Supporting Information for

Original article

Targeting a cryptic allosteric site of SIRT6 with small-molecule inhibitors that inhibit the migration of pancreatic cancer cells

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CONTENTS

The identified SIRT6 inhibitors were tested by FDL assays. The SIRT6 deacetylation FDL assay was performed as described previously[1]. All compounds were solubilized in DMSO at 50 mM. The concentrations of the compounds for IC_{50} determination were in the range from 0.1 to 100 μM. The IC_{50} values were determined by fitting the data points with the dose–response function in GraphPad Prism version 7.00 (GraphPad Software, La Jolla, CA). Each experiment was performed independently at least three times for every compound.

HPLC assay of SIRT6 deacetylation on H3K9Ac

HPLC assay of SIRT6 deacetylation on H3K9Ac for JYQ-42 were performed as described previously with some modificaitons[1]. The 50 μL reaction system contained 10 μM SIRT6, 25 μM H3K9Ac peptide (Ac-KQTARK-Ac-STGGWW-NH_2), 1 mM NAD^+, Assay Buffer, and DMSO or different concentrations of JYQ-42. The reactions were carried out at 37 °C for 4 hours, and quenched with 100 mM HCl and 160 mM acetic acid. After centrifuging at 12,000 rpm for 10 min, the supernatant was collected and analyzed by HPLC and mass spectrometry methods described below. Each experiment was independently repeated at least three times.

For HPLC analysis, the ZORBAX Eclipse Plus C18 column (4.6 × 100 mm, 3.5 μm) was used. Solvents used for HPLC were water with 0.1% trifluoroacetic acid (solvent A) and acetonitrile with 0.1% trifluoroacetic acid (solvent B). The gradient for HPLC condition was 5% to 100% B for 20 min. The flow rate was 1 mL/min with UV monitoring at 220 nm.

Enzymatic kinetic assays for JYQ-42

Enzymatic kinetic assays for JYQ-42 were performed as described previously with some modificaitons[1]. To determine the peptide kinetics, 2.5 μM SIRT6 was incubated with different concentrations (80–1250 μM) of peptide Ac-RHKK-Ac-AMC in a 50-μL reaction mixture (2 mM NAD^+ and Assay Buffer) at 37 °C for 3 h (DMSO), and 5, 7 or 9 h (1, 3 or 10 μM JYQ-42). To determine the kinetics of NAD^+, 2.5 μM SIRT6 was incubated with different concentrations (50–1200 μM) of NAD^+ in a 50-μL reaction mixture (640 μM peptide Ac-RHKK-Ac-AMC and Assay Buffer) at 37 °C for 3 hours (DMSO), and 5, 7 or 9 h (1, 3 or 10 μM JYQ-42). The reactions were quenched with 100 mM HCl and 160 mM acetic acid and centrifugated at 11,000×*g* for 10 min and the supernatant was collected. Then, the samples were analyzed by HPLC with a ZORBAX Eclipse Plus C18 column (4.6 × 100 mm, 3.5 μm). water with 0.1% trifluoroacetic acid (solvent A) and acetonitrile with 0.1% trifluoroacetic acid (solvent B) were used as solvents for HPLC. The conversion rate of substrate to product was <10% for kinetic assays. Every experiment was performed independently at least three times.

Biolayer interferometry assay

The biolayer interferometry assay was performed with an Octet Red96 instrument (ForteBio) as described previously with minor modification[1]. Briefly, Recombinant SIRT6 was incubated (30 min) with EZ-Link NHS-Biotin (Thermo Scientific, 20217) in a buffer comprising 25 mM HEPES, pH 8.0, and 150 mM NaCl at 25 °C for biotin labeling with a 1:1 molar ratio of protein to biotin. The assays were performed at 96-well plate (Greiner Bio-One, PN:655209) and the final volume was 200 μl/well. Biotinylated SIRT6 was immobilized onto super-streptavidin biosensors. The assay consisted of three steps: (1) baseline, (2) association, (3) dissociation. For measurement the interaction between SIRT6 inhibitor JYQ-42 and SIRT6, different concentrations of JYQ-42 were used for association step. Data were analyzed and the association and dissociation plot and kinetic constants were obtained in ForteBio Data Analysis Software v9. Kd was represented by the ratio koff/kon.

Surface plasmon resonance assay (SPR assay)

We performed SPR assay as described previously with some modifications[1]. Briefly, A Biacore T200 instrument (GE Healthcare) was used. The His-SIRT6 was immobilized on a CM5 sensor chip (GE) with an amine coupling kit (GE Healthcare). The binding assay was performed in PBS buffer with a series of concentrations of JYQ-42 injected into the flow system at a flow rate of 30 μL/min. The affinity constants of binding were analyzed using the 1:1 Langmuir binding model in BIACORE T200 Evaluation software v3.

***In vitro* nucleosome deacetylation assay**

In vitro nucleosome deacetylation assay was performed as previously described methods with minor modification[1-3]. Briefly, nucleosomes were purified from HeLa cells using a nucleosome preparation kit(Active motif, 53504) and recombinant SIRT6 was purified as described previously.5 μg mononucleosomes and 100 ng SIRT6 were incubated in SIRT6 assay buffer and 2 mM NAD^+ and four concentrations of JYQ-42 (0, 0.5, 1, 2, 4 μM) in a 40 μL volume for 30 min at 30 °C. The reaction mixture was resolved by 12% SDS-PAGE and analyzed by Western blot.

Q-PCR for *IL6*, *IL8* and *TNF-α* detection

Q-PCR for *IL6*, *IL8* and *TNF-α* was performed as previously described method with some modifications[4]. Pancreatic cancer cells (3×10^5 cells/well) were seeded in 6-well plates and allowed to adhere for 24 h. Then, cells were cultured with PMA (30 ng/mL) and different concentrations of JYQ-42 for 24 h. After 24 h, cells were harvested and total RNA was extracted using the trizol method[4]. 2 μg of RNA

was reverse transcribed in a final volume of 20 μL using the Reverse Transcription kit (ABI). The primers include: *IL8* (F-; R-), *TNF-α* RT (F-; R-) and *GAPDH* RT (F-; R-) (Table S4). The PCR reactions were carried out with a 7900 HT Fast real-time PCR system (Applied Biosystems by Invitrogen) under the following conditions: 95 °C for 1 min, 40 cycles at 95 °C for 15 s, 60 °C for 15 s, and 72 °C for 30 s. SyberGreen real-time quantitative PCR dissociation curves showed that each primer set gave a single and specific product. The *GAPDH* was used as internal stan dards to adjust for different qualities and quantities of DNA. Comparisons in gene expression were calculated using the $2^{-\Delta\Delta Ct}$ method.

ELISA for IL6, IL8 and TNF-*α* detection

ELISA for IL6, IL8 and TNF-*α* was performed as previously described method with some modifications[4]. BXPC-3 cells (3×10^5 cells/well) were seeded in 6-well plates and allowed to adhere for 24 h. Then, cells were cultured with PMA (30 ng/mL) and different concentrations of JYQ-42 for 24 h. Thereafter, supernatants were collected and inflammatory factors (IL6, IL8 and TNF-*α*) were determined using commercially available DuoSet® ELISA kits (R&D Systems).

Proliferation assay

Pancreatic cancer cells were seeded in 96-well plates at 8000 cells per well and allowed to adhere for 12 h. Then, a series of concentrations of JYQ-42 were added to the cultures. After 48 h, cell viability was measured using a Cell Counting Kit-8 (CCK-8) kit. Absorbance intensity was determined with a Synergy NEO microplate reader at 490 nm. The IC_{50} values were calculated at 48 h on the basis of OD_{490} nm values to the OD_{490} nm values in the presence of 0 μM JYQ-42 by fitting the data points with the dose-response function in GraphPad Prism v7 (GraphPad Software).

Migration assay by wound healing

Wound healing assay was performed as previously described methods with some modifications[5,6]. BXPC-3 cells were seeded into each well of 6-well plates (9×10^5) and cultured until 90% confluence was reached. Cells were then cultured in serum-free medium for 24 h. Wounds were made with RNase-free pipette tips (Axygen; AXY-T-300) and the cells were washed with serum-free PBS. PMA (30 ng/mL, final concentration) and a series of concentrations of JYQ-42 were diluted in serum-free medium and added in wells. 0.5 mM ADPr was added as negative control. Photos were captured at the times indicated in the relevant figures. The migration distances of BXPC-3 cells of wound-healing assays were calculated by Image J and the relative migration rates were calculated as follows: (the distance of the wound at 0 time point- the distance of the wound at 24 h time point)/ the distance of the wound at 0 time point. $^{**}P < 0.01$; $^{***}P < 0.001$; $^{****}P < 0.0001$, *t*-test (two-tailed and unpaired).

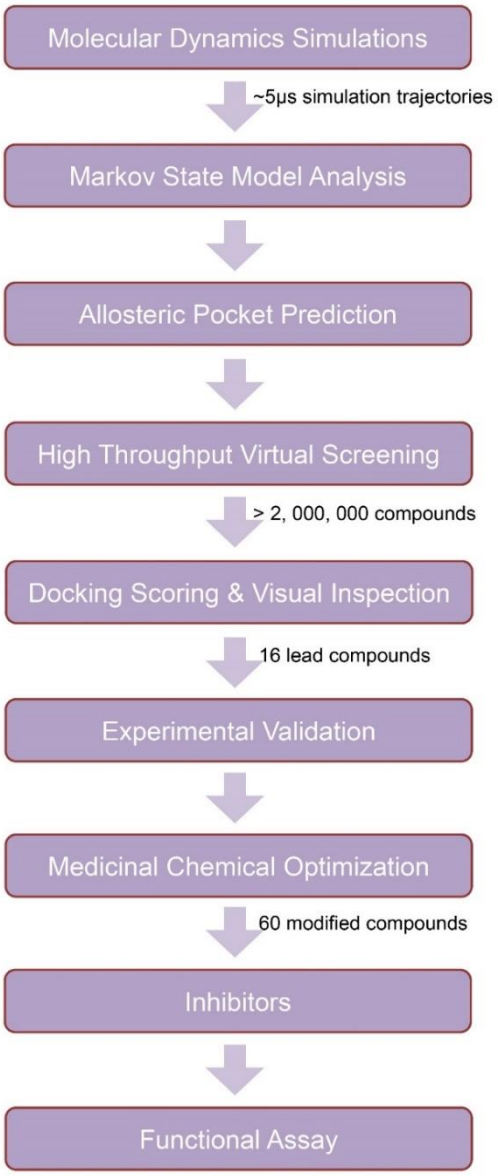


Figure S1 Workflow of the rational allosteric design of SIRT6 inhibitor.

