

Supplementary Information

A convenient synthesis and biological activities of *N*-(pyridin-3-ylmethylene) benzohydrazides by the condensation of nicotinaldehydes with benzohydrazides

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and

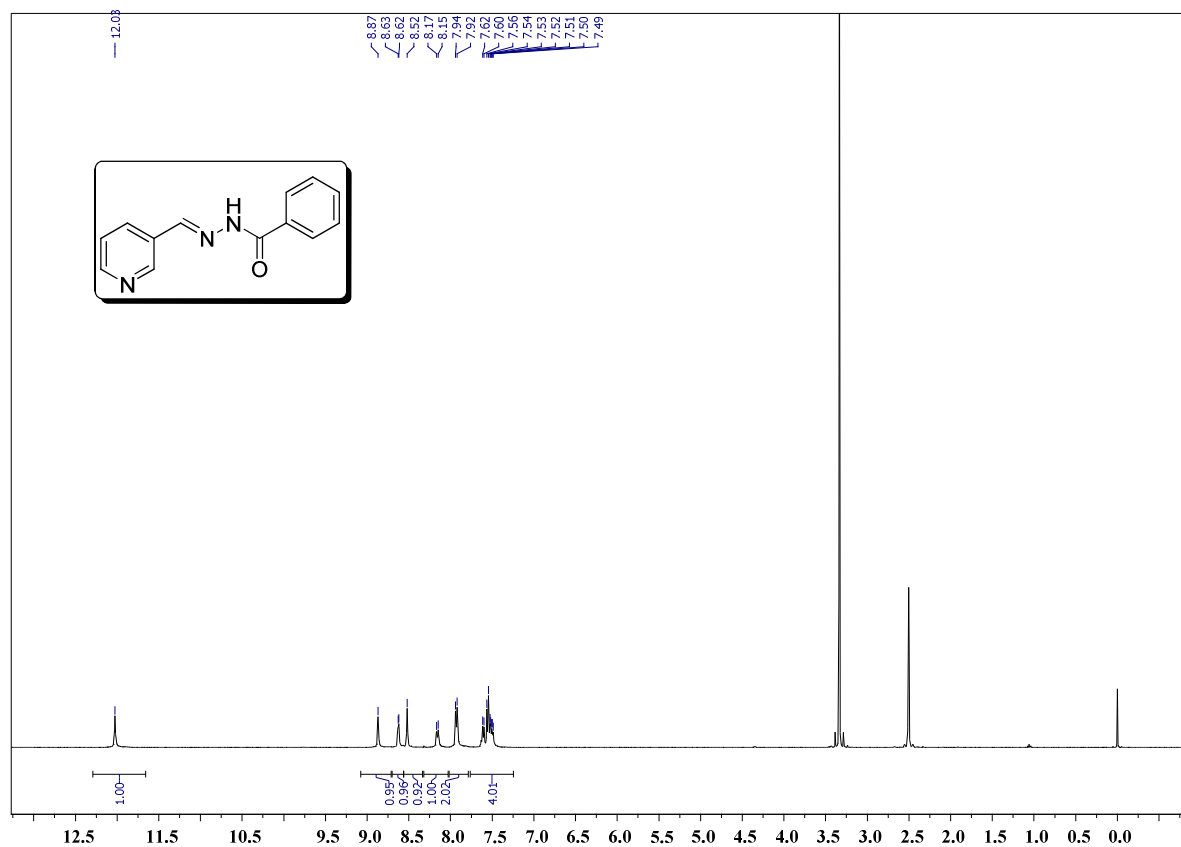
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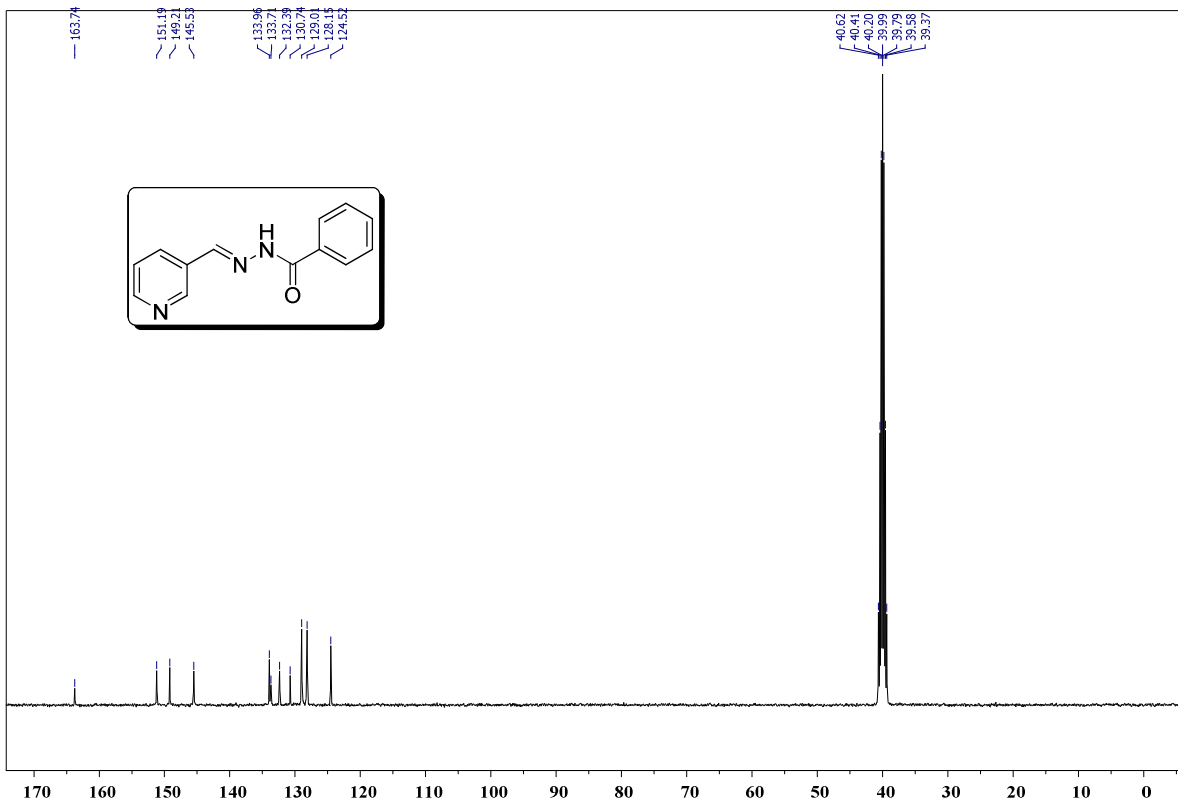
I. Experimental Section

Nicotinaldehyde, 2-chloronicotinaldehyde, thio-morpholine, 4-fluorobenzoic hydrazide were procured from Sigma-Aldrich. Piperidine, morpholine, substituted benzhydrazides and solvents were obtained from local suppliers. All the reactions were monitored by thin layer chromatography (TLC) on pre-coated silica gel 60 F₂₅₄ (mesh); spots were visualized under UV light. Merck silica gel (60-120, 100-200 mesh) was used for column chromatography. ¹H NMR and ¹³C NMR spectra were recorded on an Avance 300, 400, 500 MHz spectrometers in CDCl₃ using TMS as internal standard. FT-IR spectra were recorded on Nicolet Nexus 670 FT spectrometer. ESI-MS obtained on quarto micro spectrometer. Melting points were determined in open glass capillary tubes on a Stuart melting point apparatus and are uncorrected.

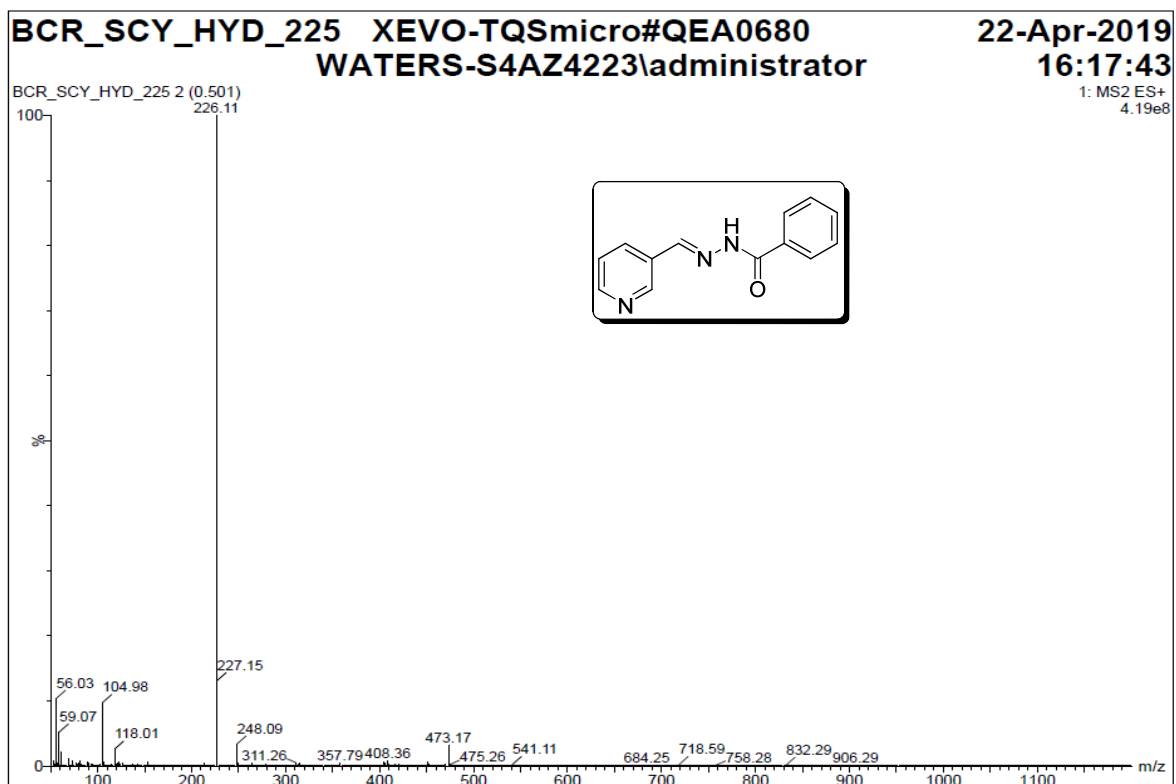
II. Copies of ¹H-NMR, ¹³C-NMR and Mass spectrum of compounds 3a-y



