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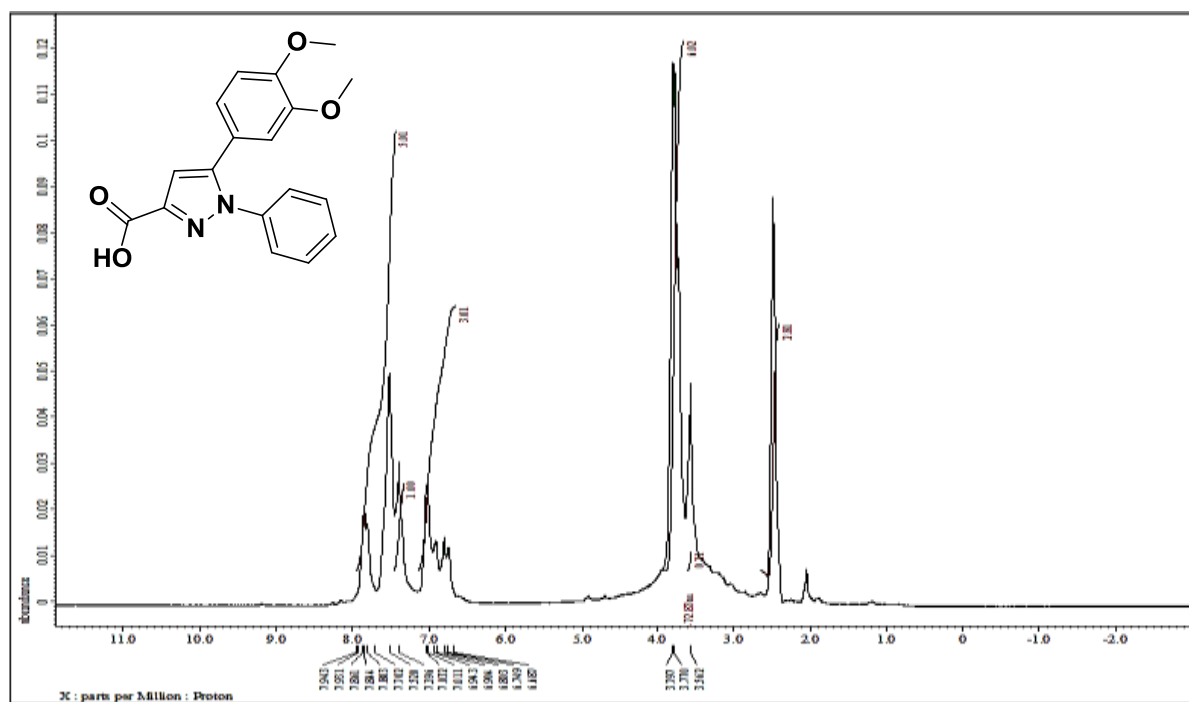


Figure 1. ¹H-NMR spectrum of compound **4c** in **DMSO-*d*₆**.

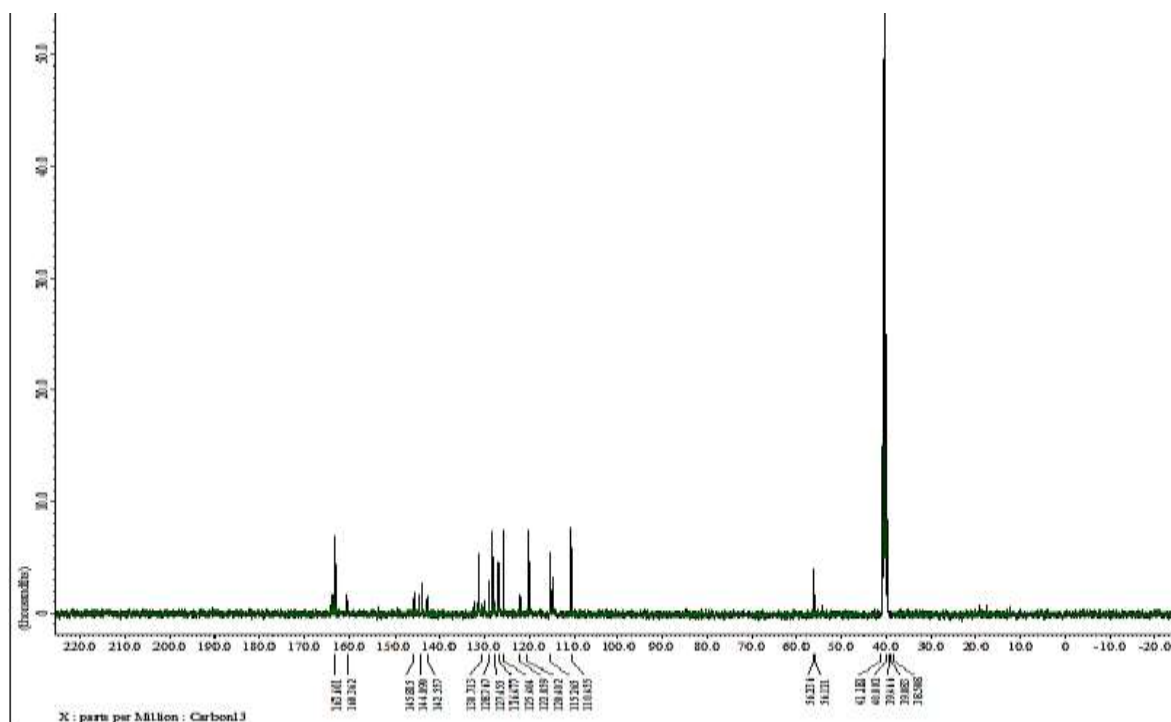


Figure 2. ^{13}C -NMR spectrum of compound **4c** in $\text{DMSO}-d_6$.