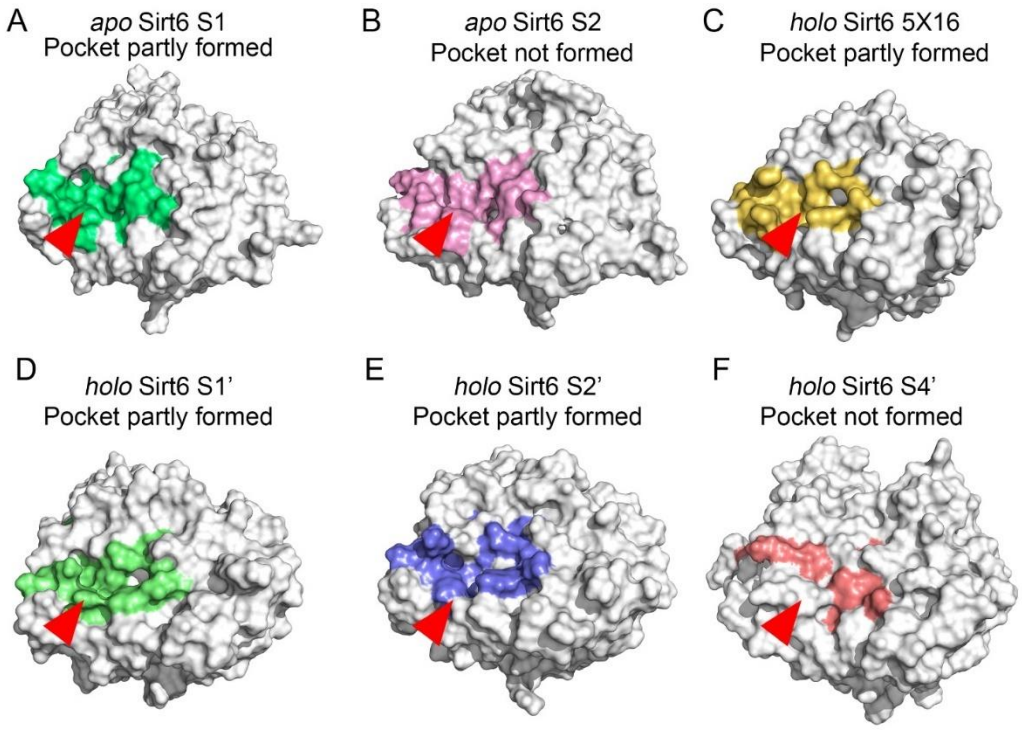


Figure S2 POCKET is not readily formed in apo SIRT6 (A, B), holo Sirt6 crystal structure (C) and other intermediate states of holo SIRT6 (D–F).

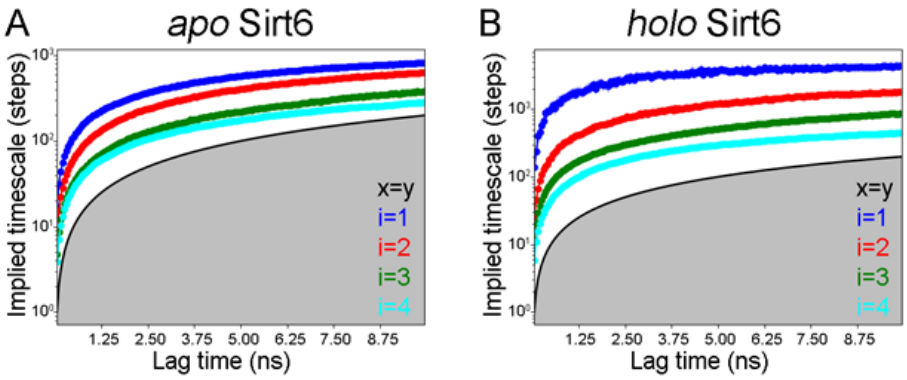


Figure S3 The results of implied timescale tests for apo (A) and holo (B) SIRT6. Timescales τ1, τ2, τ3 and τ4 were calculated as functions of lag times and graphed with blue, red, green and cyan lines. Black line corresponds to $x=y$ in logarithmic coordinates.

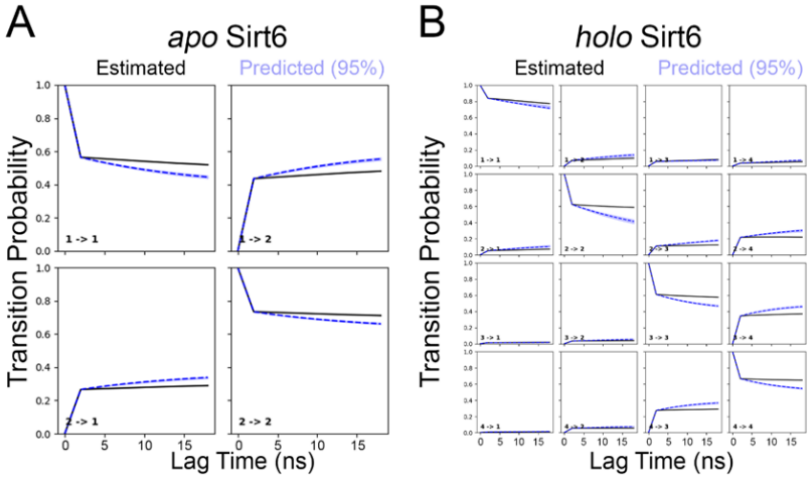


Figure S4 Results for Chapman-Kolmogorov tests for apo (A) and holo (B) SIRT6. Solid estimate lines represent the transition probability calculated by MSMs and the dotted predict lines represent the practical transition probability observed during simulations.

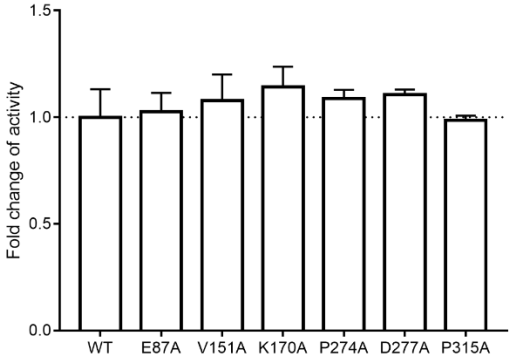


Figure S5 Mutagenesis experiments for residues outside of the Pocket Deacetylation activity of different SIRT6 mutants was measured and their relative activities were calculated as fold changes relative to the wild-type (WT) protein, which was set as 1. All assays were performed for at least three replicates and the results are shown as average ± standard deviations.

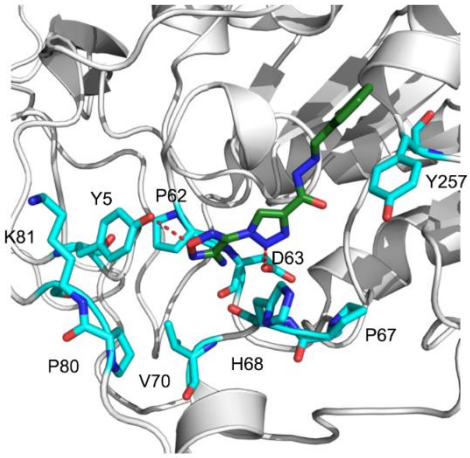


Figure S6 The molecular docking of SIRT6 with JYQ-1. The predicted allosteric Pocket Z structure was used for docking and the best binding pose of JYQ-1 was selected for further analyses.

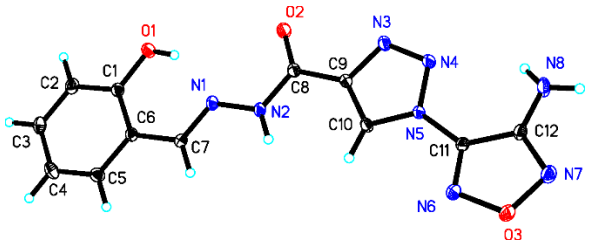


Figure S7 Single crystal X-ray data and structure of JYQ-42. Crytallographic data for JYQ-42 have been deposited with the Cambridge Crystallographic Data Center as supplementary publication no. CCDC 2053689. Copies of the data can be obtained, free of charge, on application to the Director, CCDC, 12 Union Road, Cambridge CB2 IEZ, UK (fax: +44 1223 336033 or email: deposit@ccdc.cam.ac.uk).

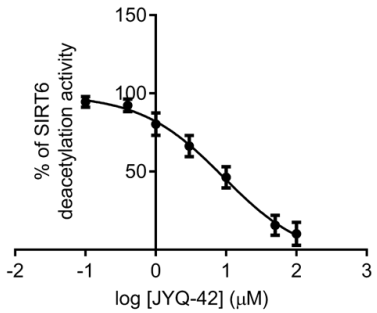


Figure S8 JYQ-42 can inhibit SIRT6 deacetylation on H3K9Ac effectively. Dose-dependent effects of JYQ-42 on the inhibition of SIRT6 deacetylation on H3K9Ac(Ac-KQTARK-Ac-STGGWW-AMC) was evaluated by Fluor-de-Lys (FDL)assay. The IC_{50} of JYQ-42 was 9.15± 0.21 μM.