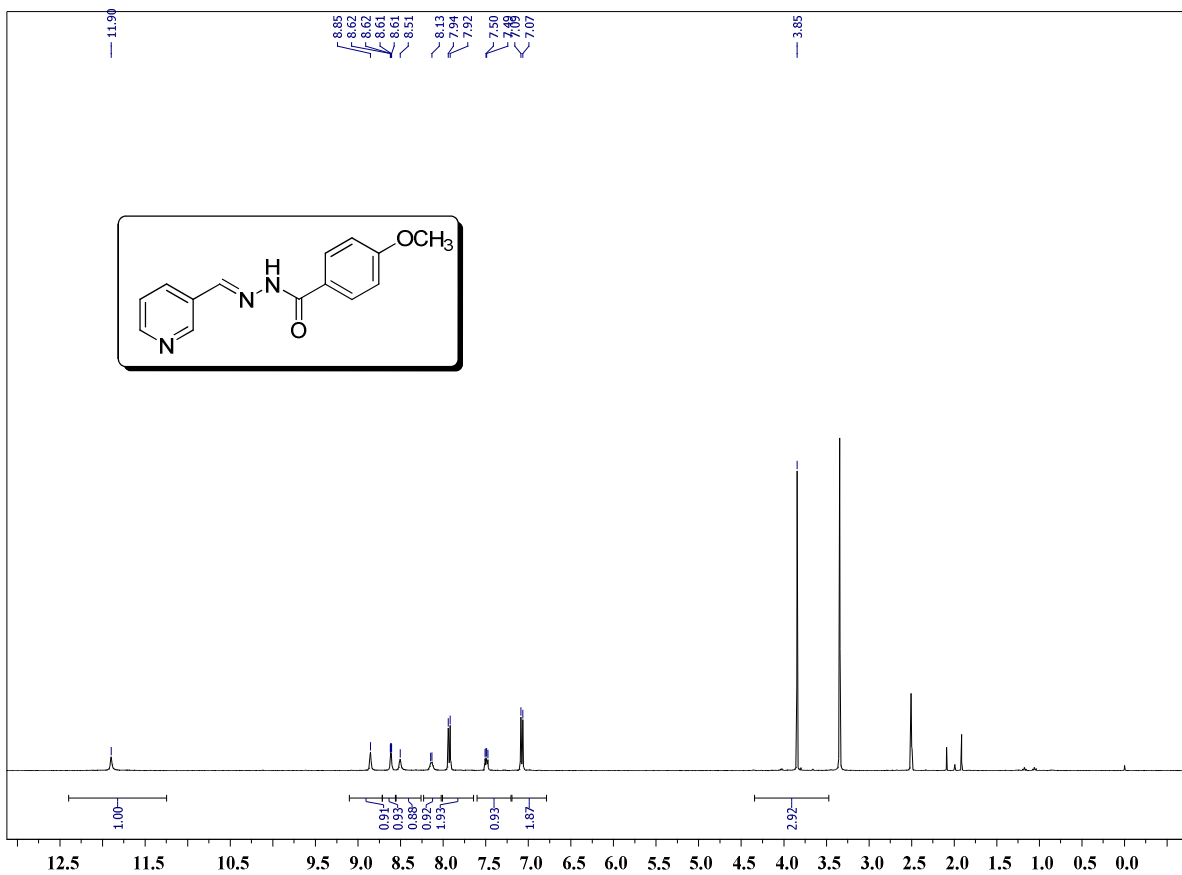
¹H NMR Spectrum of compound 3a



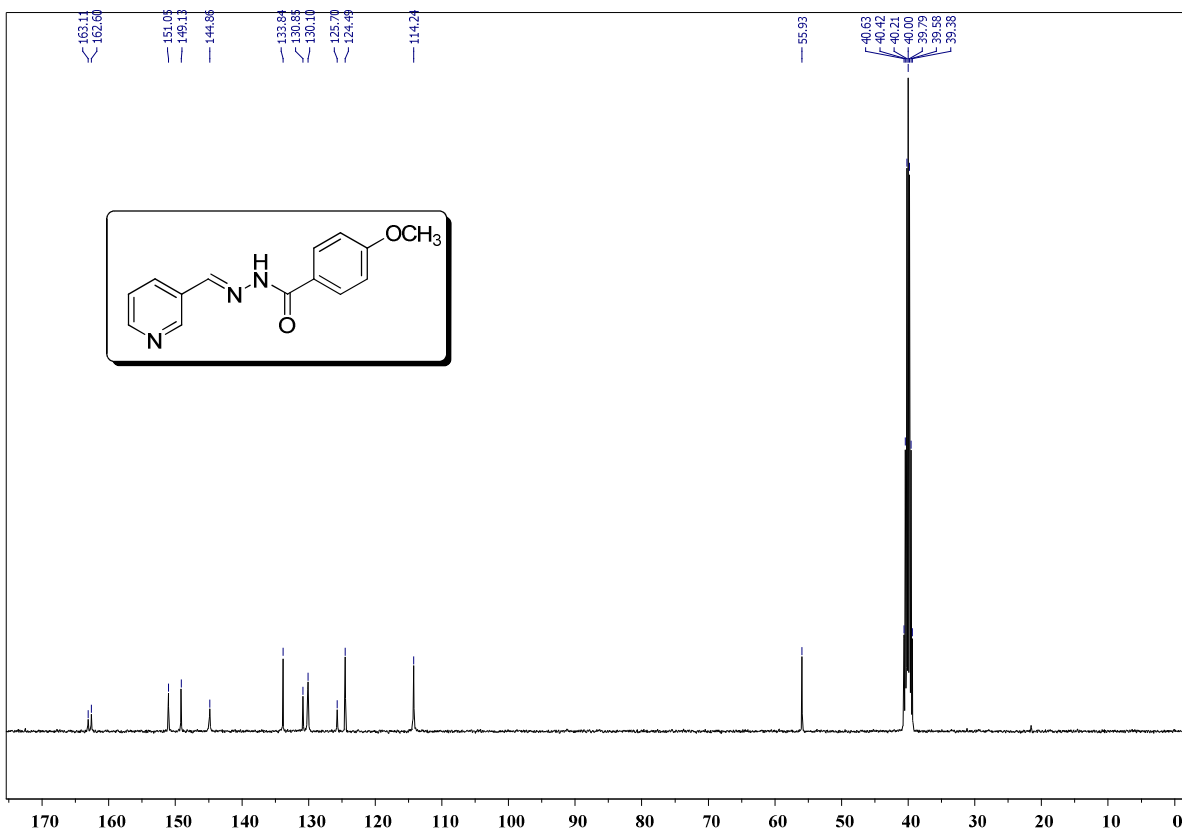
^{13}C NMR Spectrum of compound **3a**



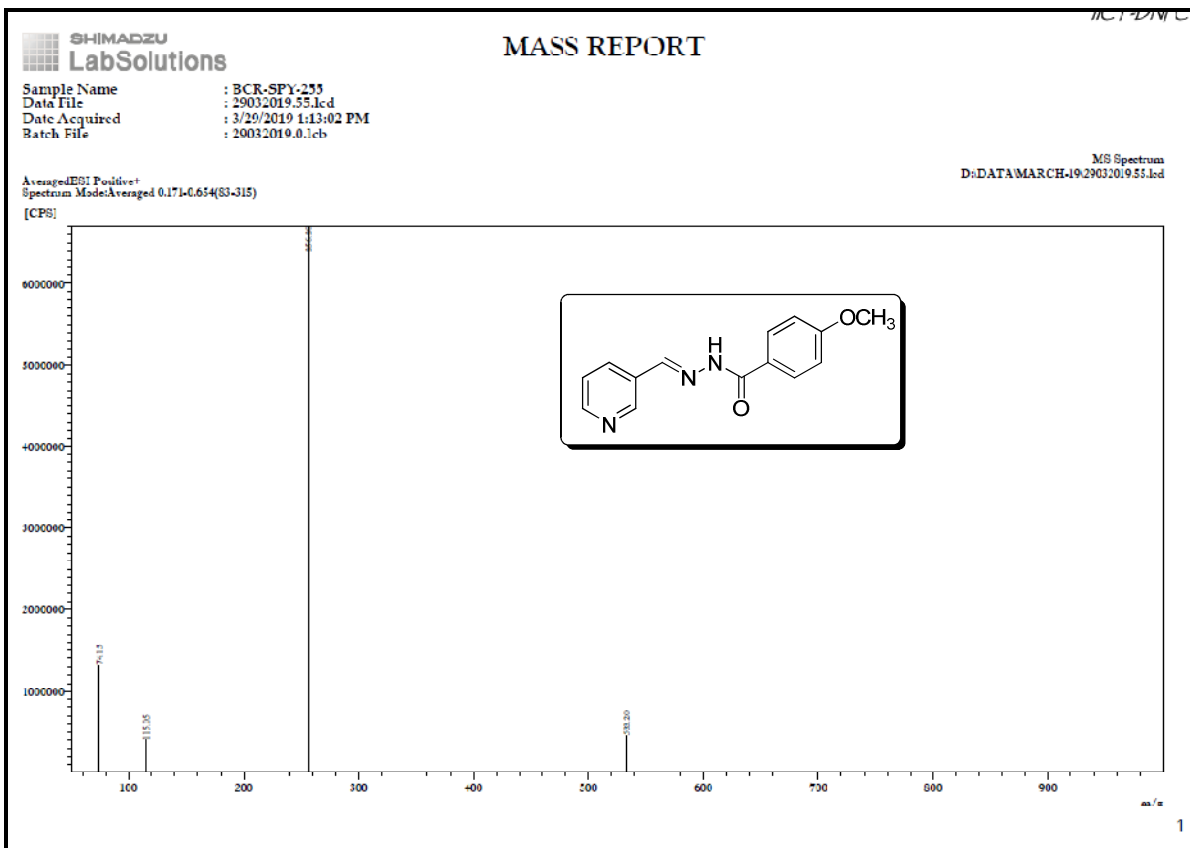
MASS Spectrum of compound **3a**



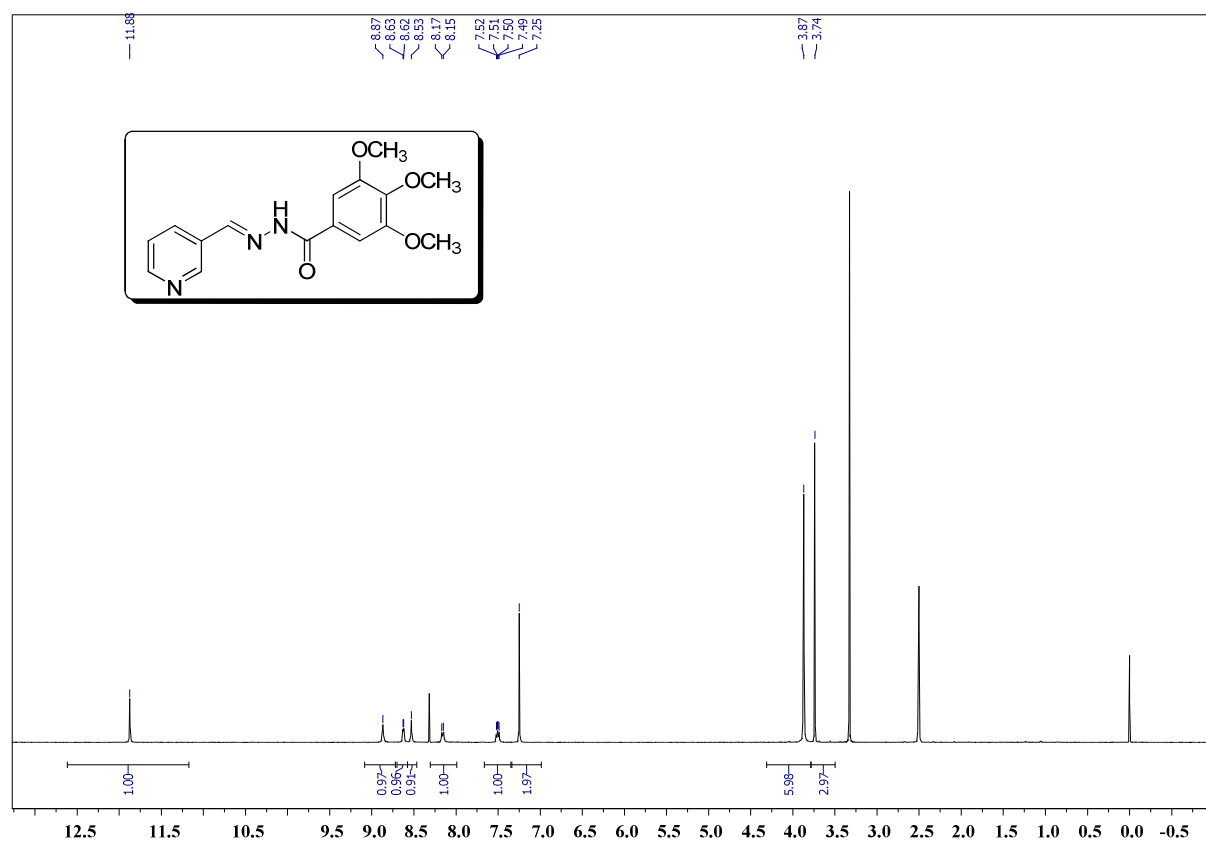
¹H NMR Spectrum of compound 3b

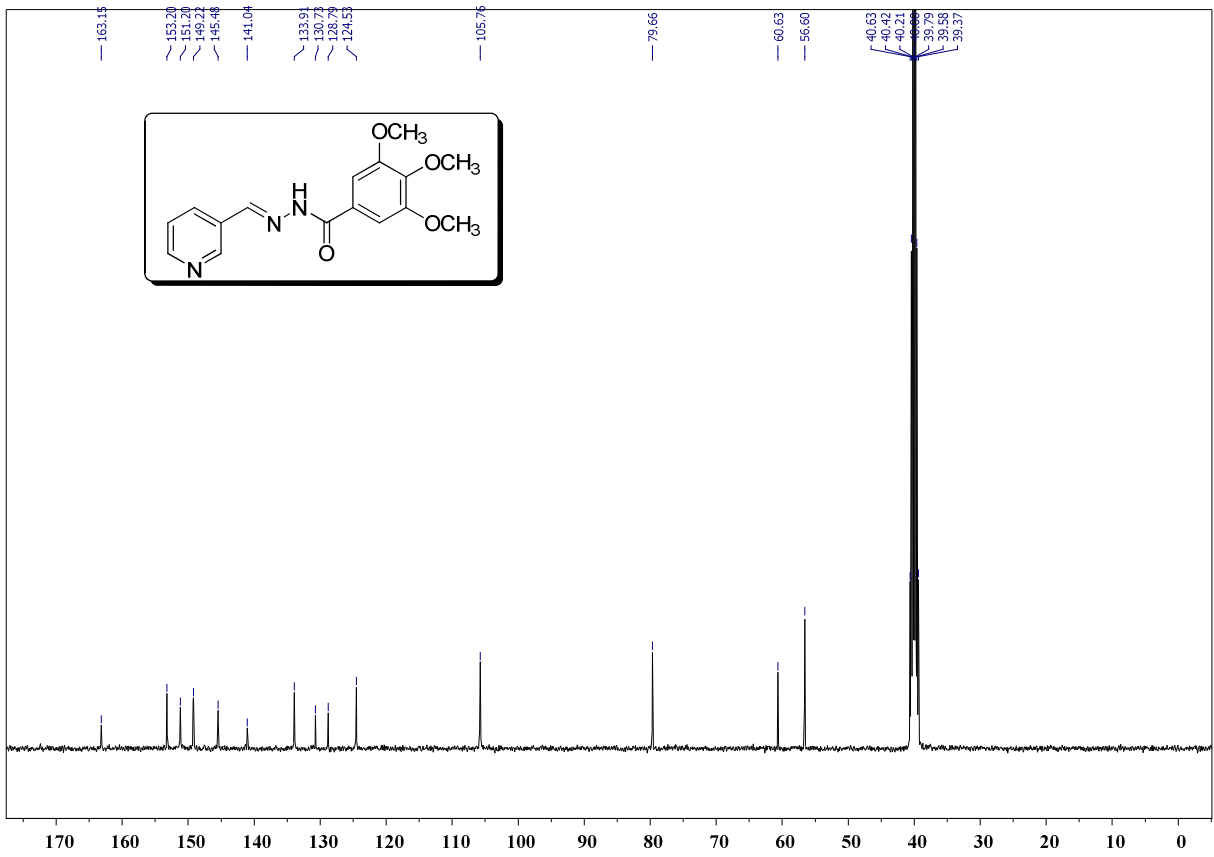


¹³C NMR Spectrum of compound 3b

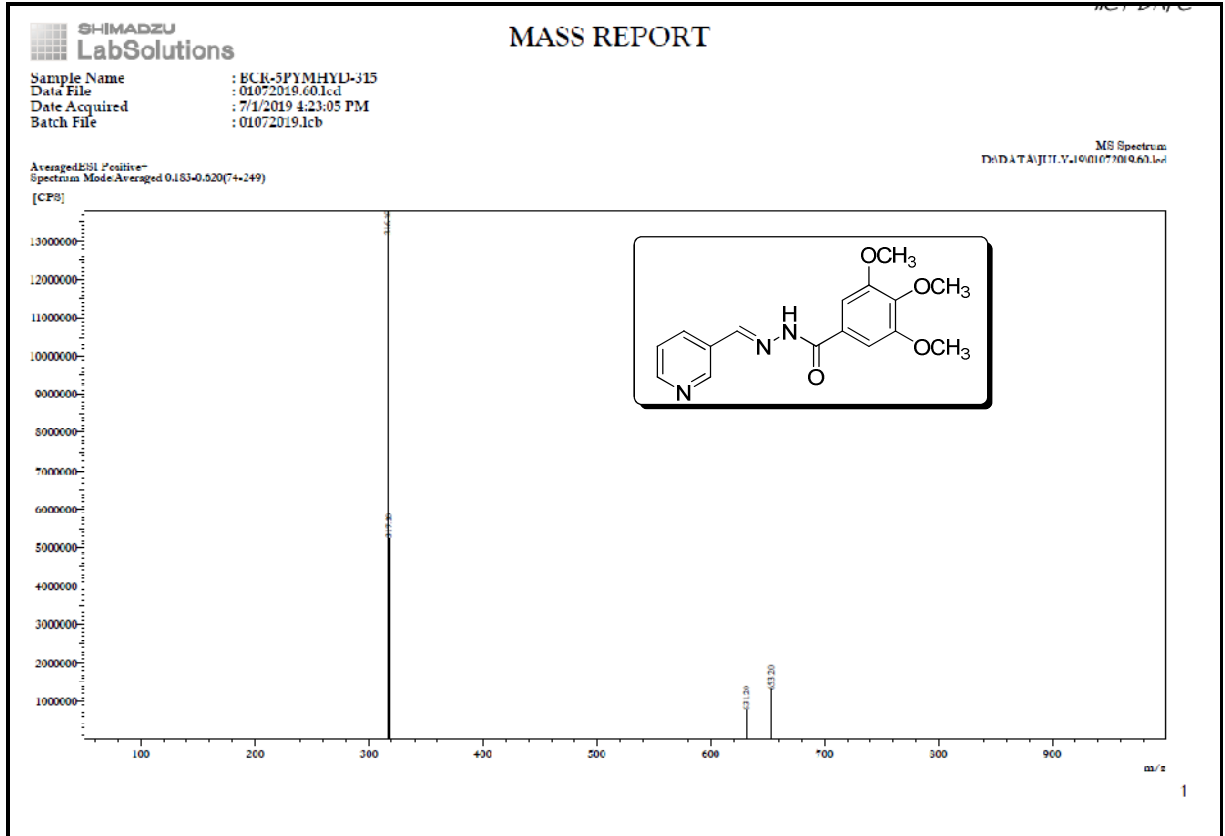


MASS Spectrum of compound **3b**

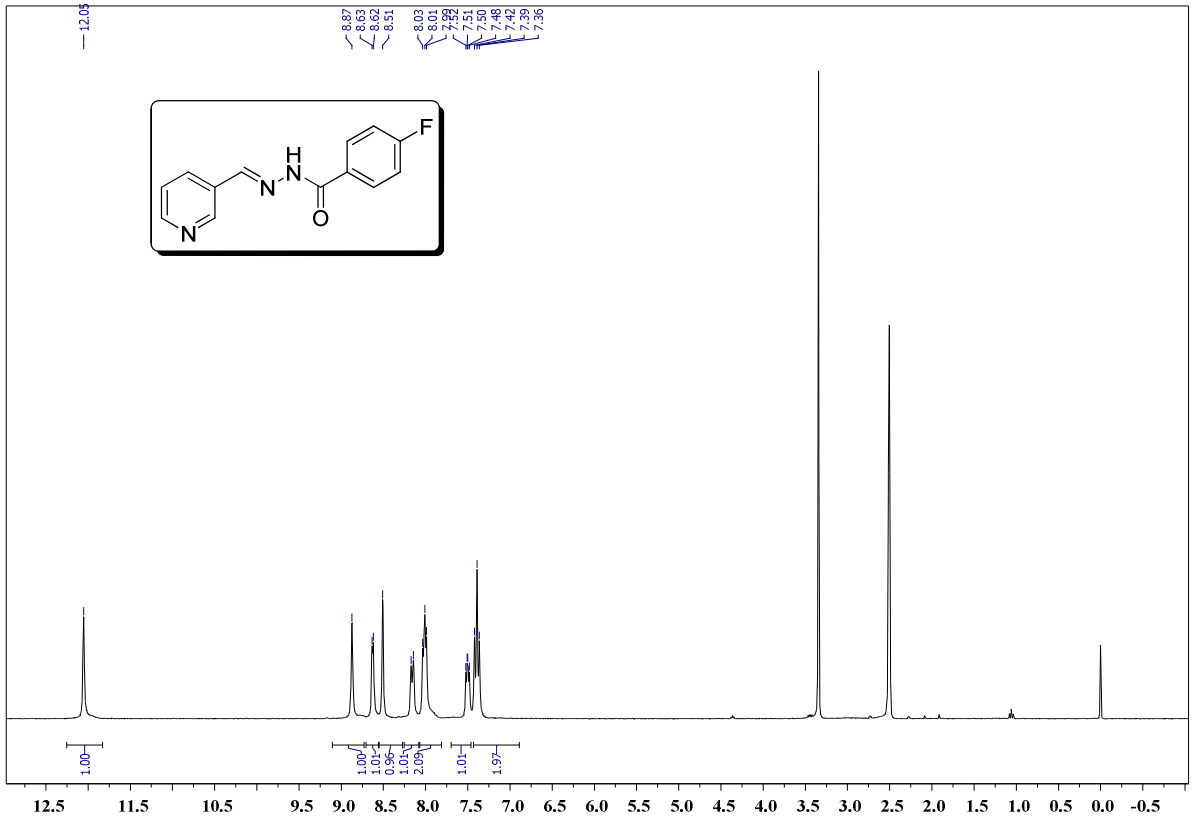




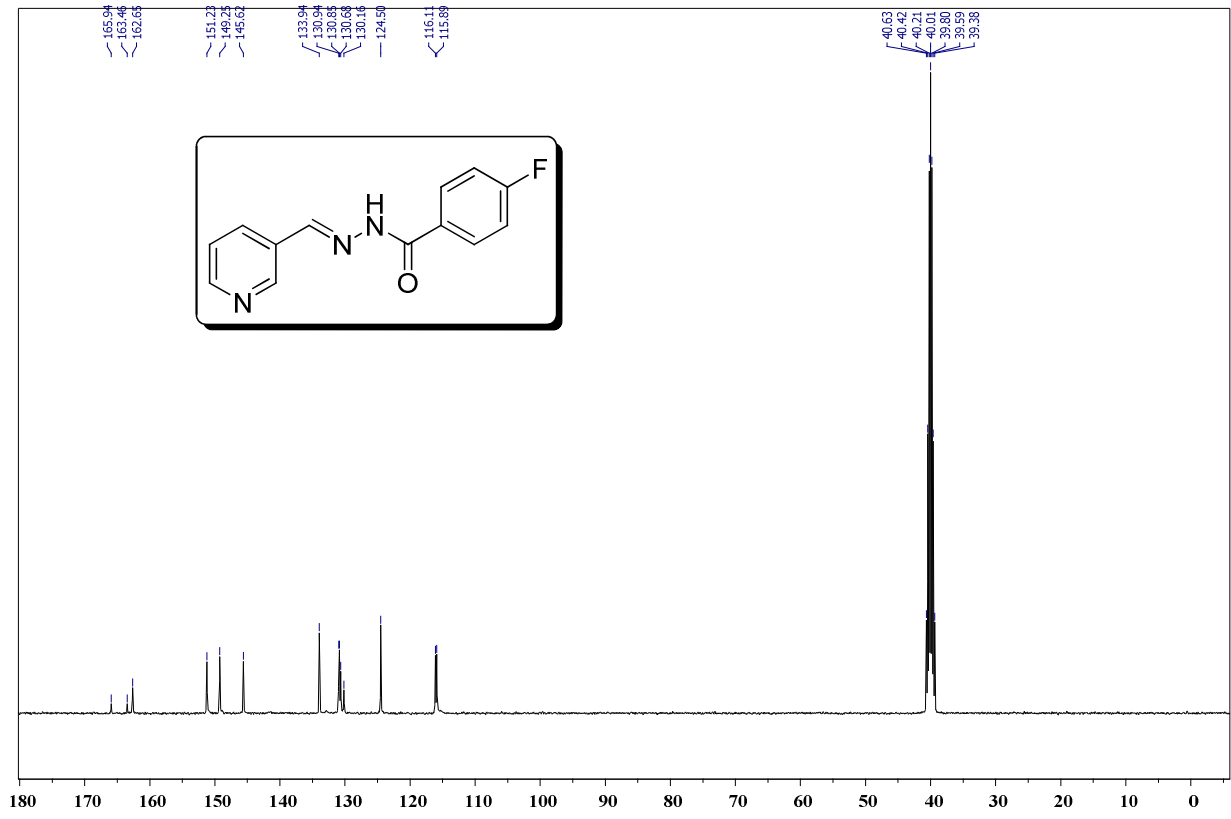
¹³C NMR Spectrum of compound **3c**



MASS Spectrum of compound **3c**



¹H NMR Spectrum of compound 3d

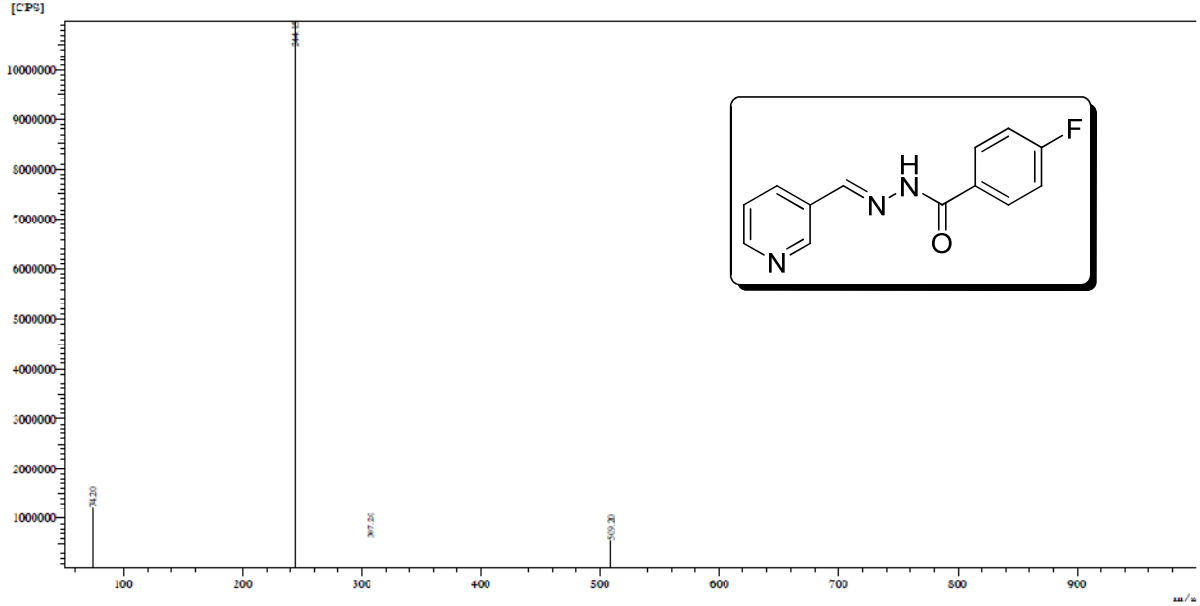


¹³C NMR Spectrum of compound 3d

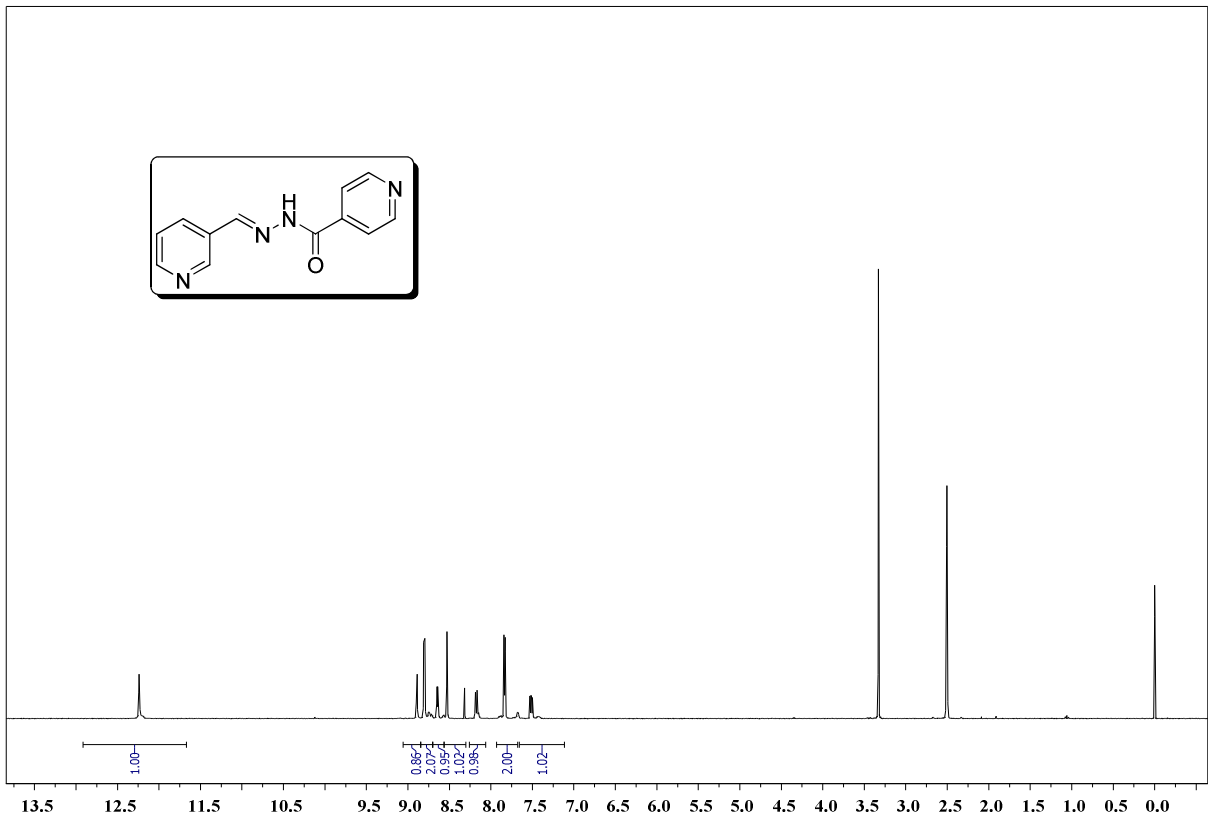
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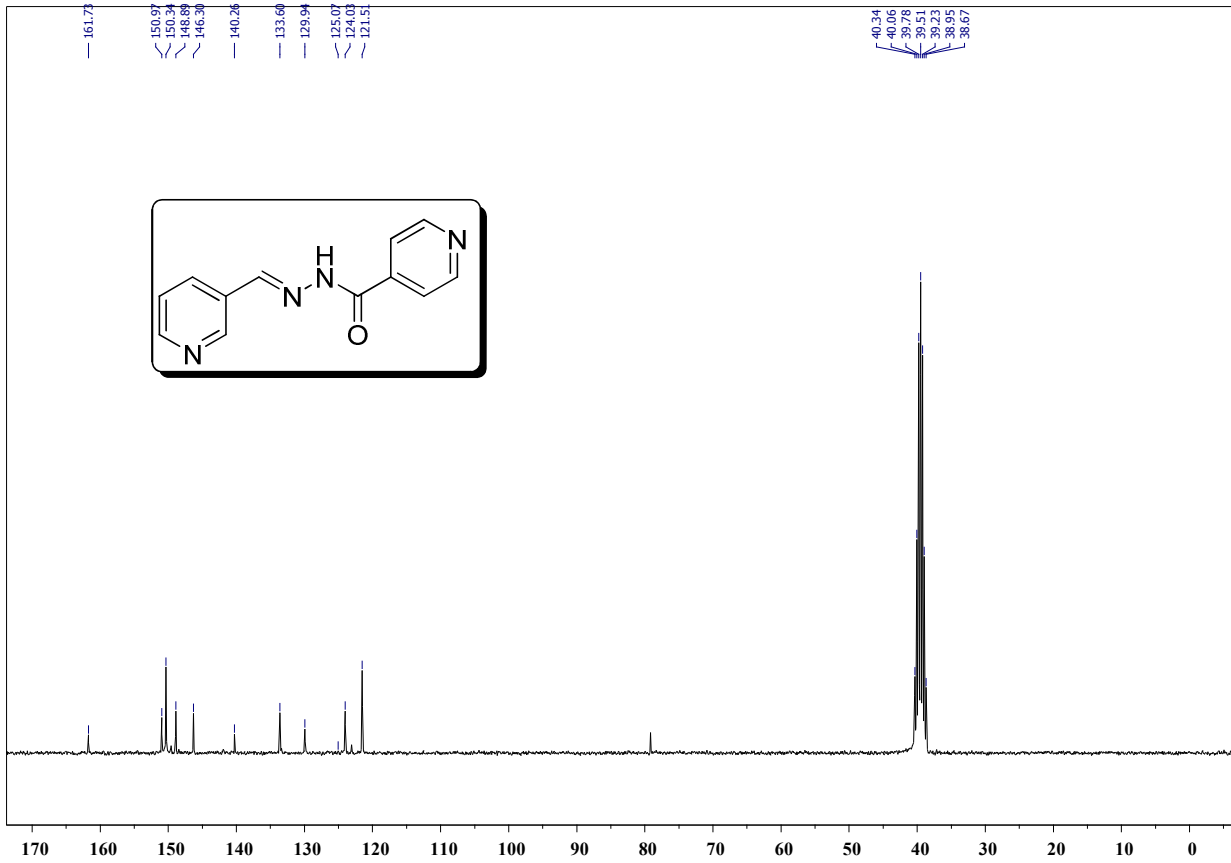
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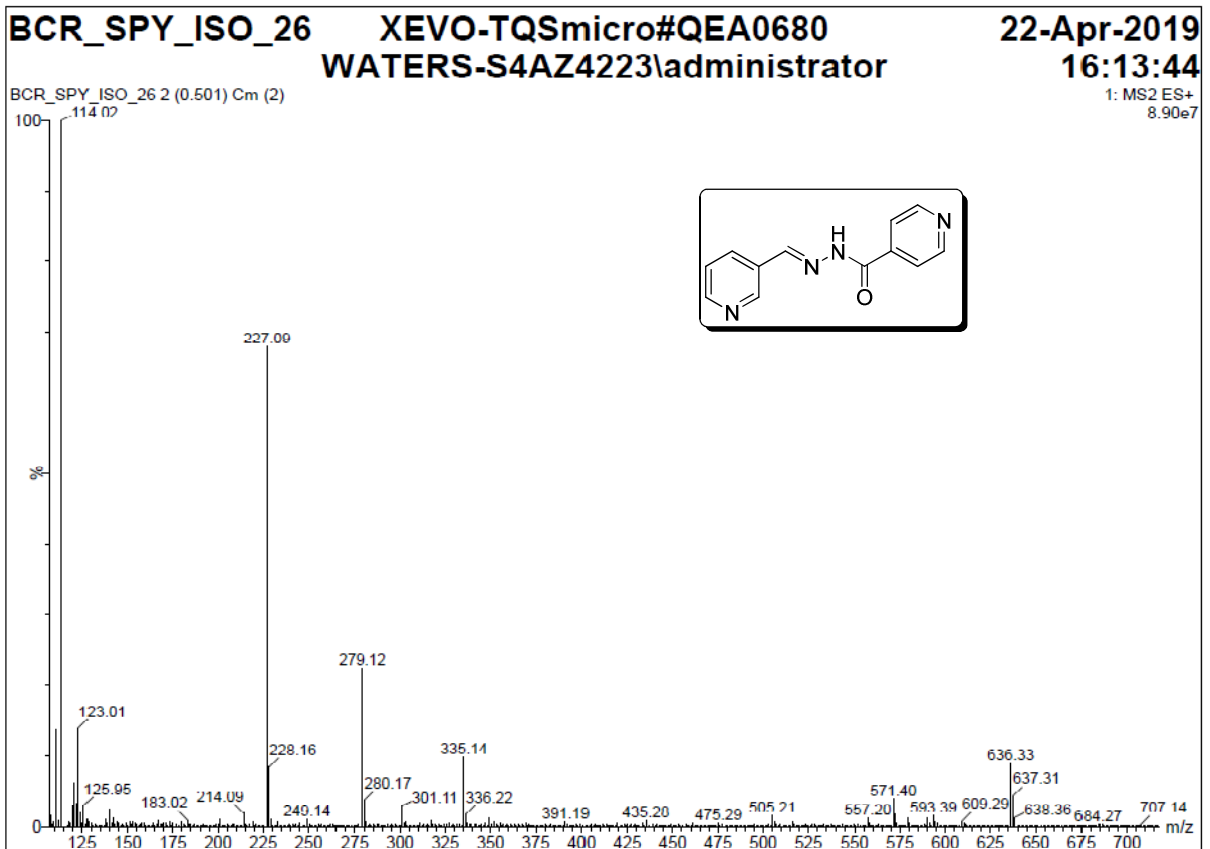
MASS Spectrum of compound 3d



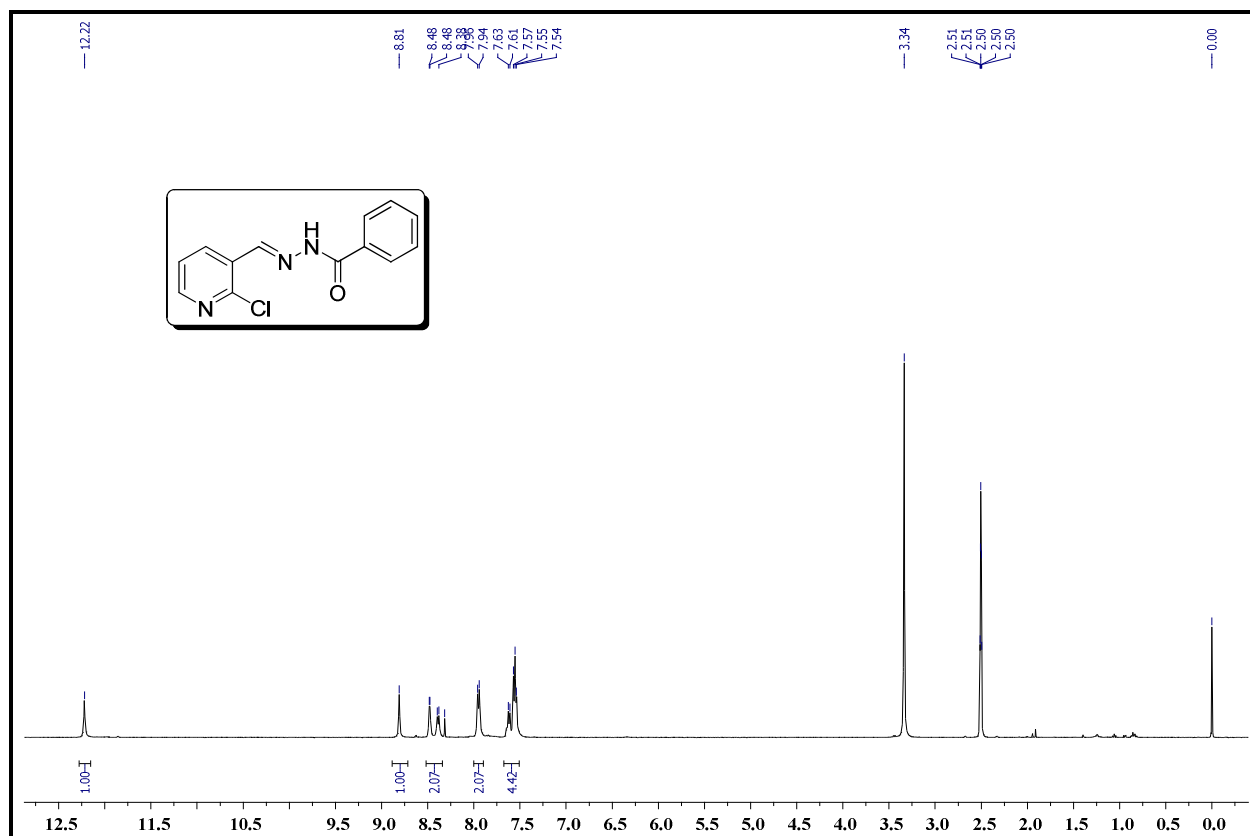
¹H NMR Spectrum of compound 3e



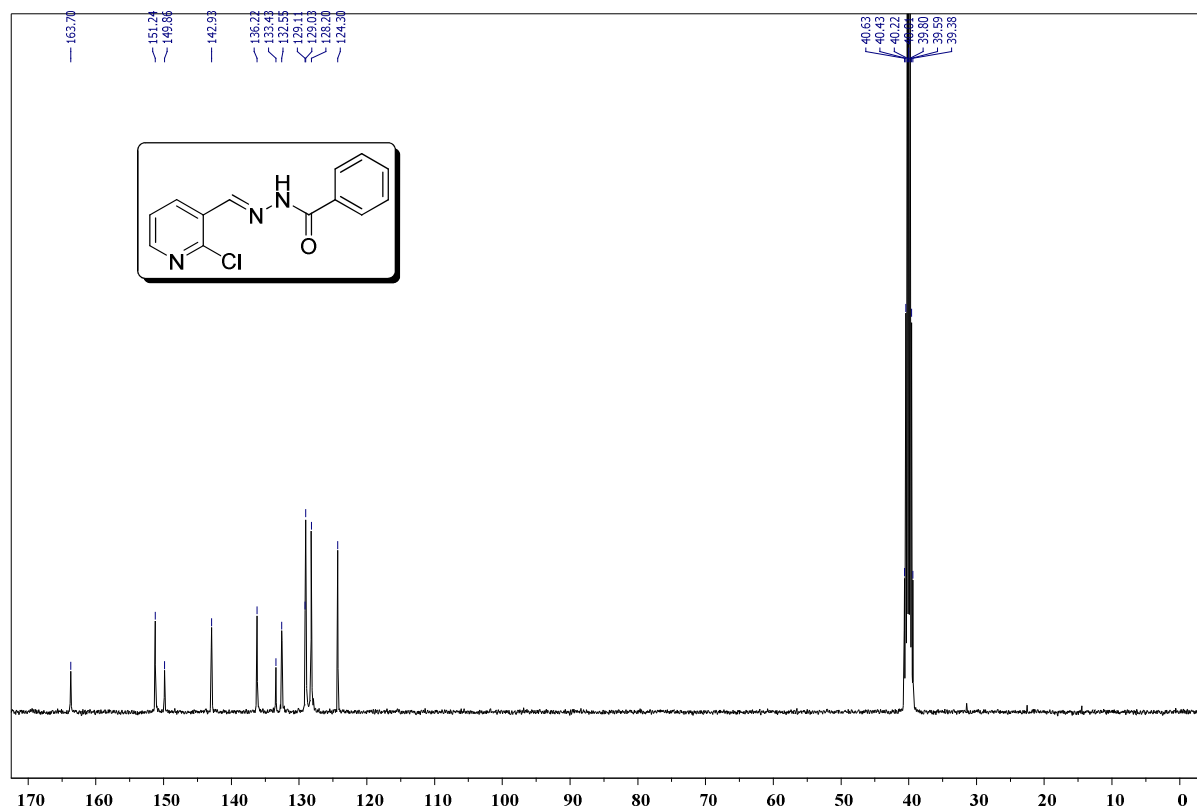
¹³C NMR Spectrum of compound 3e



MASS Spectrum of compound 3e



¹H NMR Spectrum of compound 3f

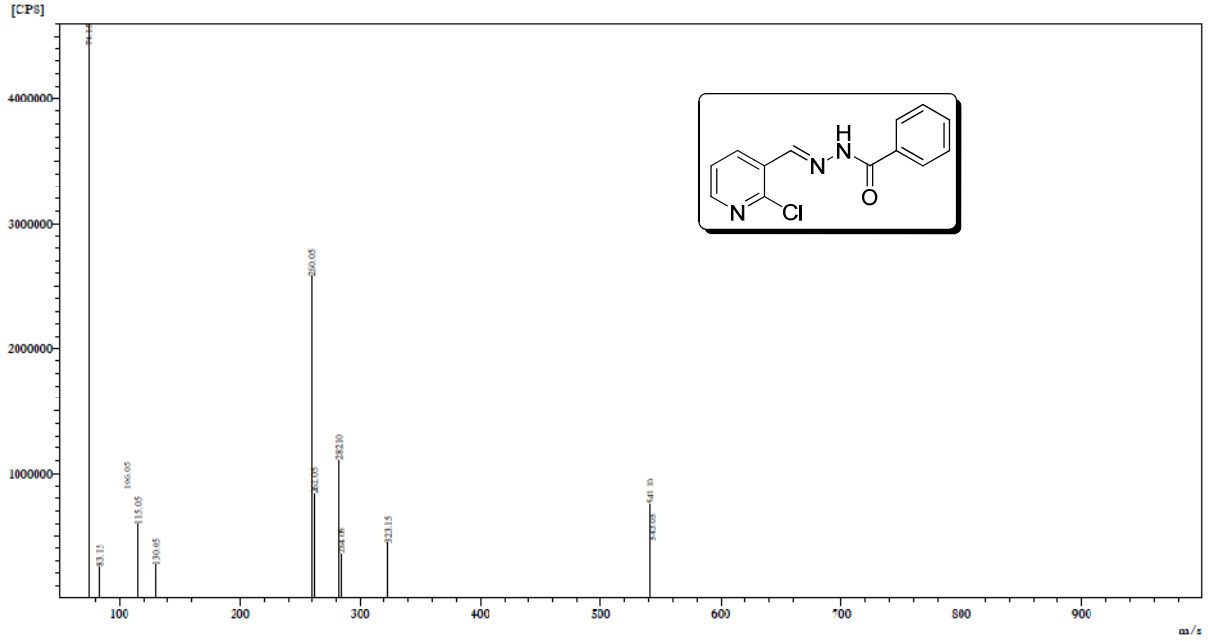


¹³C NMR Spectrum of compound 3f

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Batch File : 10012019.lcb

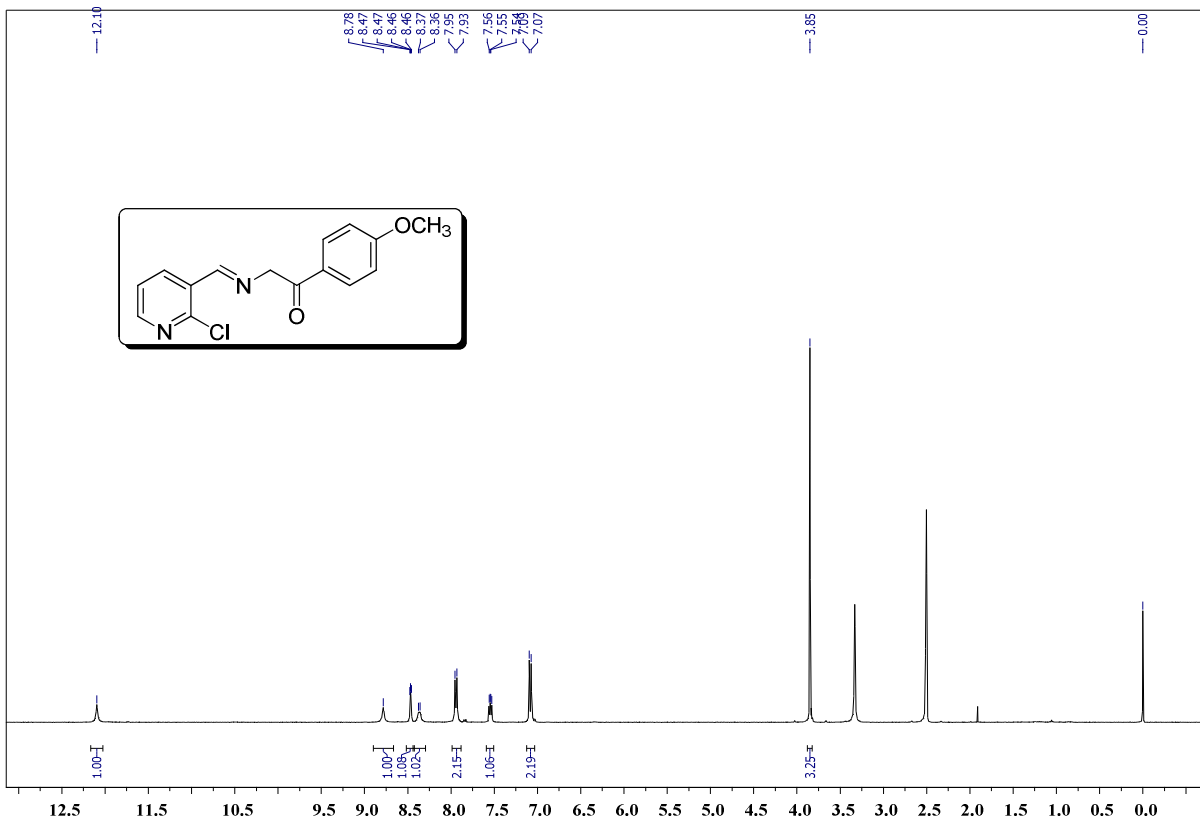
MS Spectrum
D:\DATA\JAN-9\10012019.44.lcd

