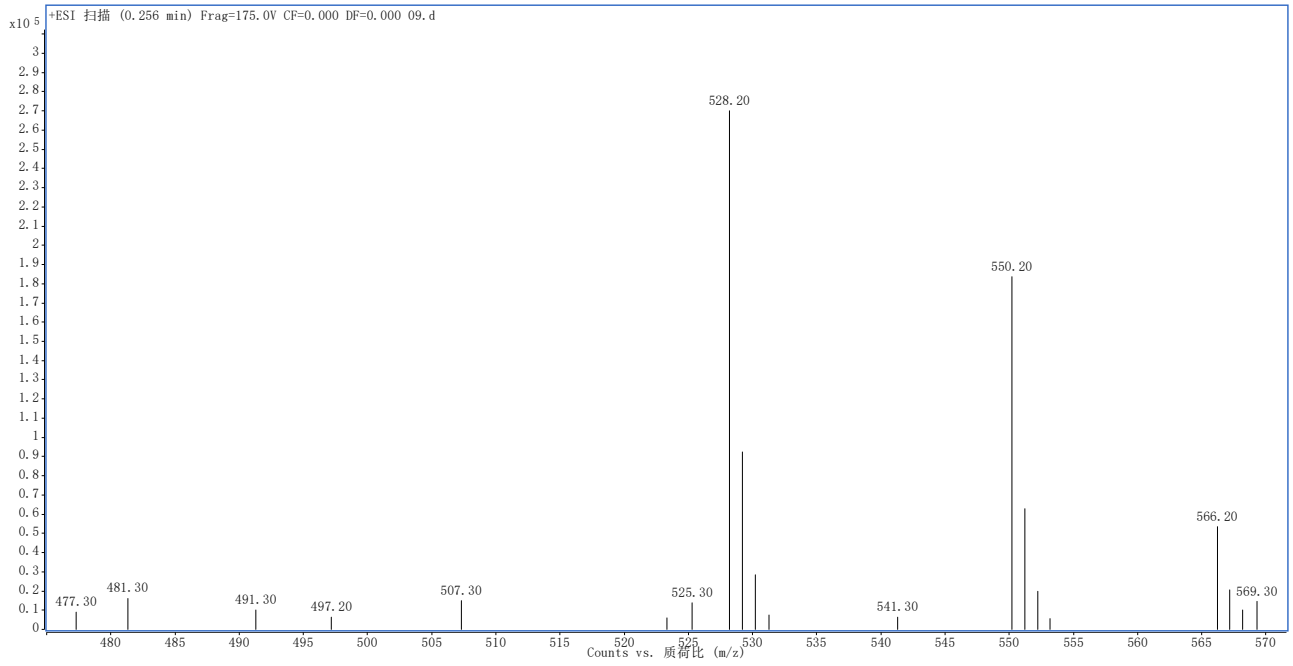
## MS spectrum of compound 8d



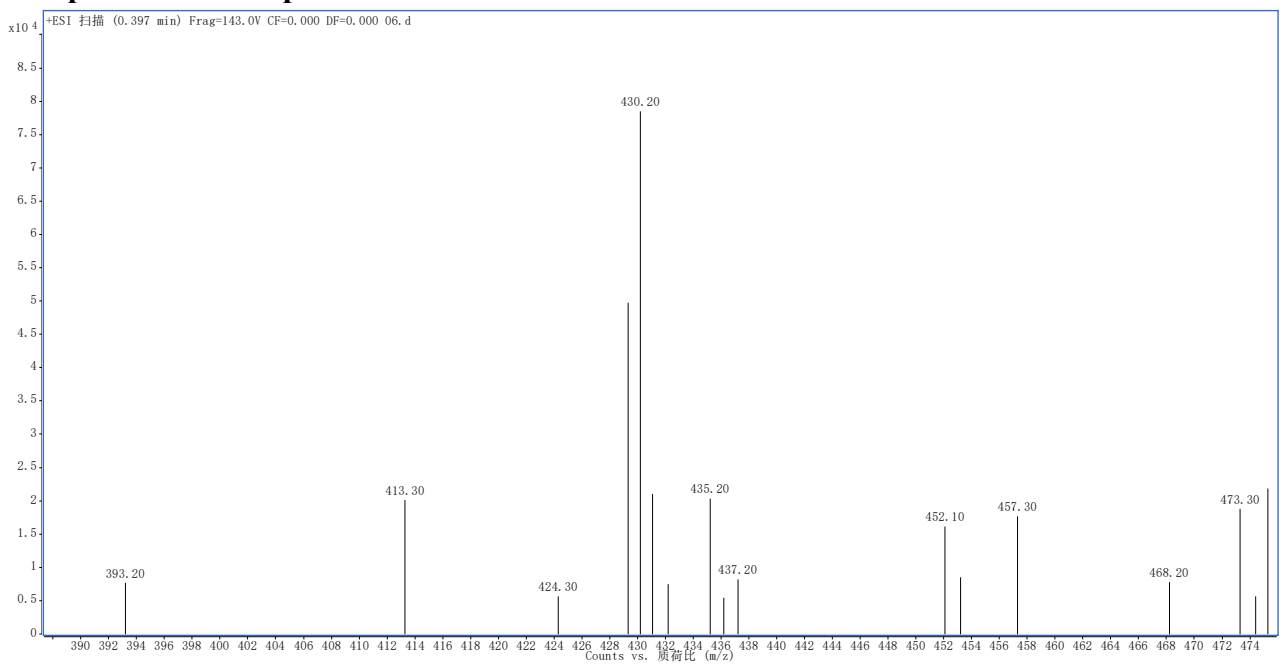
## MS spectrum of compound 12m



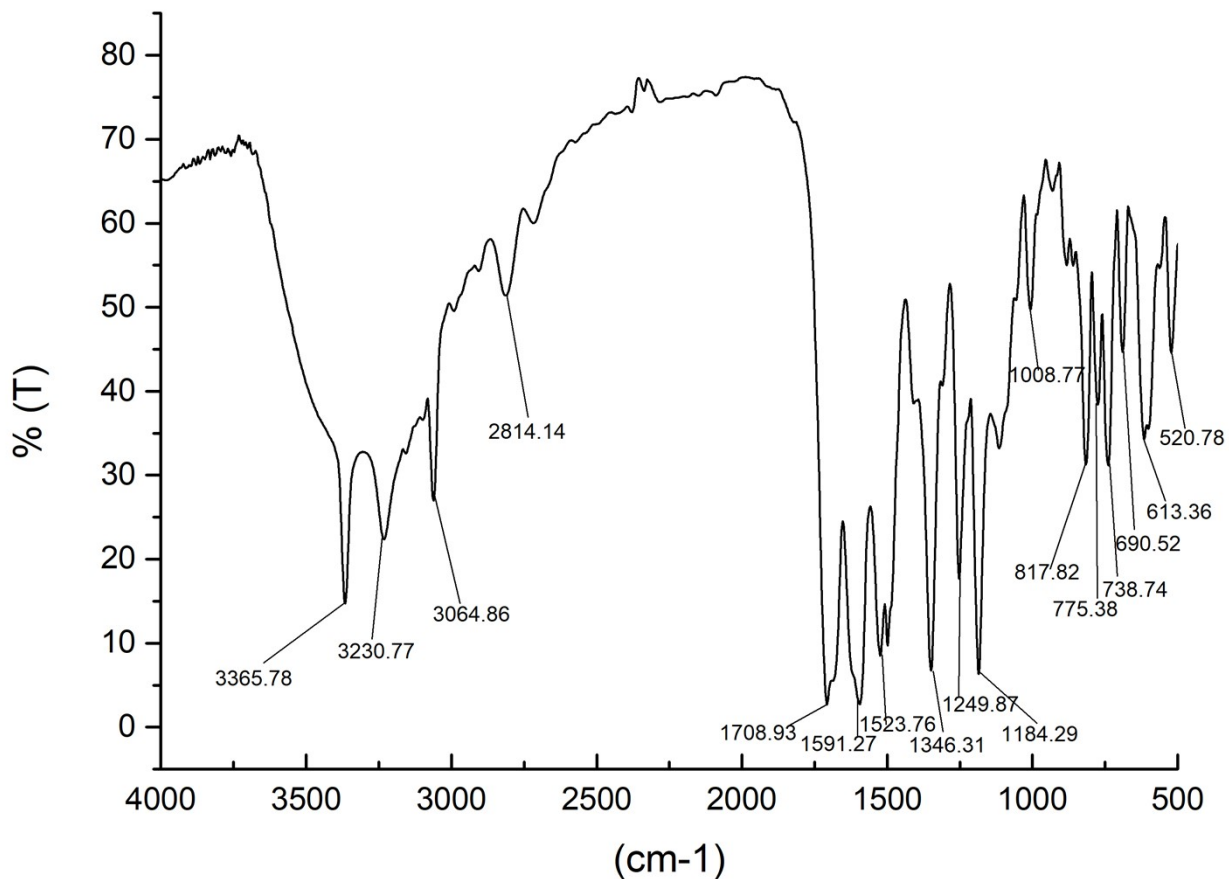