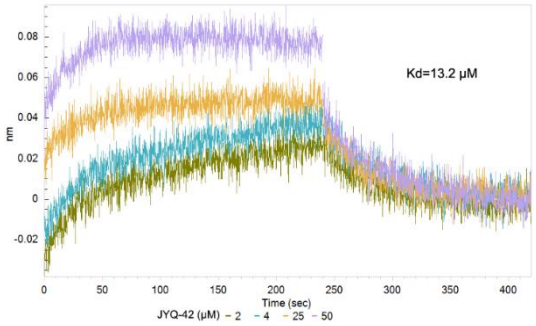


Figure S9 The binding of JYQ-42 to SIRT6 at different concentrations was assessed by bio-layer interferometry. The K_d value of JYQ-42 was 13.2 μM and three independent experiments were performed.

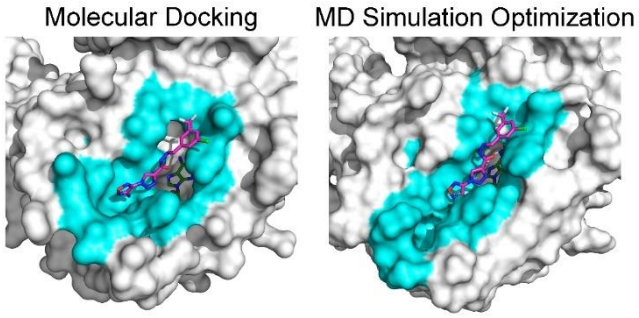


Figure S10 Molecular docking of SIRT6 with JYQ-42 and optimization of docking based on MD simulation. SIRT6-ADPR structure is shown in white, and the novel allosteric site Pocket Z is highlighted in cyan, and JYQ-42 is displayed in magenta.

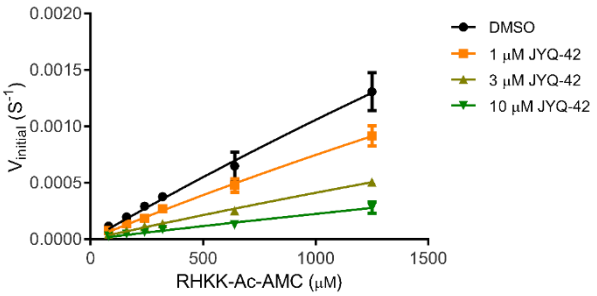


Figure S11 Steady-state kinetic studies of SIRT6 deacetylation on Ac-RHKK-Ac-AMC in the presence of the JYQ-42, as determined by HPLC**.** The initial velocities (V initial) were measured at different concentrations of Ac-RHKK-Ac-AMC in the absence or presence of 1, 3, 10 μM JYQ-42. Data are presented as the mean ± s.d. from three independent experiments.

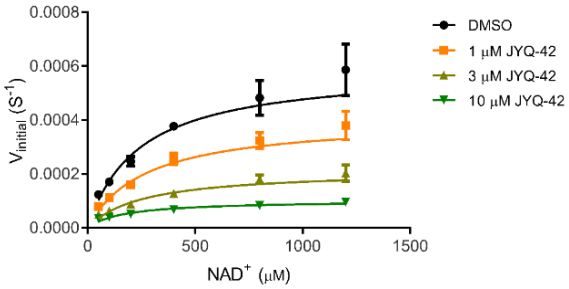


Figure S12 Steady-state kinetic studies of SIRT6 deacetylation on Ac-RHKK-Ac-AMC in the presence of the JYQ-42, as determined by HPLC. The initial velocities ($V_{initial}$) were measured at different concentrations of NAD^+ in the absence or presence of 1, 3, 10 μM JYQ-42. Data are presented as the mean ± s.d. from three independent experiments.

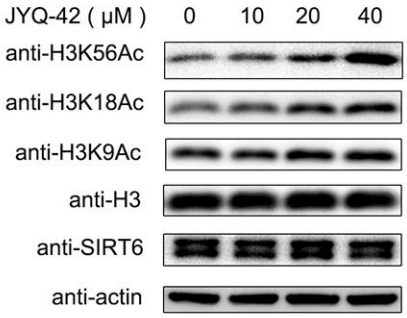


Figure S13 JYQ-42 inhibits SIRT6 deacetylation of pancreatic cancer cells. JYQ-42 inhibits SIRT6 deacetylation of MiaPaCa-2.

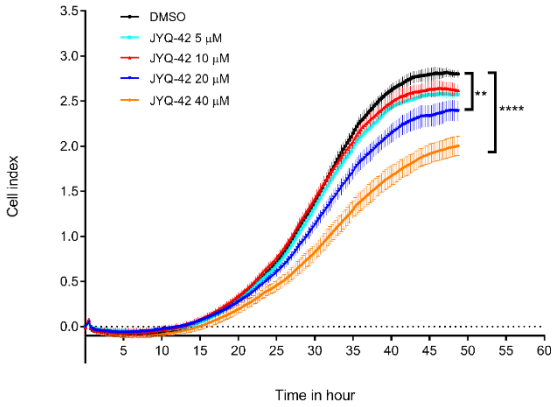


Figure S14 JYQ-42 inhibits cell migration of pancreatic cancer cells. JYQ-42 inhibits cell migration of MiaPaCa-2, as determined by RTCA(**$P < 0.01$; ****$P < 0.0001$).

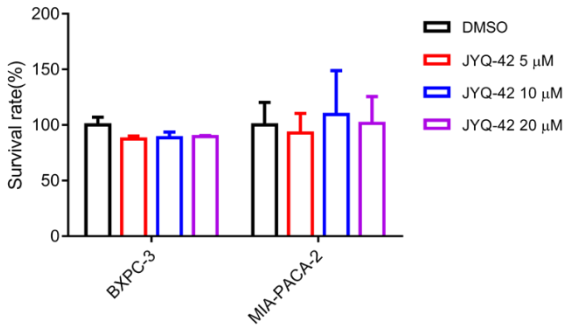


Figure S15 JYQ-42 has no significant effect on the growth of BXPC-3 and MiaPaCa-2cells at the time point of 48 h.

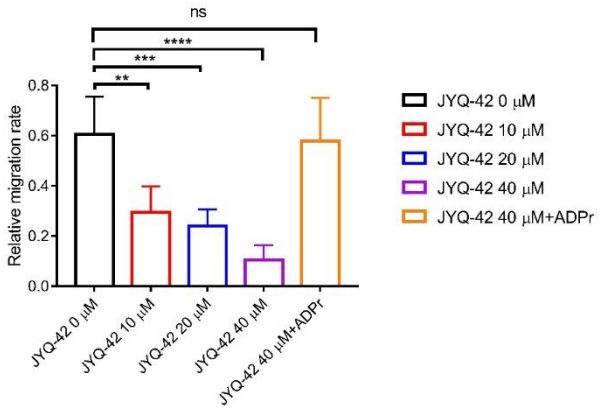
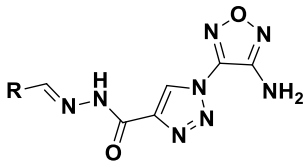
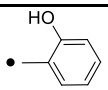
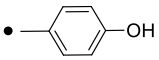
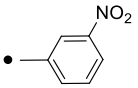
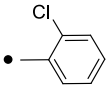
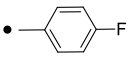
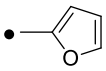
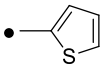
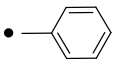
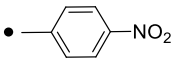
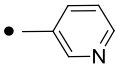
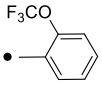
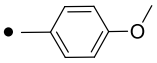
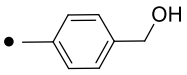
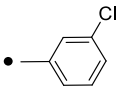
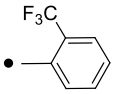
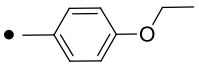
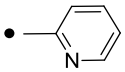
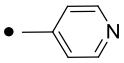
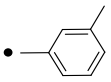
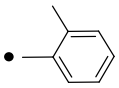
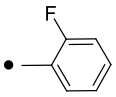
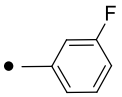
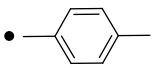
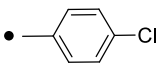
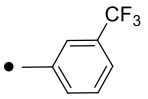
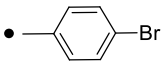
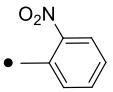
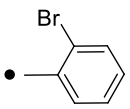
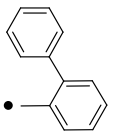
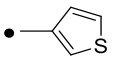
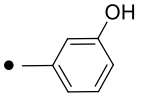


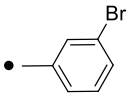
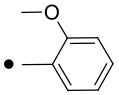
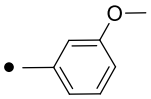
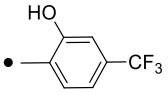
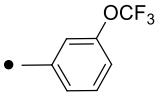
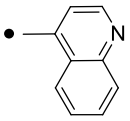
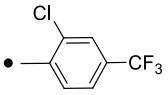
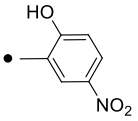
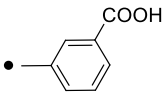
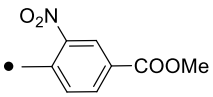
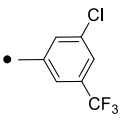
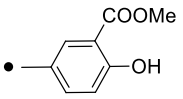
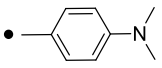
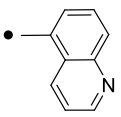
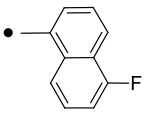
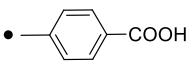
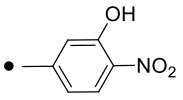
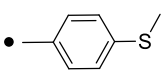
Figure S16 The relative migration rates of BXPC-3 cells in the absence or presence of 10, 20, 40 μM JYQ-42. The migration distances of BXPC-3 cells in wound-healing assays(Fig. 6C) were calculated by ImageJ, and the relative migration rates were calculated as follows: (the distance of wound healing at 0 h time point- the distance of the wound healing at 24 h time point)/the distance of the wound at 0 time point. $^{**}P < 0.01$; $^{***}P < 0.001$; $^{****}P < 0.0001$, *t*-test (two-tailed and unpaired).