Average ESI Positive
Spectrum Mode: Averaged 0.185-0.625 (00-101)

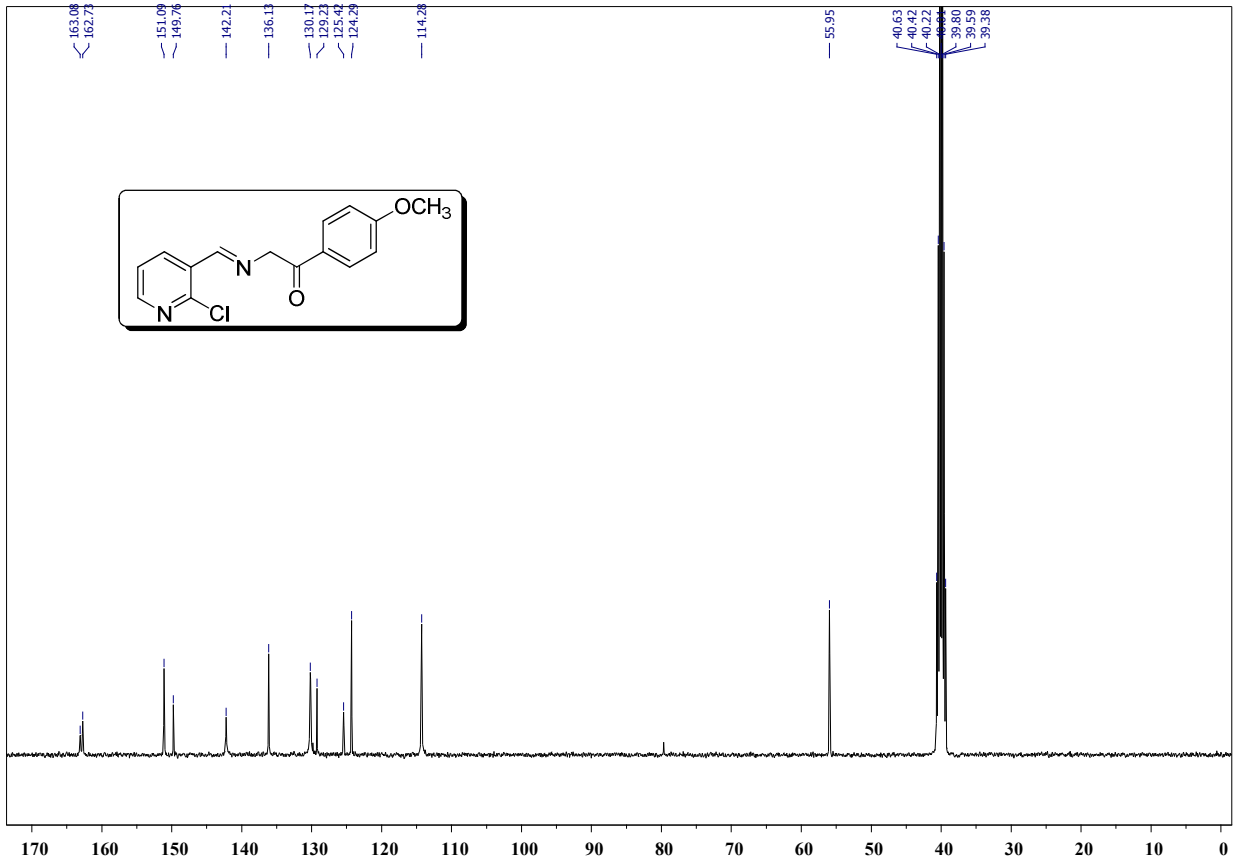


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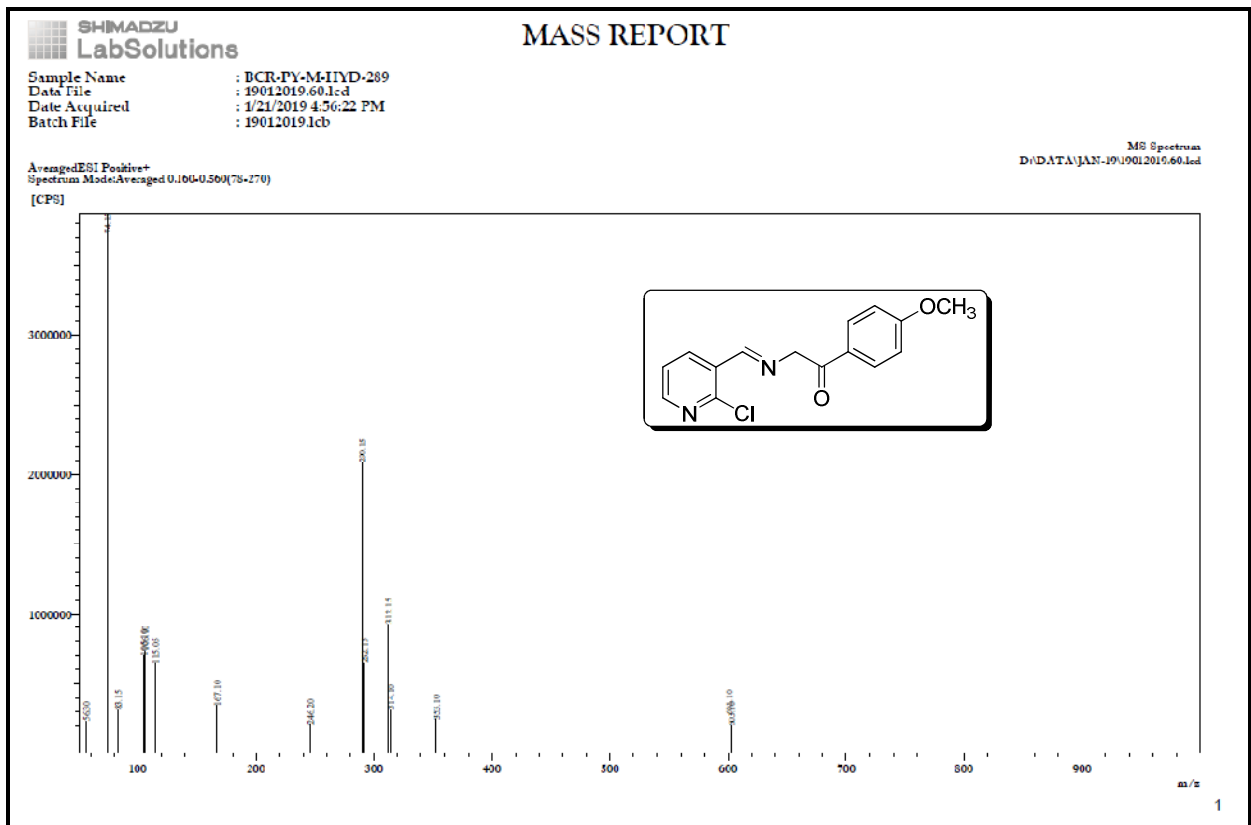
MASS Spectrum of compound 3f



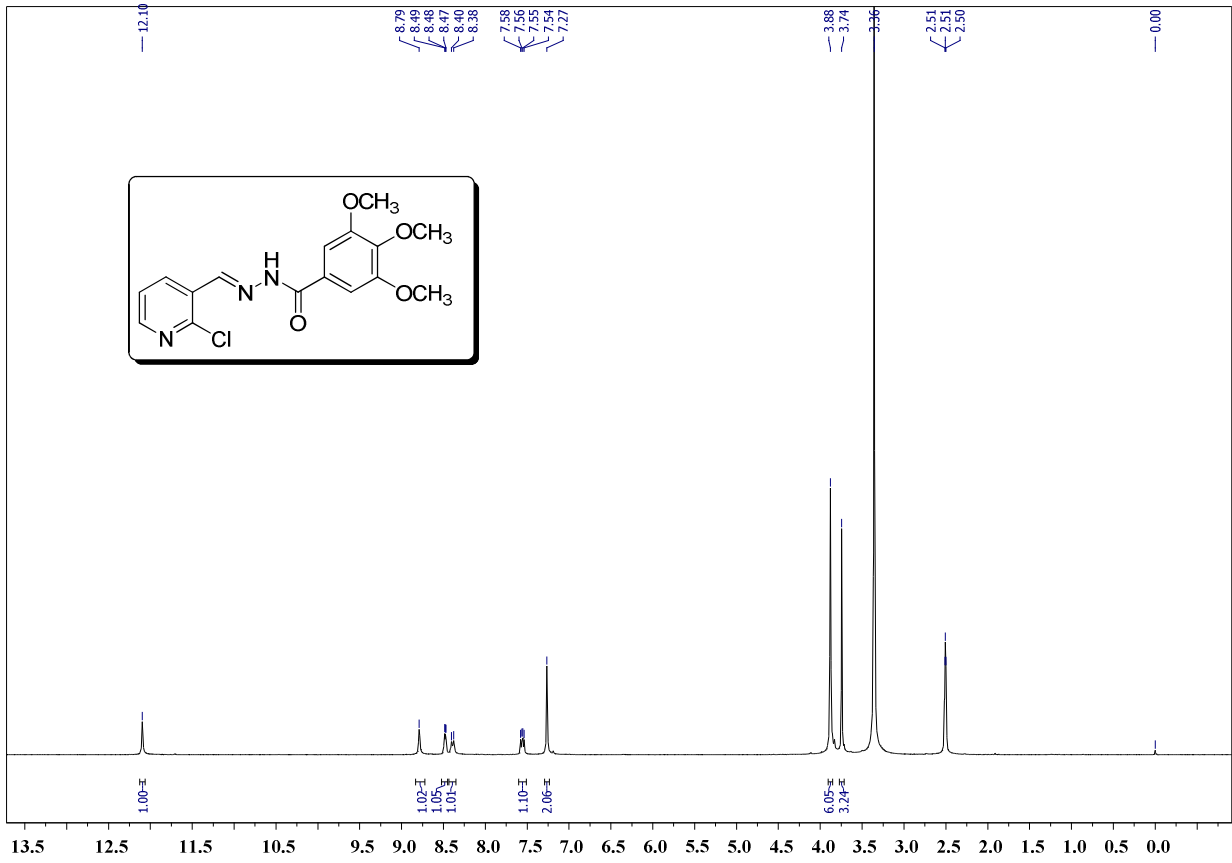
¹H NMR Spectrum of compound 3g



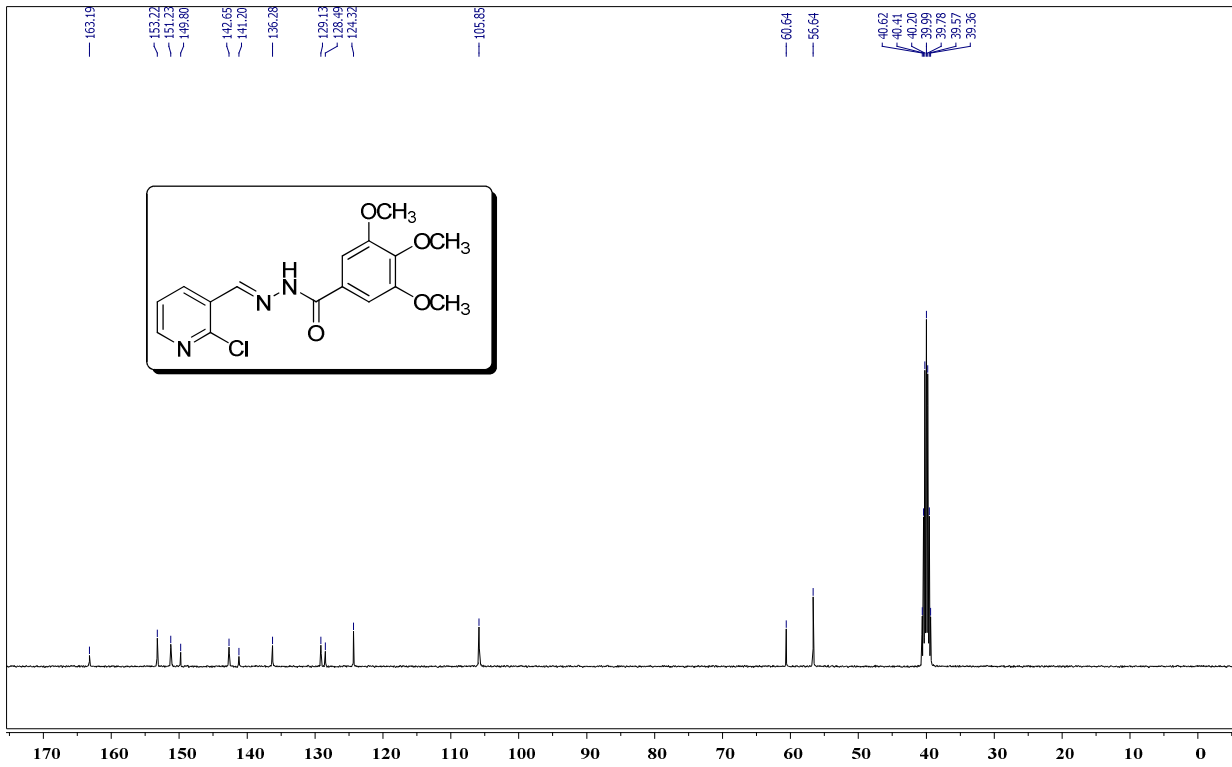
¹³C NMR Spectrum of compound **3g**



MASS Spectrum of compound **3g**



¹H NMR Spectrum of compound 3h



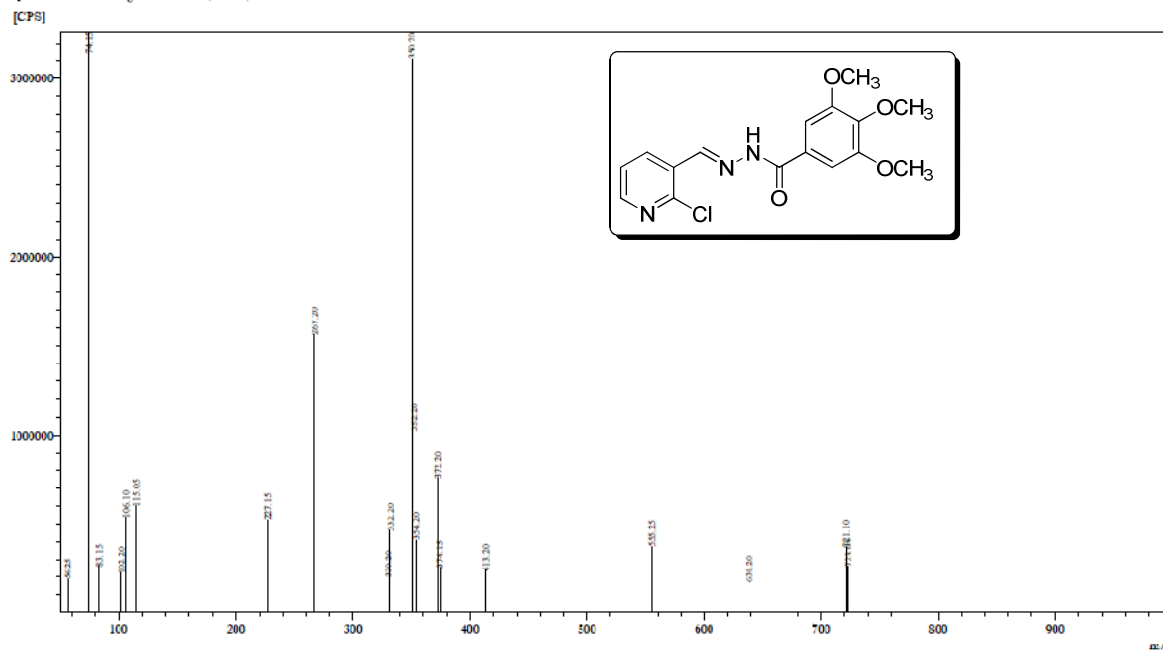
¹³C NMR Spectrum of compound 3h

MASS REPORT

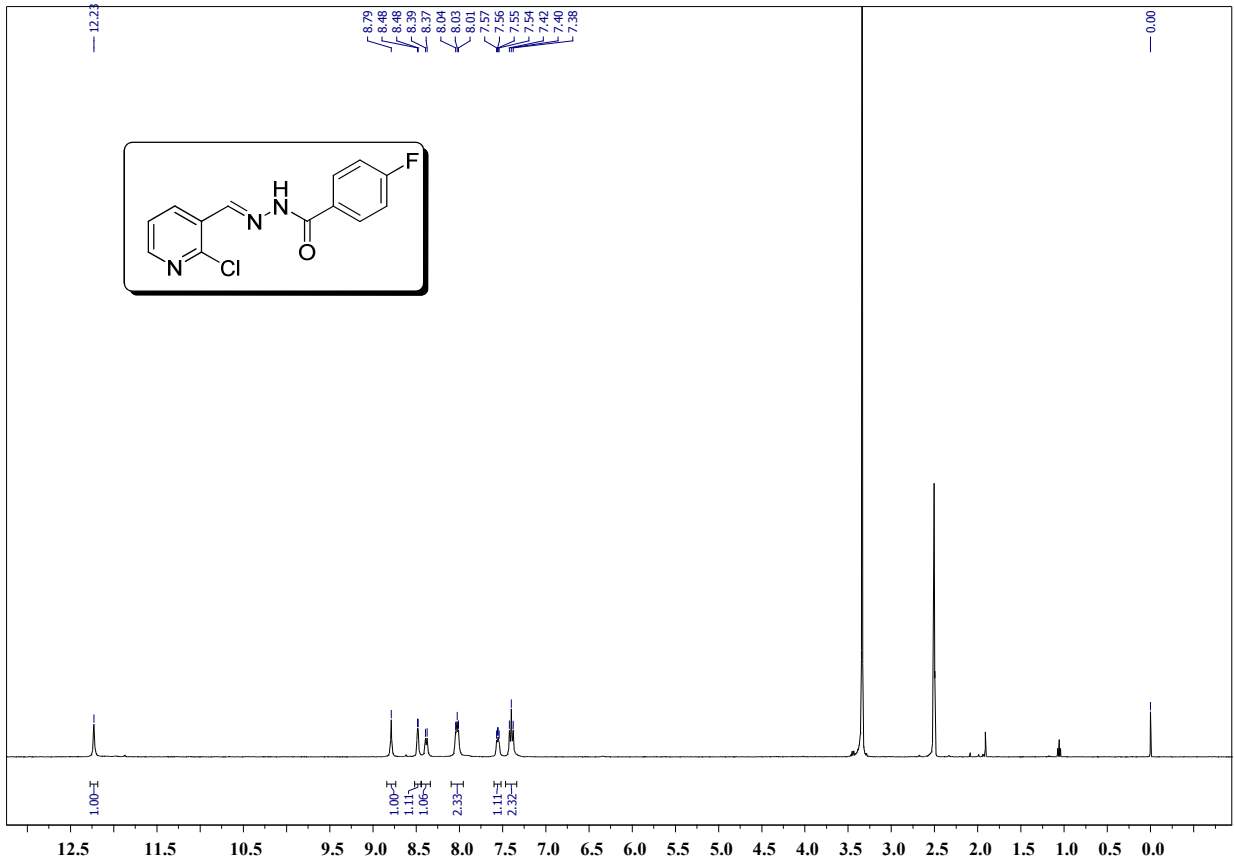
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MS Spectrum:
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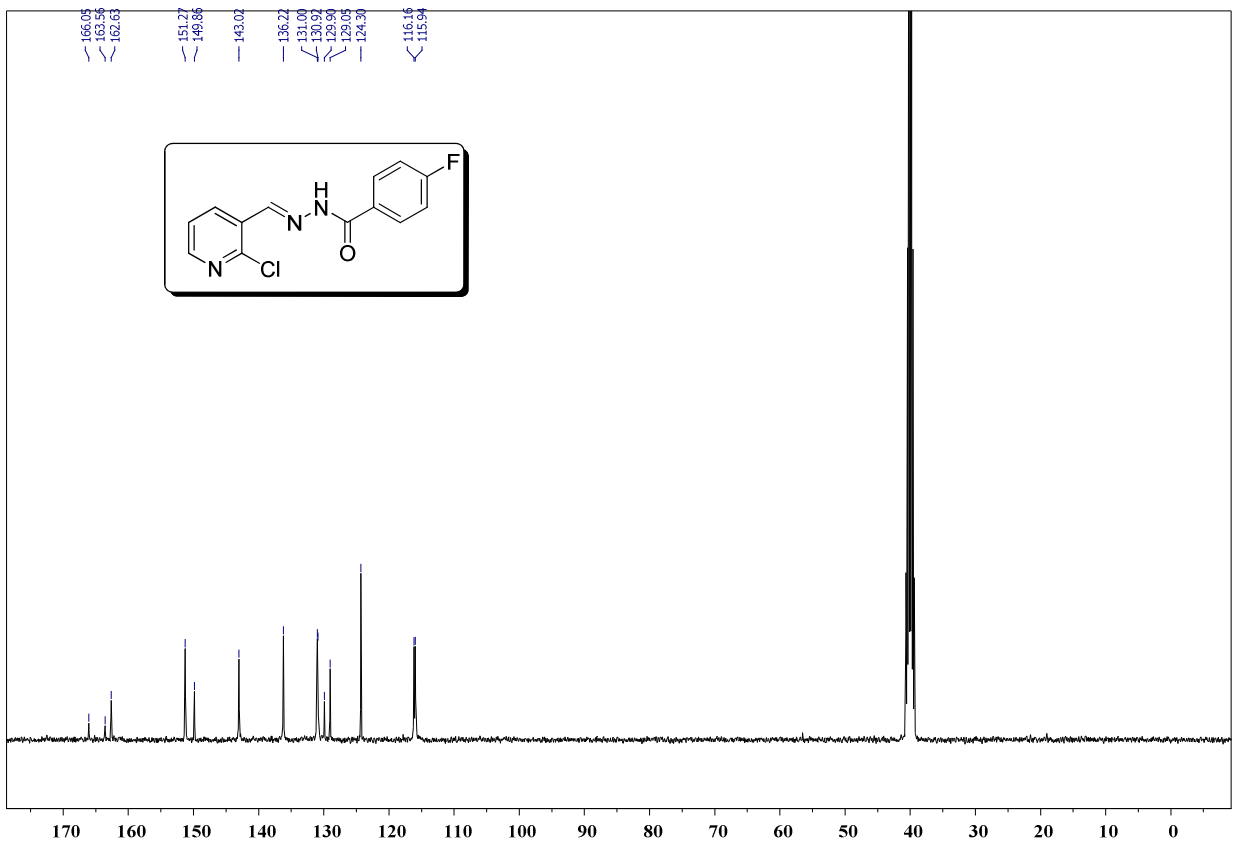
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MASS Spectrum of compound 3h