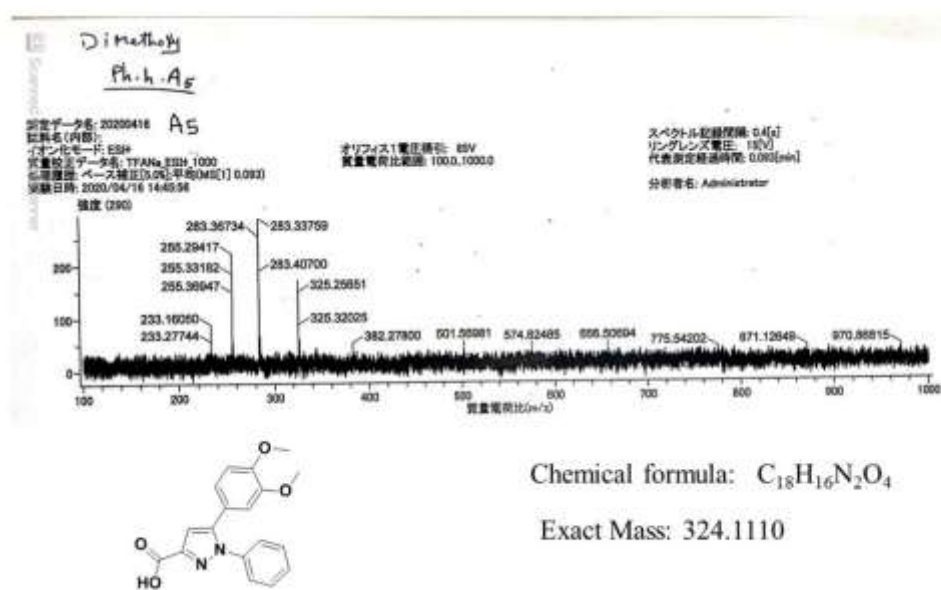


Figure 3. ESI mass spectrum of compound **4c**.

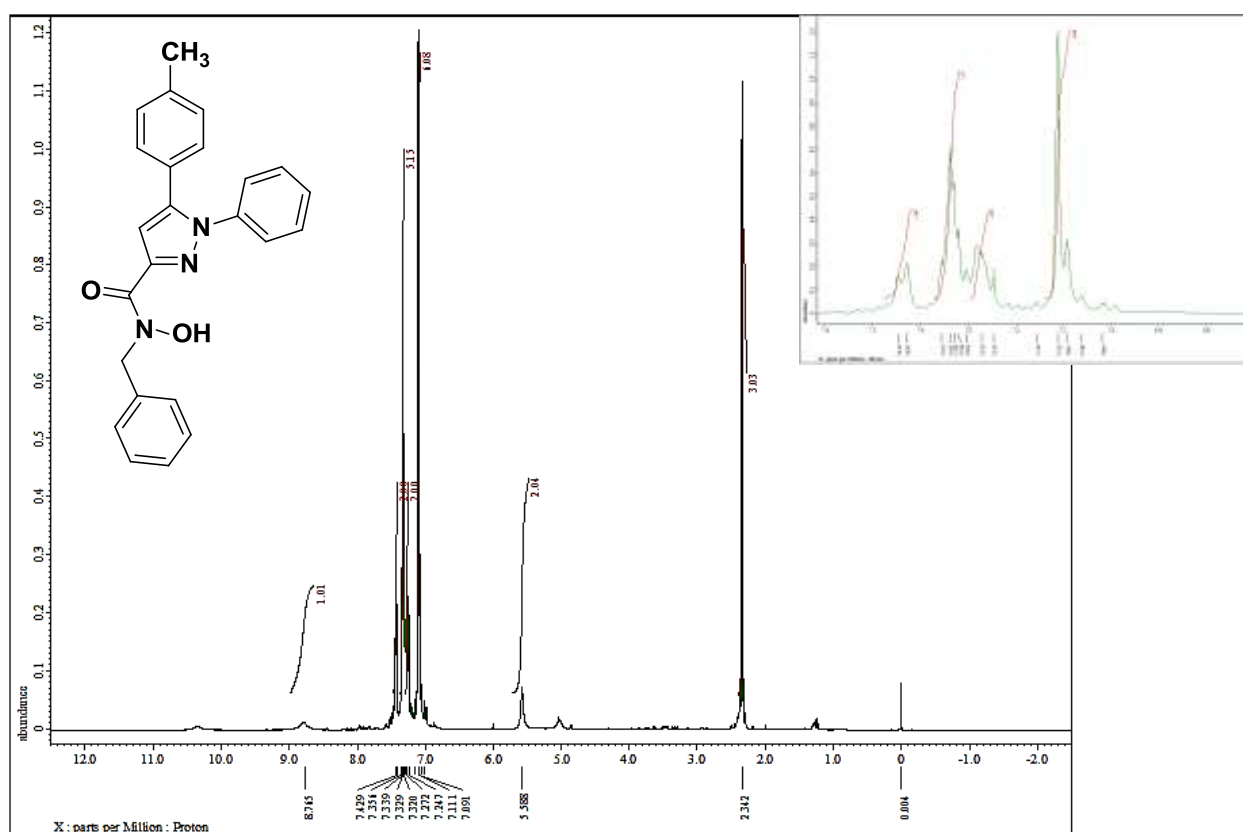


Figure 4. ¹H-NMR spectrum of compound 5a in CDCl₃.