### MS spectrum of compound 12n



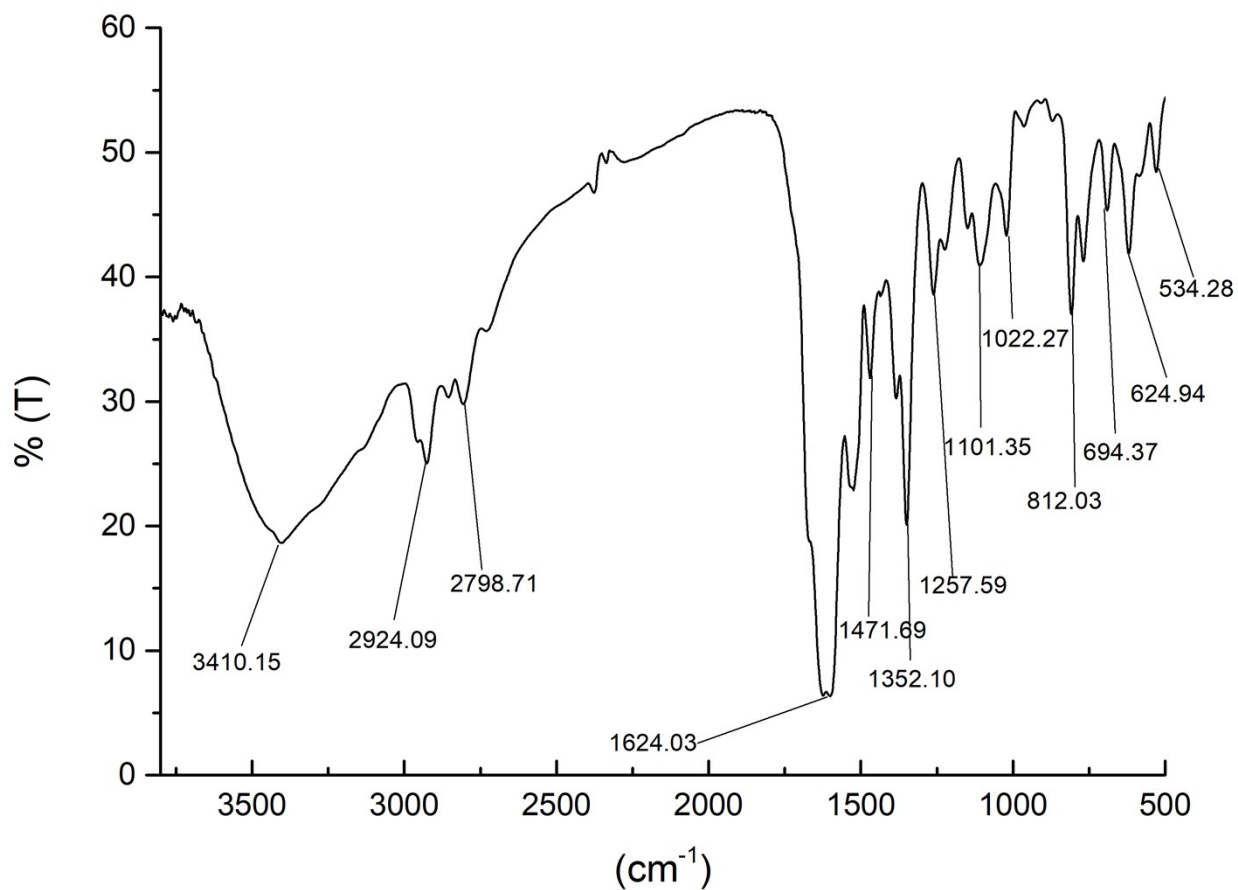
### MS spectrum of compound 12o



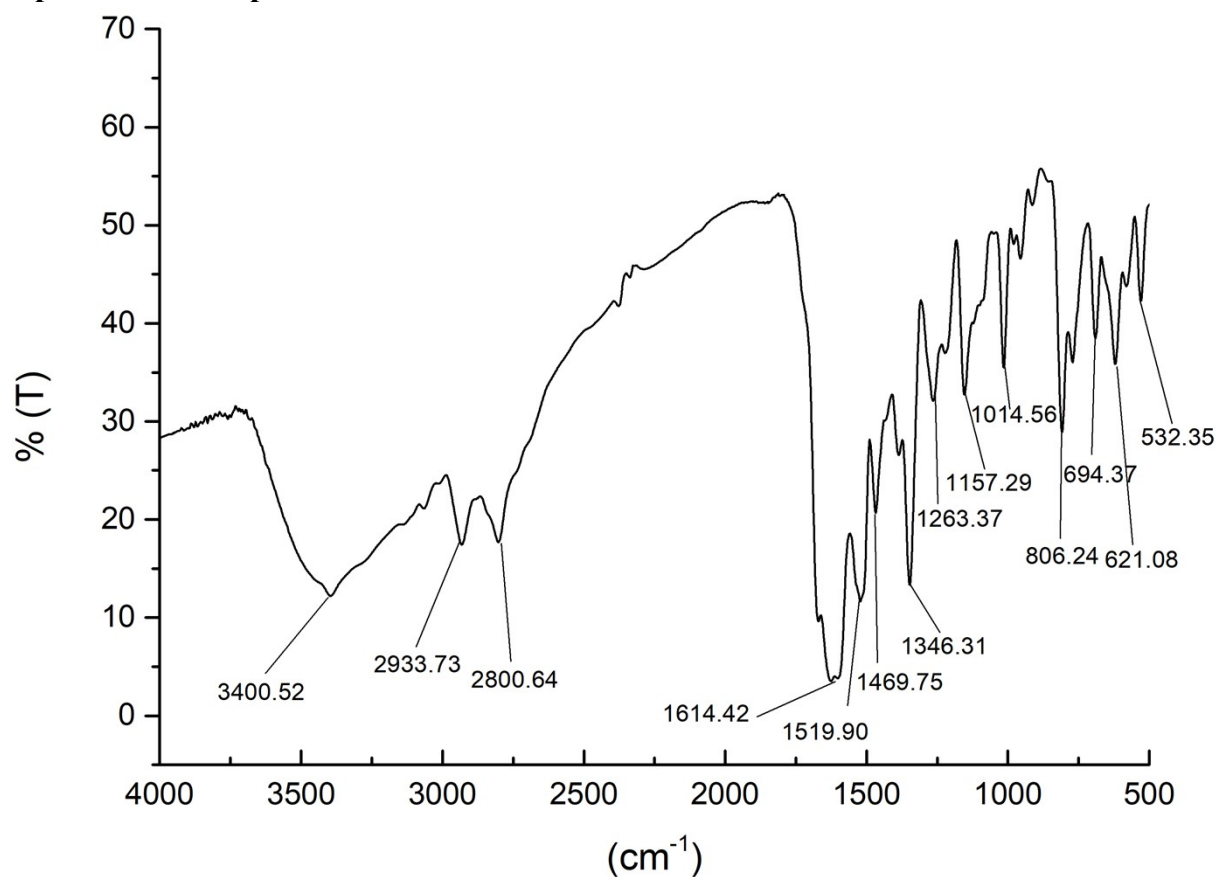
**IR spectrum of compound 8b**



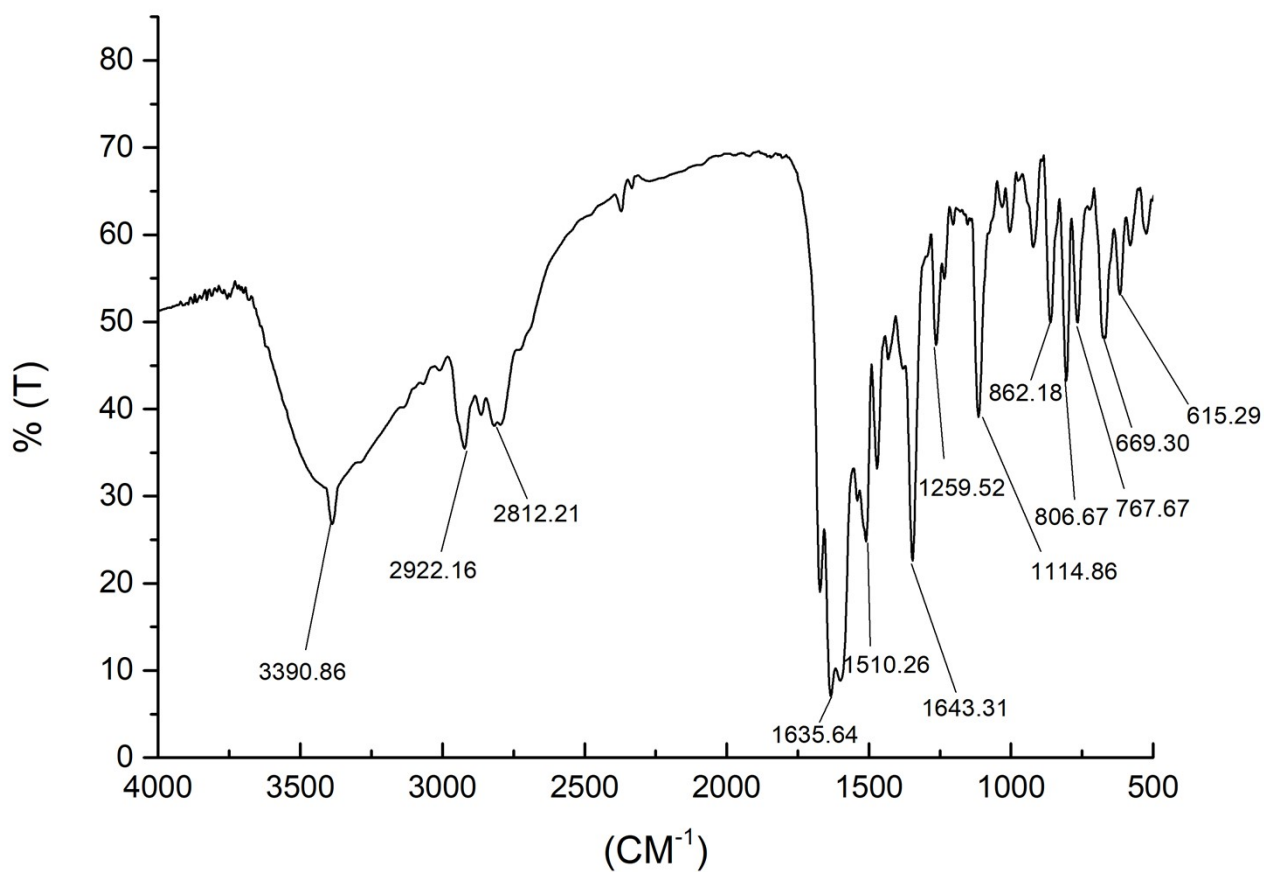