¹H NMR Spectrum of compound 3i

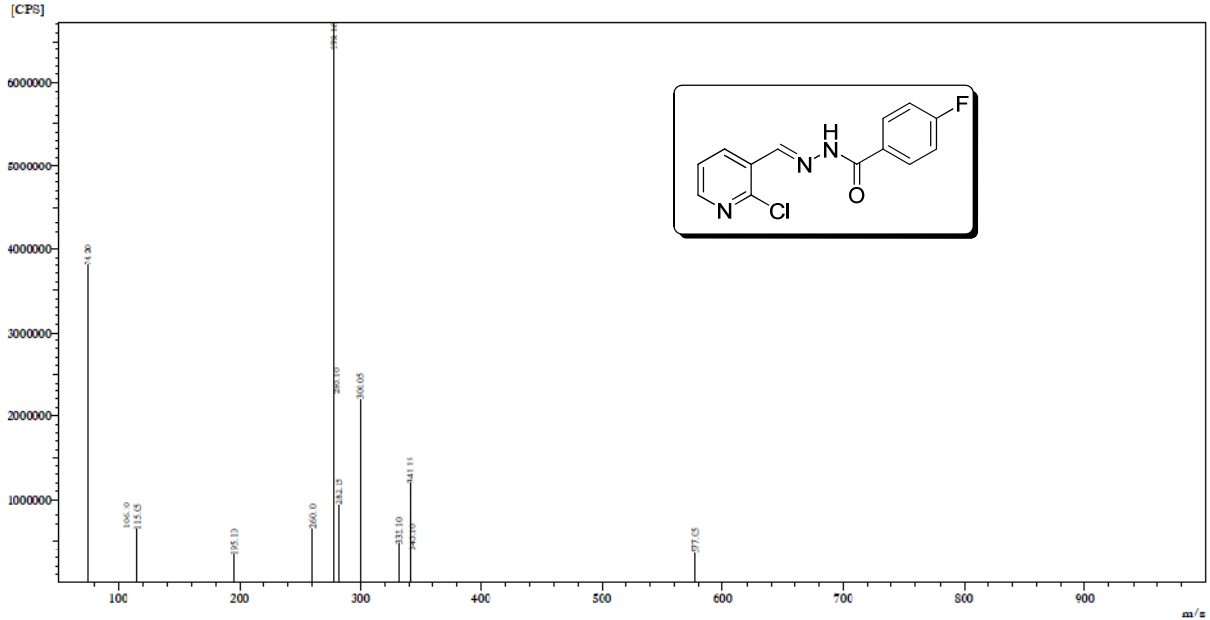


¹³C NMR Spectrum of compound 3i

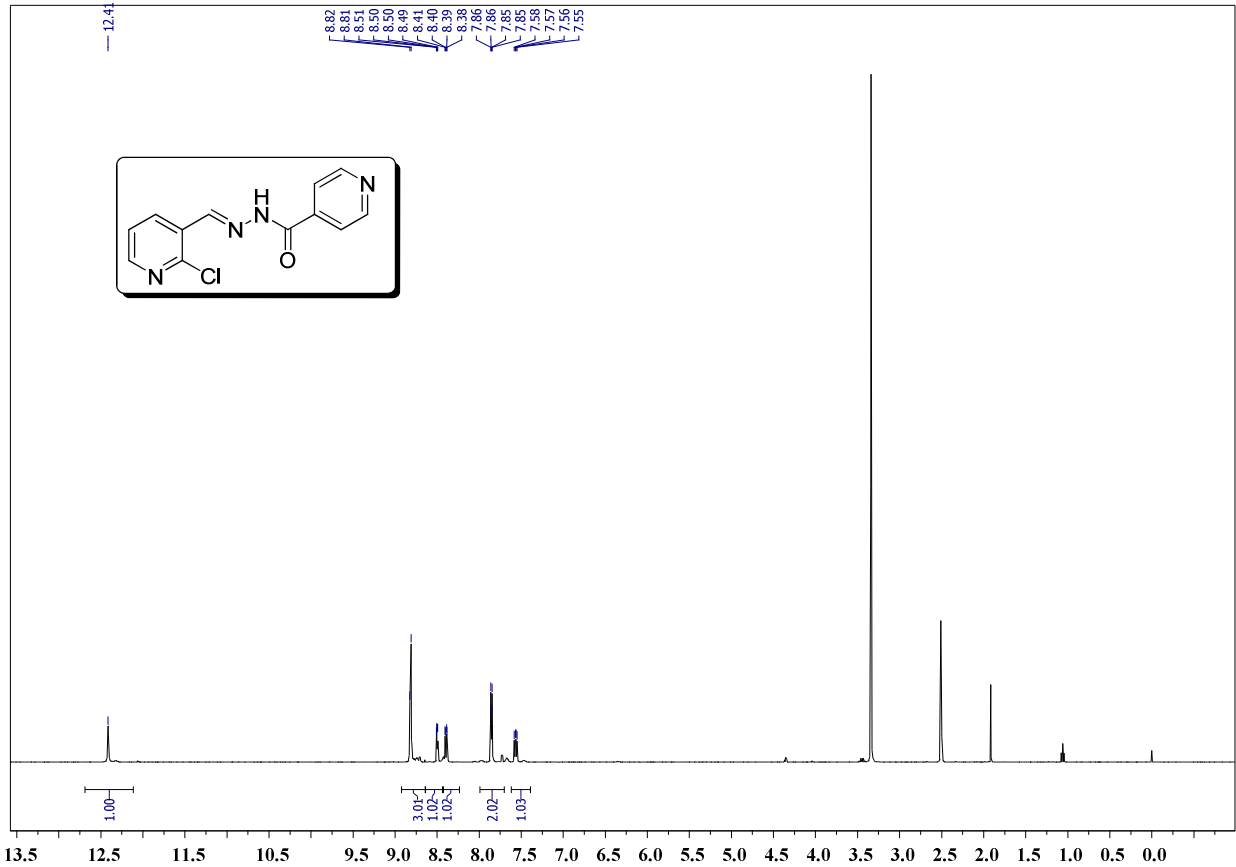
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MS Spectrum
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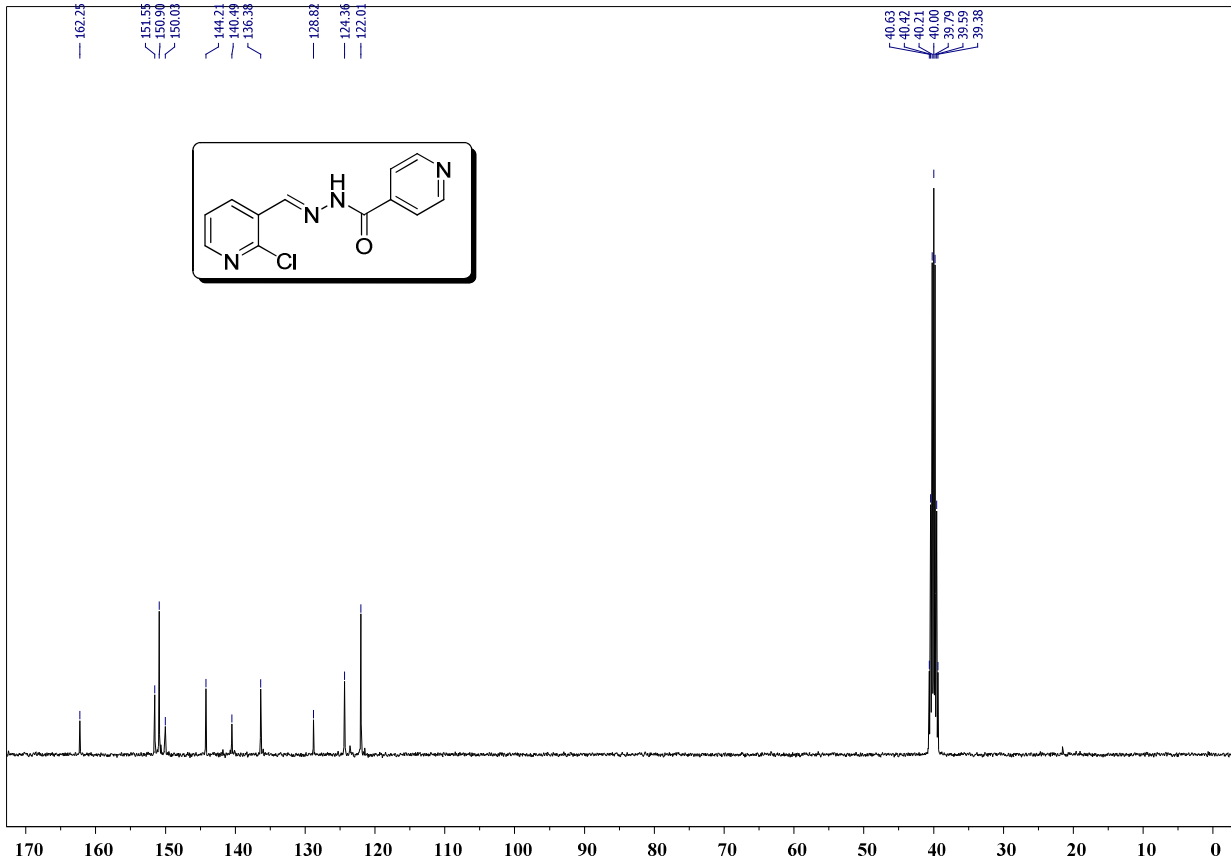
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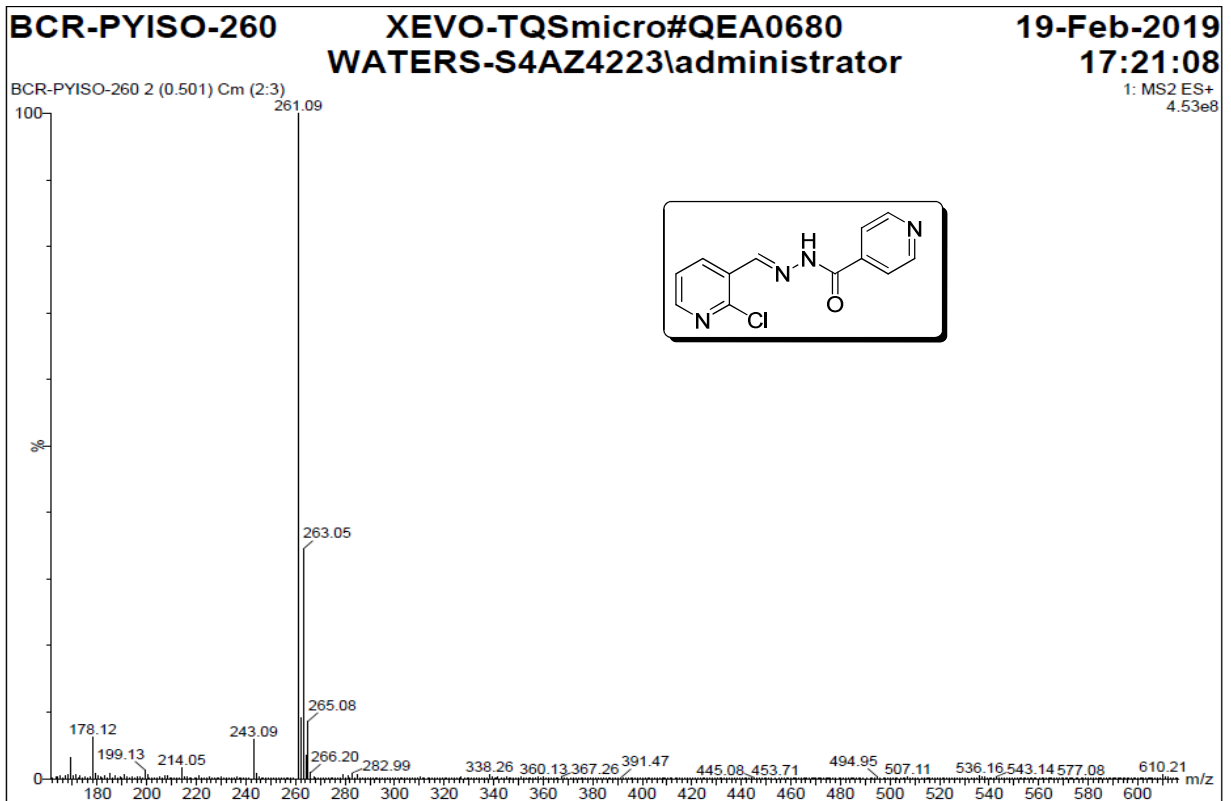
MASS Spectrum of compound 3i