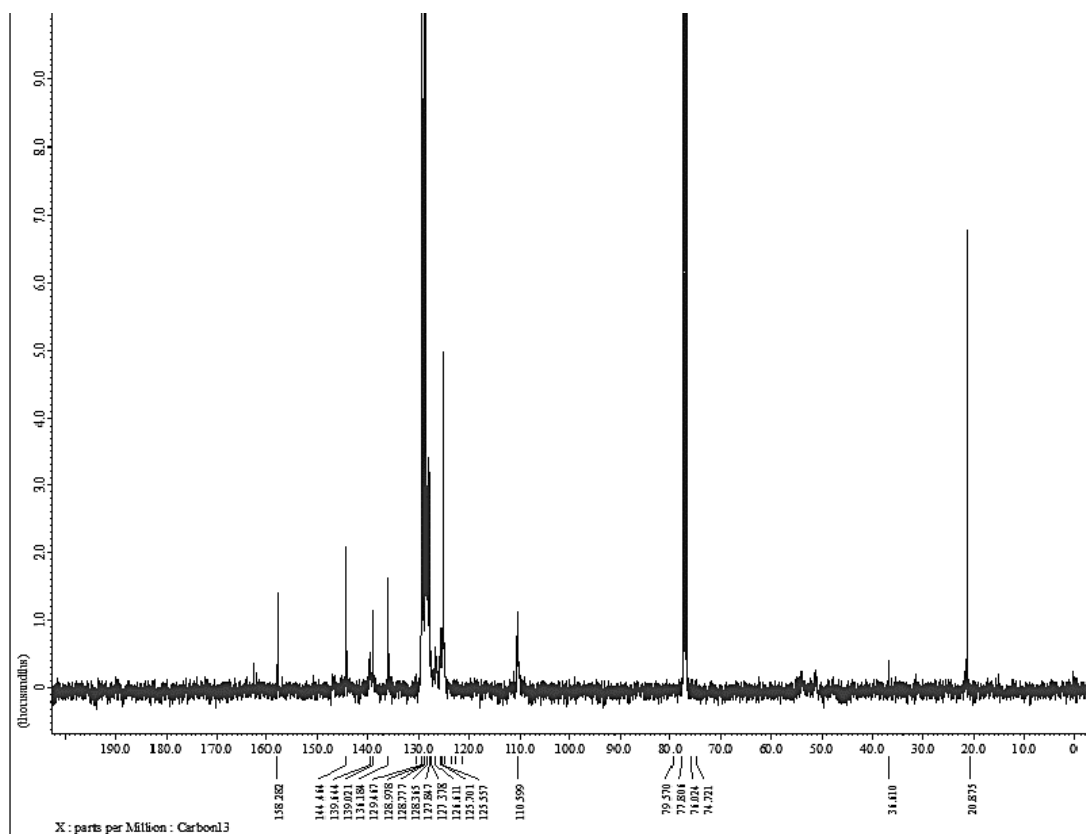


Figure 5. ^{13}C -NMR spectrum of compound **5a** in CDCl_3 .