**IR spectrum of compound 9a2**



IR spectrum of compound 9a3

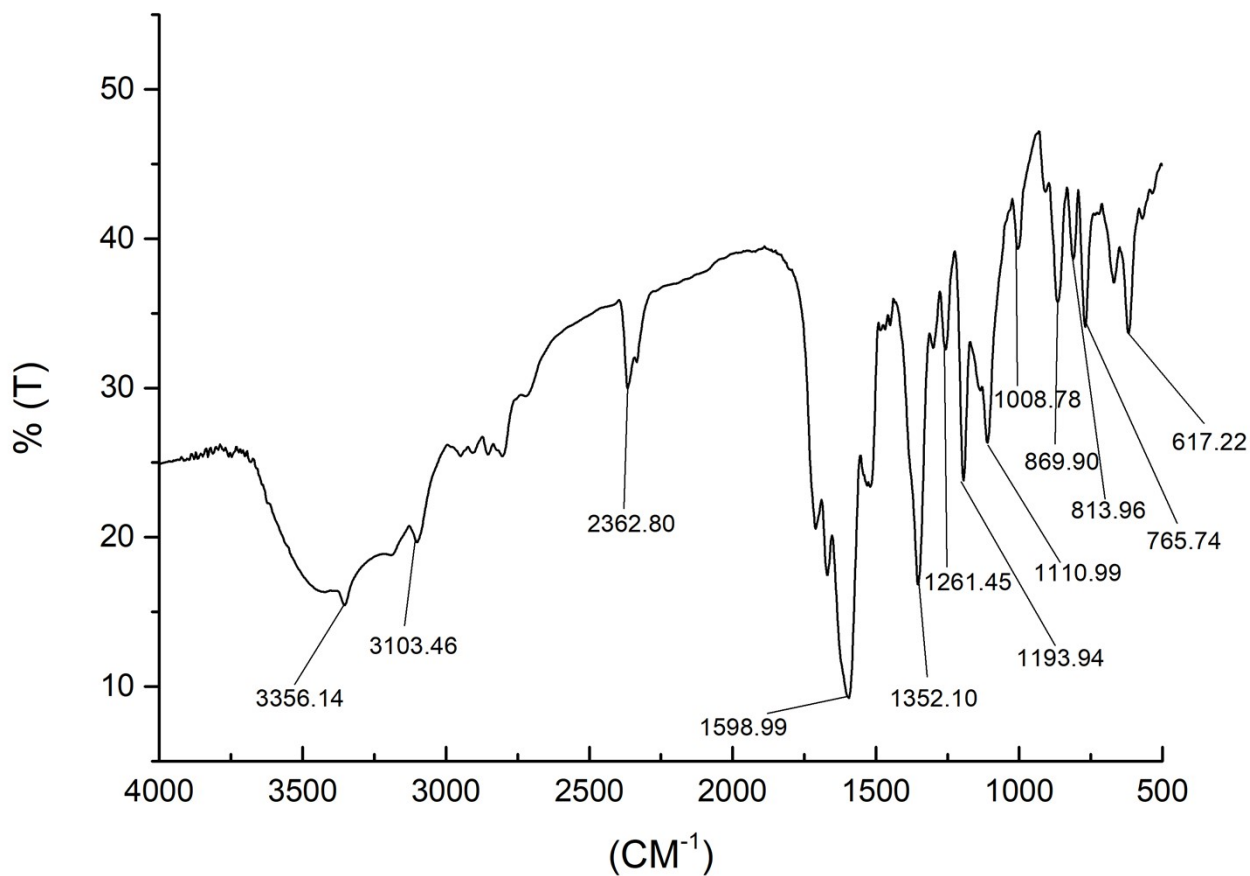


IR spectrum of compound 12a

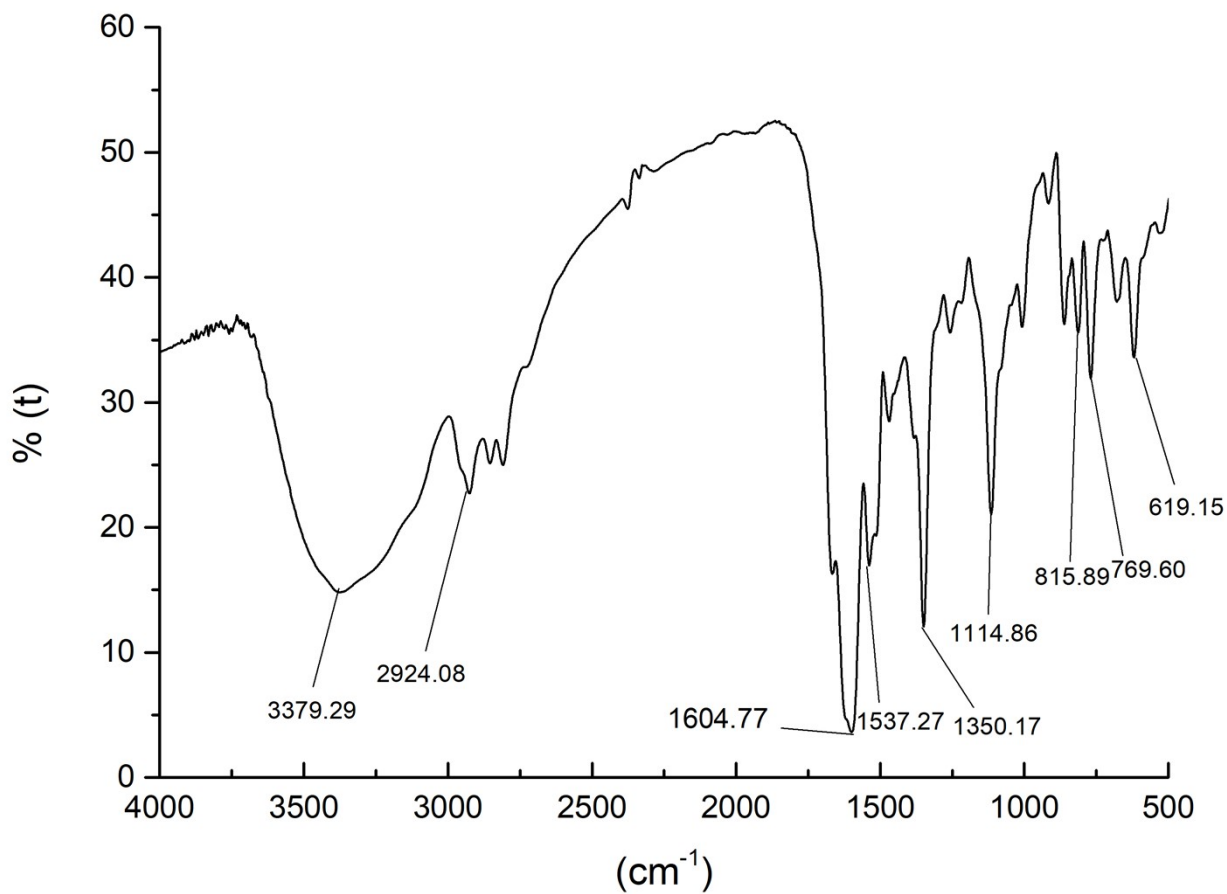