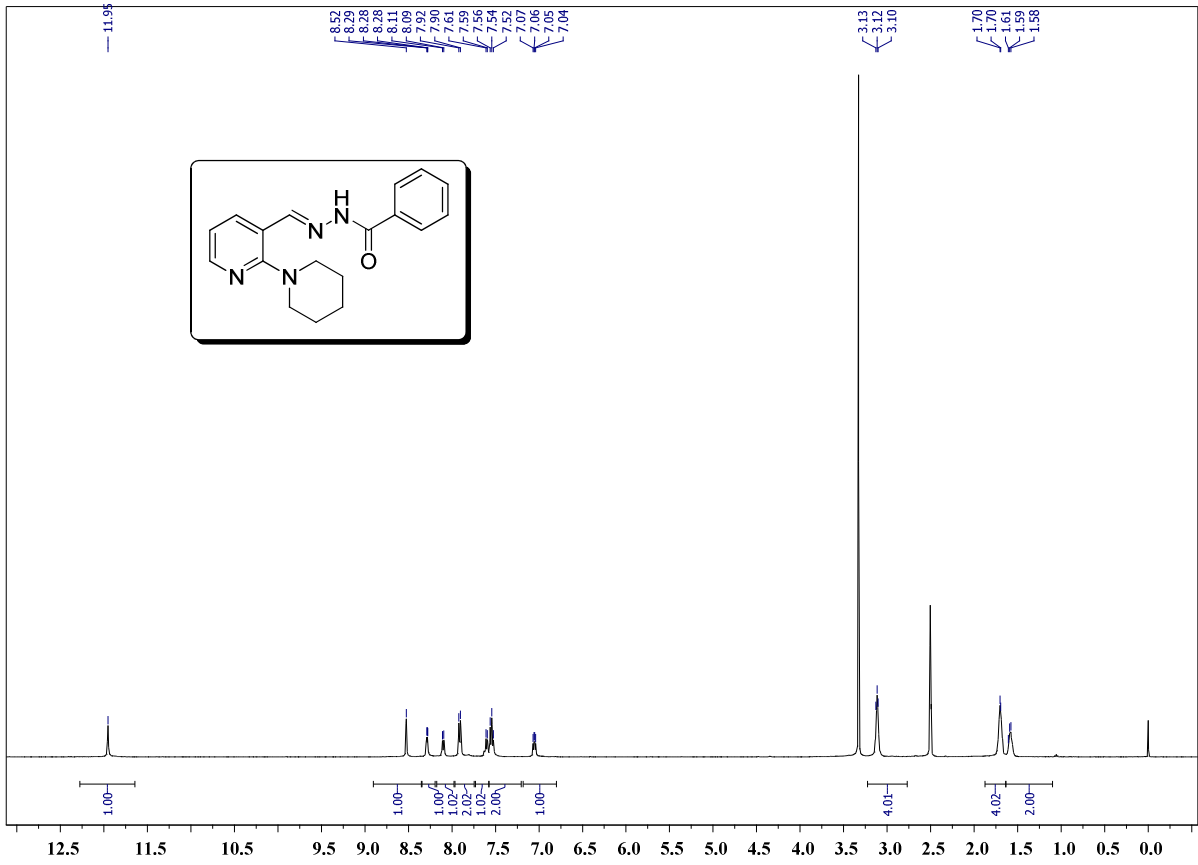
¹H NMR Spectrum of compound 3j



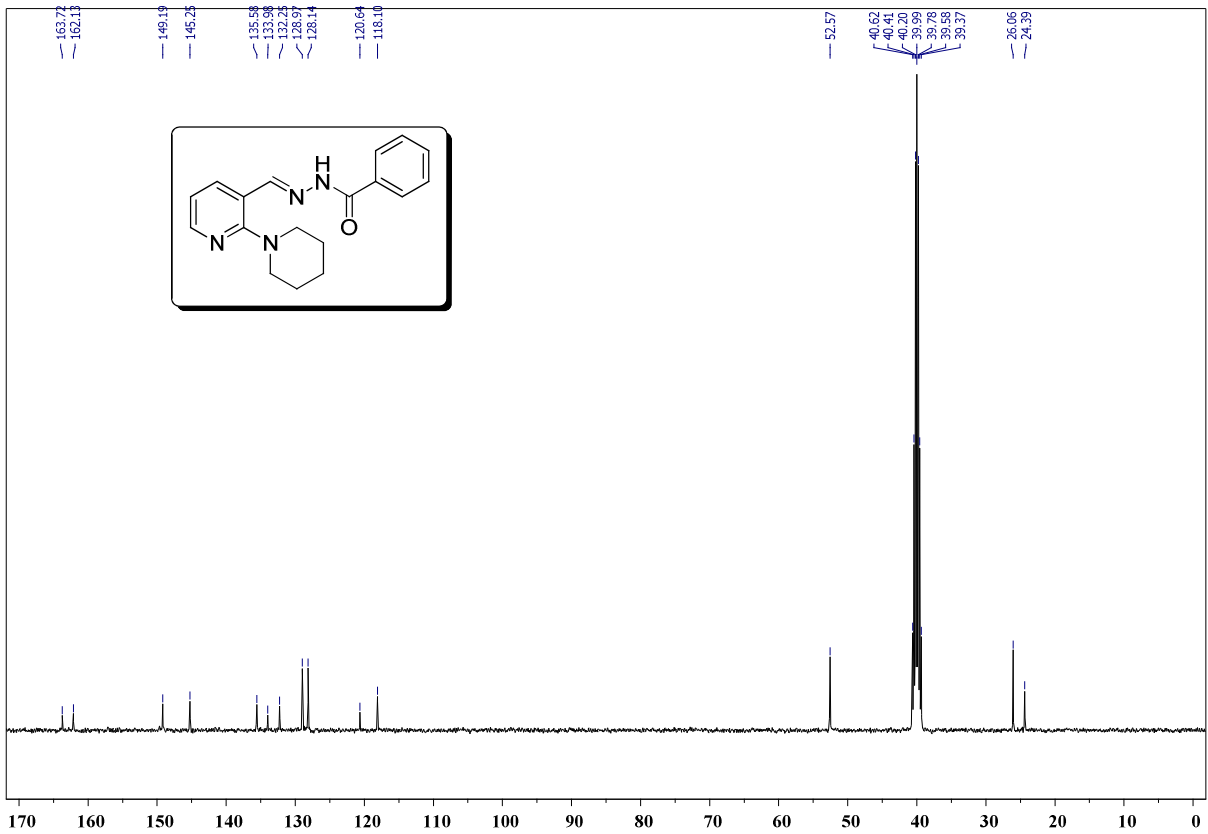
¹³C NMR Spectrum of compound 3j



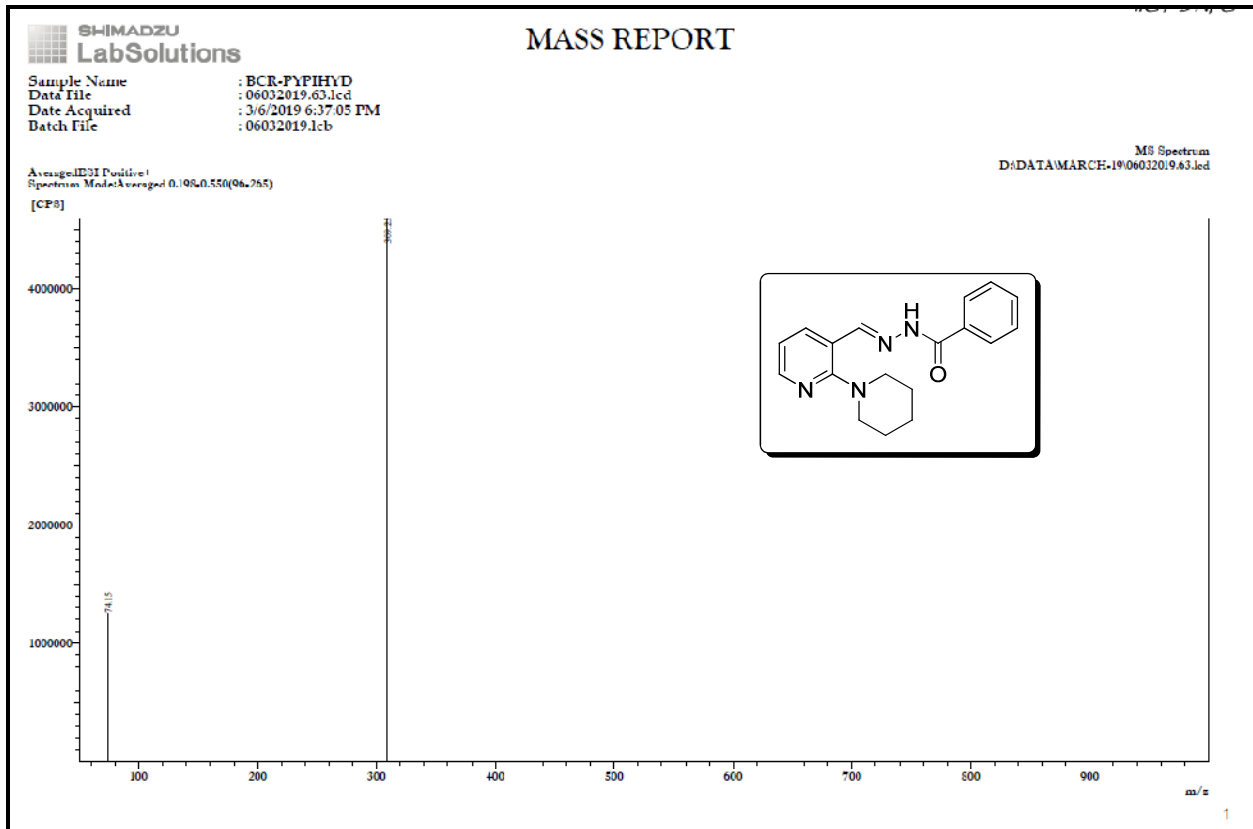
MASS Spectrum of compound 3j



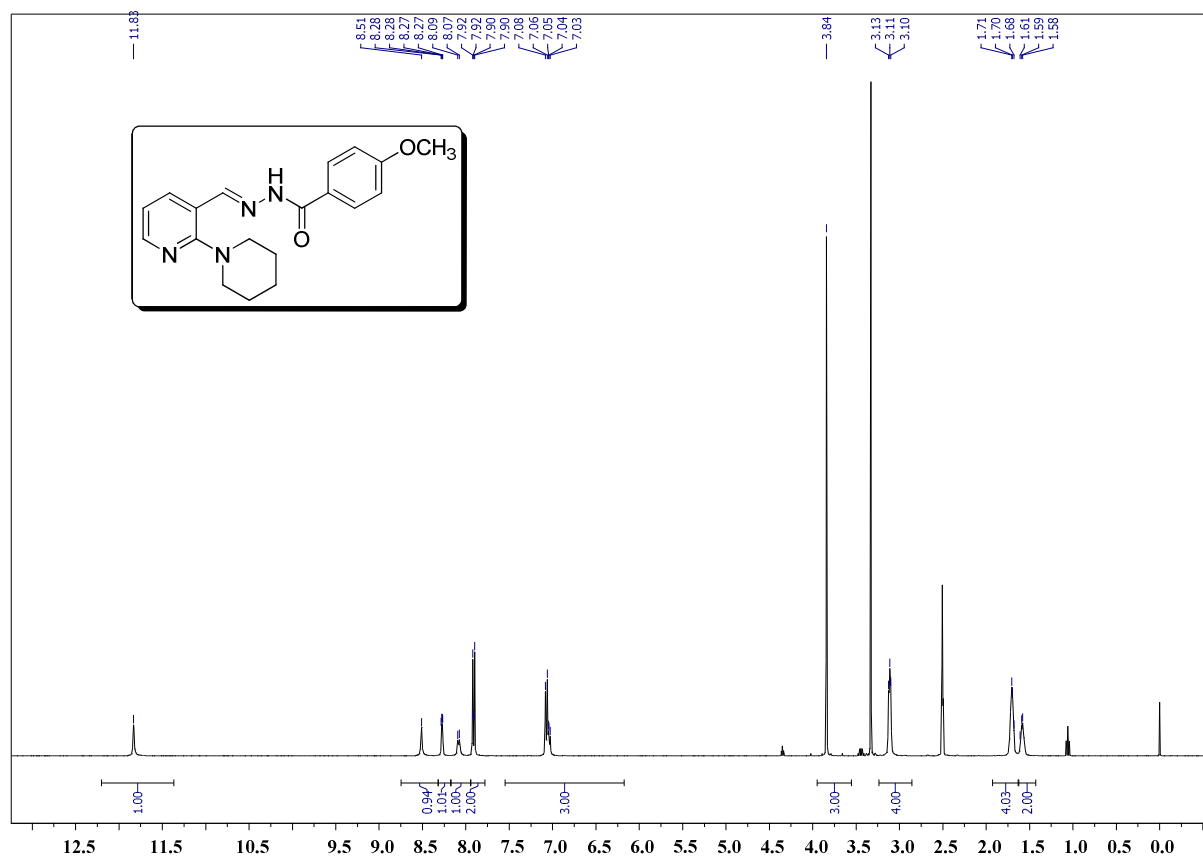
¹H NMR Spectrum of compound 3k



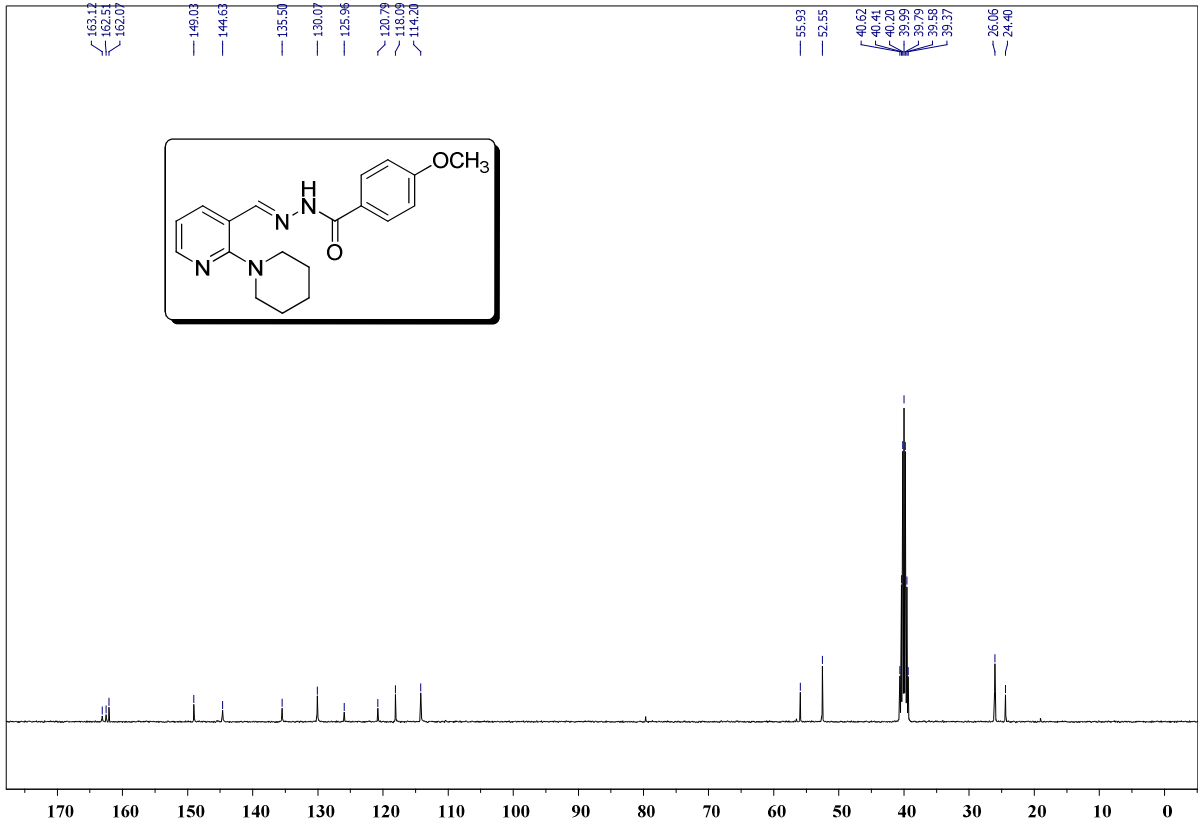
¹³C NMR Spectrum of compound 3k



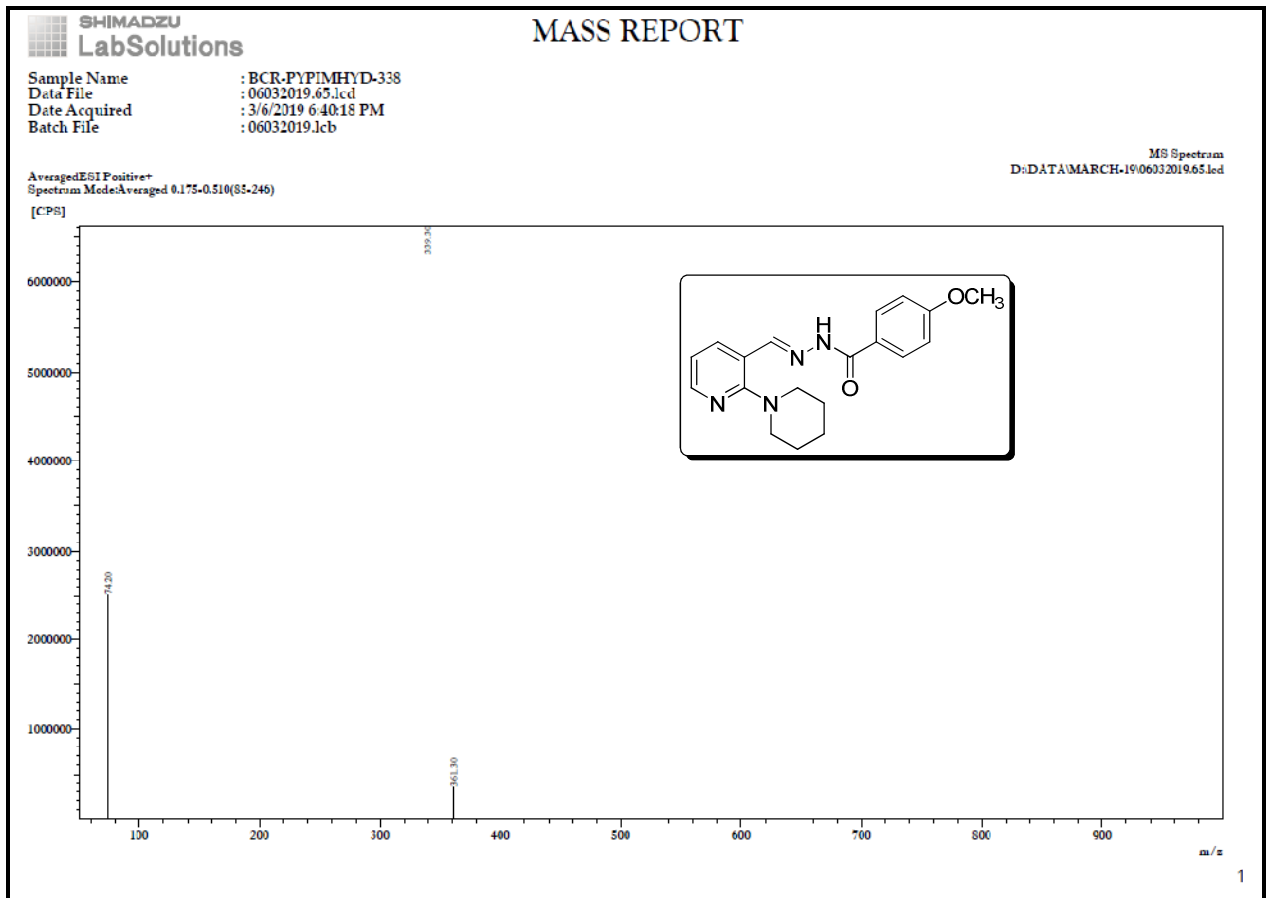
MASS Spectrum of compound **3k**



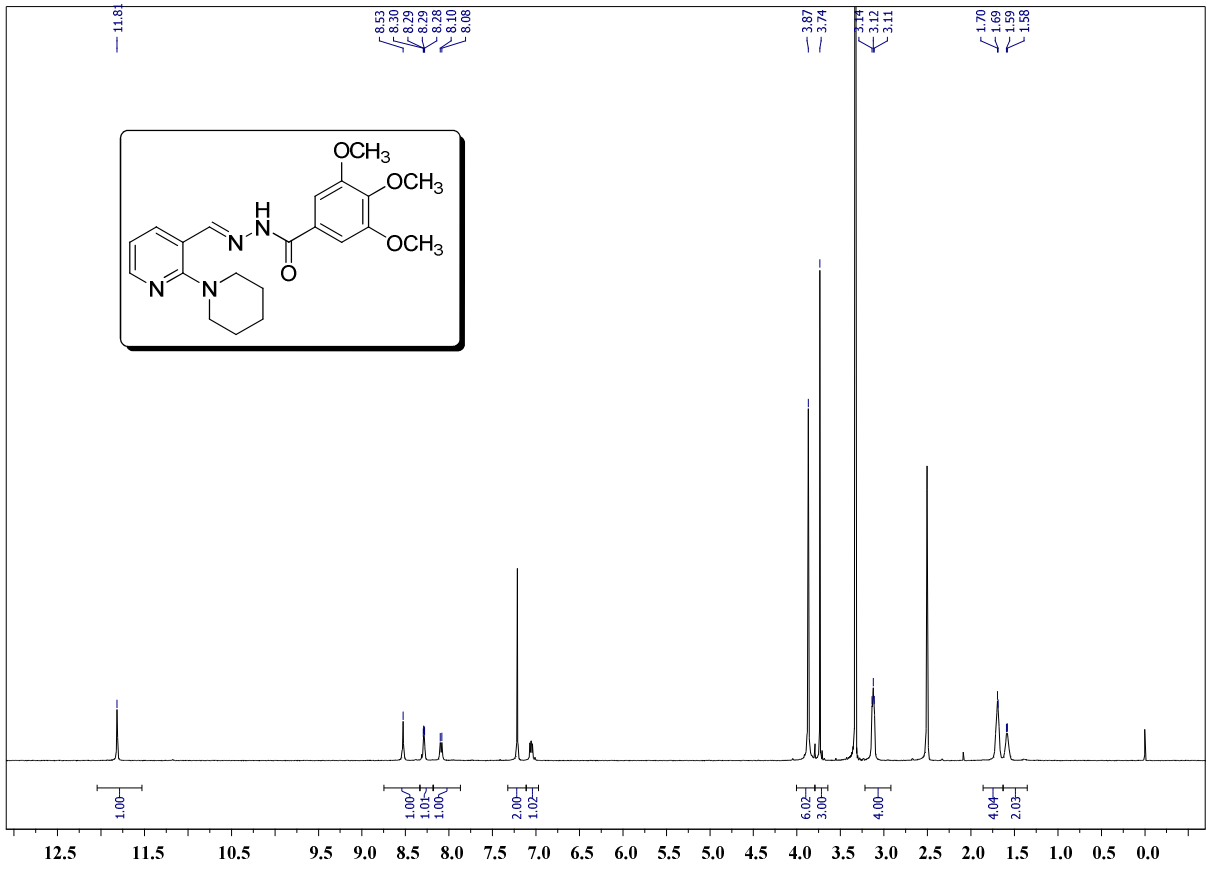
¹H NMR Spectrum of compound **3l**



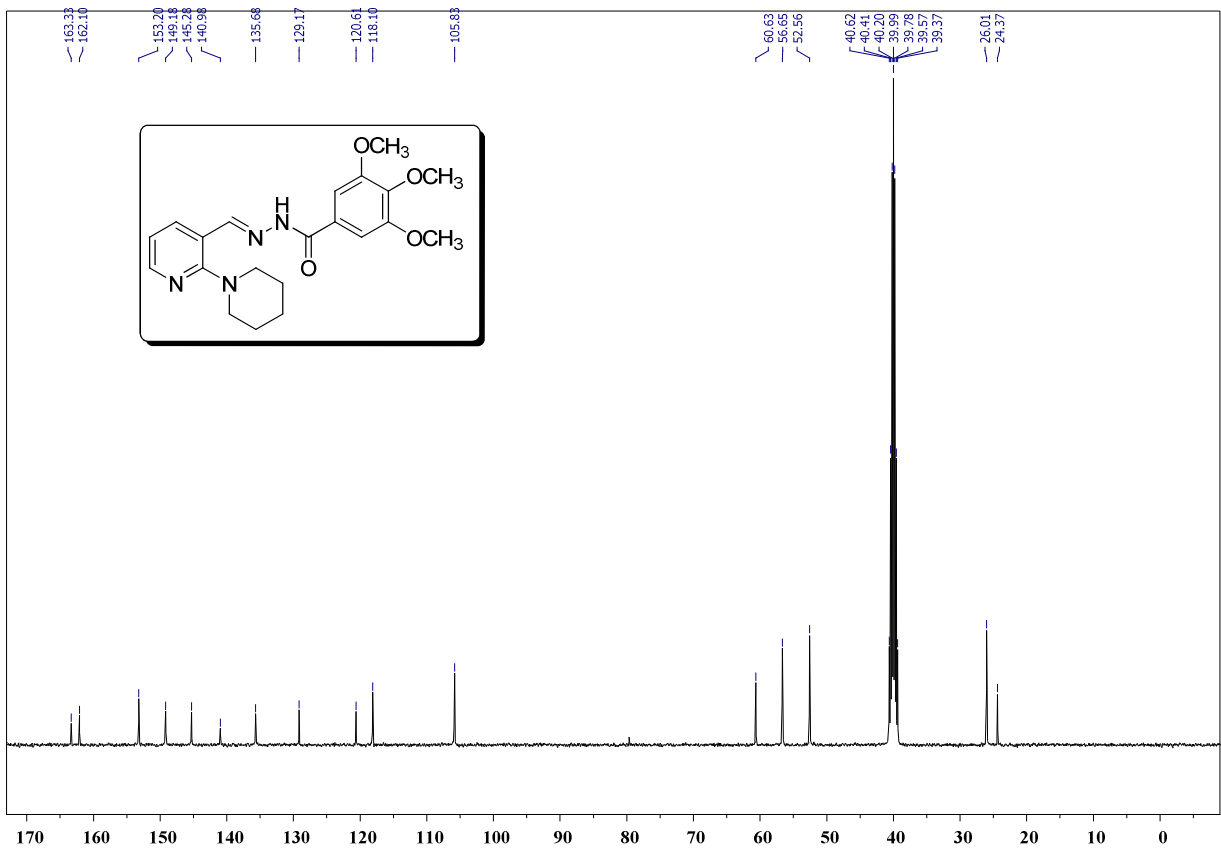
¹³C NMR Spectrum of compound 3I



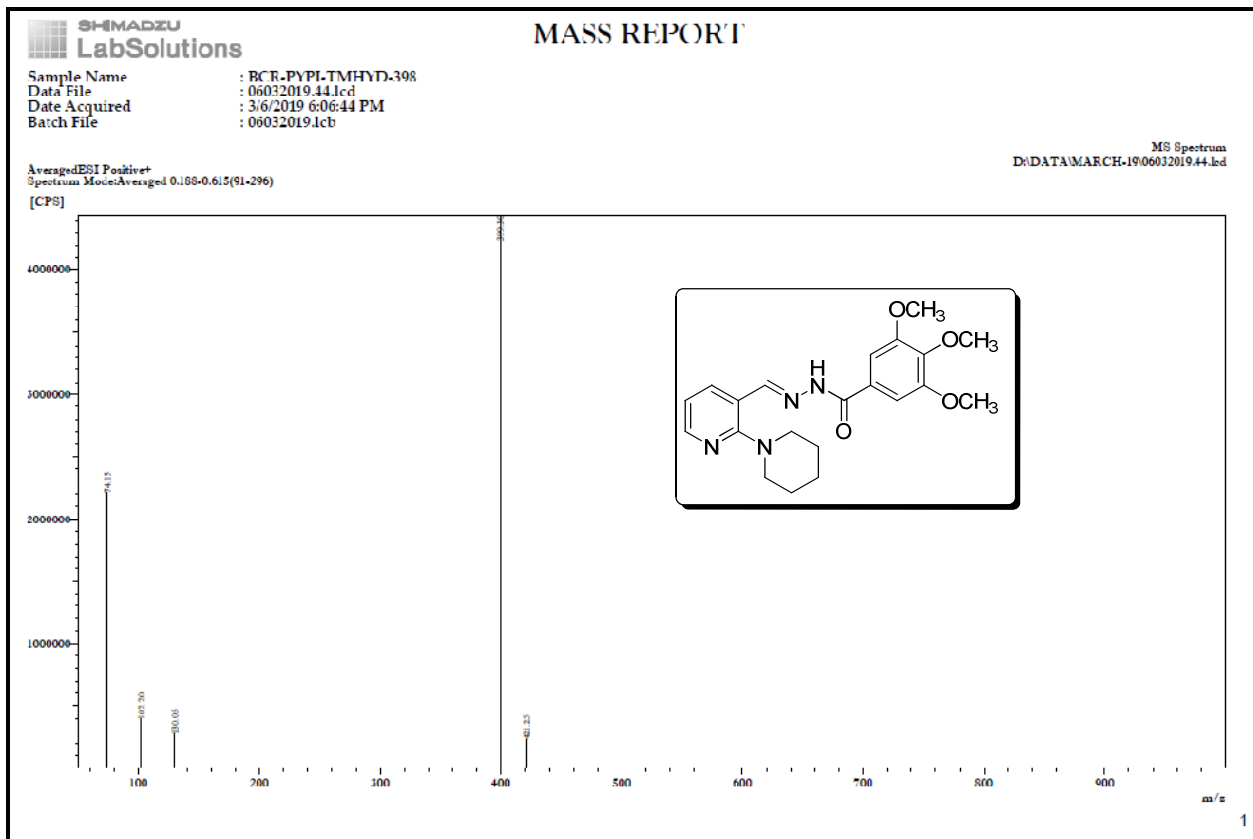
MASS Spectrum of compound 3I



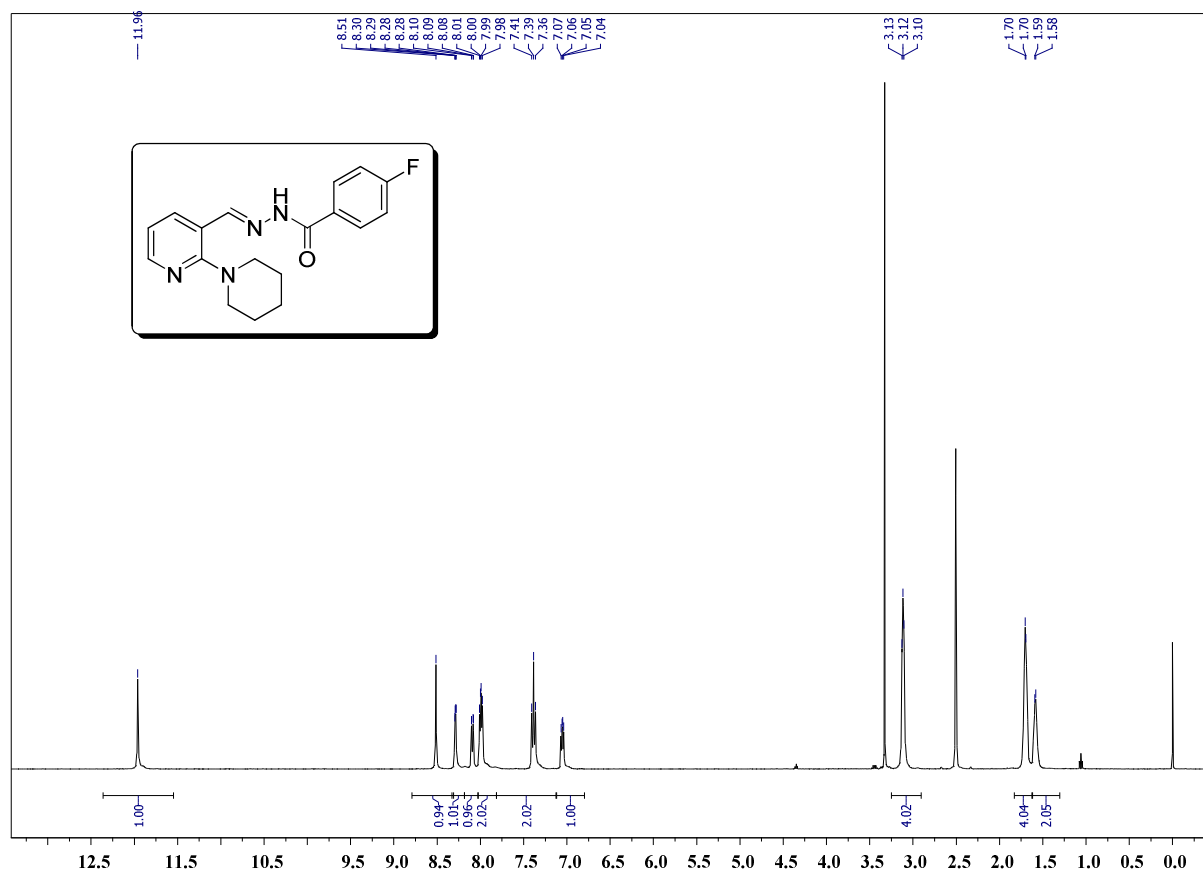
¹H NMR Spectrum of compound **3m**



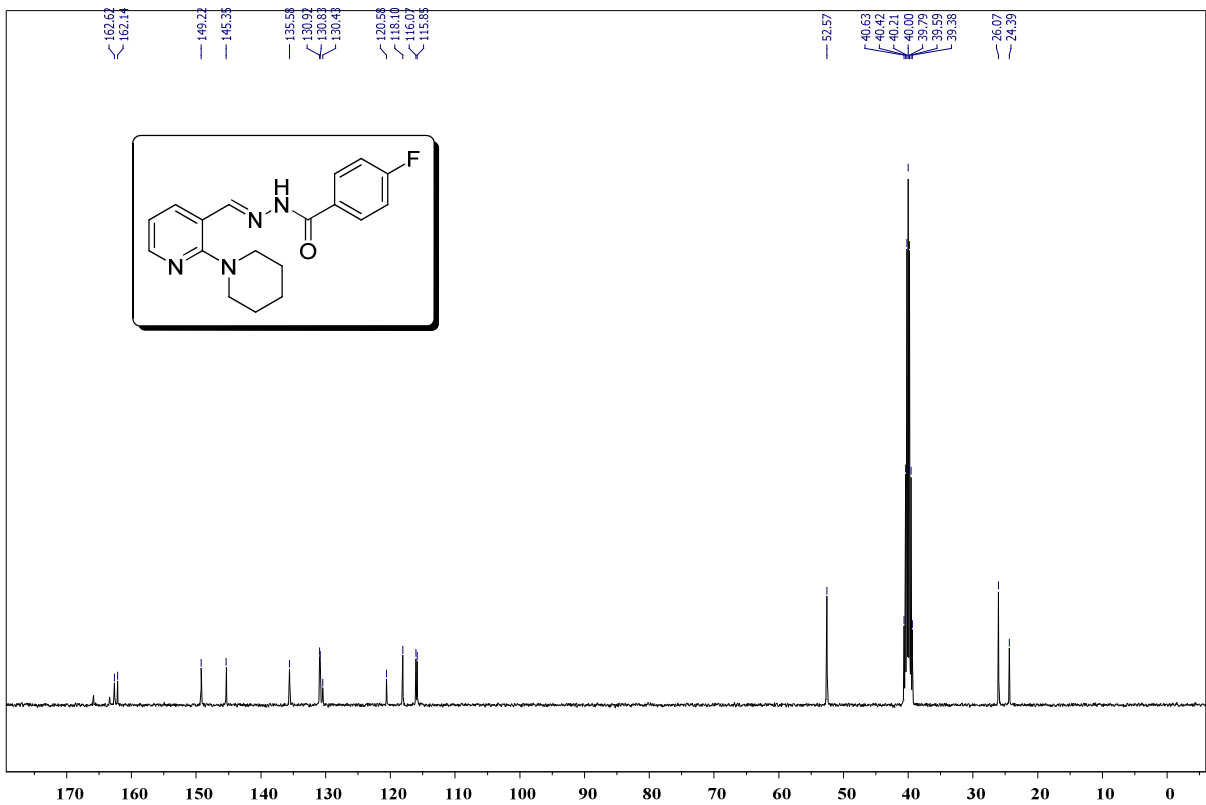
¹³C NMR Spectrum of compound **3m**



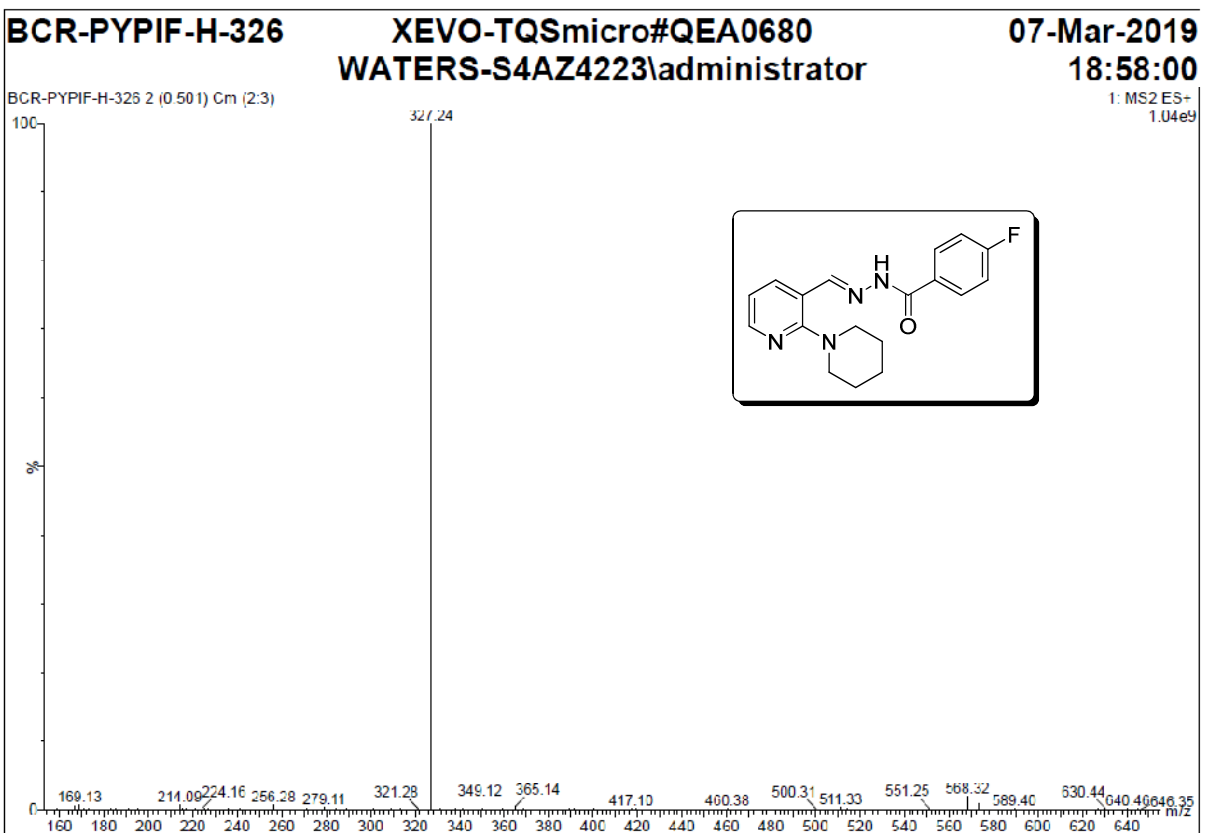
MASS Spectrum of compound **3m**



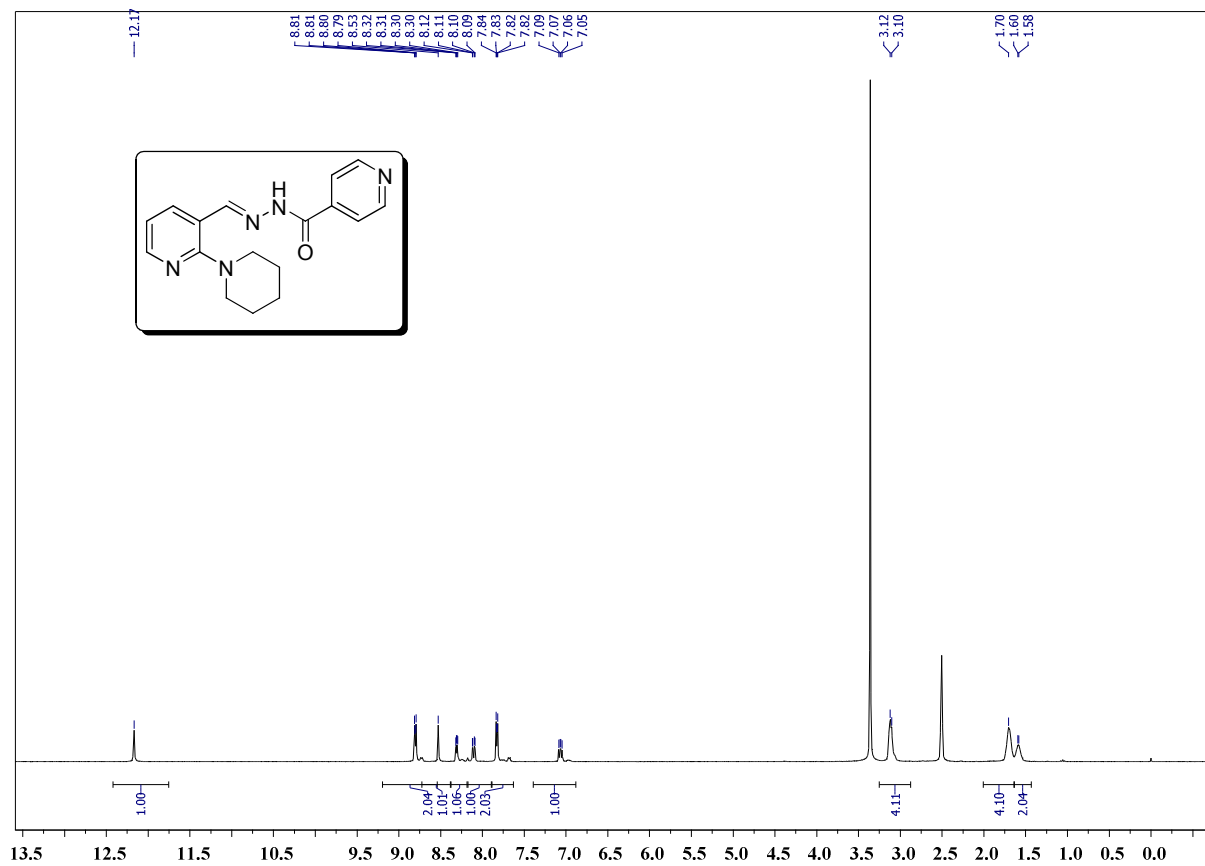
¹H NMR Spectrum of compound **3n**



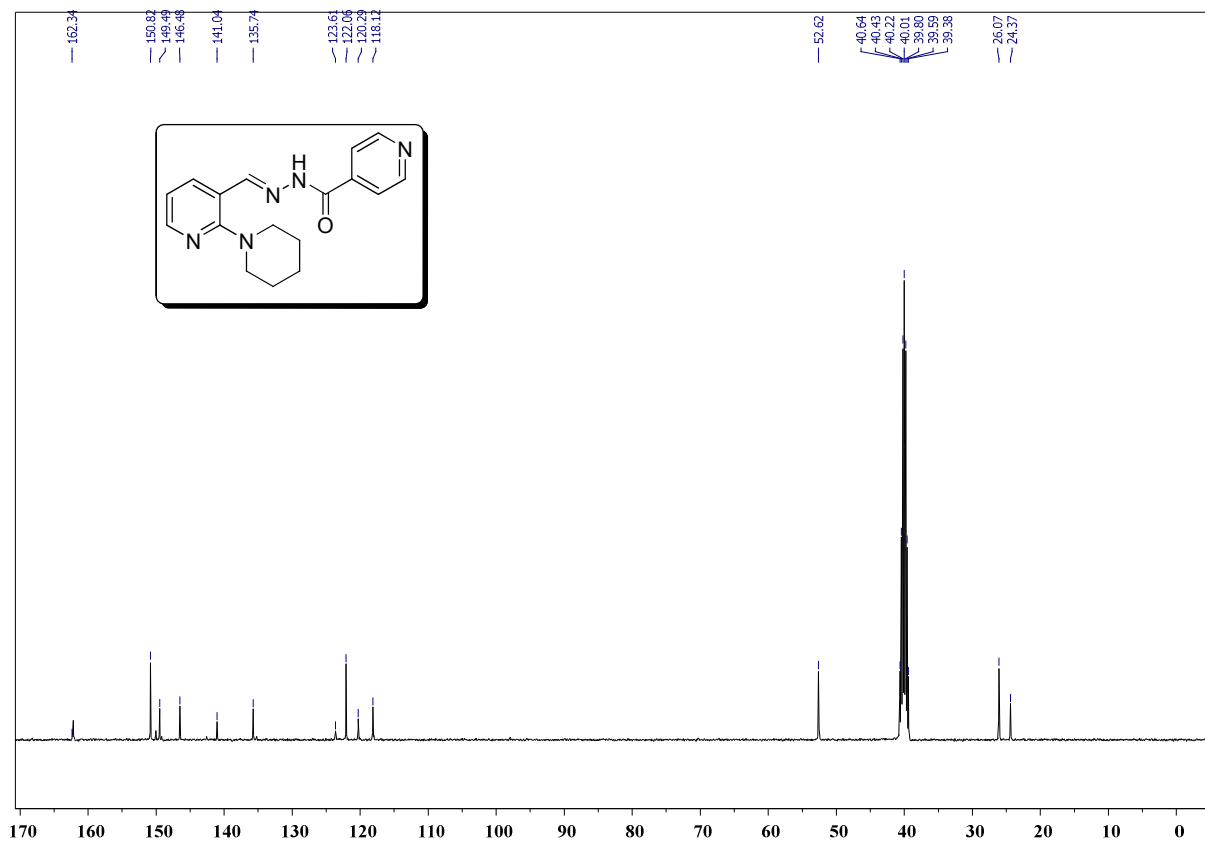
^{13}C NMR Spectrum of compound **3n**



MASS Spectrum of compound **3n**



¹H NMR Spectrum of compound **3o**

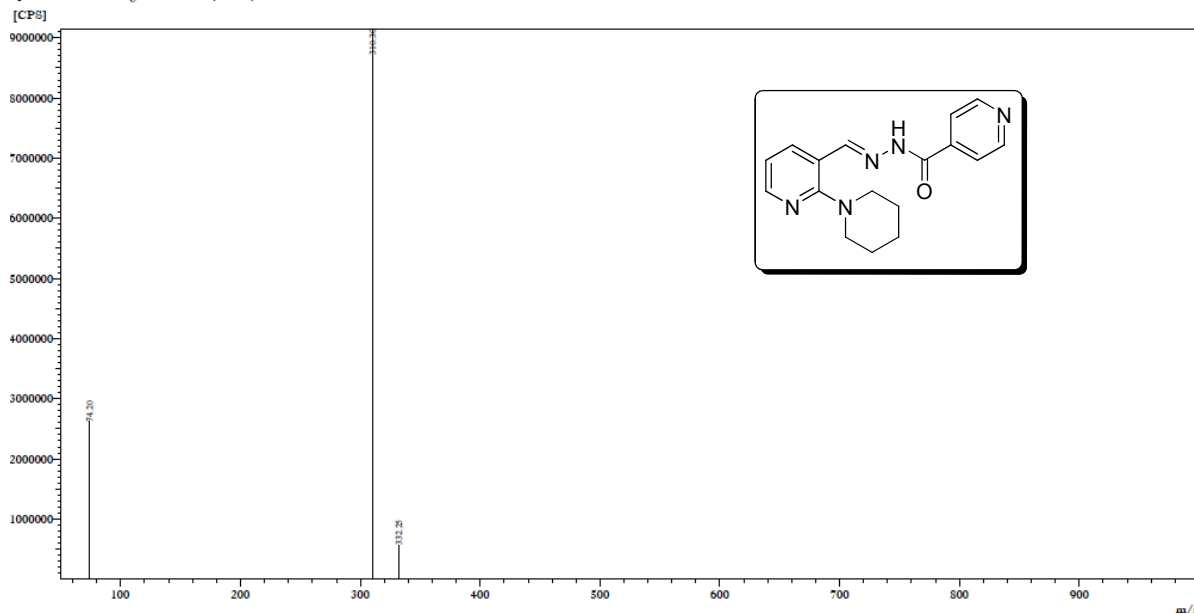


¹³C NMR Spectrum of compound **3o**

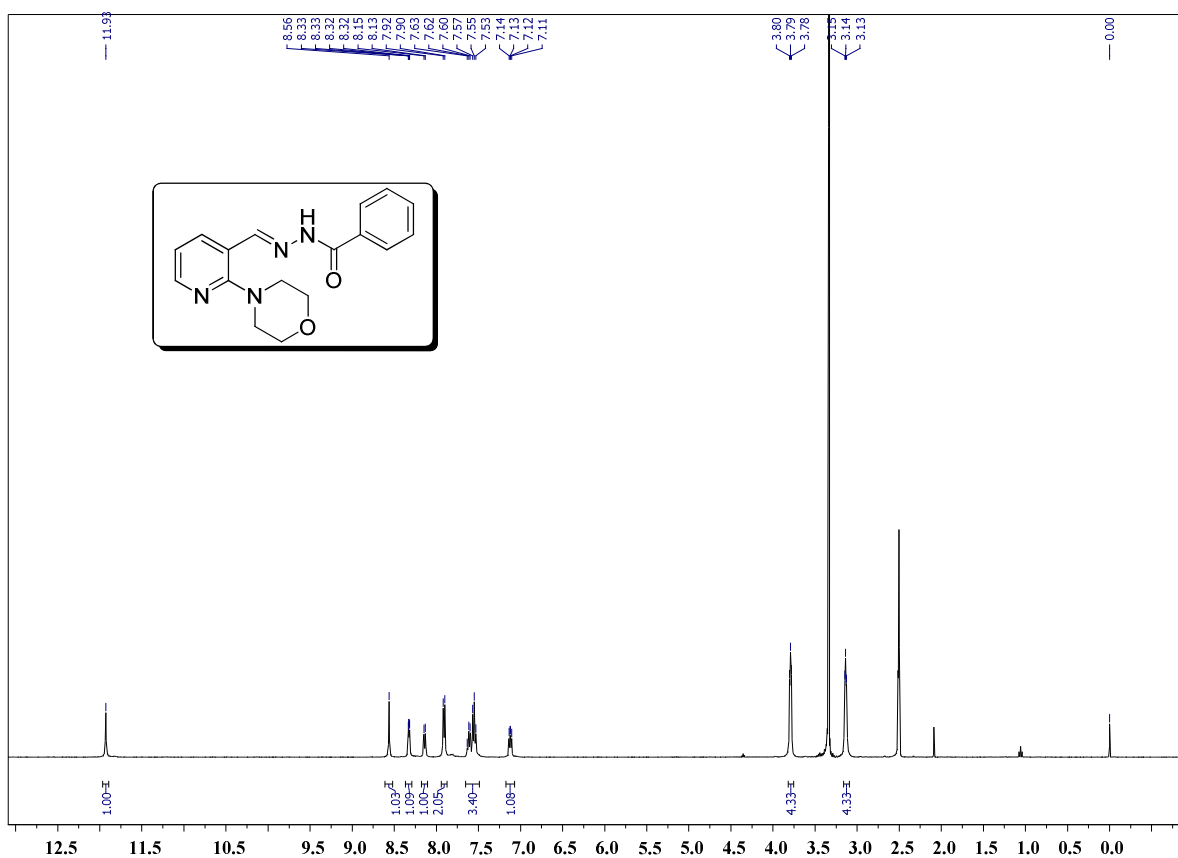
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MS Spectrum
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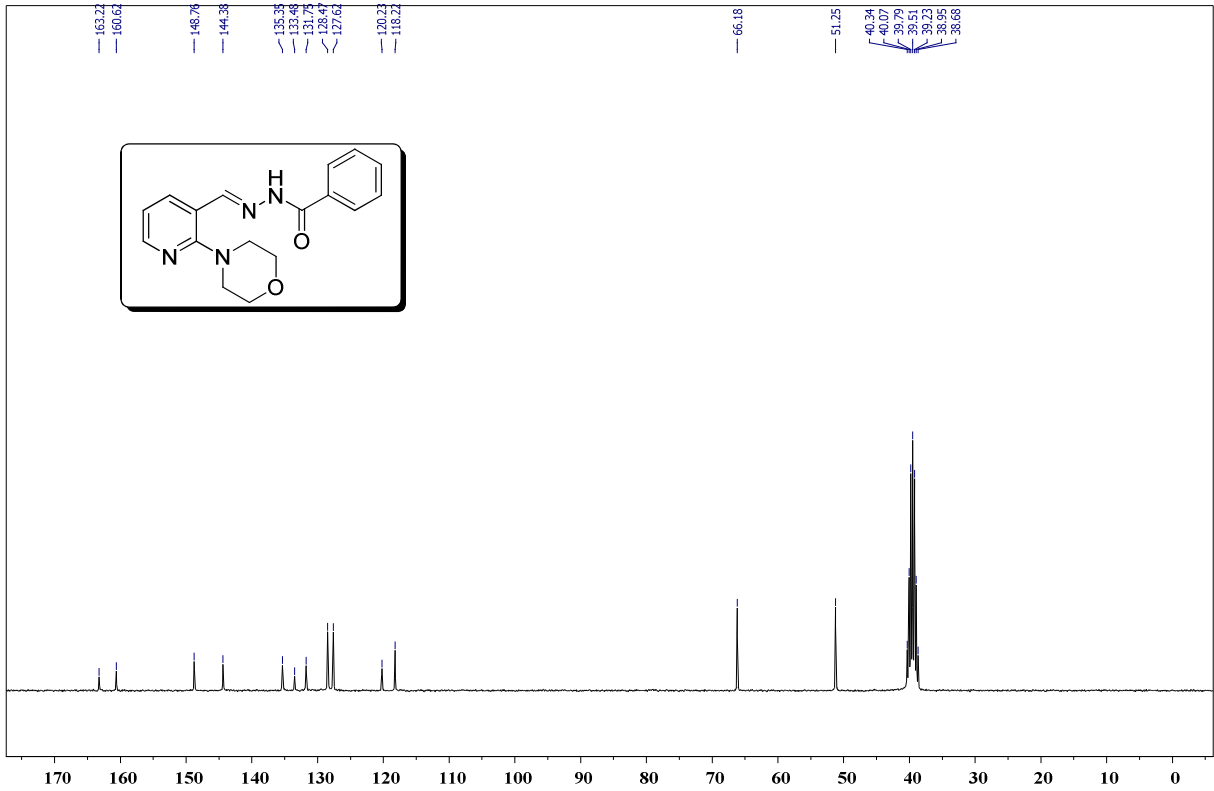
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Spectrum Mode: Averaged 0.150-0.500(73-241)