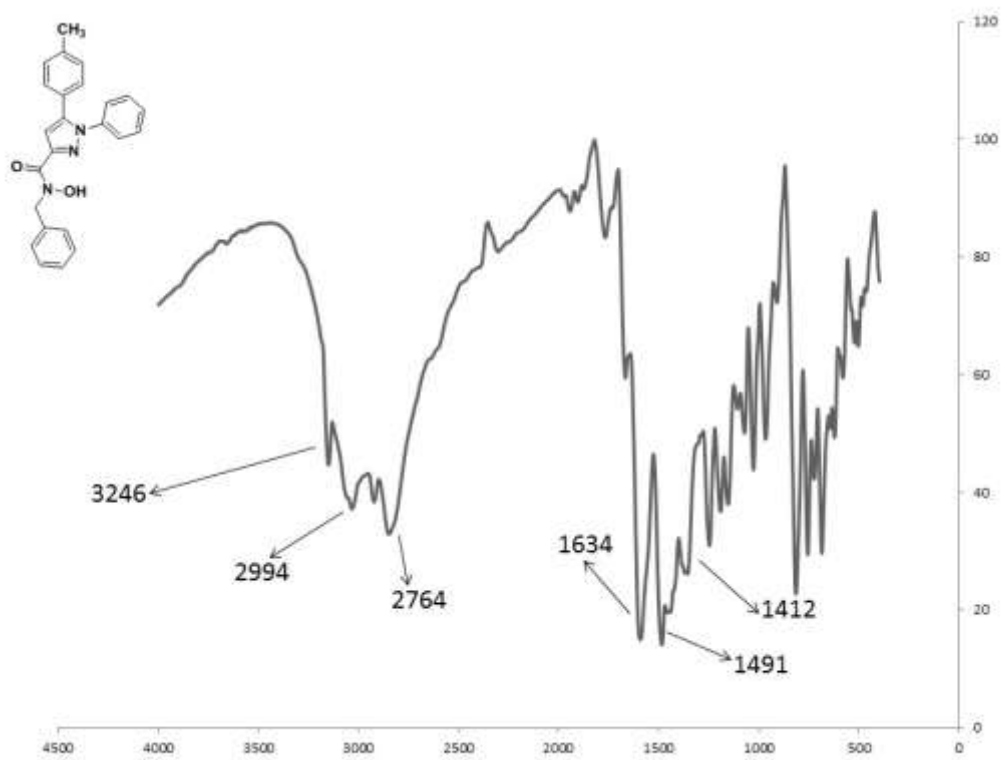
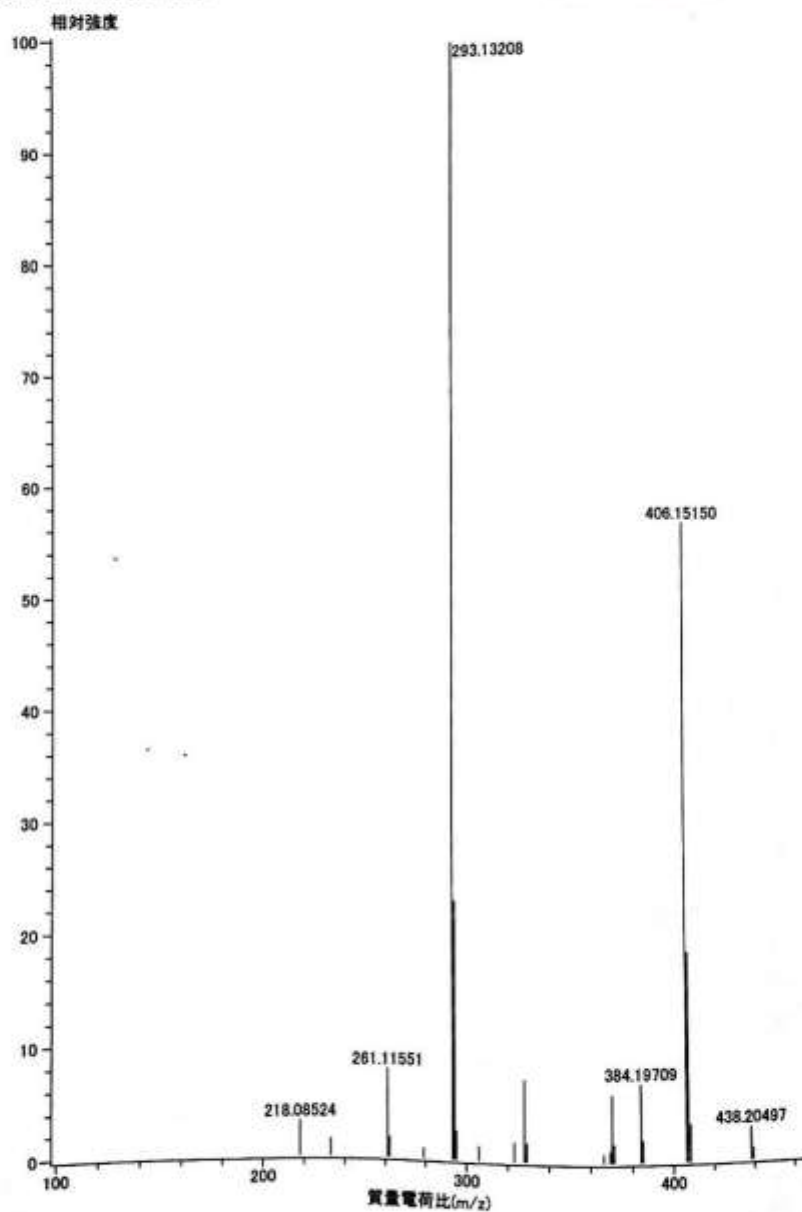


Figure 6. IR spectrum of compound **5a**.

測定データ名: osama200606-C15
 試料名(内部):
 イオン化モード: ESI+ オリフィス1電圧補正: 85V
 質量校正データ名: TFA_{Na}ESI+.1000 質量電荷比範囲: 100.0-1000.0
 処理履歴: m/z軸決定[ピーク検出(重心,1,面積);ベース補正[];平滑化[21]]ベース補正[5.0%];平均(MS[1]) 0.894.0.961
 実験日時: 2020/06/06 11:06:29
 スペクトル記録間隔: 0.4[s]
 リングレンズ電圧: 15[V]
 代表測定経過時間: 0.896[min]
 分析者名: Administrator



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Figure 7. Compound **5a** HRESI-MS m/z calcd for $[M+Na]^+ C_{24}H_{21}N_3O_2$: 406.1531, found: 406.1515.