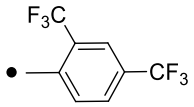
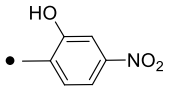
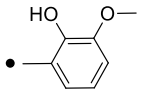
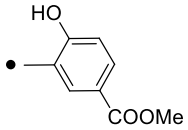
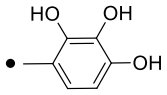
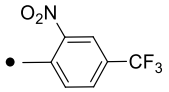
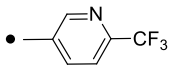
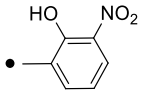
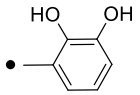
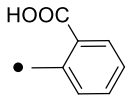
Table S1 Representative structure-activity relationship on the SIRT6 inhibitor derivatives*.



Comp.	Structure (R)	IC_{50} (μM)	Enzyme activity (%) of SIRT6 at 100 μM compound
JYQ-1		26.84±0.2	64.18 %±2.03%
JYQ-2		4.74±0.31	34.53%±0.53%
JYQ-3		6.76±0.41	20.45%±5.14%
JYQ-4		5.64±0.26	22.75%±2.27%
JYQ-5		3.98±0.15	42.96%±0.93%
JYQ-6		14.02±1.95	40.85%±0.93%
JYQ-7		35.60±9.03	31.97%±1.82%
JYQ-8		4.74±0.31	38.91%±0.58%
JYQ-9		6.76±0.41	24.81%±4.27%
JYQ-10		5.64±0.26	25.97%±2.49%
JYQ-11		3.98±0.15	48.15%±1.02%

JYQ-12		13.63±1.48	45.84%±1.02%
JYQ-13		12.10±0.52	50.17%±2.18%
JYQ-14		15.76±2.24	35.39%±0.76%
JYQ-15		8.81±0.61	36.90%±3.18%
JYQ-16		NA	NA
JYQ-17		36.72±6.31	39.40%±8.32%
JYQ-18		20.95±5.54	31.34%±1.40%
JYQ-19		16.64±0.65	28.40%±1.40%
JYQ-20		15.27±3.78	30.79%±1.64%
JYQ-21		7.43±1.25	29.72%±1.32%
JYQ-22		7.75±1.04	24.29%±1.32%
JYQ-23		NA	81.26%±5.26%
JYQ-24		NA	69.38%±2.10%
JYQ-25		2.64±0.01	17.37%±0.69%
JYQ-26		NA	57.07%±7.30%
JYQ-27		23.67±2.74	21.00%±4.24%
JYQ-28		4.42±1.09	23.99%±3.24%
JYQ-29		3.12±0.11	44.66%±8.66%
JYQ-30		97.83±18.87	25.09%±8.77%
JYQ-31		10.96±1.09	37.62%±2.48%

JYQ-32		3.61±0.23	32.39%±1.49%
JYQ-33		16.65±1.19	56.45%±1.18%
JYQ-34		12.79±0.55	35.30%±0.16%
JYQ-35		6.98±4.27	66.47%±3.26%
JYQ-36		4.45±0.58	34.28%±0.71%
JYQ-37		3.03±0.37	33.79%±0.57%
JYQ-38		2.99±0.02	25.72%±0.53%
JYQ-39		311.00±157.60	42.53%±1.95%
JYQ-40		81.92±8.30	70.10%±1.31%
JYQ-41		3.68±0.24	30.21%±0.31%
JYQ-42		2.33±0.17	14.70%±4.57%
JYQ-43		10.59±1.05	26.76%±0.57%
JYQ-44		NA	109.80%±8.35%
JYQ-45		9.95±0.76	22.05%±0.64%
JYQ-46		NA	NA
JYQ-47		98.51±11.60	74.24%±0.32%
JYQ-48		155.95±9.05	24.10%±0.49%
JYQ-49		NA	NA

JYQ-50		2.69±0.27	32.53%±0.74%
JYQ-51		121.37±86.93	20.60%±0.87%
JYQ-52		19.92±3.05	17.21%±0.04%
JYQ-53		NA	99.62%±2.15%
JYQ-54		26.02±4.75	51.26%±0.56%
JYQ-55		6.20±0.04	24.90%±4.41%
JYQ-56		16.44±3.36	40.90%±0.83%
JYQ-57		1049.15±702.85	41.37%±0.78%
JYQ-58		13.77±0.06	27.17%±0.12%
JYQ-59		59.47±29.08	84.18%±0.25%

*The enzyme activity of SIRT6 deacetylation was tested by Fluor-de-Lys (FDL) assay using an acetylated substrate peptide (Ac-RHKK-Ac-AMC) and 100 μM compound.

Table S2 Crystal data and structure refinement for JYQ-42.

Empirical formula	$C_{12}H_{10}N_8O_3 \cdot C_2H_6OS$
Formula weight	392.41
Temperature (K)	170.04
Crystal system	triclinic
Space group	P-1
a (Å)	8.1836(2)
b (Å)	10.3970(2)
c (Å)	10.9367(2)
α (°)	77.1330(10)
B (°)	86.2010(10)
γ (°)	77.0330(10)
Volume ($Å^3$)	883.92(3)
Z	2
ρ_{calc} (g/cm^3)	1.474
μ (mm^{-1})	1.306

$F(000)$	408.0
Crystal size (mm^3)	0.12 × 0.08 × 0.06
Radiation	GaKα (λ = 1.34139)
2θ range for data collection (°)	7.214 to 109.814
Index ranges	$-9 \le h \le 9$, $-12 \le k \le 12$, $-13 \le l \le 12$
Reflections collected	10,334
Independent reflections	3341 [R_{int} = 0.0446, R_{sigma} = 0.0419]
Data/restraints/parameters	3341/0/255
Goodness-of-fit on F^2	1.116
Final R indexes [I>=2σ (I)]	R_1 = 0.0443, wR_2 = 0.1358
Final R indexes [all data]	R_1 = 0.0538, wR_2 = 0.1474
Largest diff. peak/hole / e $Å^{-3}$	0.25/–0.49

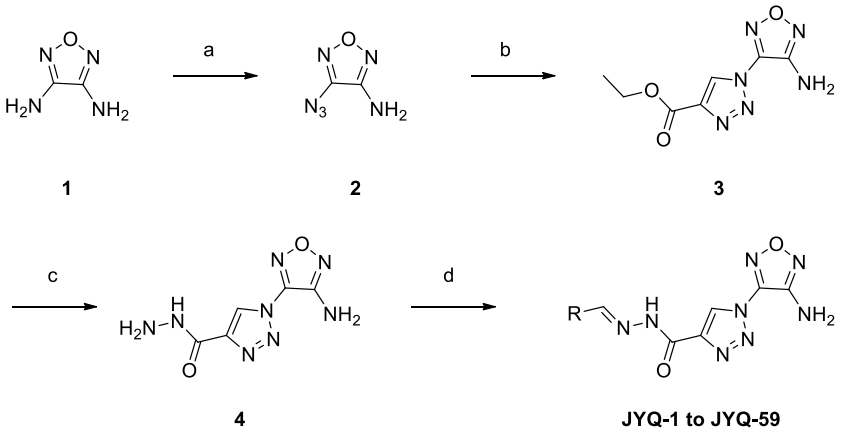
Table S3 Plasmids and strains used in this study.

Plasmid or strain	Description	Source
Strains		
	F- 80lacZ M15 (lacZYA–argF)U169 eoR recA1endA1 hsdR17 phoA supE44-thi-1 gyrA96 relA1	Laboratory stock
E. coli BL21	F- ompT gal dcm lon hsdSB (rB- mB-) λ(DE3 [lacI lacUV5-T7 gene 1ind1 sam7 nin5])	Laboratory stock
Plasmi		
pET22b-*SIRT6*	pET22b harboring wild type *SIRT6*	Laboratory stock
pET22b-*SIRT6 Y5A*	pET22b harboring *SIRT6 Y5A*	This work
pET22b-*SIRT6 T57A*	pET22b harboring *SIRT6 T57A*	This work
pET22b-*SIRT6 P62A*	pET22b harboring *SIRT6 P62A*	This work
pET22b-*SIRT6 D63A*	pET22b harboring *SIRT6 D63A*	This work
pET22b-*SIRT6 P67A*	pET22b harboring *SIRT6 P67A*	This work
pET22b-*SIRT6 H68A*	pET22b harboring *SIRT6 H68A*	This work
pET22b-*SIRT6 V70A*	pET22b harboring *SIRT6 V70A*	This work
pET22b-*SIRT6 P80A*	pET22b harboring *SIRT6 P80A*	This work
pET22b-*SIRT6 K81A*	pET22b harboring *SIRT6 K81A*	This work
pET22b-*SIRT6 E87A*	pET22b harboring *SIRT6 E87A*	This work
pET22b-*SIRT6 V151A*	pET22b harboring *SIRT6 V151A*	This work
pET22b-*SIRT6 K170A*	pET22b harboring *SIRT6 K170A*	This work
pET22b-*SIRT6 Y257A*	pET22b harboring *SIRT6 Y257A*	This work
pET22b-*SIRT6 W274A*	pET22b harboring *SIRT6 W274A*	This work
pET22b-*SIRT6 P277A*	pET22b harboring *SIRT6 P277A*	This work
pET22b-*SIRT6 P315A*	pET22b harboring *SIRT6 P315A*	This work

Table S4 Primers used in this study.