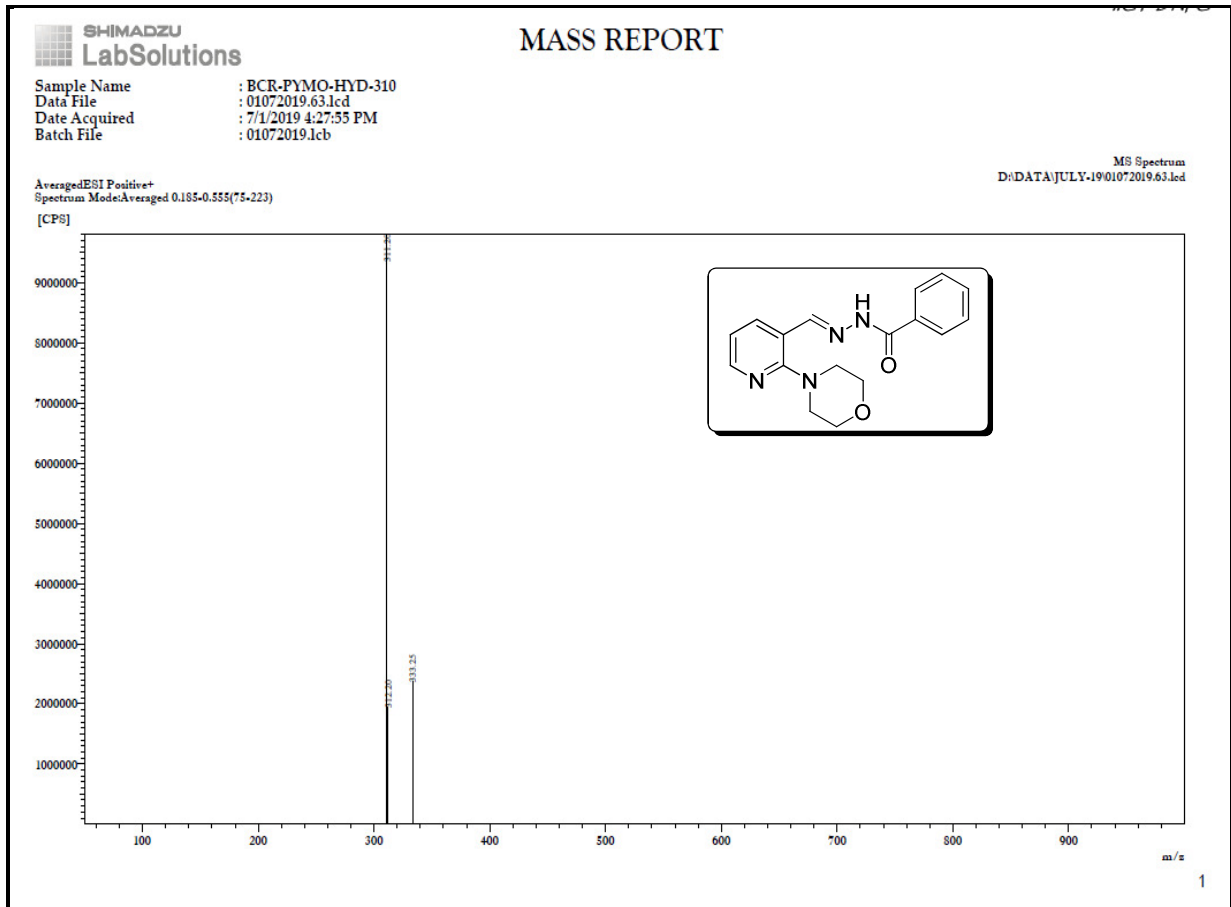
MASS Spectrum of compound **3o**



¹H NMR Spectrum of compound **3p**



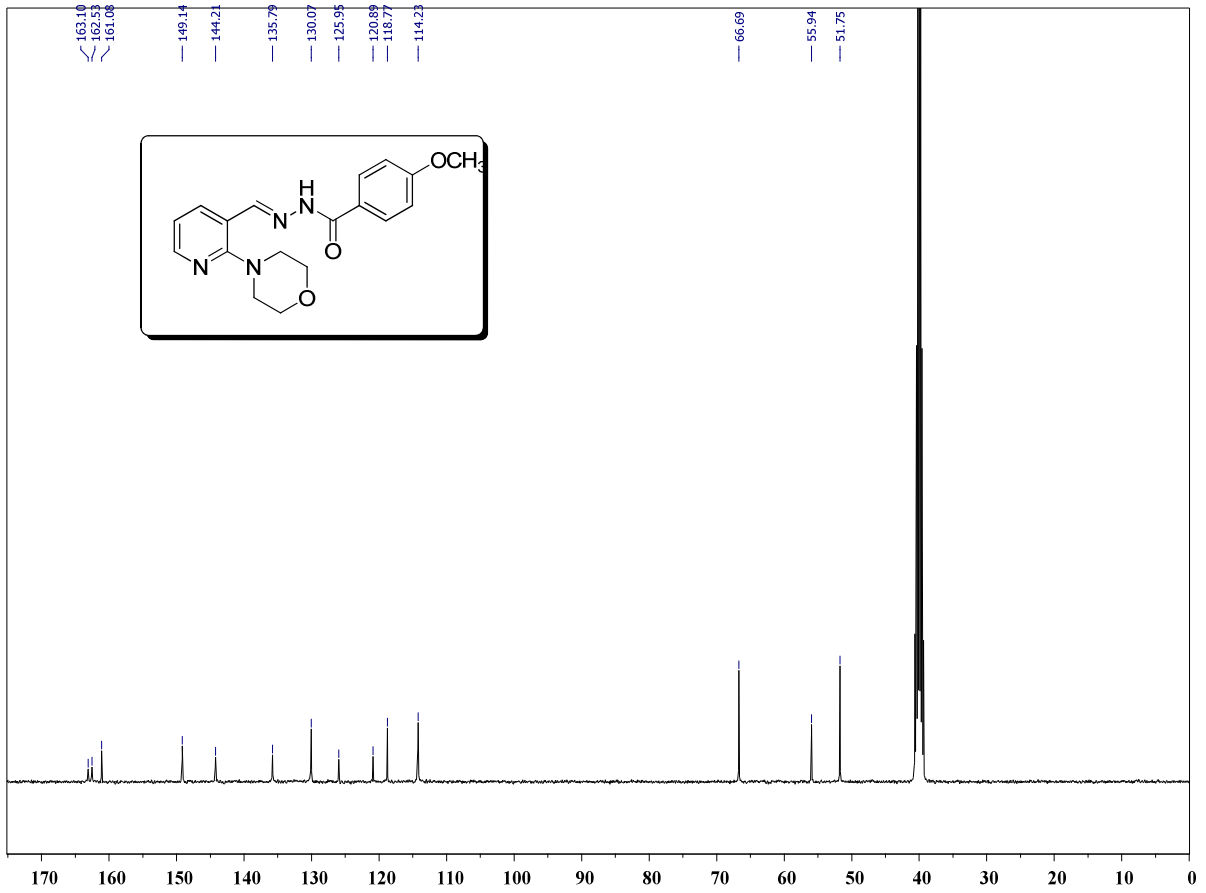
¹³C NMR Spectrum of compound **3p**



MASS Spectrum of compound **3p**



¹H NMR Spectrum of compound 3q



¹³C NMR Spectrum of compound 3q

BDR_PY_MOM_HYD

XEVO-TQSmicro#QEA0680

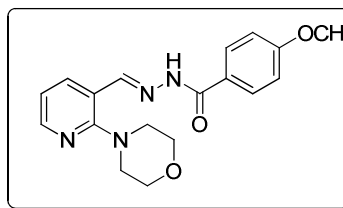
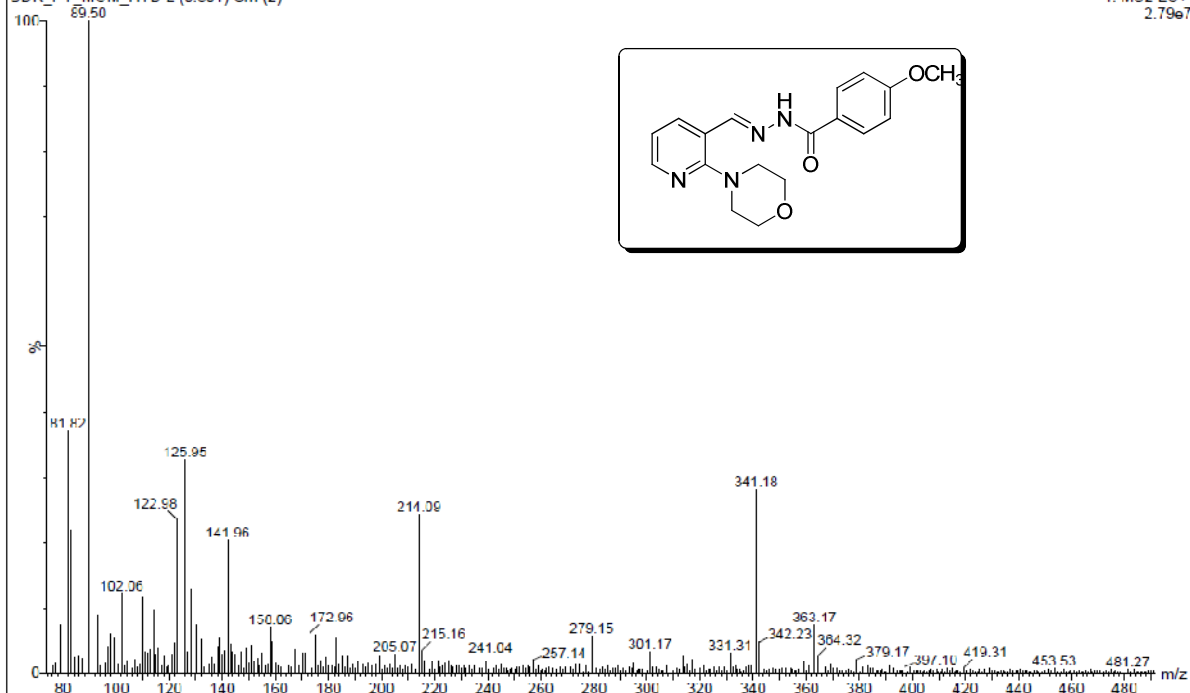
18-Apr-2019

WATERS-S4AZ4223\ADMINISTRATOR

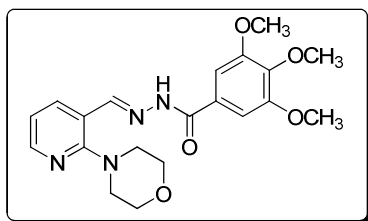
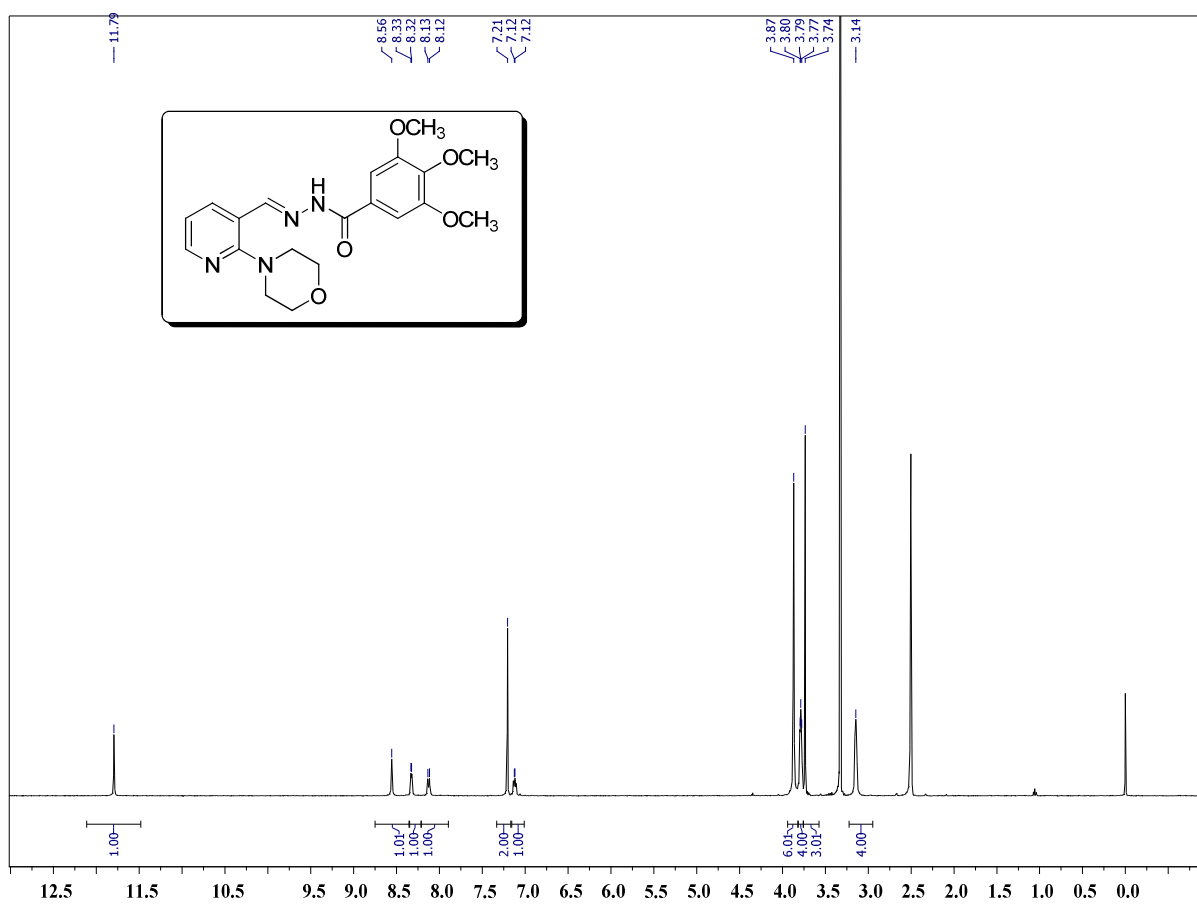
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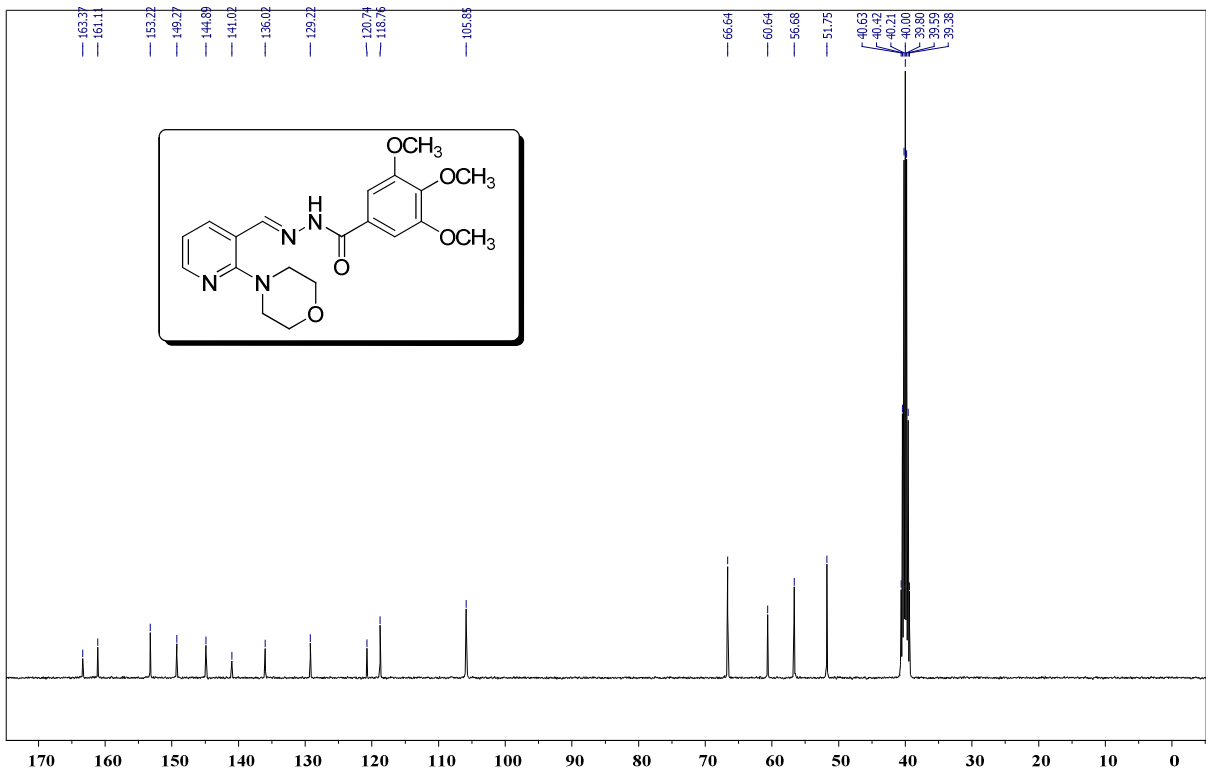
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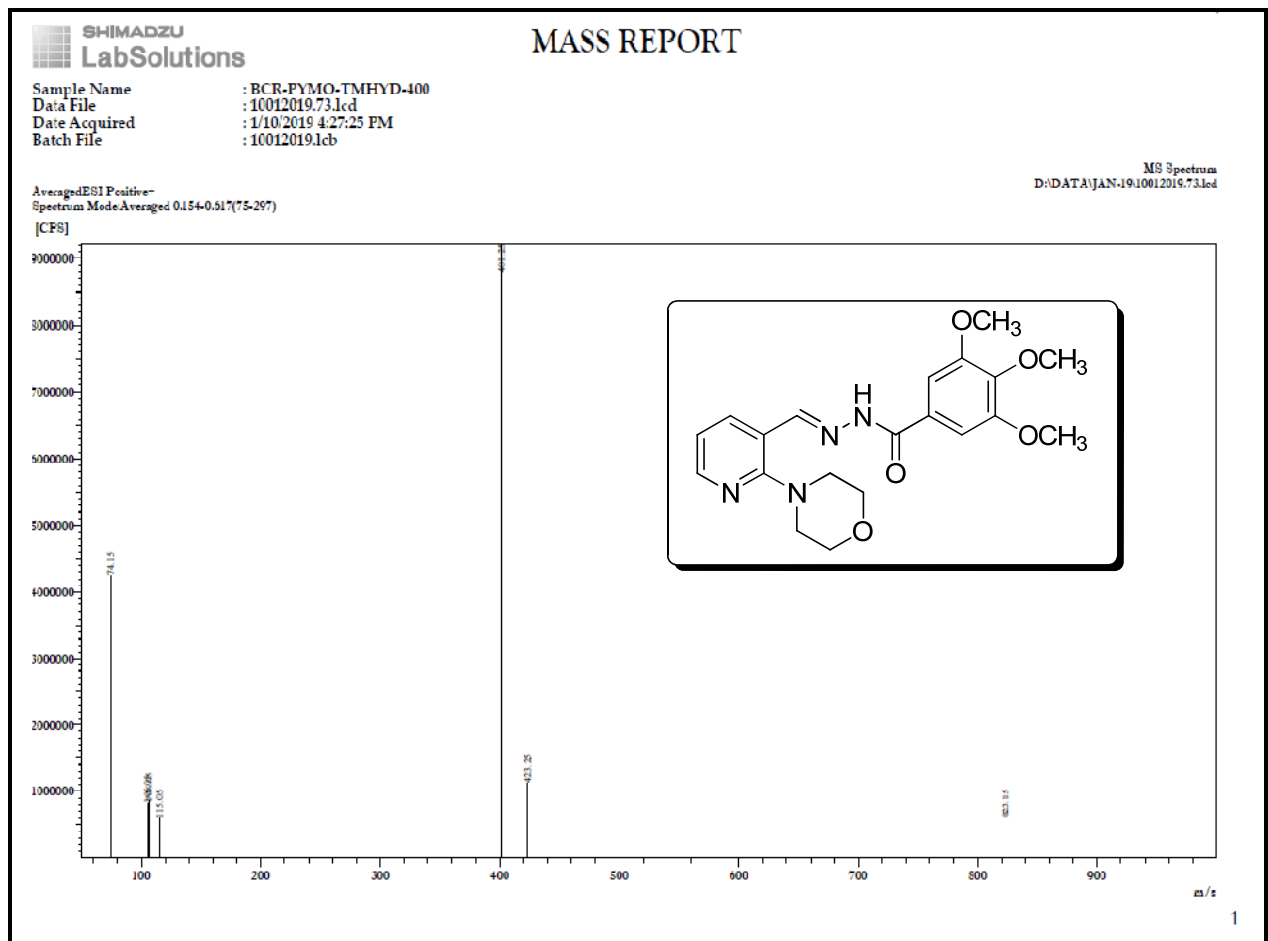
MASS Spectrum of compound 3q