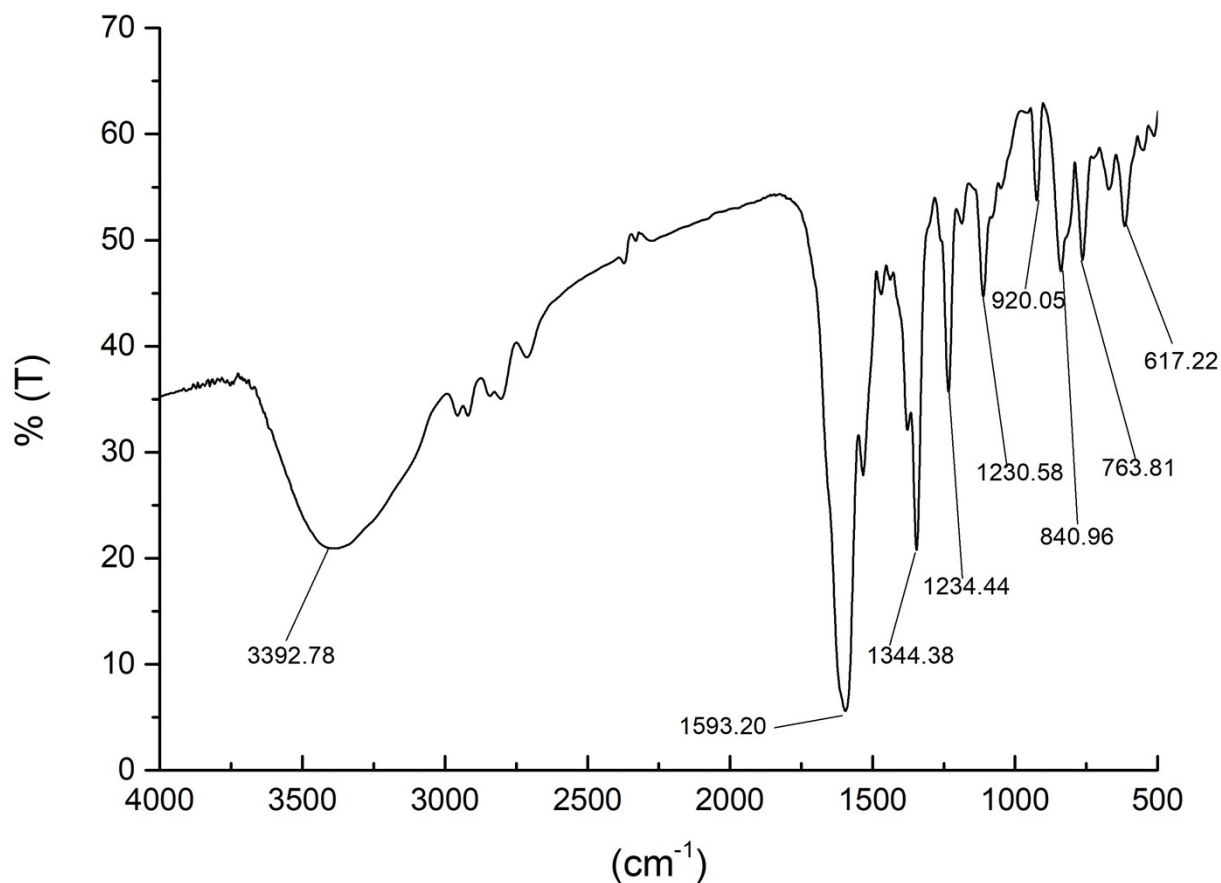
**IR spectrum of compound 12e**



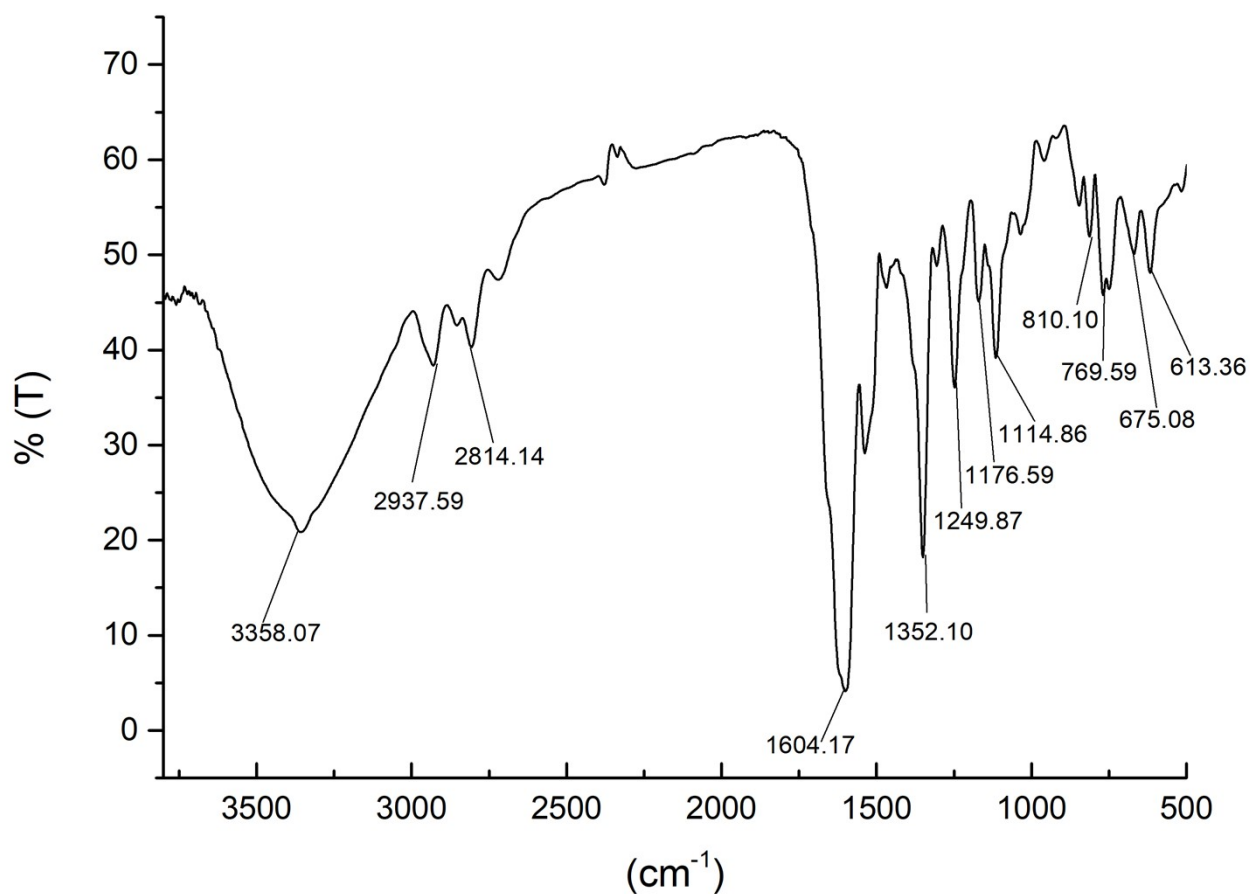
**IR spectrum of compound 12i**



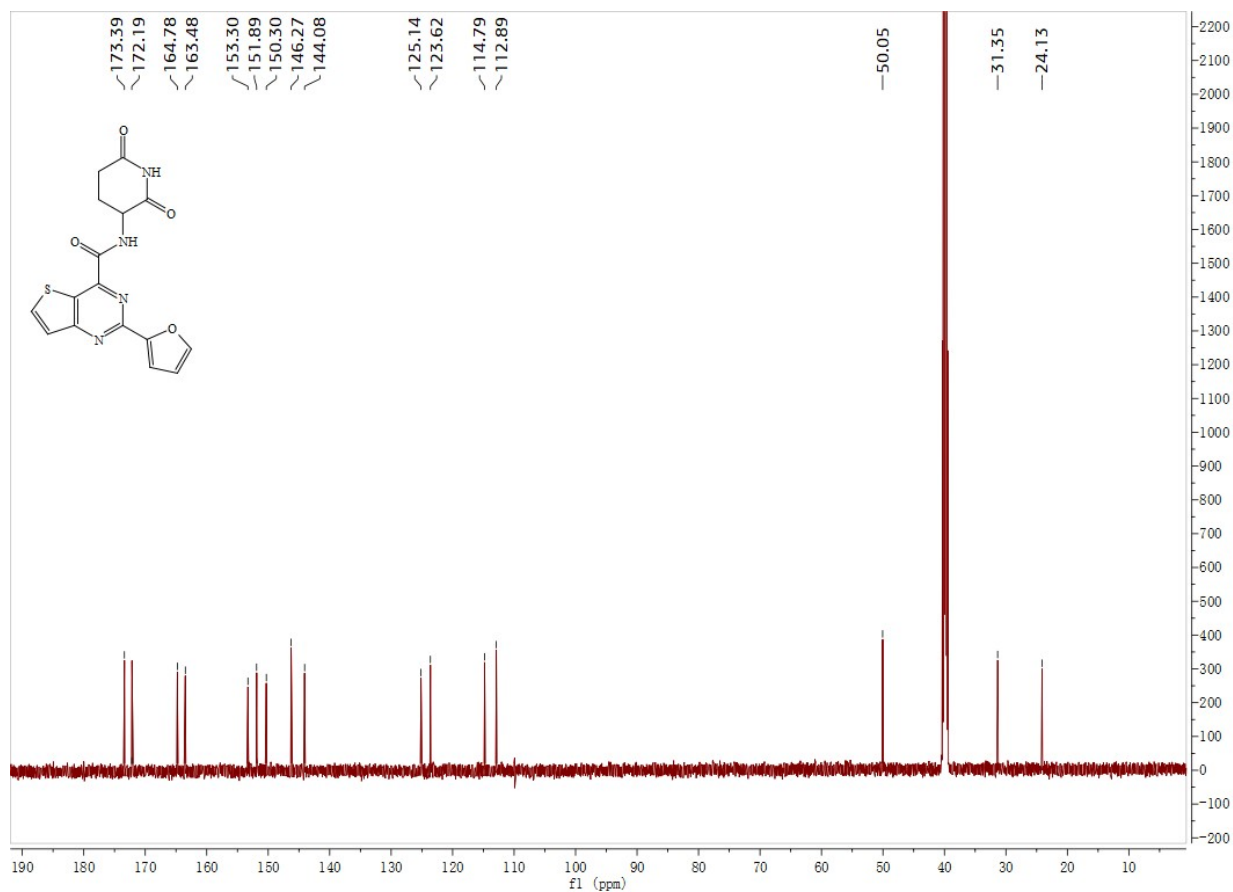