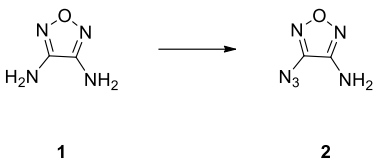
Primer name	Primer sequence(5'→3'')
SIRT6 Y5A F	ATGTCGGTGAATGCCGCGGCGGGGCTGTCG
SIRT6 Y5A R	CGACAGCCCCGCCGCGGCATTCACCGACAT
SIRT6 T57A F	GGTGCCGGCATCAGCGCTGCCTCTGGCATCCCC
SIRT6 T57A R	GGGGATGCCAGAGGCAGCGCTGATGCCGGCACC
SIRT6 P62A F	ACTGCCTCTGGCATCTTCGACTTCAGGGGTCCC
SIRT6 P62A R	GGGACCCCTGAAGTCGAAGATGCCAGAGGCAGT
SIRT6 D63A F	GCCTCTGGCATCCCCGCCTTCAGGGGTCCCCAC
SIRT6 D63A R	GTGGGGACCCCTGAAGGCGGGGATGCCAGAGGC
SIRT6 P67A F	CCCGACTTCAGGGGTGCCCACGGAGTCTGGACC
SIRT6 P67A R	GGTCCAGACTCCGTGGGCACCCCTGAAGTCGGG
SIRT6 H68A F	GACTTCAGGGGTCCCGCCGGAGTCTGGACCATG
SIRT6 H68A R	CATGGTCCAGACTCCGGCGGGACCCCTGAAGTC
SIRT6 V70A F	AGGGGTCCCCACGGAGCCTGGACCATGGAGGAG
SIRT6 V70A R	CTCCTCCATGGTCCAGGCTCCGTGGGGACCCCT
SIRT6 P80A F	GAGCGAGGTCTGGCCGCCAAGTTCGACACCACC
SIRT6 P80A R	GGTGGTGTCGAACTTGGCGGCCAGACCTCGCTC
SIRT6 K81A F	CGAGGTCTGGCCCCCGCGTTCGACACCACCTTT
SIRT6 K81A R	AAAGGTGGTGTCGAACGCGGGGGCCAGACCTCG
SIRT6 E87A F	TTCGACACCACCTTTGCGAGCGCGCGGCCCACG
SIRT6 E87A R	CGTGGGCCGCGCGCTCGCAAAGGTGGTGTCGAA
SIRT6 V151A F	ACGCAGTACGTCCGAGCCACAGTCGTGGGCACC
SIRT6 V151A R	GGTGCCCACGACTGTGGCTCGGACGTACTGCGT
SIRT6 K170A F	CTCTGCACCGTGGCTGCGGCAAGGGGGCTGCGA
SIRT6 K170A R	TCGCAGCCCCCTTGCCGCAGCCACGGTGCAGAG
SIRT6 Y257A F	CTCCGCATCCATGGCGCCGTTGACGAGGTCATG
SIRT6 Y257A R	CATGACCTCGTCAACGGCGCCATGGATGCGGAG
SIRT6 P274A F	CTGGGGCTGGAGATCGCCGCCTGGGACGGCCCC
SIRT6 P274A R	GGGGCCGTCCCAGGCGGCGATCTCCAGCCCCAG
SIRT6 D277A F	ATCCCCGCCTGGGACGCCCCCCGTGTGCTG
SIRT6 D277A R	CAGCACACGGGGGGCGTCCCAGGCGGGGAT
SIRT6 P315A F	TCTATCCCCGCCGGCGCCAAGCAGGAGCCCTGC
SIRT6 P315A R	GCAGGGCTCCTGCTTGGCGCCGGCGGGGATAGA
Human *GAPDH* RT F	ACCCACTCCTCCACCTTTG
Human *GAPDH* RT R	CTCTTGTGCTCTTGCTGGG
Human *IL8* RT F	GACCACACTGCGCCAACAC
Human *IL8* RT R	CTTCTCCACAACCCTCTGCAC
Human *TNF-α* RT F	GGAGAAGGGTGACCGACTCA
Human *TNF-α* RT R	CTGCCCAGACTCGGCAA
Human *IL6* RT F	AATTCGGTACATCCTCGACGG
Human *IL6* RT R	GGTTGTTTTCTGCCAGTGCC
Human *SIRT6* F	CCCACGGAGTCTGGACCAT
Human *SIRT6* R	CTCTGCCAGTTTGTCCCTG

Chemical characterization

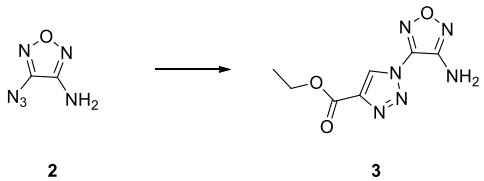


Scheme S1 Synthetic pathways of compound JYQ-1 to JYQ-59. Reagent: (a) (1) $NaNO_2$, H_2SO_4, 0 °C; (2) NaN_3, H_2O, CH_3COOH, 0 °C to room temperture; (b) ethyl propiolate, $CuSO_4·5H_2O$, sodium ascorbate, CH_3CN, H_2O, room temperature; (c) hydrazine hydrate 64%, EtOH, 60 °C; (d) ArCHO, EtOH, CH_3COOH (cat.), 60 °C.

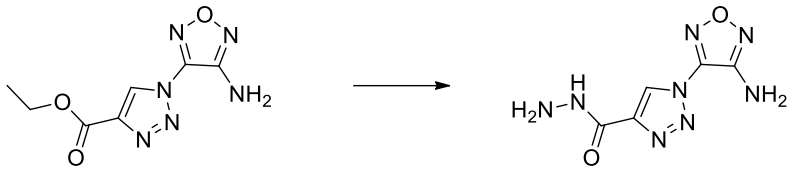
Synthesis of compounds JYQ-1 to JYQ-59



To the mixture of $NaNO_2$ (723 mg, 10.5 mmol) in 2 mL H_2SO_4 (conc.) was added 1,2,5-oxadiazole-3,4-diamine (**1**, 1.0 g, 10.0 mmol) in 5 mL H_2SO_4 (conc.) at 0 °C. After the reaction was stirred at the same temperature for about 1 h, acetic acid (10 mL) was added and then the solution of sodium azide (1.3 g, 20 mmol) was added slowly. The resulting mixture was moved to room temperature and stirred for 2 h. The reaction was added dropwise to ice and extracted with ethyl acetate. The organic layer was washed with saturated $NaHCO_3$ and brine, dried over Na_2SO_4. The organic layer was evaporated *in vacuo*, and subsequently purified by column chromatography on silica gel (petroleum ether: ethyl acetate =4:1) to afford compound **2** (344 mg, 28%) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 4.19 (s, 2H). MS (ESI^+) *m*/z: 127.0 $[M+H]^+$

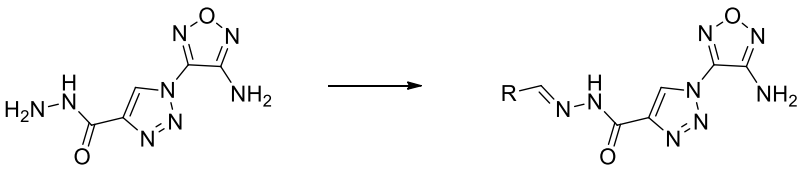


To a solution of compound **2** (1.0 g, 7.9 mmol) in 15 mL acetonitrile was added ethyl propiolate (1.56 g, 15.9 mmol), then CuSO4·5H_2O (198 mg, 0.79 mmol) in H_2O (2 mL) and sodium ascorbate (16 mg, 0.08 mmol) was added in turn. The resulting mixture was stirred at room temperature overnight. After the reaction was completed, the system was filtered immediately and the solvent was evaporated under reduced pressure. Then the solid was dissolved withethyl acetate and washed with saturated $NaHCO_3$, brine, dried over Na_2SO_4. The organic layer was evaporated *in vacuo*, and subsequently purified by column chromatography on silica gel (petroleum ether: ethyl acetate = 2:1) to afford compound **3** (1.4 g, 80%) as light yellow solid. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.44 (s, 1H), 6.71 (s, 2H), 4.39 (m, 2H), 1.34 (t, *J* = 7.1 Hz, 3H). MS (ESI^+) *m*/*z*: 225.1 $[M+H]^+$



3 **4**

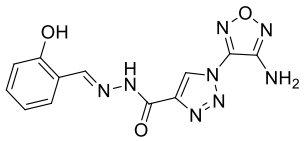
To a solution of compound **3** (1.0 g, 4.46 mmol) in 10mL ethanol was added hydrazine hydrate (3 mL, 64%) in room temperature and the system was heated at 60 °C for 4 h. The reaction was moved to room temperature and the white solid was filtrated and washed with ethanol. The solid was dried and used to the next step without any purification (858 mg, 85%). ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.02 (s, 1H), 9.19 (s, 1H), 6.69 (s, 2H), 4.60 (s, 2H). MS (ESI$^+$) *m*/*z*: 211.1 $[M+H]^+$.



4 **JYQ-1 to JYQ-59**

To a mixture of compound **4** (30 mg, 0.14 mmol) in 2 mL ethanol was added different aromatic aldehydes (1.2 equivalent) at roomtemperature, then acetic acid (cat.) was added and the resulting mixture was stirred at 60 °C for 10 h. The reaction was moved to room temperature and the solid was filtrated and washed with ethanol. After drying, different derivatives were obtained without any purification and directly used to test *in vitro*.