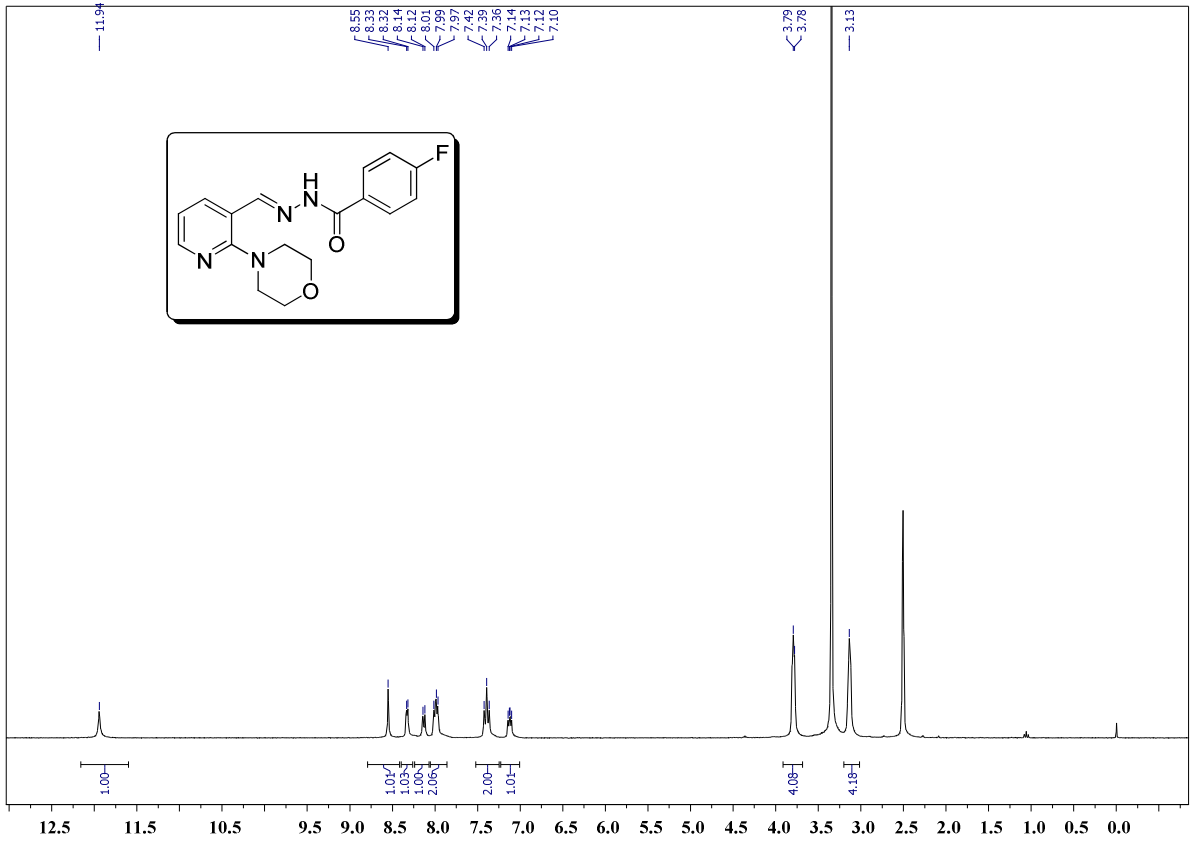
¹H NMR Spectrum of compound 3r



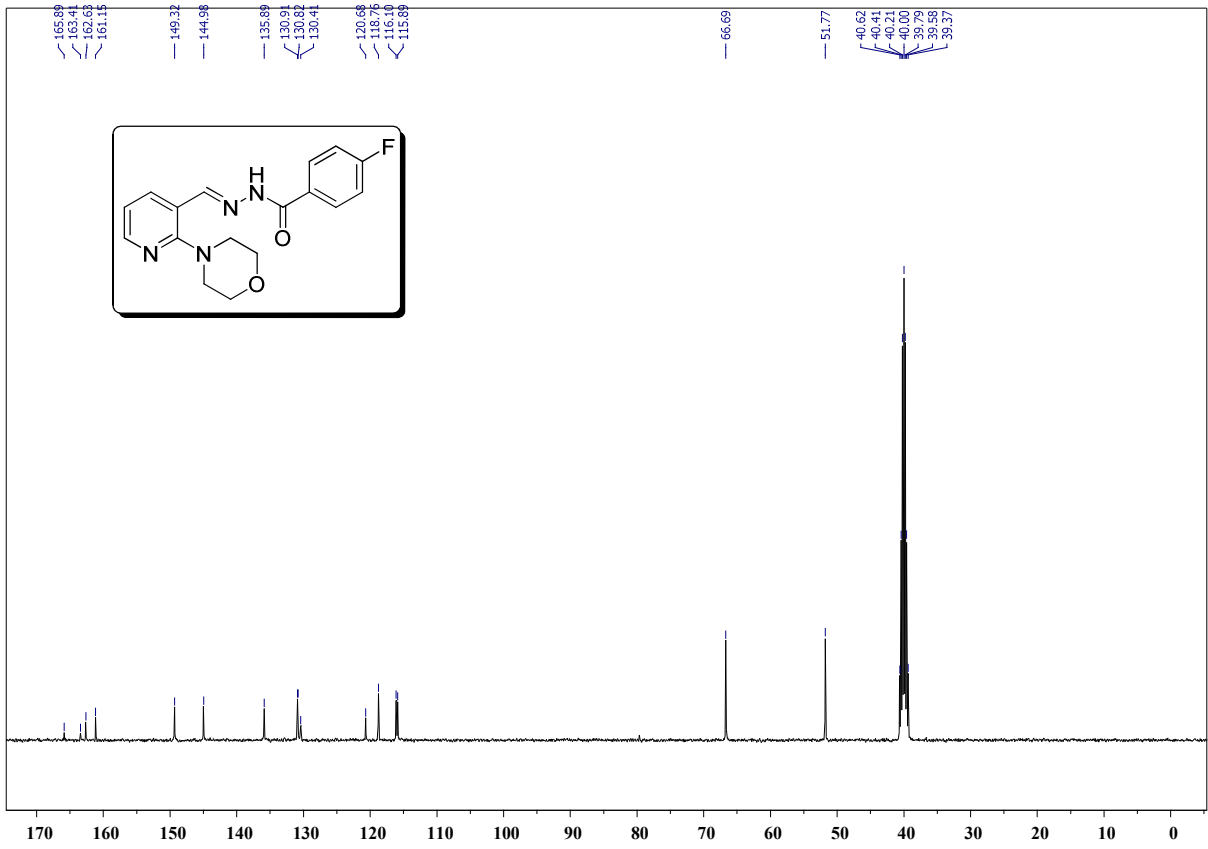
¹³C NMR Spectrum of compound 3r



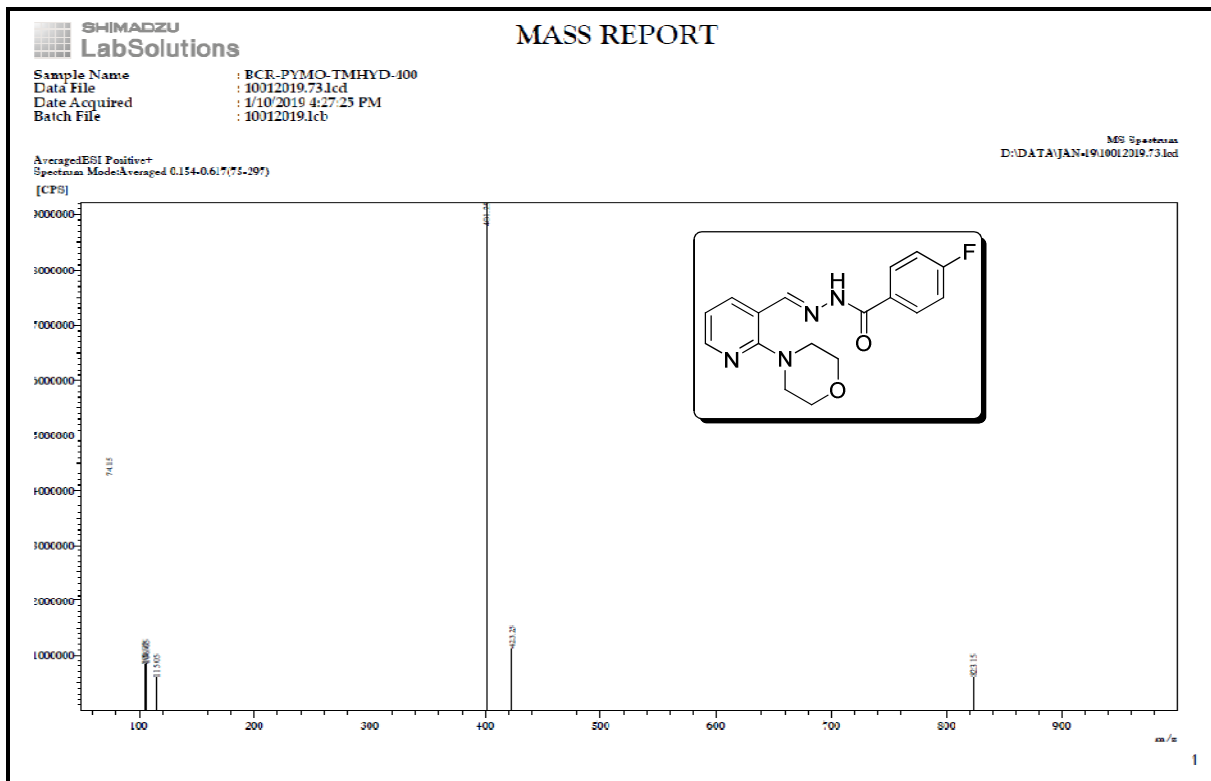
Mass Spectrum of compound 3r



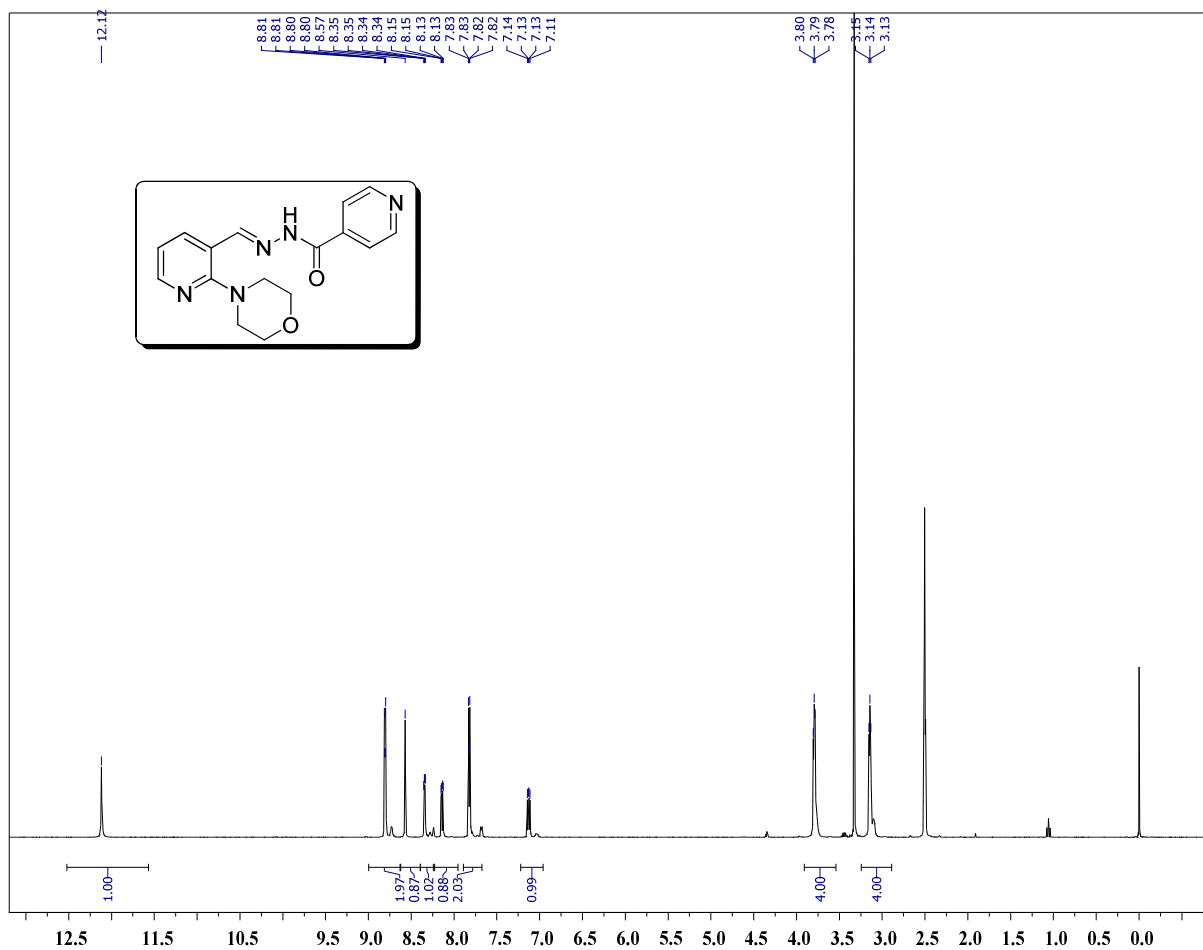
¹H NMR Spectrum of compound 3s



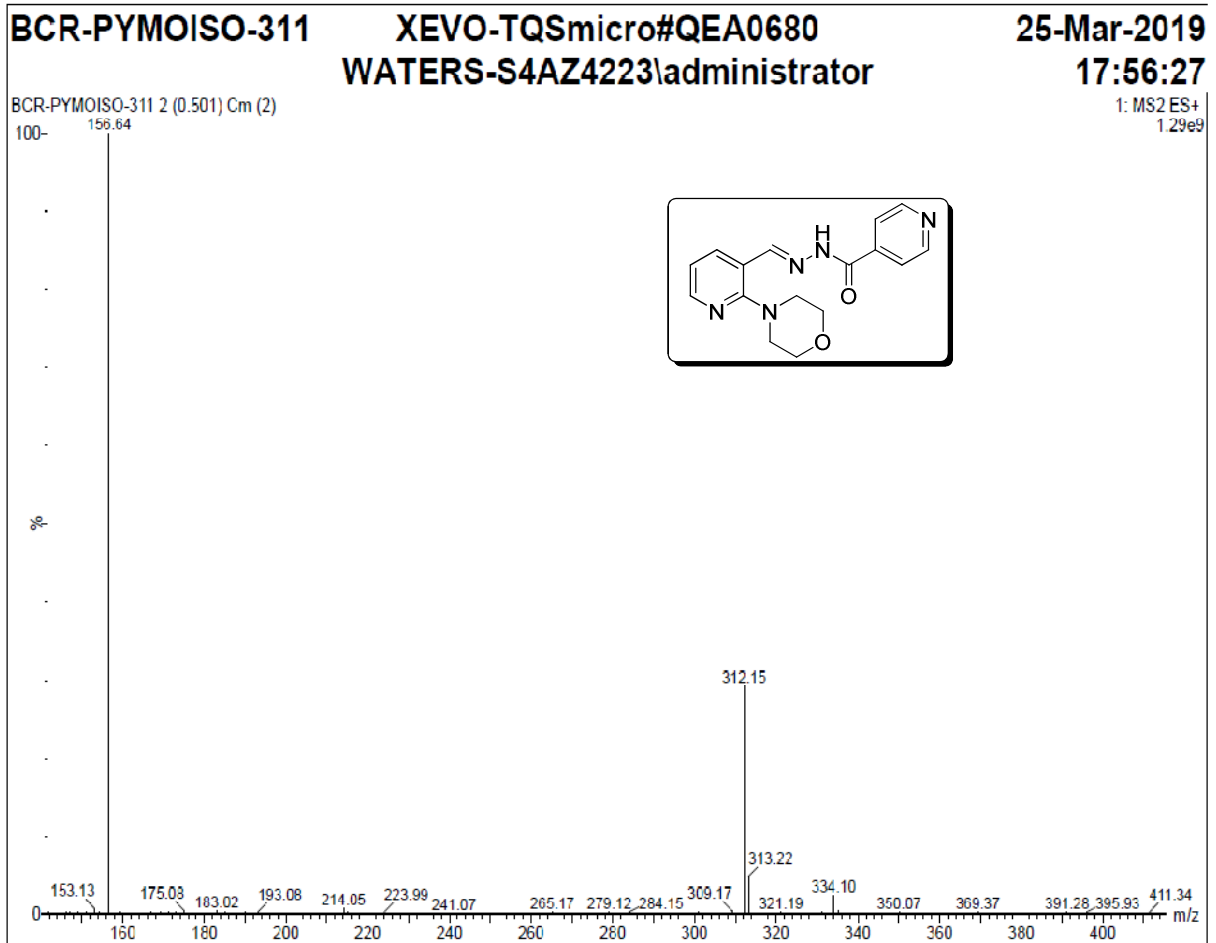
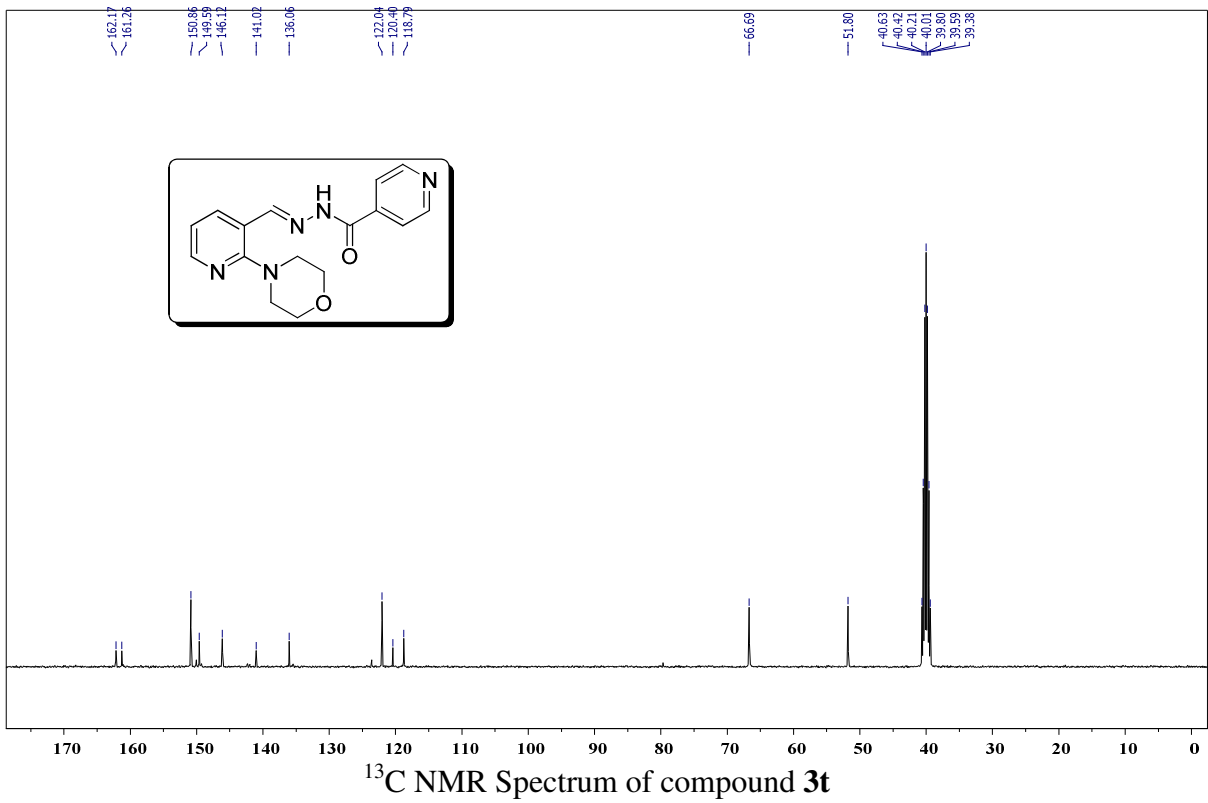
¹³C NMR Spectrum of compound 3s

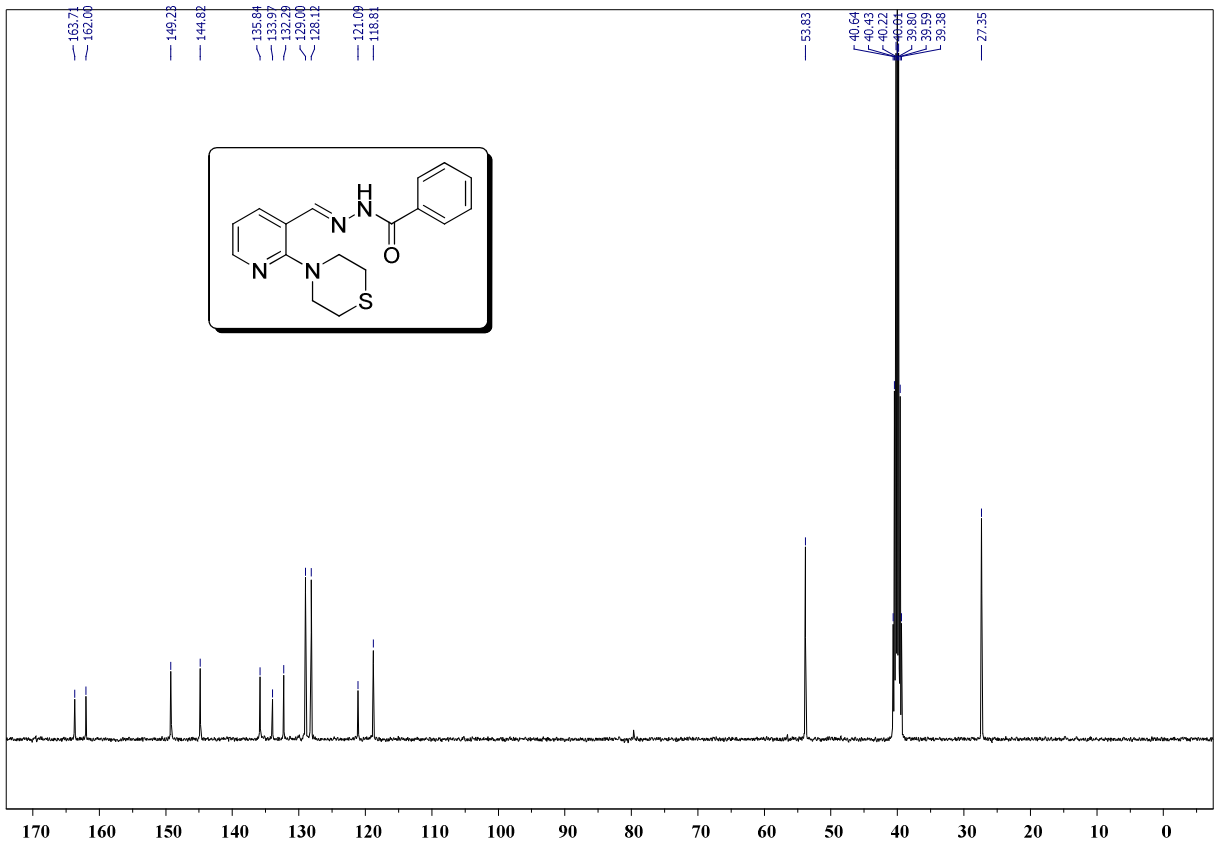
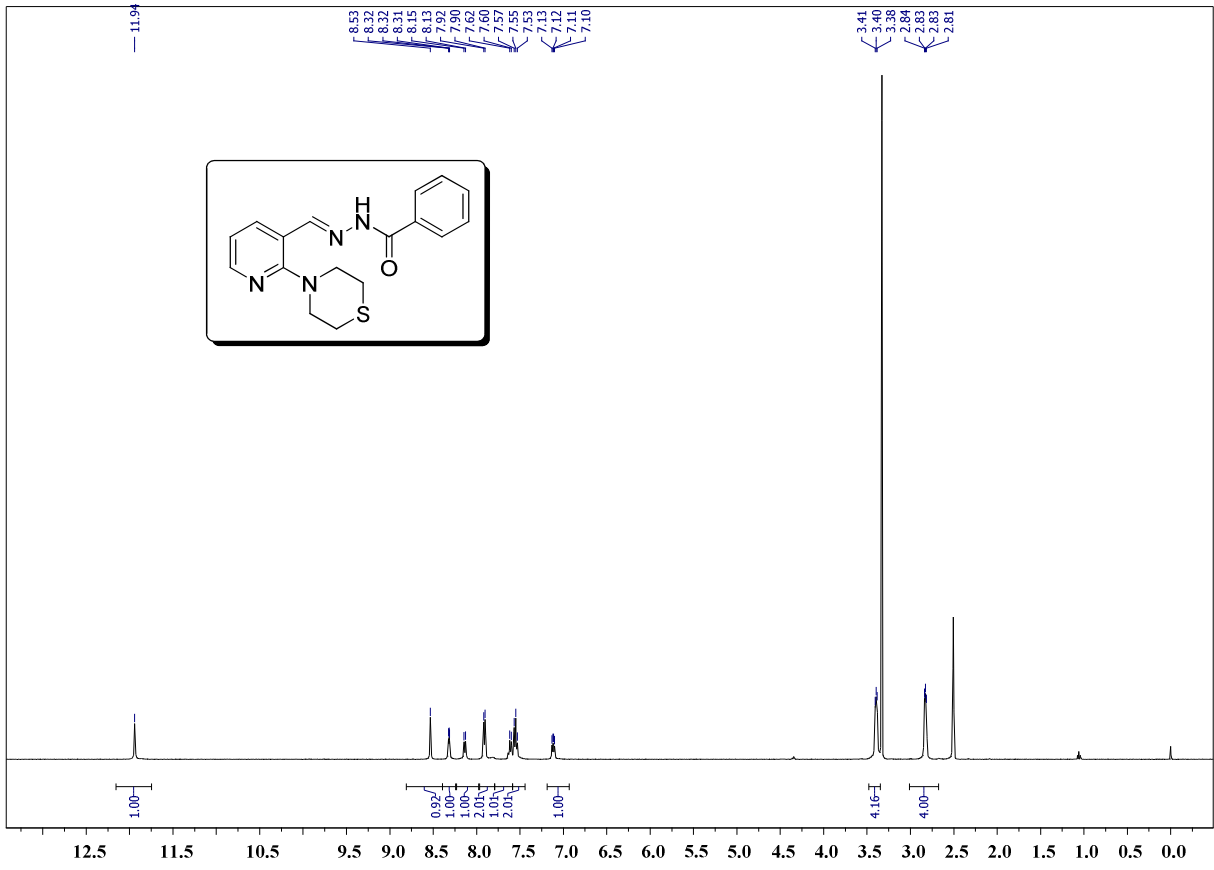