**IR spectrum of compound 12j**



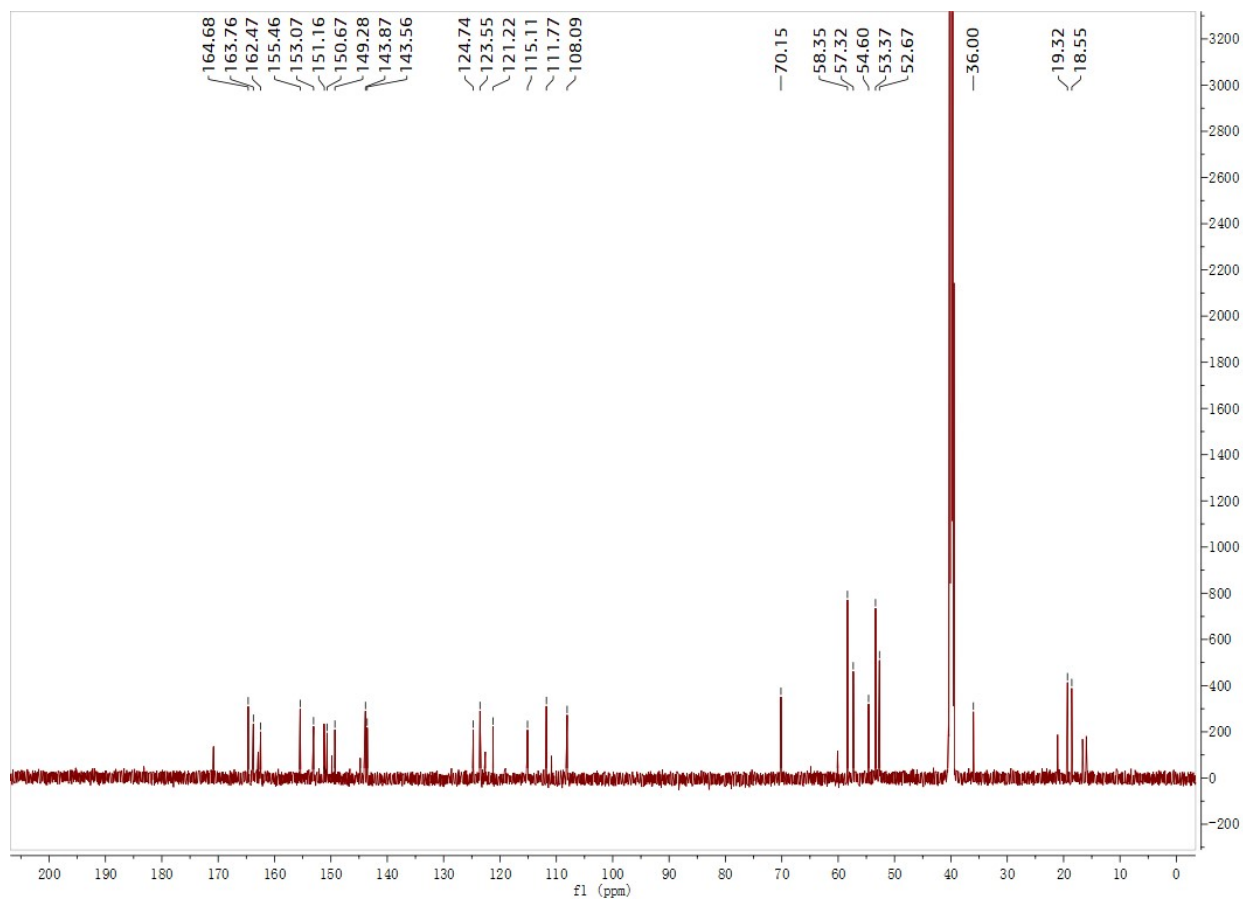
**IR spectrum of compound 12n**



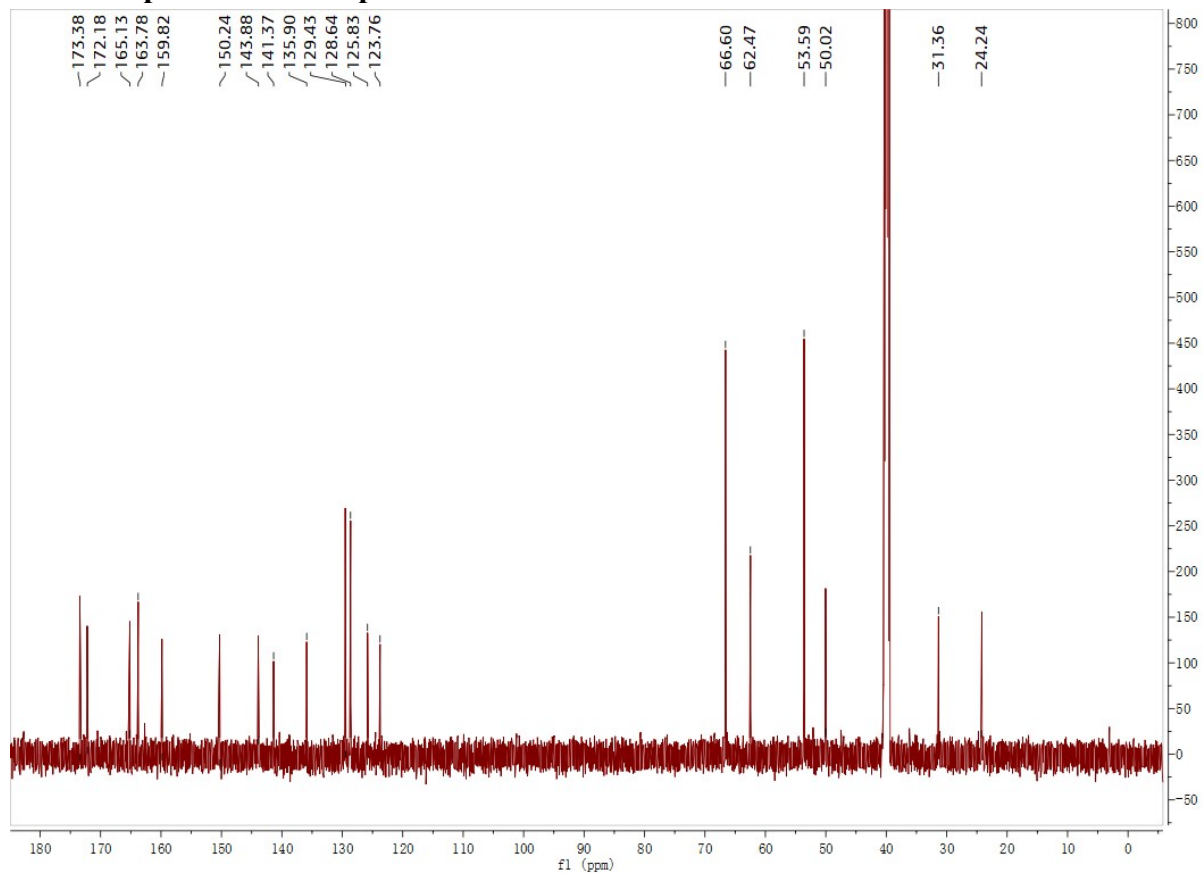
### <sup>13</sup>C NMR spectrum of compound 8b