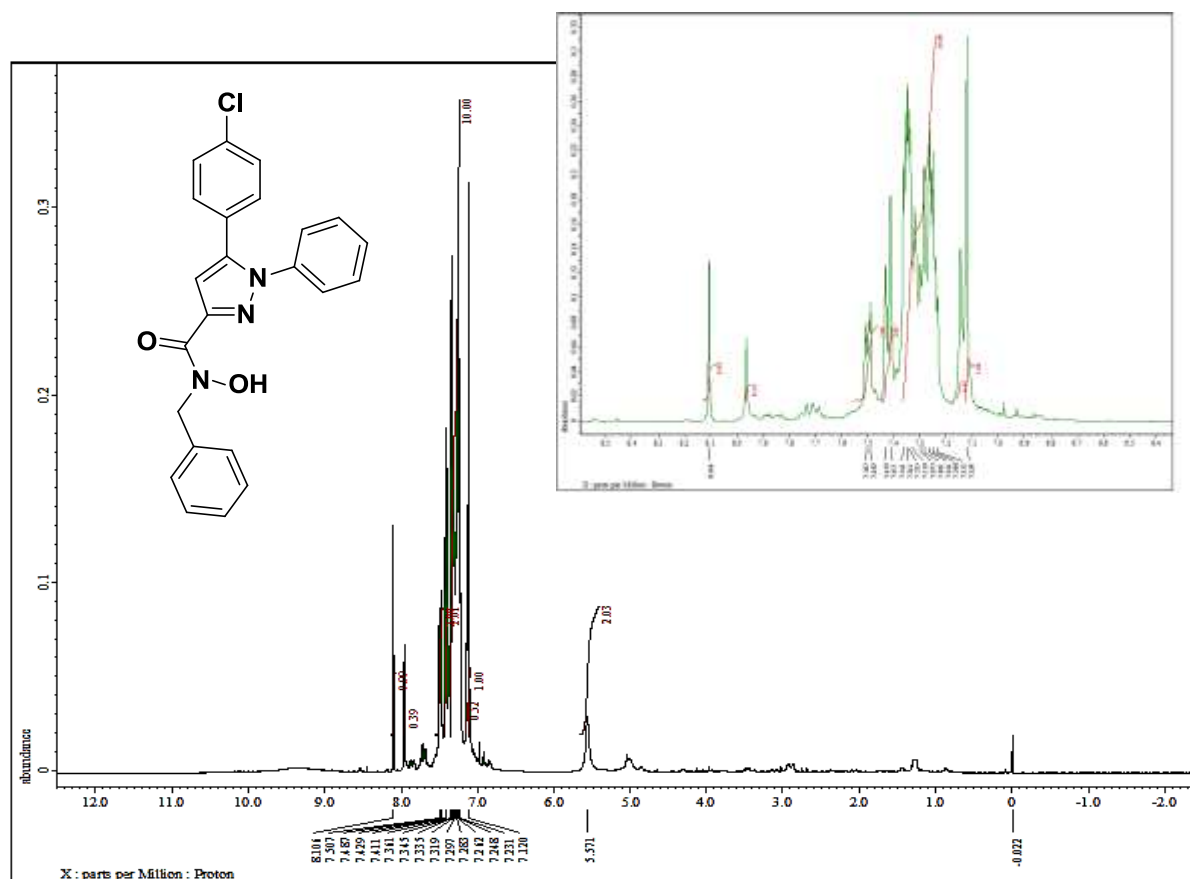


Figure 8. ¹H-NMR spectrum of compound 5b in CDCl₃.