Characterization data of compounds JYQ-1 to JYQ-59:



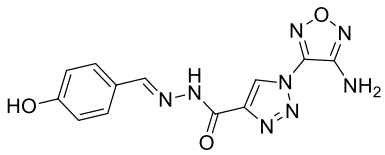
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-1): white solid, 40 mg, 88.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.61 (s, 1H), 11.16 (s, 1H), 9.42 (s, 1H), 8.79 (s, 1H), 7.59-7.53 (m, 1H), 7.36–7.29 (m, 1H), 6.99–6.91 (m, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 157.41, 154.95, 151.63, 149.22, 142.92, 141.94, 131.57, 129.38, 128.49, 119.33, 118.59, 116.37.

LRMS: (ESI, *m*/z): $[M–H]^–$: 313.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_9N_8O_3$ $[M–H]^–$: 313.0801, found: 313.0801.



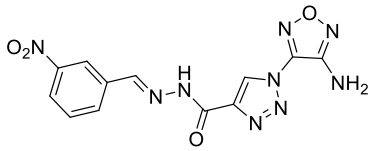
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-hydroxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-2): white solid, 38 mg, 84.7% yield.

^{1}H NMR (500 MHz, DMSO-d_6) ^{1}H NMR (500 MHz, DMSO) δ 12.10 (s, 1H), 9.98 (s, 1H), 9.36 (s, 1H), 8.47 (s, 1H), 7.58 (d, J = 8.5 Hz, 2H), 6.86 (d, J = 8.5 Hz, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 160.10, 155.36, 152.15, 149.76, 143.49, 143.04, 129.53, 128.65, 125.57, 116.23.

LRMS: (ESI, *m*/z): $[M+H]^+$: 315.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_{11}N_8O_3$ $[M+H]^+$: 315.0949, found: 315.0949.



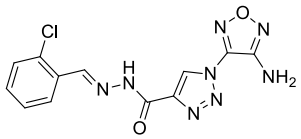
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide(JYQ-3): white solid, 39 mg, 86.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ ^{1}H NMR (500 MHz, DMSO) δ 12.59 (s, 1H), 9.44 (s, 1H), 8.70 (s, 1H), 8.56 (s, 1H), 8.29 (d, J = 7.9 Hz, 1H), 8.17 (d, J = 7.7 Hz, 1H), 7.78 (t, J = 8.0 Hz, 1H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.91, 152.18, 148.71, 147.08, 143.47, 142.63, 136.44, 134.02, 131.00, 129.19, 124.95, 121.53.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 344.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_9O_4$ $[M+H]^+$: 344.0850, found: 344.0850.



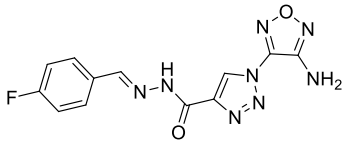
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-chlorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide(JYQ-4): white solid, 40 mg, 84.3%.

^{1}H NMR (500 MHz, DMSO-d_6) ^{1}H NMR (500 MHz, DMSO) δ 12.60 (s, 1H), 9.42 (s, 1H), 9.02 (s, 1H), 8.06 (dd, J = 7.3, 1.5 Hz, 1H), 7.55 (d, J = 7.4 Hz, 1H), 7.51–7.43 (m, 2H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.80, 152.18, 145.47, 143.48, 142.70, 133.92, 132.19, 131.95, 130.44, 129.06, 128.12, 127.47.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 333.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_8O_2Cl$ $[M+H]^+$: 333.0610, found: 333.0608.



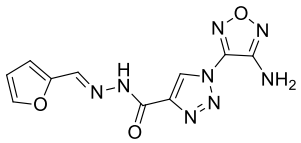
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-fluorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-5): white solid, 38 mg, 84.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) ^{1}H NMR (500 MHz, DMSO) δ 12.32 (s, 1H), 9.39 (s, 1H), 8.59 (s, 1H), 7.81 (dd, J = 8.0, 5.8 Hz, 2H), 7.32 (t, J = 8.7 Hz, 2H), 6.72 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 163.73(d, J=248.22 Hz), 155.66, 152.18, 148.33, 143.48, 142.83, 131.23, 129.96, 129.89, 128.93, 116.52, 116.34.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 317.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_8O_2F$ $[M+H]^+$: 317.0905, found: 317.0904.



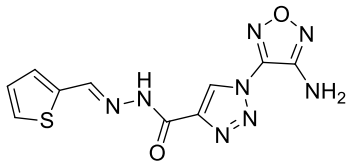
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(furan-2-ylmethylene)-1H-1,2,3-triazole-4-carbohydrazide (JYQ-6): white solid, 35 mg, 85.1% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ ^{1}H NMR (500 MHz, DMSO) δ 12.32 (s, 1H), 9.39 (s, 1H), 8.47 (s, 1H), 7.88 (s, 1H), 6.97 (d, J = 3.3 Hz, 1H), 6.75–6.64 (m, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.57, 152.20, 149.79, 145.90, 143.48, 142.84, 139.07, 129.03, 114.48, 112.76.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 289.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{10}H_9N_8O_3$ $[M+H]^+$: 289.0792, found: 289.0791.



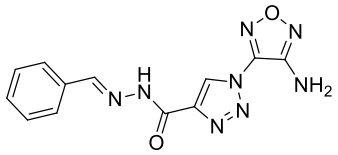
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(thiophen-2-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-7): yellow solid, 36 mg, 82.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ ^{1}H NMR (500 MHz, DMSO) δ 12.31 (s, 1H), 9.38 (s, 1H), 8.77 (s, 1H), 7.72 (d, J = 5.0 Hz, 1H), 7.49 (d, J = 3.2 Hz, 1H), 7.19–7.13 (m, 1H), 6.72 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.46, 152.19, 144.45, 143.48, 142.84, 139.34, 131.83, 129.80, 128.94, 128.42.

LRMS: (ESI, m/z): $[M+H]^+$: 305.1.

HRMS: (ESI, m/z): calcd. for $C_{12}H_{11}N_8O_2S$ $[M+H]^+$: 305.0564, found: 305.0563.



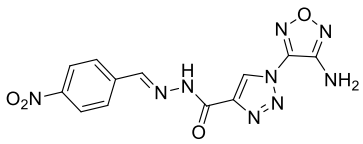
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-benzylidene-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-8): white solid, 35 mg, 82.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ ^{1}H NMR (500 MHz, DMSO-d_6) δ 12.32 (s, 1H), 9.40 (s, 1H), 8.59 (s, 1H), 7.75 (dd, J = 7.4, 1.7 Hz, 2H), 7.48 (t, J = 5.6 Hz, 3H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) ^{13}C NMR (126 MHz, DMSO) δ 155.66, 152.18, 149.49, 143.49, 142.86, 134.60, 130.78, 129.35, 128.91, 127.72.

LRMS: (ESI, m/z): $[M–H]^–$: 297.0.

HRMS: (ESI, m/z): calcd. for $C_{12}H_9N_8O_2$ $[M–H]^–$: 297.0848, found: 297.0852.



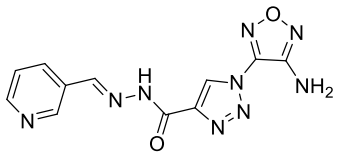
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-9): white solid, 43 mg, 87.8% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.61 (s, 1H), 9.44 (s, 1H), 8.69 (s, 1H), 8.32 (d, J = 8.5 Hz, 2H), 8.01 (d, J = 8.5 Hz, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.94, 152.16, 148.46, 146.98, 143.45, 142.59, 140.86, 129.22, 128.65, 124.54.

LRMS: (ESI, m/z): $[M–H]^–$: 342.0.

HRMS: (ESI, m/z): calcd. for $C_{12}H_8N_9O_4$ $[M–H]^–$: 342.0699, found: 342.0702.



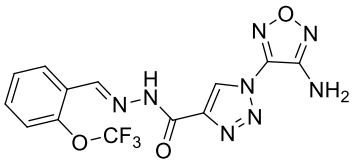
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(pyridin-3-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-10): white solid, 36 mg, 84.3% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.49 (s, 1H), 9.42 (s, 1H), 8.87 (s, 1H), 8.64 (s, 2H), 8.17 (d, J = 8.0 Hz, 1H), 7.51 (dd, J = 7.8, 4.8 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.78, 152.19, 151.40, 149.34, 146.78, 143.48, 142.70, 134.10, 130.53, 129.08, 124.52.

LRMS: (ESI, m/z): $[M+H]^+$: 300.1.

HRMS: (ESI, m/z): calcd. for $C_{11}H_{10}N_9O_3$ $[M+H]^+$: 300.0952, found: 300.0951.



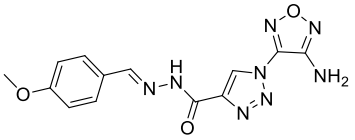
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-(trifluoromethoxy)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-11): white solid, 46 mg, 84.3% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.65 (s, 1H), 9.43 (s, 1H), 8.94 (s, 1H), 8.11 (dd, J = 7.8, 1.4 Hz, 1H), 7.65–7.58 (m, 1H), 7.56–7.45 (m, 2H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ ^{13}C NMR (126 MHz, DMSO) δ 155.26, 151.67, 146.86, 142.95, 142.17, 131.86, 128.67, 128.04, 127.27, 126.58, 121.82, 120.03 (q, J=257.04 Hz).

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 383.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{10}N_3O_3F_3$ $[M+H]^+$: 383.0822, found: 383.0822.