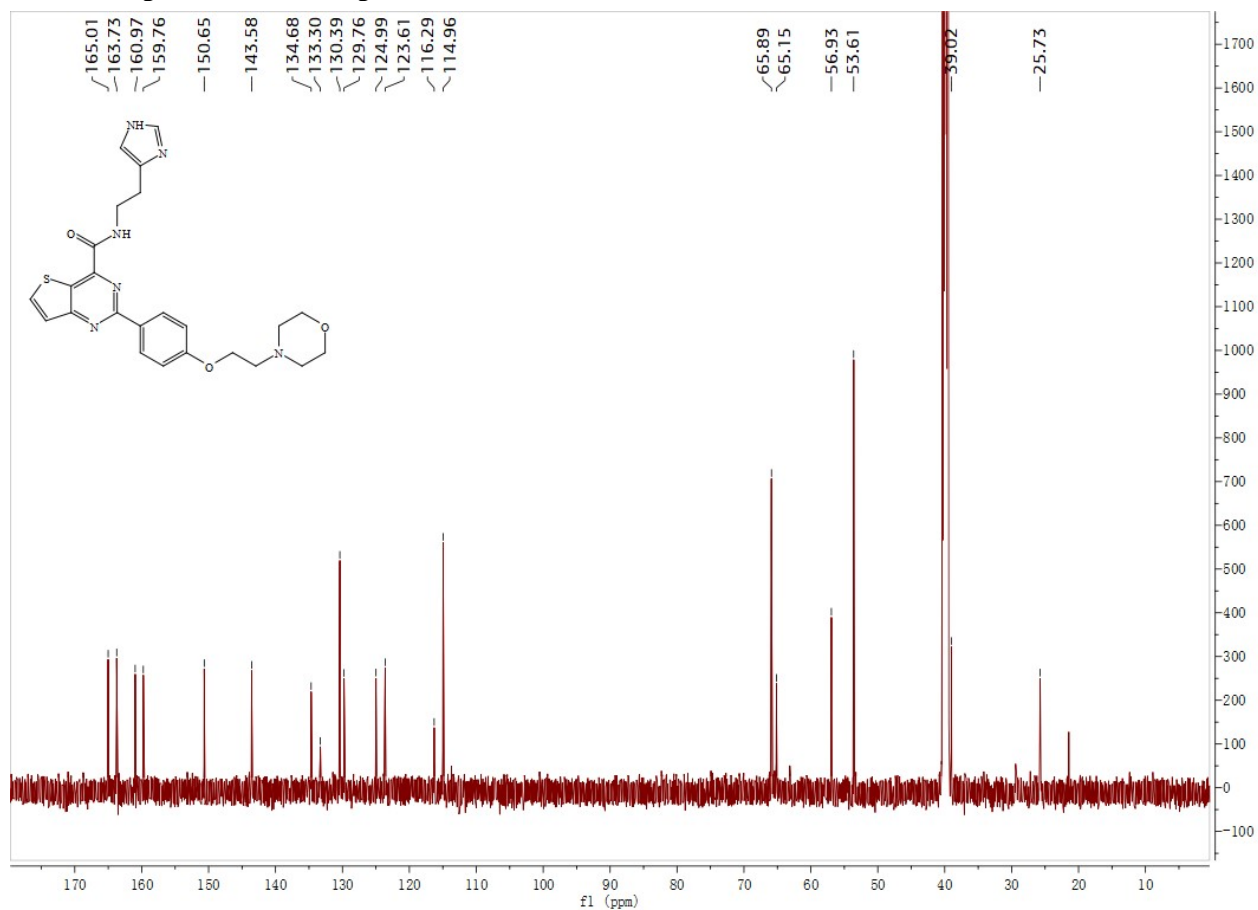
### <sup>13</sup>C NMR spectrum of compound 9a6



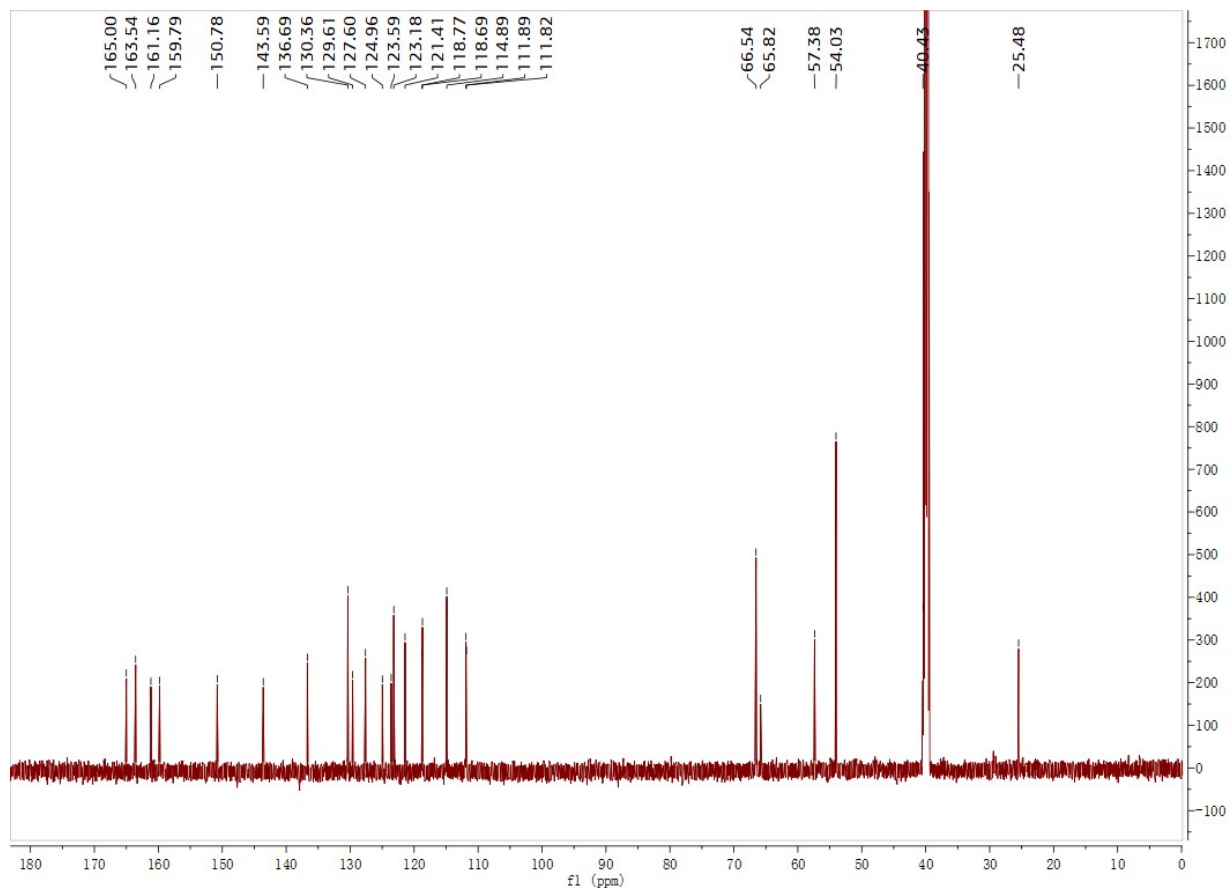
### <sup>13</sup>C NMR spectrum of compound 12e