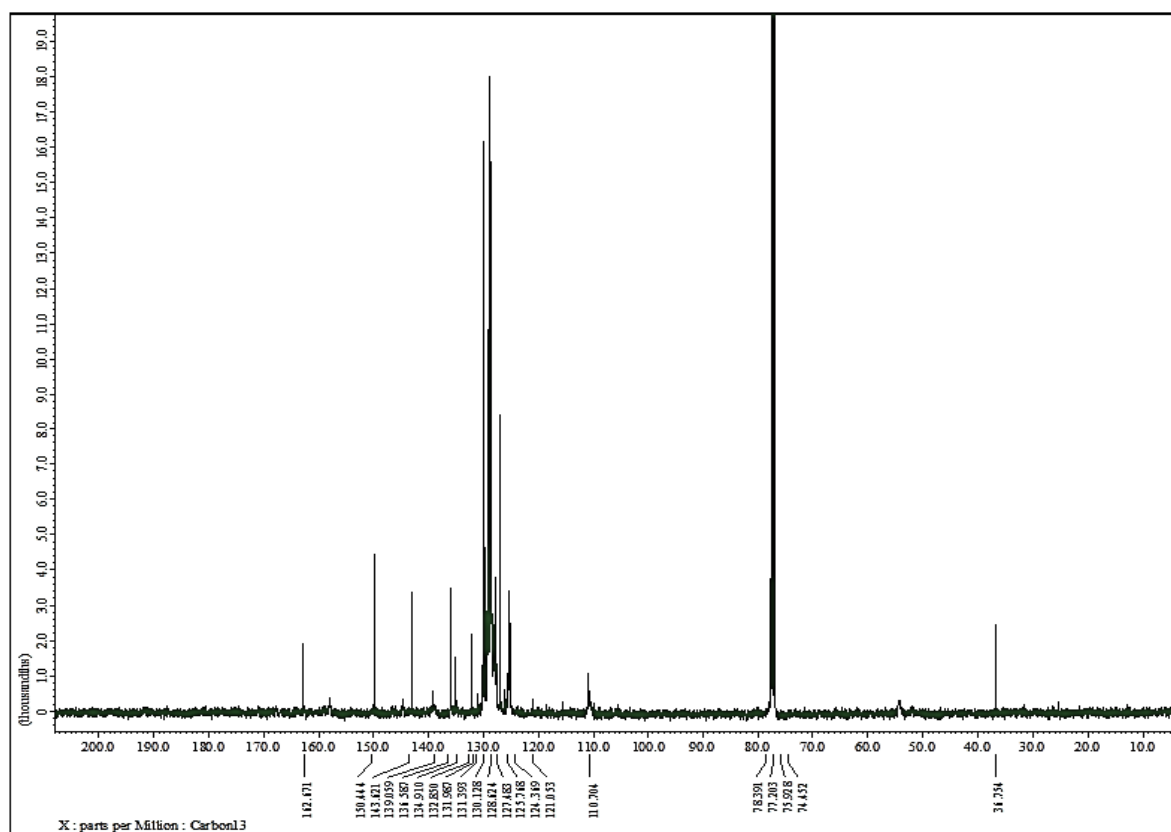


Figure 9. ¹³C-NMR spectrum of compound 5b in CDCl₃.



Figure 10. IR spectrum of compound 5b.

測定データ名: osama200806-C16
 試料名(内部):
 イオン化モード: ESI+ オリフィス1電圧掃引: 85V
 質量校正データ名: TFA/Na₂ESI+ 1000 質量電荷比範囲: 100.0-1000.0
 処理履歴: m/z軸決定[ピーク検出(重心,1,面積),ベース補正□,平滑化[15]] ベース補正[5.0%],平均(MS[1]) 0.715,0.833
 実験日時: 2020/06/06 11:08:16
 スペクトル記録間隔: 0.4[s]
 リングレンズ電圧: 15[V]
 代表測定経過時間: 0.776[min]
 分析者名: Administrator

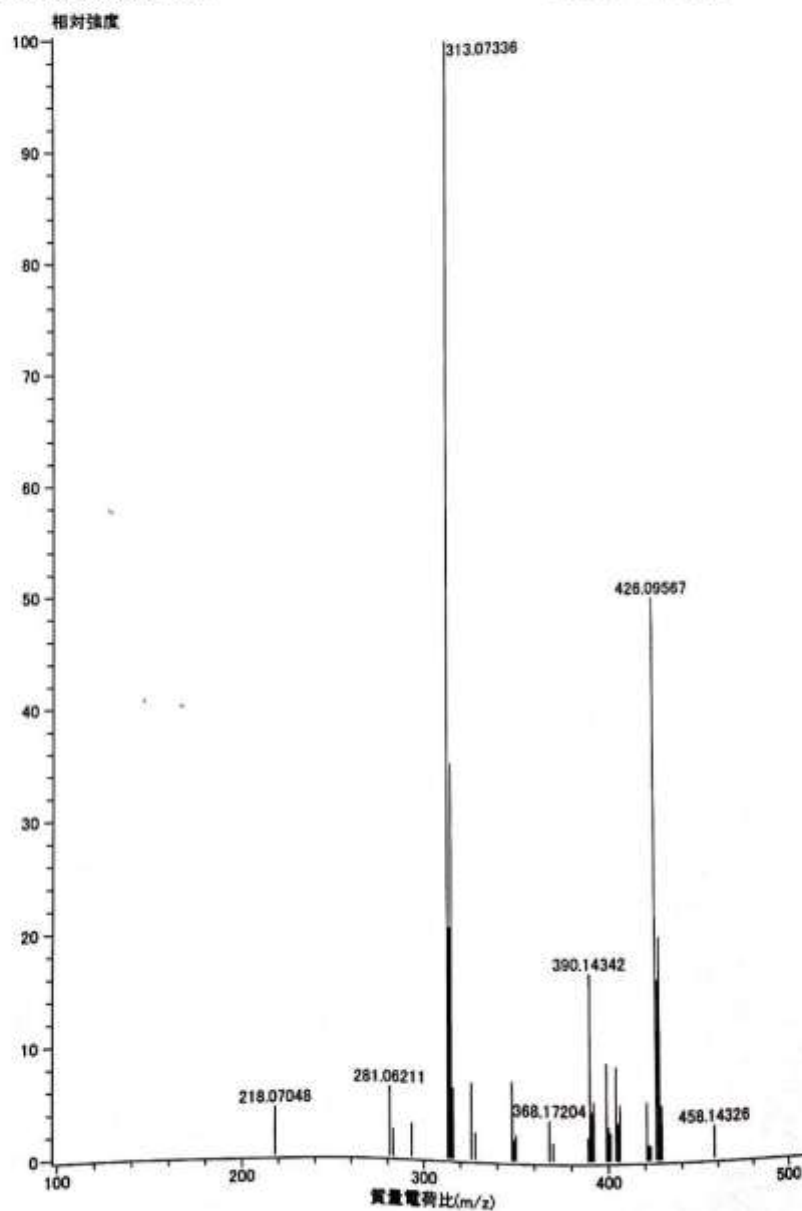


Figure 11. Compound **5b** HRESI-MS m/z calcd for $[M+Na]^+$ C₂₃H₁₈ClN₃O₂: 426.0985, found: 426.0956.