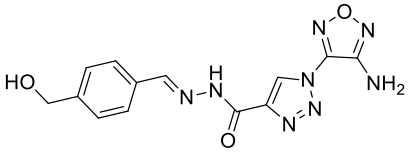
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-methoxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-12): white solid, 38 mg, 81.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.17 (s, 1H), 9.37 (s, 1H), 8.52 (s, 1H), 7.69 (d, J = 8.7 Hz, 2H), 7.04 (d, J = 8.7 Hz, 2H), 6.73 (s, 2H), 3.83 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 161.49, 155.45, 152.17, 149.33, 143.49, 142.98, 129.36, 128.74, 127.15, 114.85.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 329.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{13}N_8O_3$ $[M+H]^+$: 329.1105, found: 329.1104.



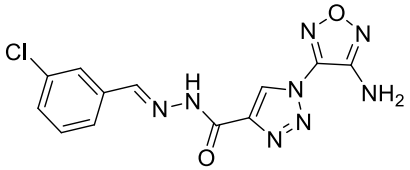
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-(hydroxymethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-13): white solid, 39 mg, 83.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.28 (s, 1H), 9.39 (s, 1H), 8.57 (s, 1H), 7.71 (d, J = 8.1 Hz, 2H), 7.43 (d, J = 8.0 Hz, 2H), 6.73 (s, 2H), 5.30 (t, J = 5.7 Hz, 1H), 4.56 (d, J = 5.7 Hz, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.61, 152.17, 149.47, 145.55, 143.49, 142.89, 133.03, 128.87, 127.58, 127.22, 63.07.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 329.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{13}N_8O_3$ $[M+H]^+$: 329.1105, found: 329.1104.



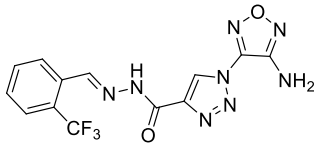
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-chlorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-14): white solid, 41 mg, 86.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.46 (s, 1H), 9.42 (s, 1H), 8.57 (s, 1H), 7.80 (s, 1H), 7.71 (d, J = 5.0 Hz, 1H), 7.54–7.49 (m, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.80, 152.18, 147.79, 143.48, 142.71, 136.85, 134.17, 131.27, 130.41, 129.06, 126.86, 126.48.

LRMS: (ESI, *m*/z): $[M+H]^+$: 333.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_{10}N_8O_2Cl$ $[M+H]^+$: 333.0610, found: 333.0609.



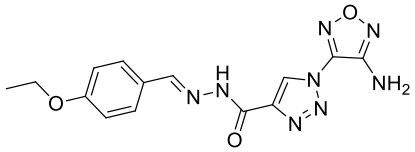
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-15): white solid, 35 mg, 66.1% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.75 (s, 1H), 9.43 (s, 1H), 9.01 (s, 1H), 8.26 (d, *J* = 7.8 Hz, 1H), 7.88–7.76 (m, 2H), 7.67 (t, *J* = 7.6 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO) δ 155.39, 151.64, 144.03, 142.93, 142.10, 132.80, 131.98, 130.24, 128.64, 126.96 (q, *J* = 30.24 Hz), 126.91, 125.88 (q, *J*= 6.3 Hz), 124.05 (q, *J*= 274.68 Hz).

LRMS: (ESI, *m*/z): $[M+H]^+$: 367.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{10}N_8O_2F_3$ $[M+H]^+$: 367.0872, found: 367.0873.



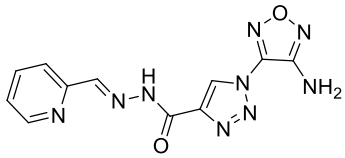
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-ethoxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-16): white solid, 4 2mg, 85.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.17 (s, 1H), 9.37 (s, 1H), 8.52 (s, 1H), 7.68 (d, *J* = 8.8 Hz, 2H), 7.02 (d, *J* = 8.8 Hz, 2H), 6.73 (s, 2H), 4.09 (m, 2H), 1.36 (t, *J* = 7.0 Hz, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 160.23, 154.88, 151.60, 148.81, 142.93, 142.43, 128.81, 128.15, 126.44, 114.69, 63.20, 14.49.

LRMS: (ESI, *m*/z): $[M+H]^+$: 343.1.

HRMS: (ESI, *m*/z): calcd. for $C_{14}H_{15}N_8O_3$ $[M+H]^+$: 343.1262, found: 343.1261.



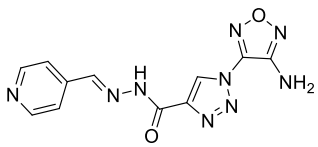
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(pyridin-2-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-17): white solid, 37 mg, 86.7% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.60 (s, 1H), 9.44 (s, 1H), 8.69–8.59 (m, 2H), 8.02 (d, *J* = 7.9 Hz, 1H), 7.91 (t, *J* = 7.6 Hz, 1H), 7.51–7.38 (m, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.90, 153.59, 152.22, 150.04, 149.69, 143.49, 142.69, 137.38, 129.28, 125.06, 120.58.

LRMS: (ESI, *m*/z): $[M+H]^+$: 300.1.

HRMS: (ESI, *m*/z): calcd. for $C_{11}H_{10}N_9O_2$ $[M+H]^+$: 300.0952, found: 300.0951.



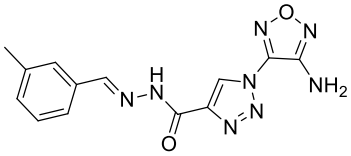
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(pyridin-4-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-18): white solid, 36 mg, 84.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ12.62 (s, 1H), 9.44 (s, 1H), 8.69 (s, 2H), 8.59 (s, 1H), 7.70 (s, 2H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.95, 152.22, 150.82, 147.07, 143.48, 142.57, 141.75, 129.32, 121.60.

LRMS: (ESI, *m*/z): $[M+H]^+$: 300.1.

HRMS: (ESI, *m*/z): calcd. for $C_{11}H_{10}N_9O_2$ $[M+H]^+$: 300.0952, found: 300.0951.



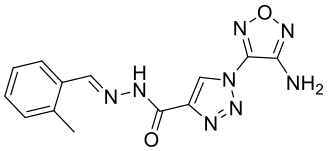
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-methylbenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-19): white solid, 39 mg, 87.5% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.30 (s, 1H), 9.40 (s, 1H), 8.55 (s, 1H), 7.58 (s, 1H), 7.53 (d, *J* = 7.4 Hz, 1H), 7.37 (t, *J* = 7.6 Hz, 1H), 7.28 (d, *J* = 7.6 Hz, 1H), 6.74 (s, 2H), 2.37 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.64, 152.17, 149.55, 143.48, 142.87, 138.61, 134.56, 131.50, 129.23, 128.89, 127.94, 125.17, 21.34.

LRMS: (ESI, *m*/z): $[M–H]^–$: 311.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{12}N_8O_2$ $[M–H]^–$: 311.1005, found: 311.1009.



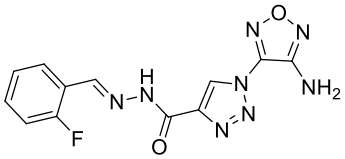
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-methylbenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-20): white solid, 39 mg, 87.5% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.29 (s, 1H), 9.40 (s, 1H), 8.93 (s, 1H), 7.88 (d, *J* = 7.5 Hz, 1H), 7.32 (m, 3H), 6.74 (s, 2H), 2.47 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ154.95, 151.60, 147.60, 142.92, 142.35, 137.08, 132.03, 130.79, 129.90, 128.34, 126.10, 125.69, 18.83.

LRMS: (ESI, *m*/z): $[M+H]^+$: 313.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{14}N_8O_2$ $[M+H]^+$: 313.1156, found: 313.1155.



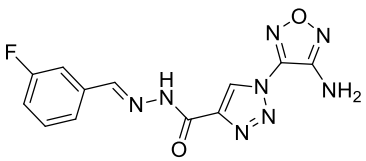
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-fluorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-21): white solid, 39 mg, 86.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ12.49 (s, 1H), 9.42 (s, 1H), 8.85 (s, 1H), 7.98 (s, 1H), 7.53 (d, *J* = 7.4 Hz, 1H), 7.34–7.30 (m, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 160.83 (*J*= 250.74 Hz), 155.17, 151.63, 142.92, 142.16, 141.70, 132.21, 128.51, 126.39, 124.90, 121.66 (*J*=10.08 Hz), 115.96 (*J*=20.16 Hz).

LRMS: (ESI, *m*/z): $[M+H]^+$: 317.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_{10}N_8O_2F$ $[M+H]^+$: 317.0905, found: 317.0904.



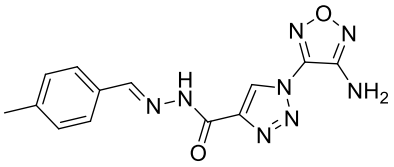
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-fluorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-22): white solid, 39 mg, 86.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.40 (s, 1H), 9.40 (s, 1H), 8.60 (s, 1H), 7.55 (m, 3H), 7.31 (t, J = 7.7 Hz, 1H), 6.71 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 162.90 (J= 245.70 Hz), 155.77, 152.18, 148.10, 143.48, 142.74, 137.22, 137.15, 131.48, 131.41, 129.03, 124.13, 117.54 (J= 21.42 Hz), 113.60 (J = 22.68 Hz).

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 317.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_8O_2F$ $[M+H]^+$: 317.0905, found: 317.0903.



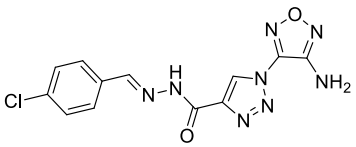
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-N'-(4-methylbenzylidene)-1H-1,2,3-triazole-4-carbohydrazide (JYQ-23): white solid, 37 mg, 83.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ12.25 (s, 1H), 9.39 (s, 1H), 8.55 (s, 1H), 7.64 (d, J = 8.0 Hz, 2H), 7.29 (d, J = 8.0 Hz, 2H), 6.73 (s, 2H), 2.36 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.56, 152.17, 149.50, 143.49, 142.91, 140.65, 131.90, 129.96, 128.84, 127.71, 21.52.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 313.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{14}N_8O_2$ $[M+H]^+$: 313.1156, found: 313.1155.