### <sup>13</sup>C NMR spectrum of compound 12k



### <sup>13</sup>C NMR spectrum of compound 12n



### <sup>13</sup>C NMR spectrum of compound 12o

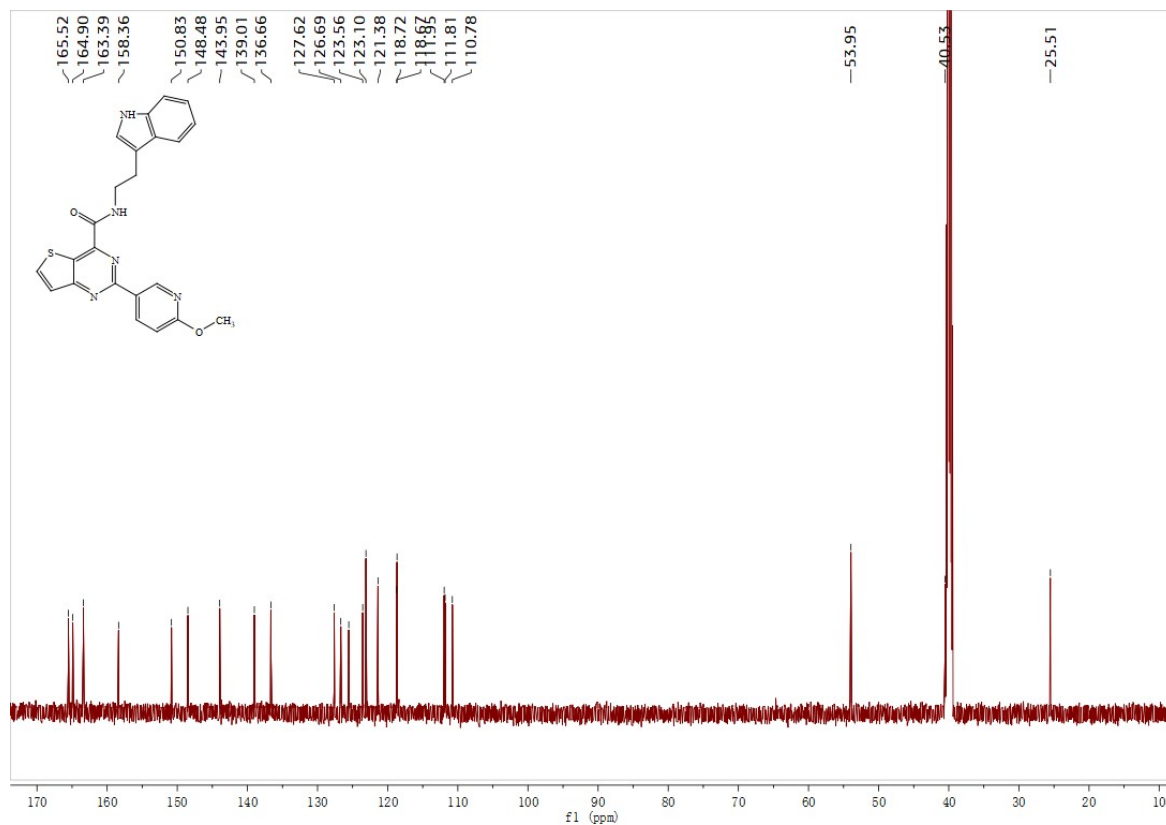


Fig. S1. Dose-response curves of target compounds for the SU-DHL-6 cell lines.

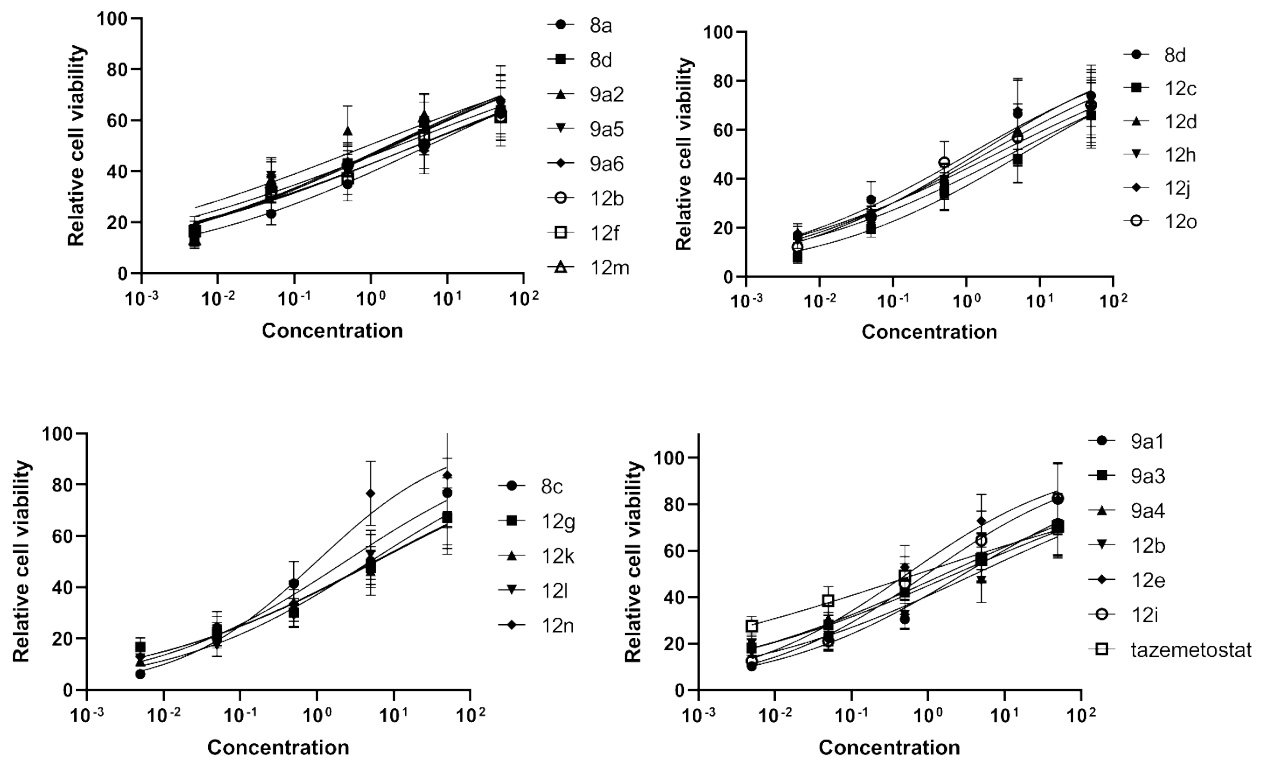


Fig. S2. Dose-response curves of target compounds for the WSU-DLCL-2 cell lines.

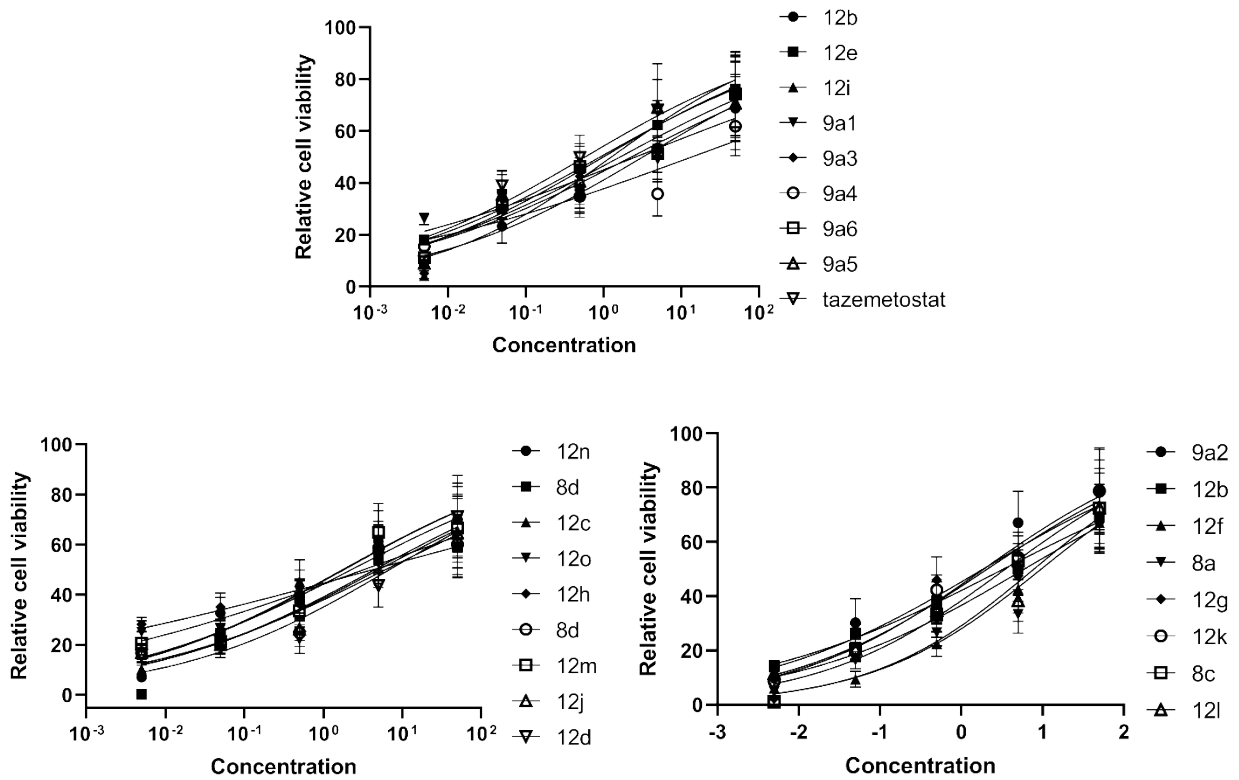


Fig. S3. Dose-response curves of target compounds for the K562 cell lines.