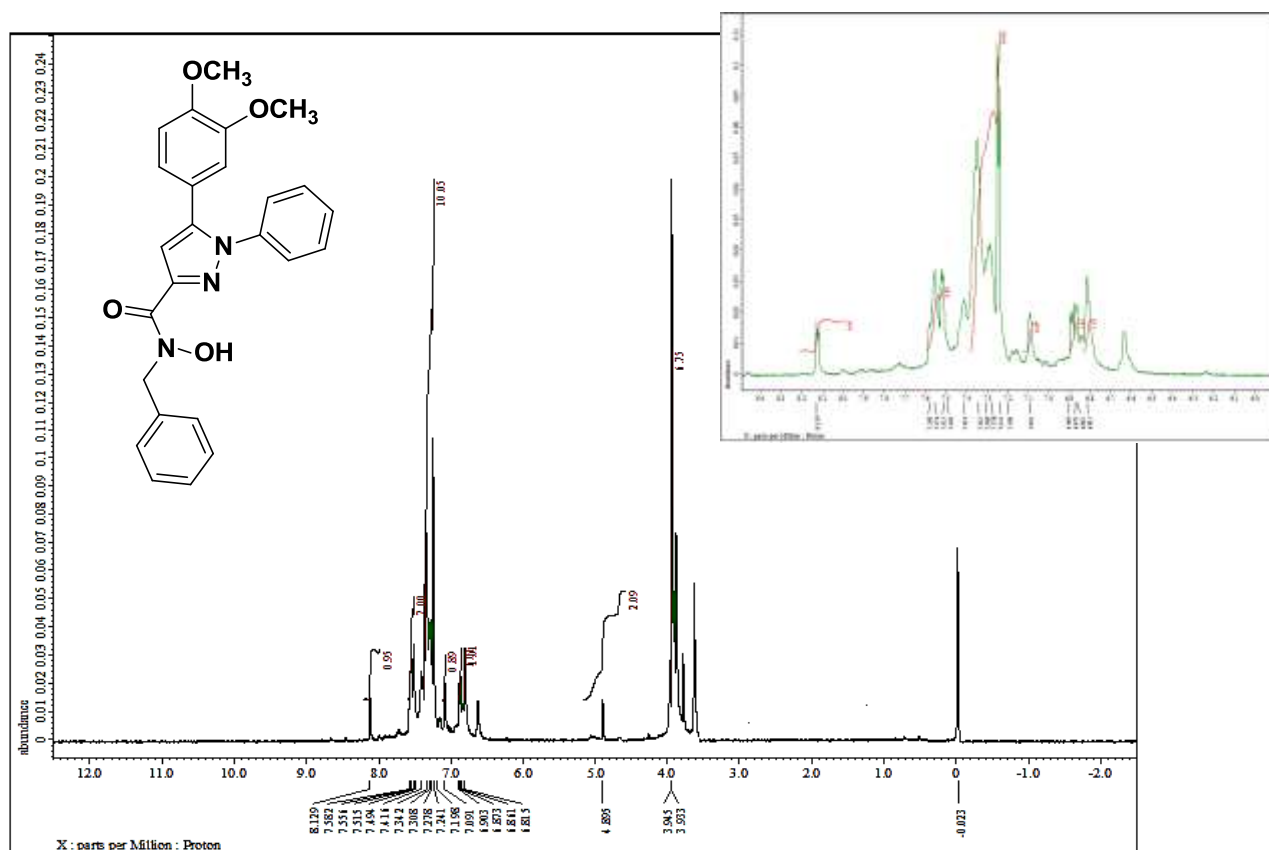


Figure 12. ¹H-NMR spectrum of compound 5c in CDCl₃.