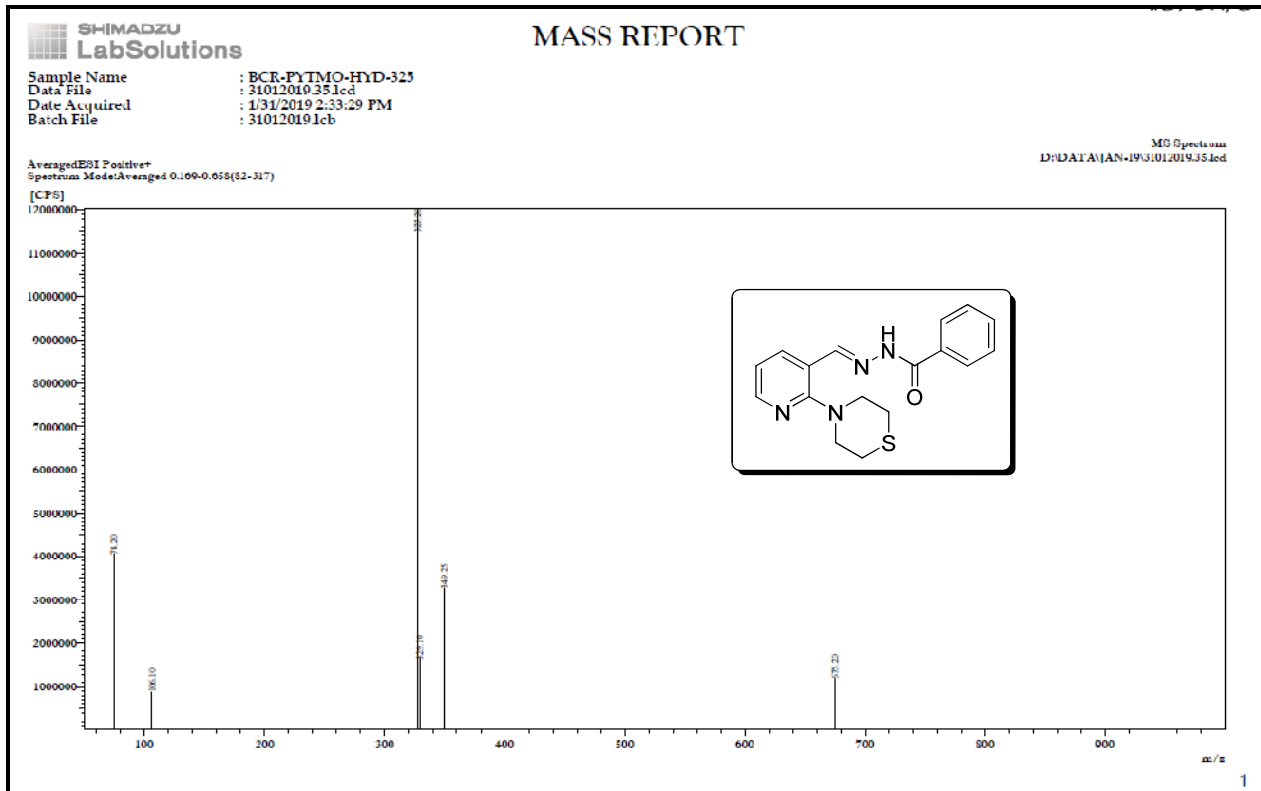
MASS Spectrum of compound 3s



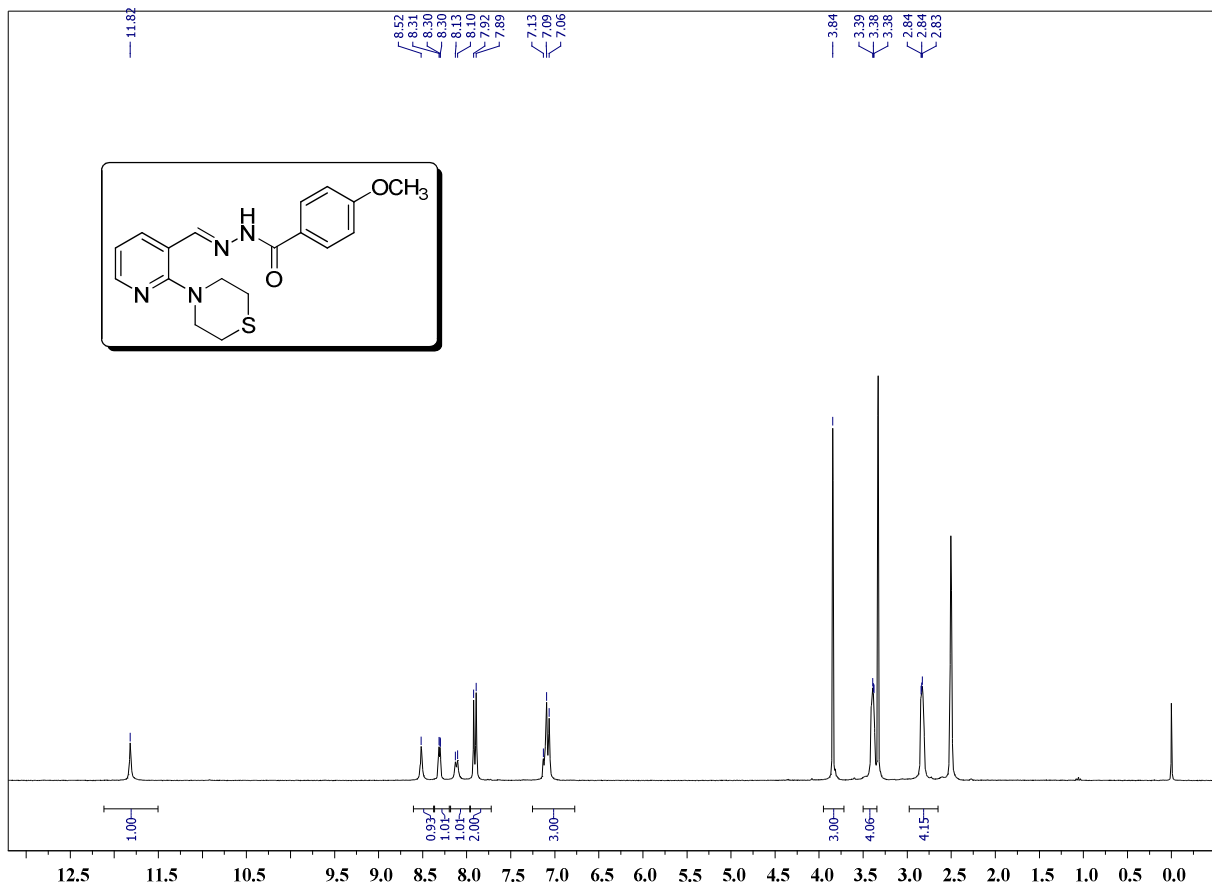
¹H NMR Spectrum of compound 3t



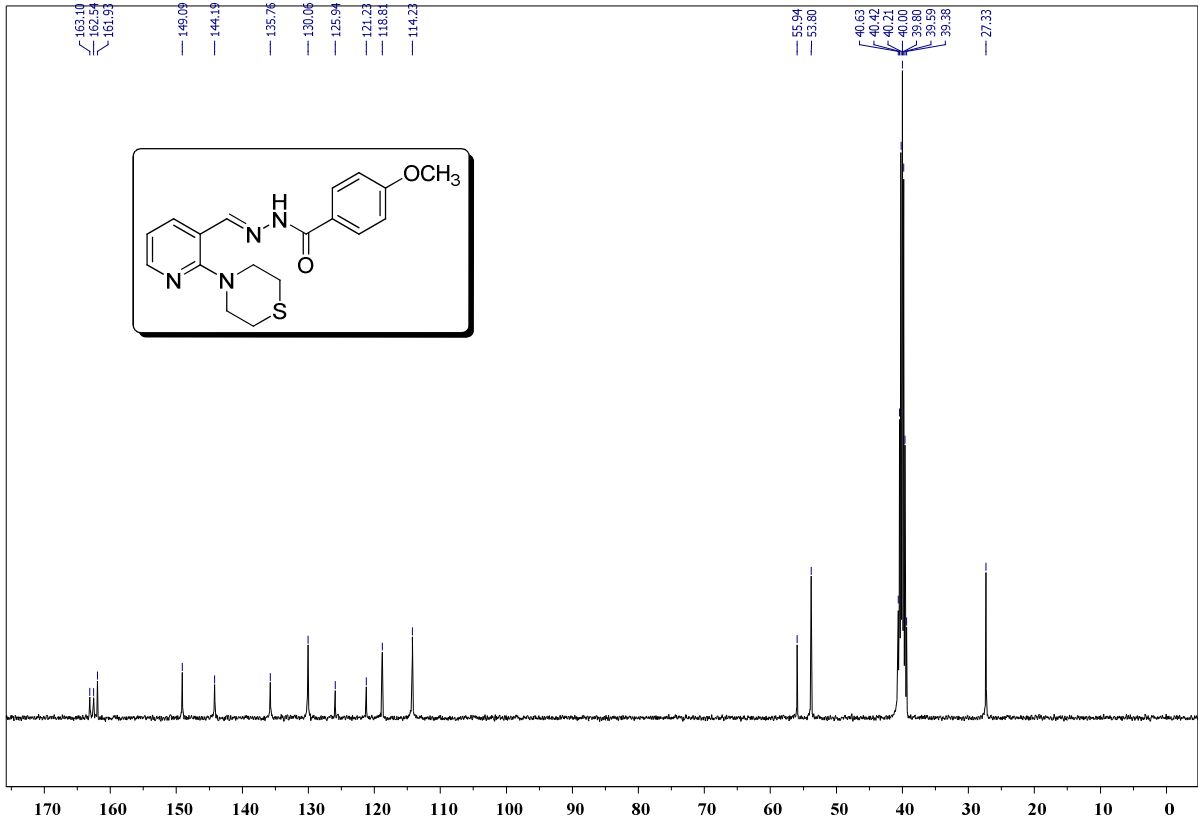




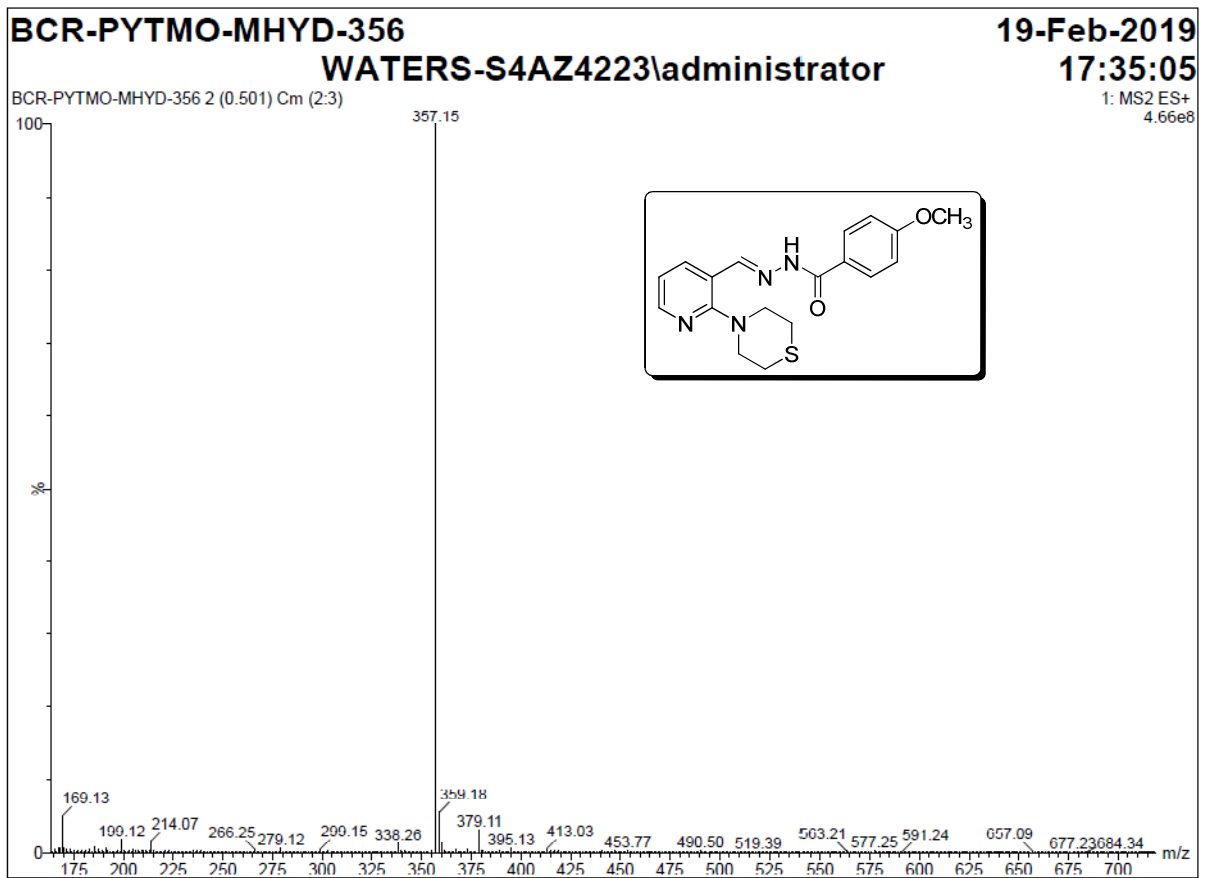
MASS Spectrum of compound 3u



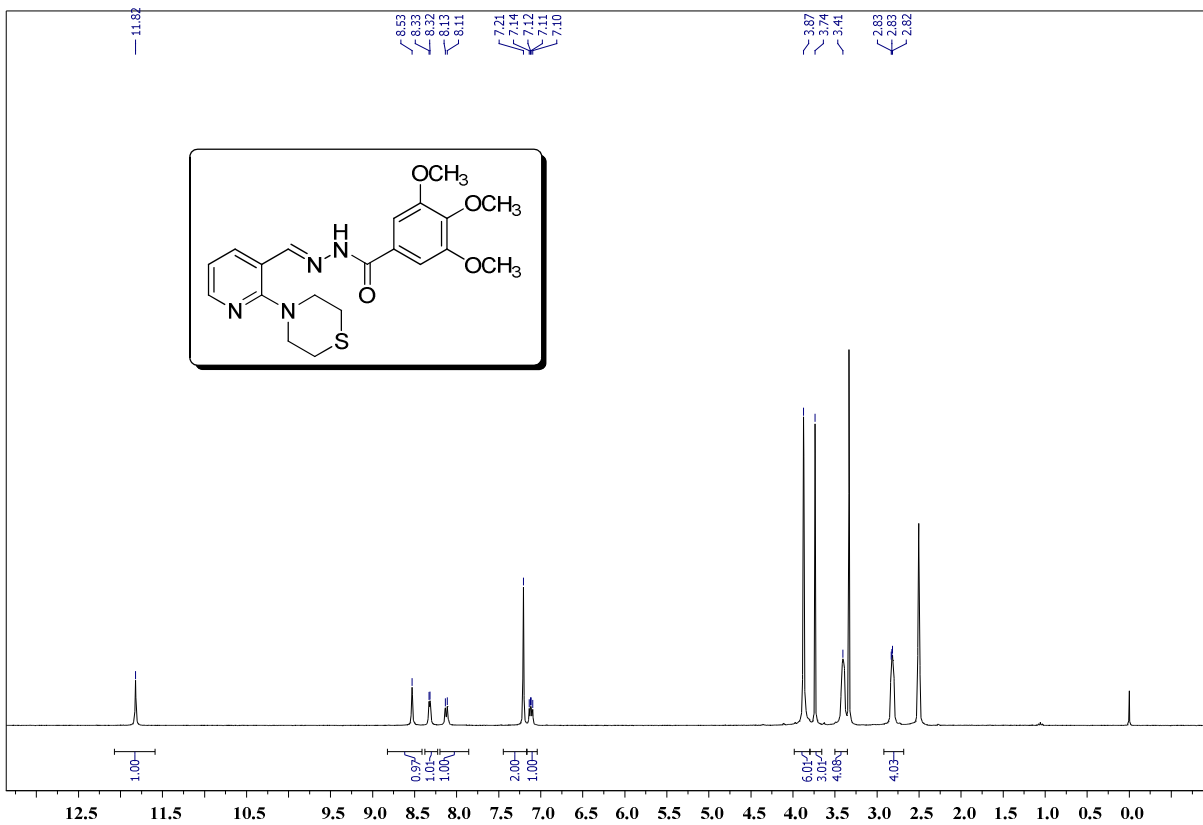
¹H NMR Spectrum of compound 3v



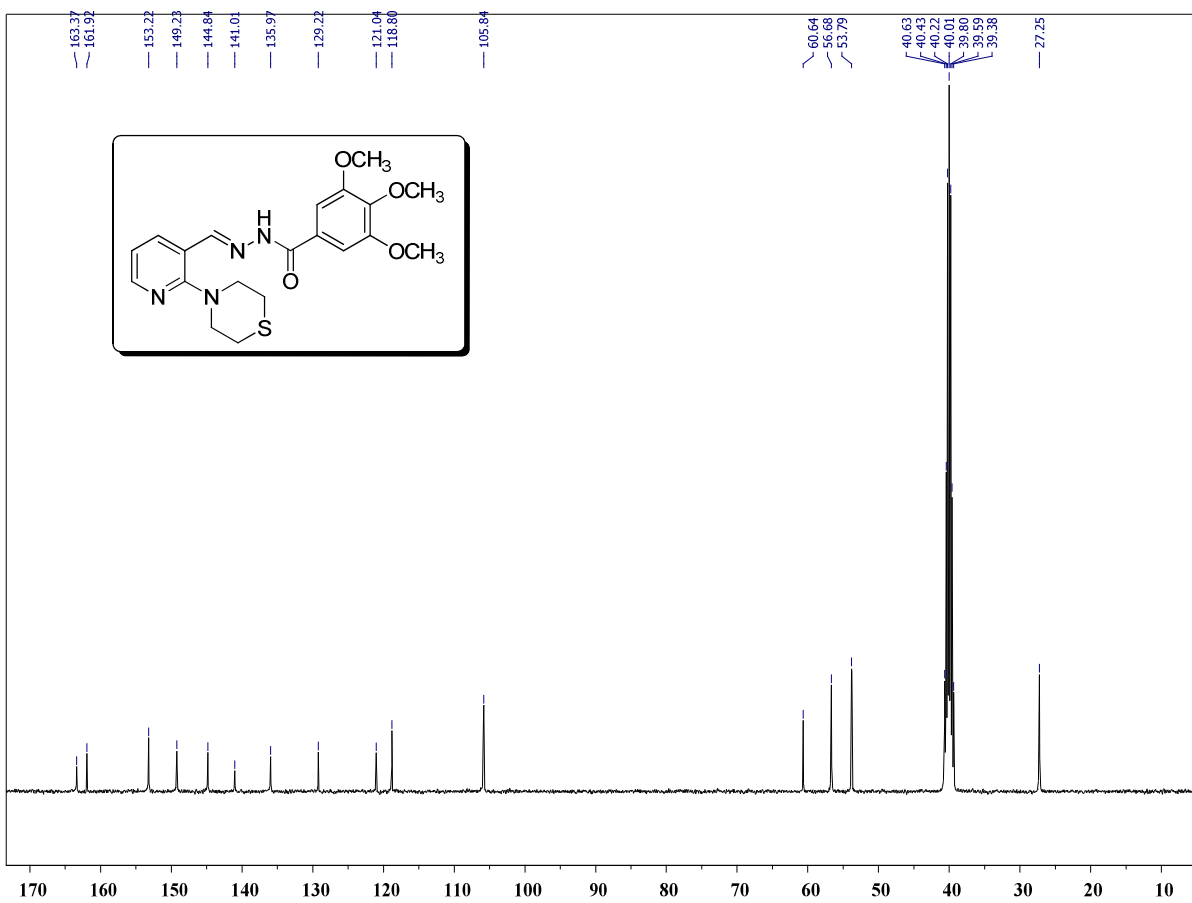
^{13}C NMR Spectrum of compound 3v



MASS Spectrum of compound 3v



¹H NMR Spectrum of compound 3w



¹³C NMR Spectrum of compound 3w

BCR-PYTMO-TM-HYD-416

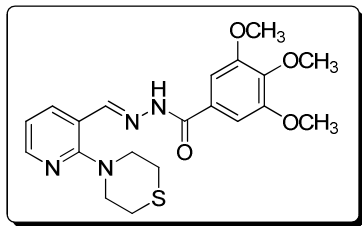
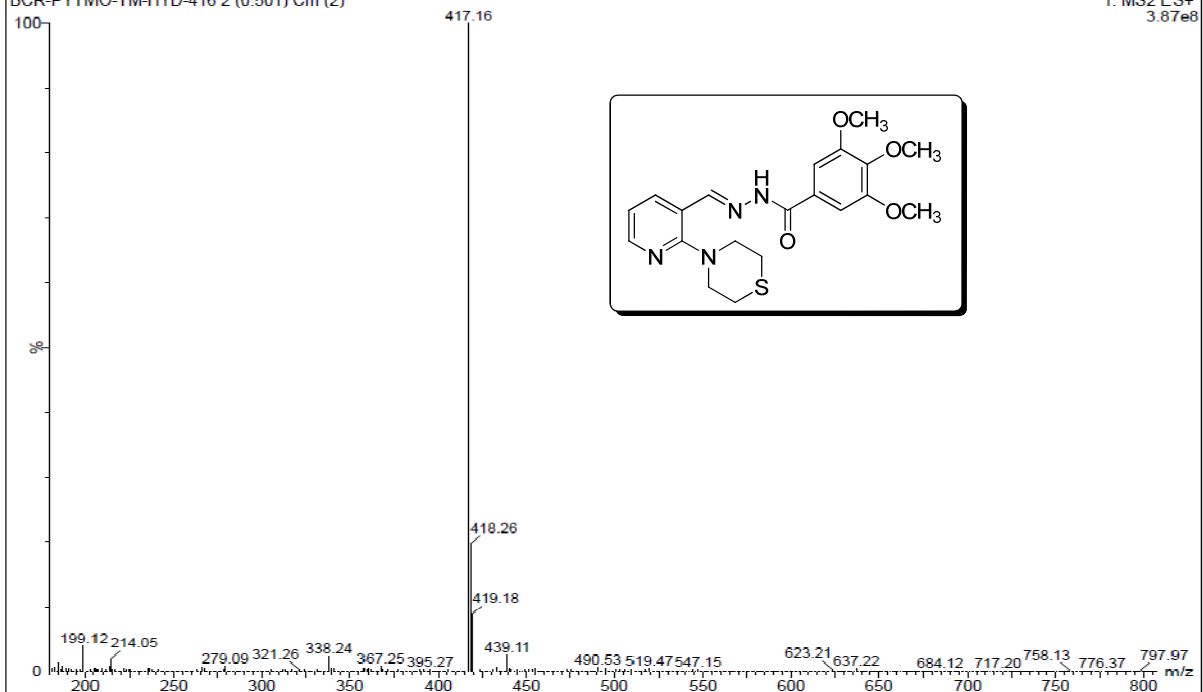
19-Feb-2019

WATERS-S4AZ4223\administrator

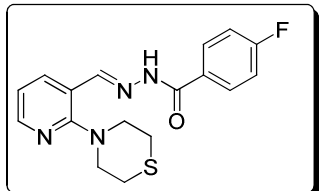
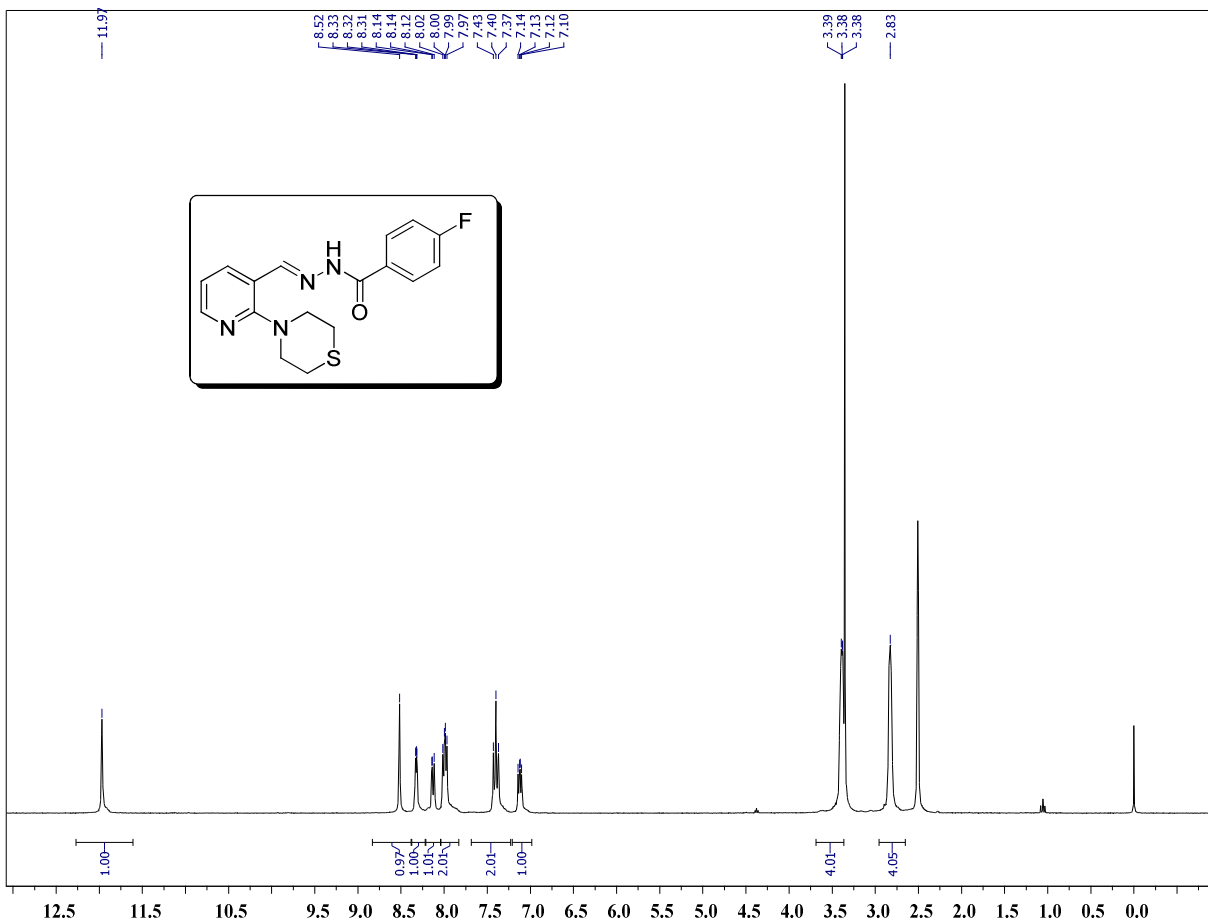
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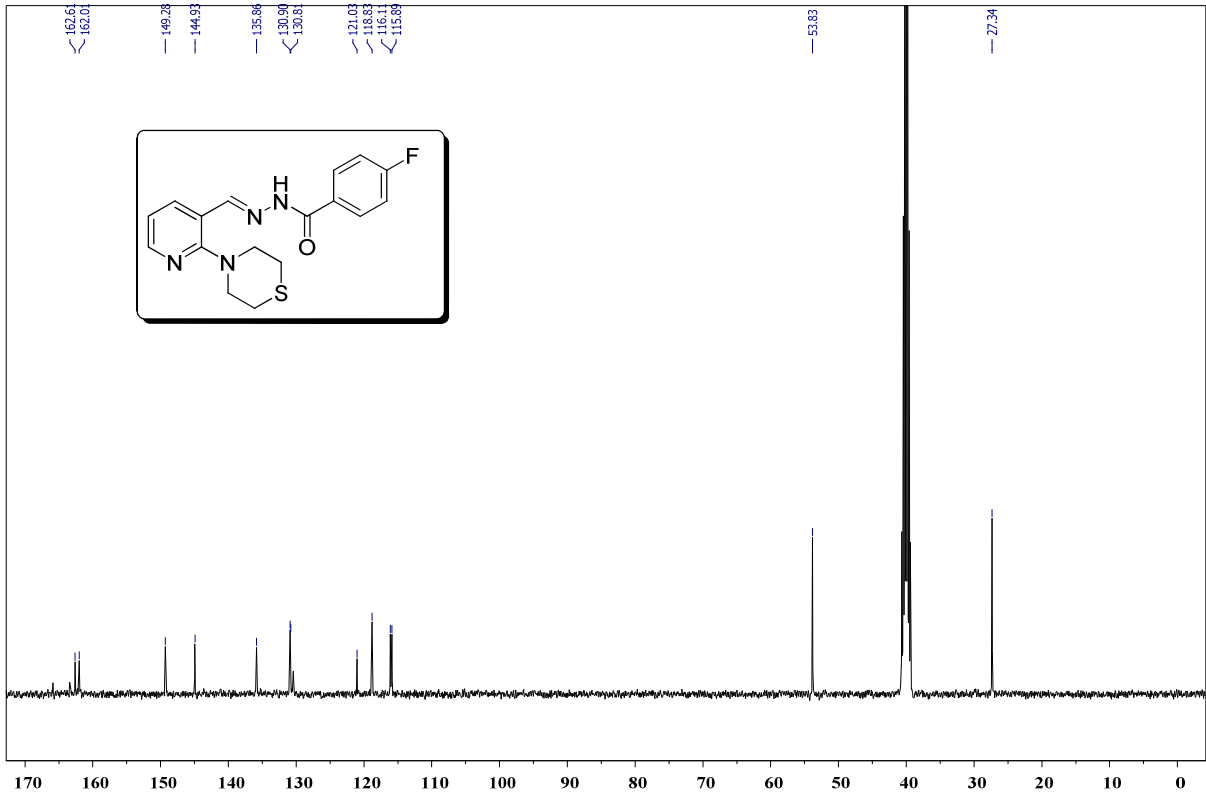
1: MS2 ES+
3.87e8



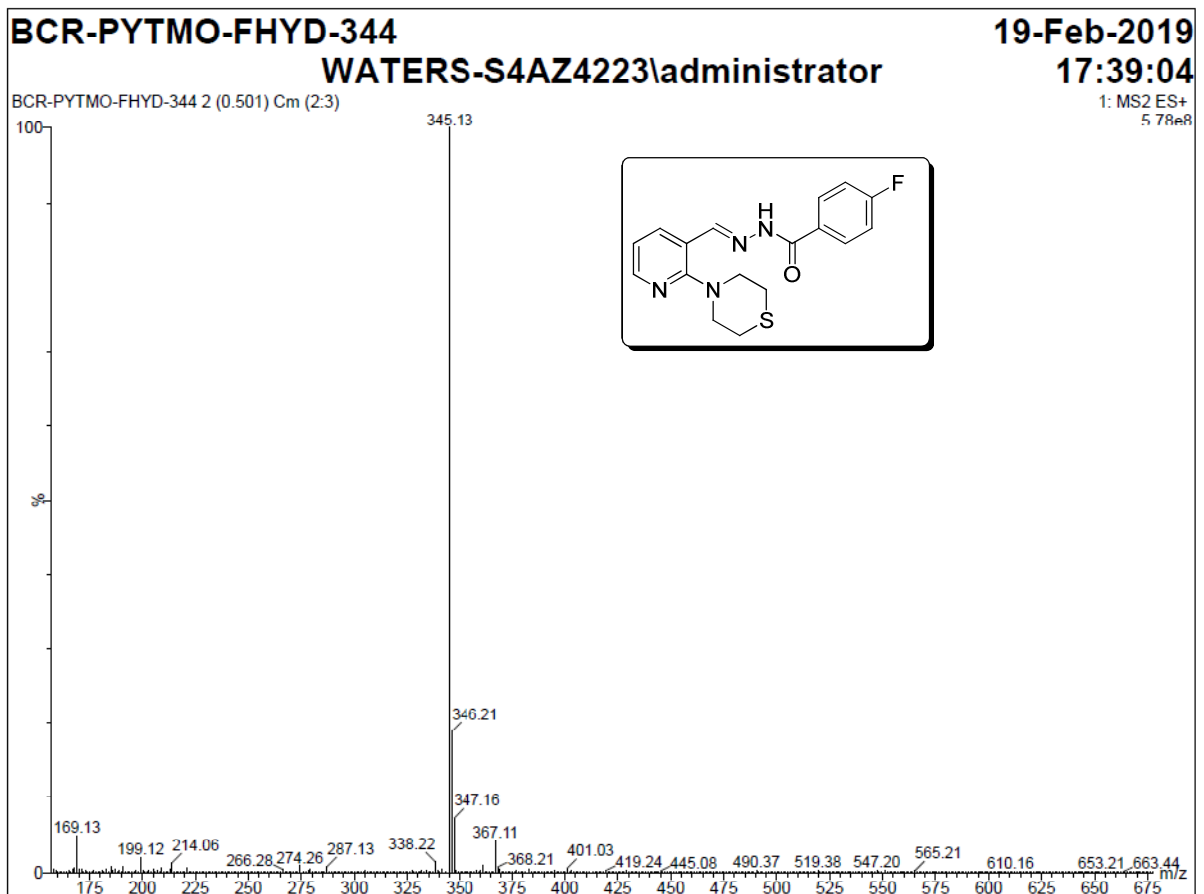
MASS Spectrum of compound 3w



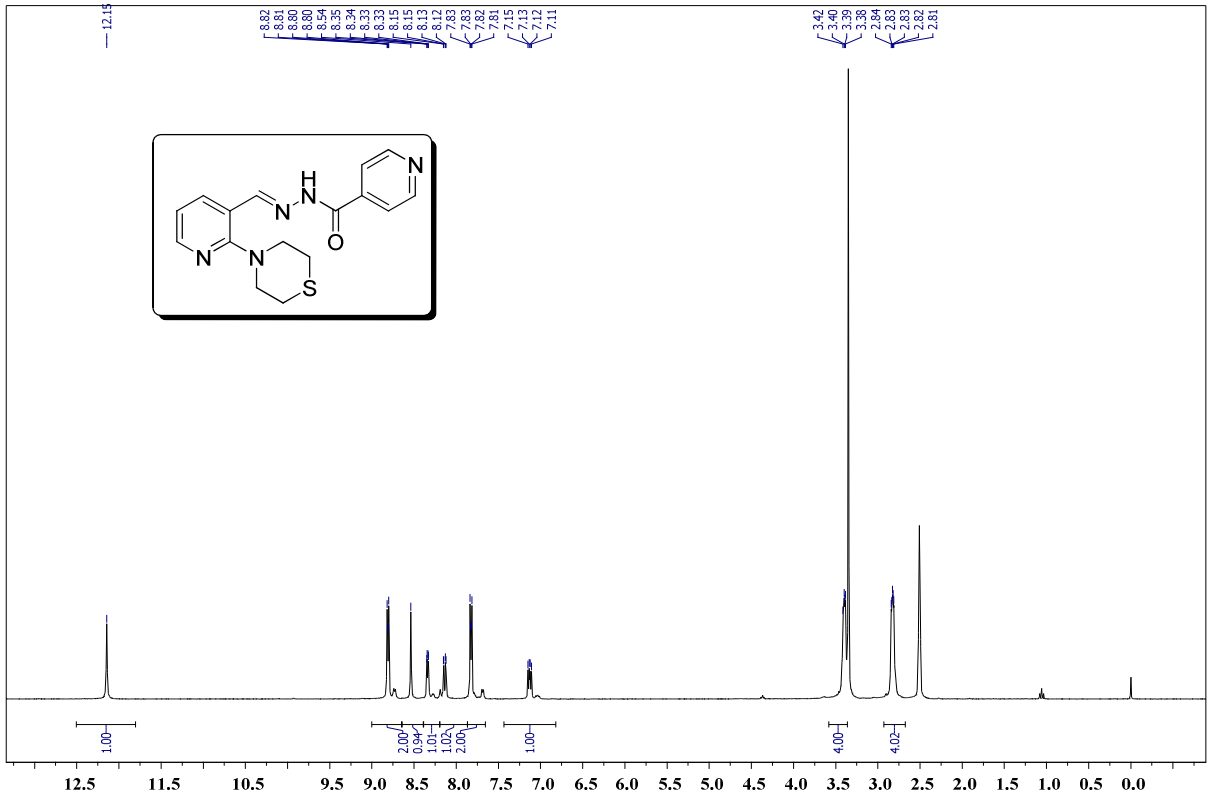
¹H NMR Spectrum of compound 3x



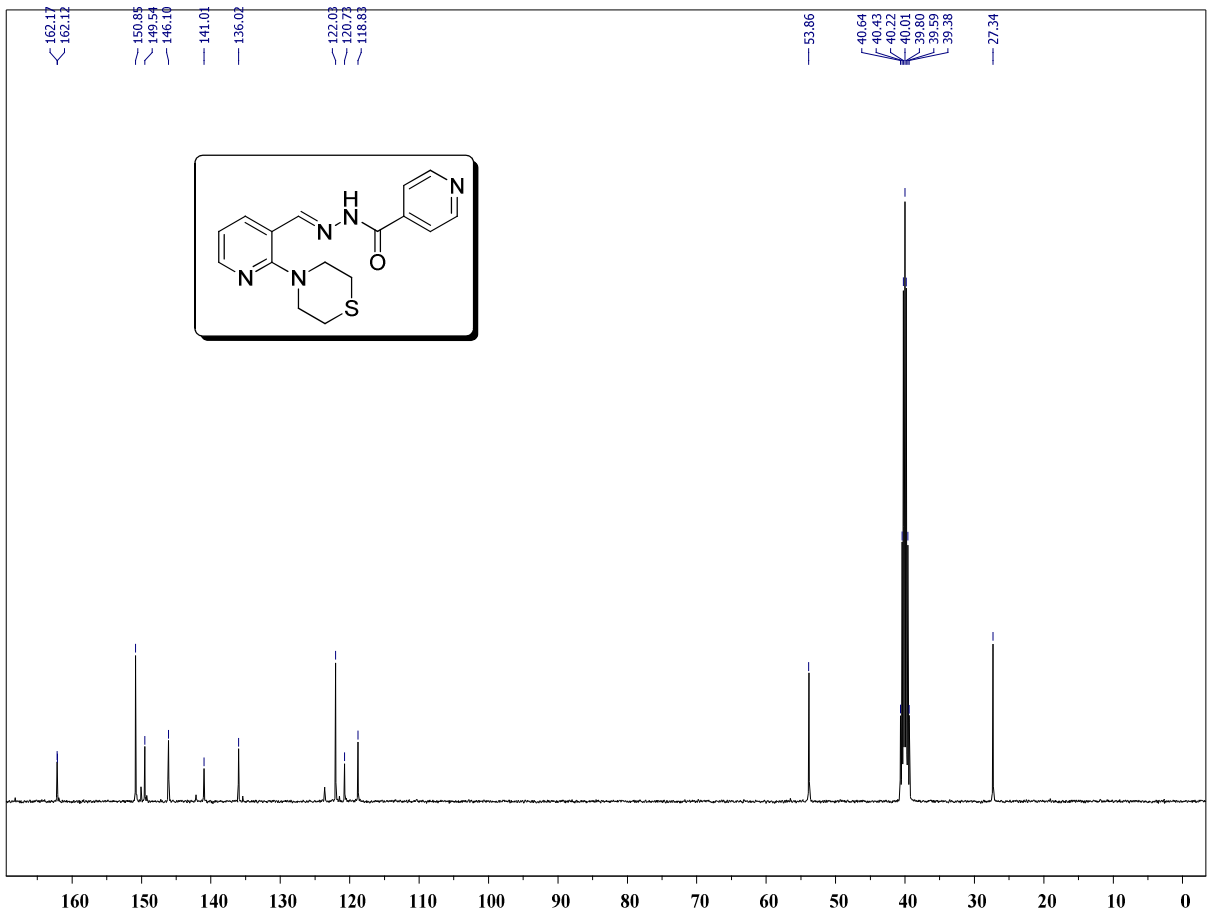
¹³C NMR Spectrum of compound 3x



MASS Spectrum of compound 3x



¹H NMR Spectrum of compound **3y**



¹³C NMR Spectrum of compound **3y**

BCR-PYTMO-ISO-327

XEVO-TQSmicro#QEA0680

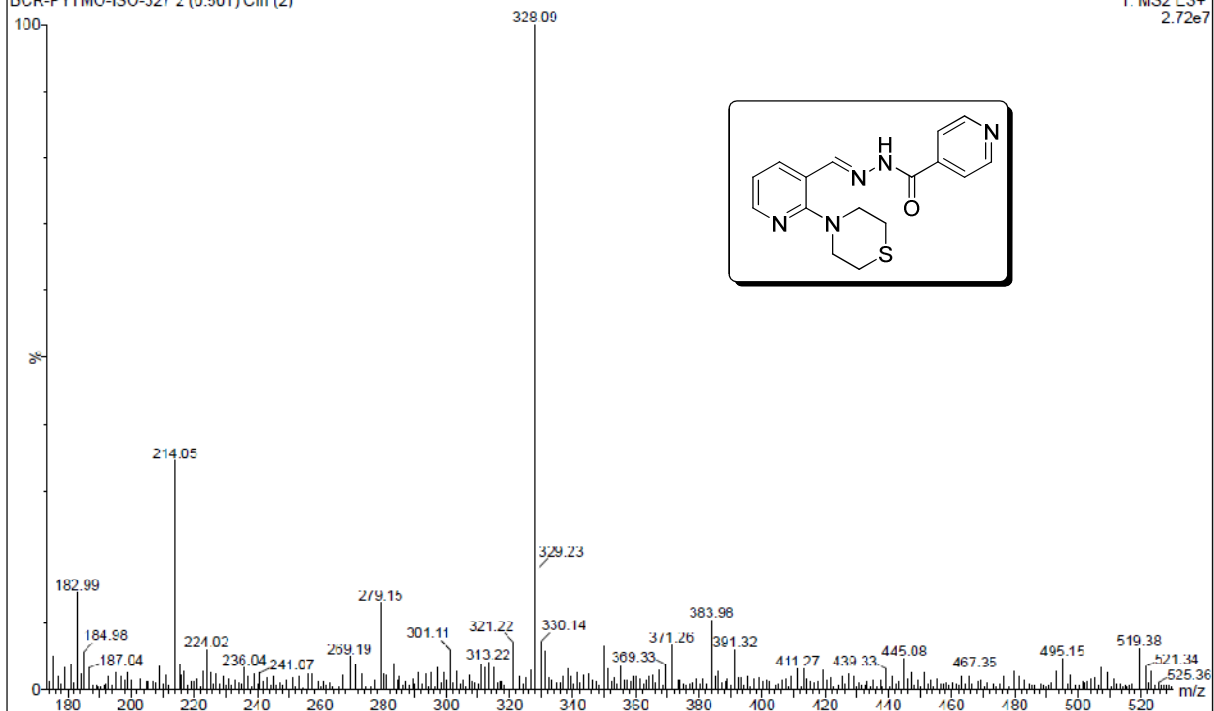
25-Mar-2019

WATERS-S4AZ4223\administrator

17:54:27

BCR-PYTMO-ISO-327 2 (0.501) Cm (2)

1: MS2 ES+
2.72e7



MASS Spectrum of compound 3y