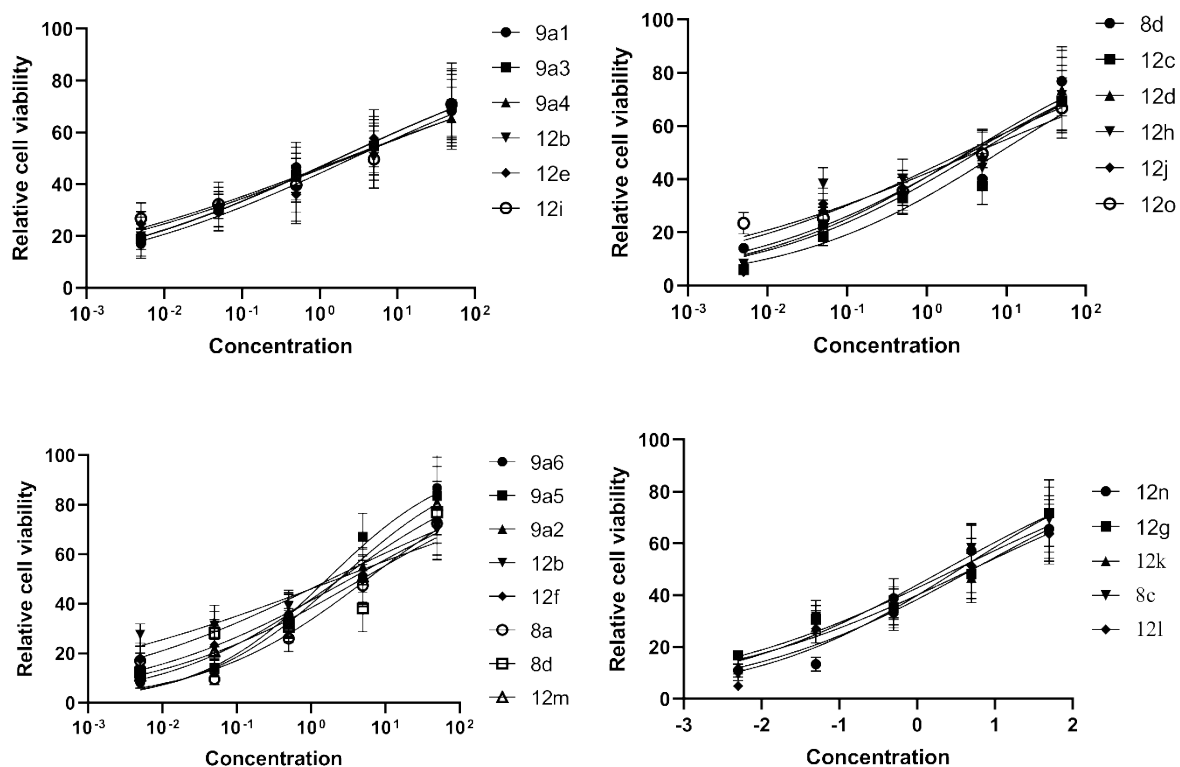


Fig. S4. Dose-response curves of target compounds for the H358 cell lines.

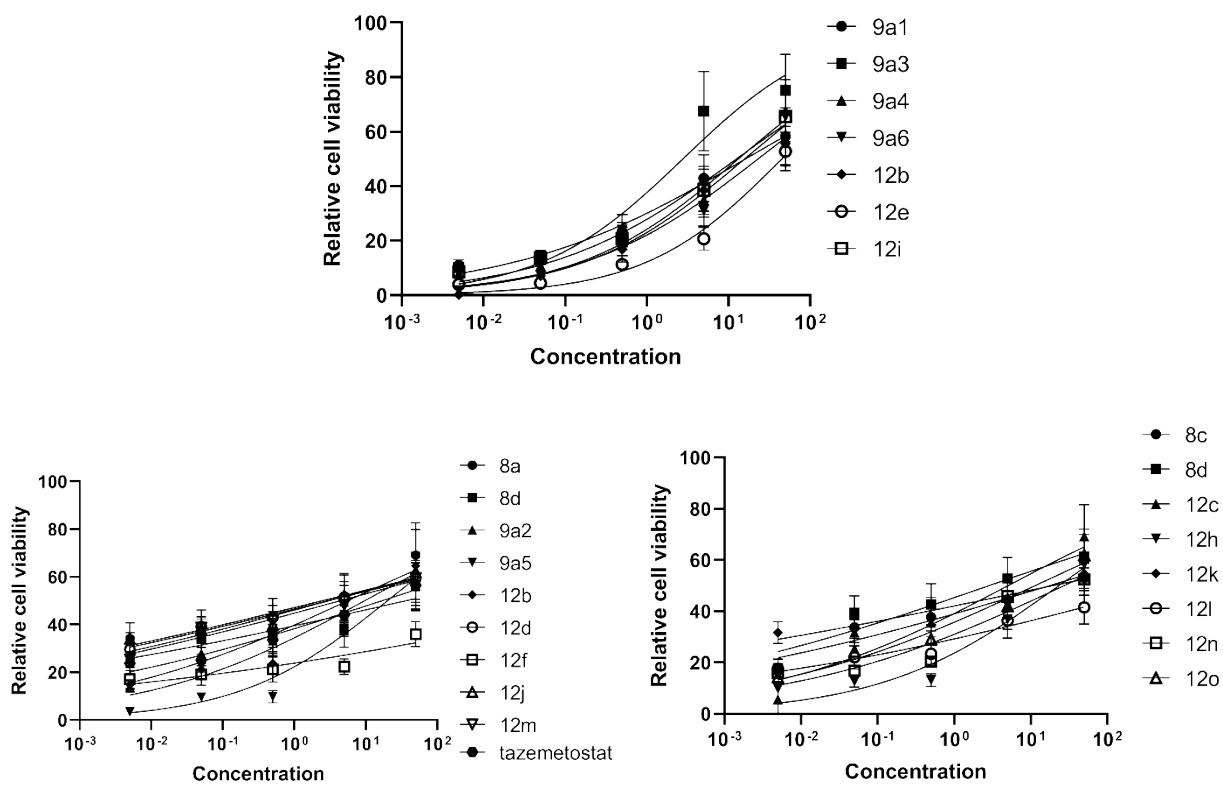


Fig. S5. Dose-response curves of target compounds for the H1703 cell lines.

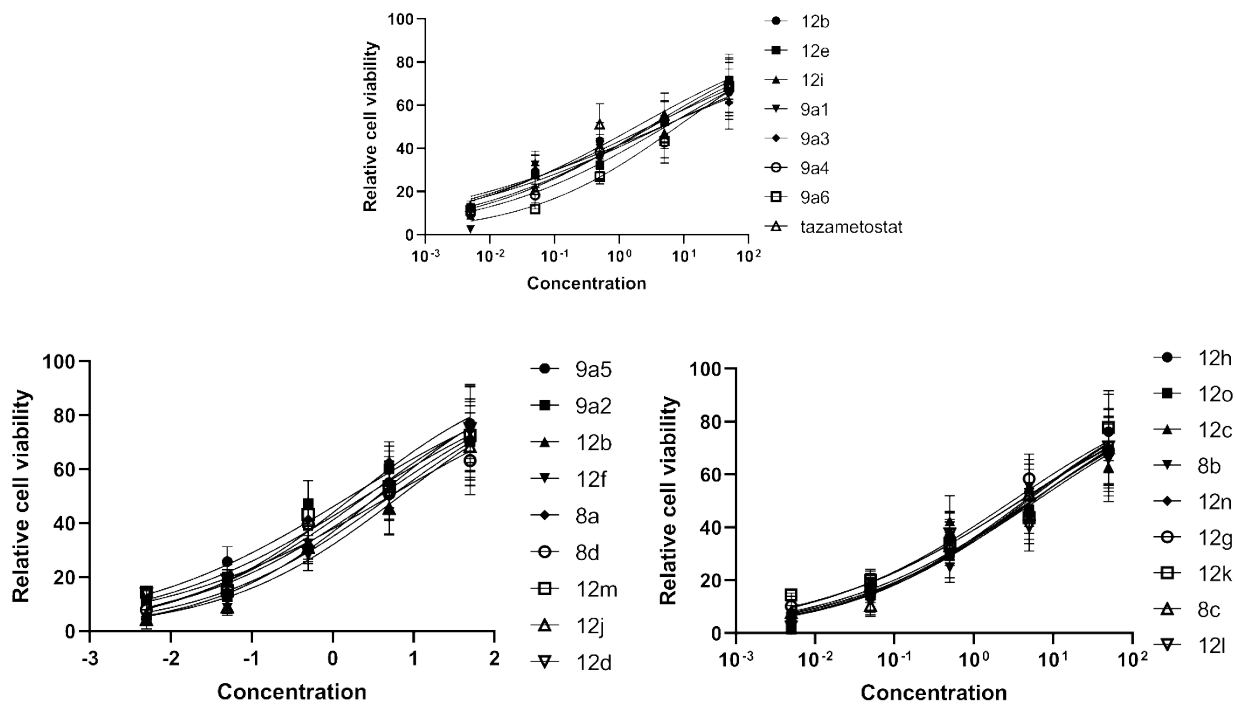


Fig. S5. Dose-response curves of target compounds for the HEK-293T cell lines.