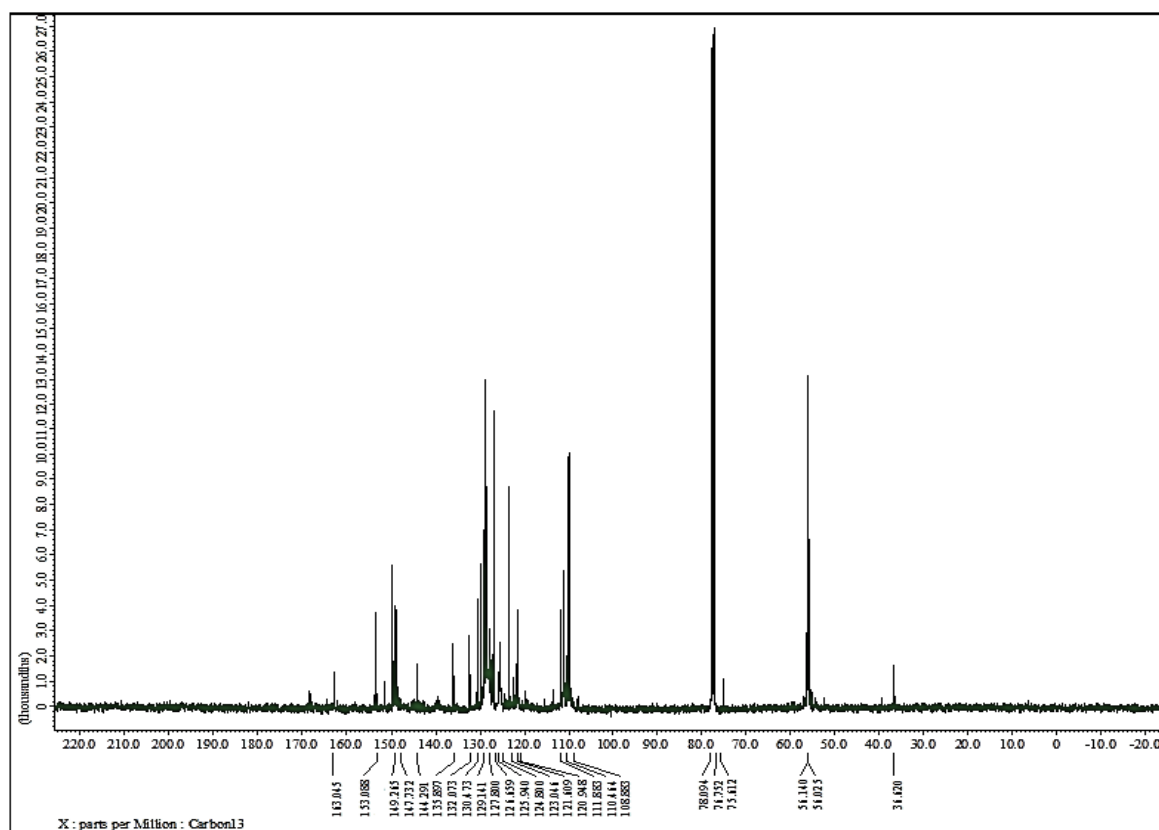
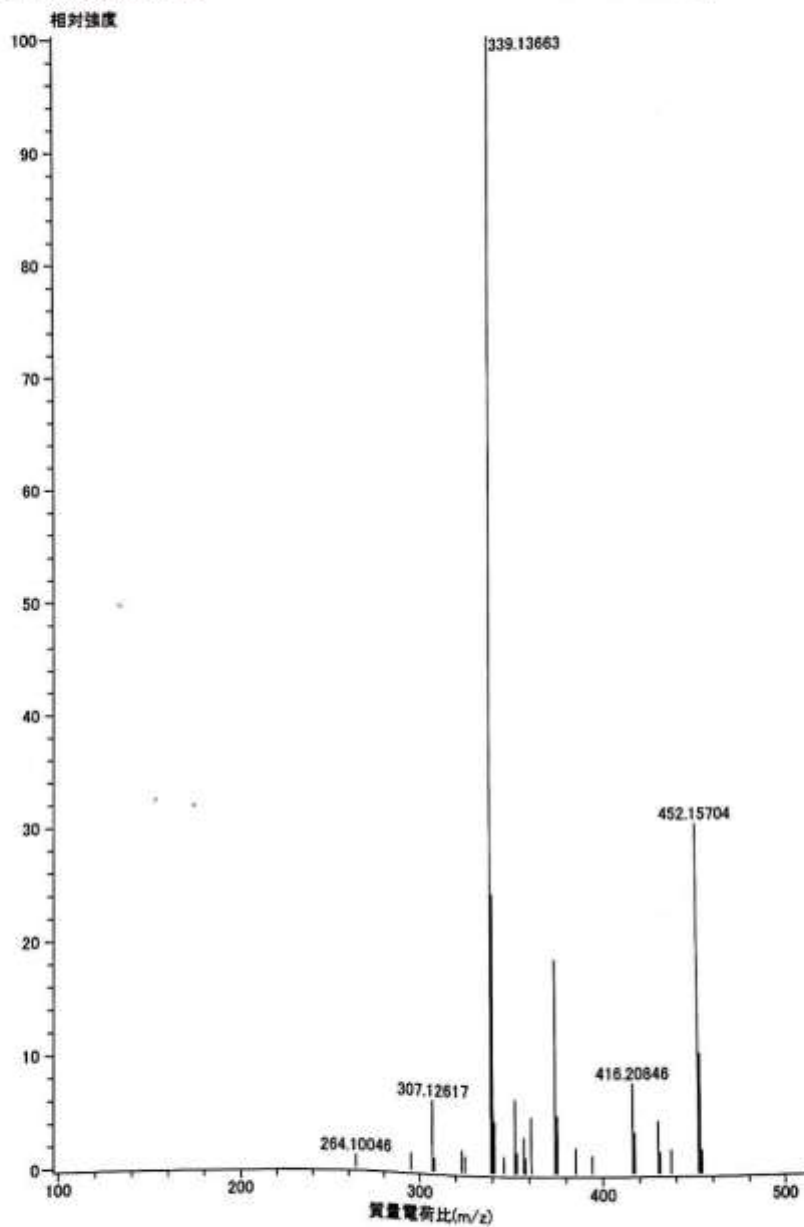


Figure 13. ^{13}C -NMR spectrum of compound 5c in CDCl_3 .



Figure 14. IR spectrum of compound 5c.

測定データ名: osama200606-C17
 試料名(内部):
 イオン化モード: ESI+ オリフィス1電圧掃引: 85V
 質量校正データ名: TFA.Na.ESI+.1000 質量電荷比範囲: 100.0.1000.0
 処理履歴: m/z軸決定[ピーク検出[頂上,面積],ベース補正[平滑化[19]]];ベース補正[5.0%];平均(MS[1] 0.831,0.948)
 実験日時: 2020/06/06 11:10:16
 スペクトル記録間隔: 0.4[s]
 リングレンズ電圧: 15[V]
 代表測定経過時間: 0.856[min]
 分析者名: Administrator



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Figure 15. Compound 5c HRESI-MS m/z calcd for $[M+Na]^+$ $C_{25}H_{23}N_3O_4$: 452.1586, found: 452.1570.