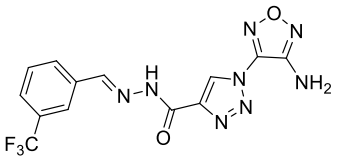
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-chlorobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-24): white solid, 41 mg, 86.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ12.40 (s, 1H), 9.41 (s, 1H), 8.58 (s, 1H), 7.77 (d, J = 8.5 Hz, 2H), 7.55 (d, J = 8.4 Hz, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.70, 152.19, 148.13, 143.48, 142.78, 135.23, 133.56, 129.46, 129.36, 129.02.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 333.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_8O_2Cl$ $[M+H]^+$: 333.0610, found: 333.0609.



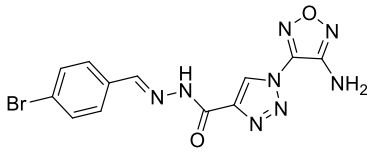
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-25): white solid, 35 mg, 66.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ^1H NMR (500 MHz, DMSO-d_6) δ 12.31 (s, 1H), 9.35 (s, 1H), 8.68 (s, 1H), 8.05–8.03 (m, 2H), 7.84–7.63 (m, 2H), 6.59 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.89, 152.10, 147.89, 143.49, 142.81, 135.90, 131.59, 130.49, 130.35 (q, J = 31.9 Hz), 128.79, 126.88, 125.57, 124.49 (q, J = 272.6 Hz), 123.67.

LRMS: (ESI, *m*/*z*): $[M–H]^–$: 365.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_8N_8O_2F_3$ $[M–H]^–$: 365.0722, found: 365.0725.



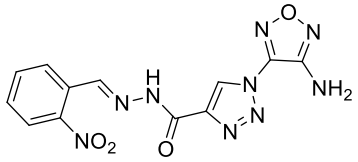
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-bromobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-26): white solid, 48mg, 89.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.40 (s, 1H), 9.41 (s, 1H), 8.56 (s, 1H), 7.74–7.66 (m, 4H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.70, 152.19, 148.22, 143.48, 142.77, 133.90, 132.38, 129.58, 129.03, 124.04.

LRMS: (ESI, *m*/*z*): $[M–H]^–$: 375.0.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_8N_8O_2Br$ $[M–H]^–$: 374.9954, found: 374.9957.



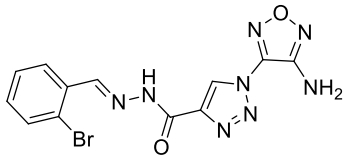
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-27): white solid, 42 mg, 85.7% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.71 (s, 1H), 9.43 (s, 1H), 9.01 (s, 1H), 8.13 (m, 2H), 7.85 (m, 1H), 7.72 (m, 1H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.95, 152.15, 148.82, 144.73, 143.47, 142.55, 134.25, 131.38, 129.08, 129.04, 128.57, 125.16.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 344.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_9O_4$ $[M+H]^+$: 344.0850, found: 344.0849.



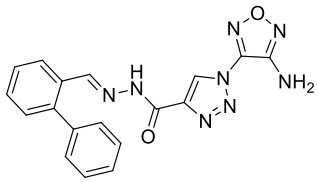
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-bromobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-28): white solid, 47 mg, 87.5% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.65 (s, 1H), 9.42 (s, 1H), 8.97 (s, 1H), 8.07–8.00 (m, 1H), 7.72 (d, J = 7.9 Hz, 1H), 7.50 (t, J = 7.5 Hz, 1H), 7.43–7.36 (m, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.25, 151.61, 147.23, 142.92, 142.14, 133.12, 132.89, 131.87, 128.49, 128.04, 127.30, 123.69.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 377.0.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{10}N_8O_2Br$ $[M+H]^+$: 377.0105, found: 377.0104.



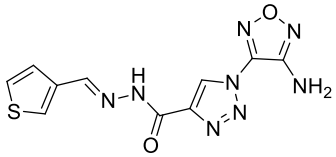
(*E*)-*N*'-([1,1'-biphenyl]-2-ylmethylene)-1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-29): white solid, 47 mg, 88.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.35 (s, 1H), 9.36 (s, 1H), 8.55 (s, 1H), 8.16 – 8.10 (m, 1H), 7.56–7.45 (m, 5H), 7.39 (d, J = 7.2 Hz, 3H), 6.71 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.64, 152.14, 147.84, 143.47, 142.84, 142.75, 139.49, 131.90, 130.88, 130.52, 130.18, 128.99, 128.77, 128.22, 128.04, 126.18.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 375.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{18}H_{15}N_8O_2$ $[M+H]^+$: 375.1312, found: 375.1311.



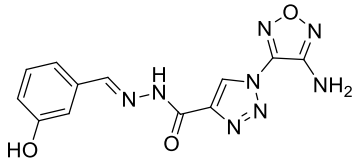
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(thiophen-3-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-30): white solid, 36 mg, 82.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ12.21 (s, 1H), 9.38 (s, 1H), 8.61 (s, 1H), 7.97 (d, J = 2.5 Hz, 1H), 7.67–7.66 (m, 1H), 7.52 (d, J = 5.0 Hz, 1H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.56, 152.19, 145.08, 143.49, 142.92, 137.81, 129.25, 128.85, 128.24, 125.20.

LRMS: (ESI, m/z): $[M+H]^+$: 305.1.

HRMS: (ESI, m/z): calcd. for $C_{10}H_9N_8O_2S$ $[M+H]^+$: 305.0564, found: 305.0563.



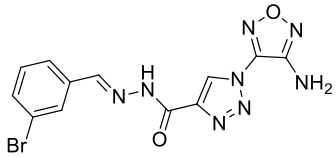
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-hydroxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-31): white solid, 40 mg, 88.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.00 (s, 1H), 9.44 (s, 1H), 9.30 (s, 1H), 8.50 (s, 1H), 7.25 (m, 2H), 7.12 (d, J = 7.5 Hz, 1H), 6.86 (d, J = 6.5 Hz, 1H), 6.56 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 158.22, 155.65, 152.09, 149.76, 143.48, 142.98, 135.92, 130.30, 128.53, 119.35, 118.16, 113.52.

LRMS: (ESI, m/z): $[M+Na]^+$: 337.1.

HRMS: (ESI, m/z): calcd. for $C_{12}H_{10}N_8O_3Na$ $[M+Na]^+$: 337.0768, found: 337.0770.



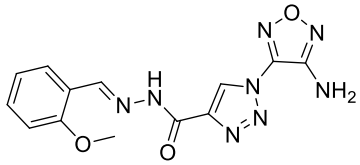
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-bromobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-32): white solid, 47 mg, 87.5% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.46 (s, 1H), 9.42 (s, 1H), 8.55 (s, 1H), 7.94 (s, 1H), 7.74 (d, J = 7.7 Hz, 1H), 7.66 (d, J = 8.0 Hz, 1H), 7.46 – 7.43 (m, 1H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.80, 152.18, 147.68, 143.48, 142.71, 137.07, 133.29, 131.53, 129.70, 129.07, 126.90, 122.67.

LRMS: (ESI, m/z): $[M+H]^+$: 377.0.

HRMS: (ESI, m/z): calcd. for $C_{12}H_{10}N_8O_2Br$ $[M+H]^+$: 377.0105, found: 377.0106.



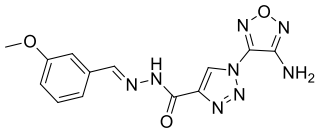
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-methoxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-33): white solid, 40 mg, 85.3% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.31 (s, 1H), 9.39 (s, 1H), 8.93 (s, 1H), 7.91–7.89 (m, 1H), 7.48–7.42 (m, 1H), 7.13 (d, J = 8.3 Hz, 1H), 7.05 (t, J = 7.5 Hz, 1H), 6.73 (s, 2H), 3.88 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 158.42, 155.56, 152.13, 144.97, 143.48, 142.85, 132.29, 128.62, 126.13, 122.66, 121.23, 112.38, 56.23.

LRMS: (ESI, *m*/z): $[M+H]^+$: 329.1

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{13}N_8O_3$ $[M+H]^+$: 329.1105, found: 329.1105



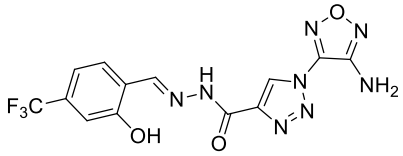
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-methoxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-34): white solid, 38 mg, 81.1% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.33 (s, 1H), 9.40 (s, 1H), 8.56 (s, 1H), 7.40 (t, J = 7.8 Hz, 1H), 7.31 (d, J = 7.6 Hz, 2H), 7.07 – 7.02 (m, 1H), 6.74 (s, 2H), 3.83 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 160.04, 155.67, 152.17, 149.40, 143.48, 142.83, 136.02, 130.46, 128.91, 120.68, 116.95, 111.83, 55.69.

LRMS: (ESI, *m*/z): $[M+H]^+$: 329.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{13}N_8O_3$ $[M+H]^+$: 329.1105, found: 329.1104.



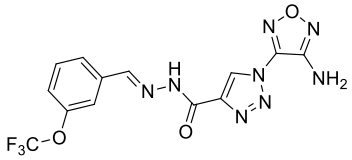
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxy-4-(trifluoromethyl)benzylidene)-1H-1,2,3-triazole-4-carbohydrazide (JYQ-35): white solid, 45 mg, 82.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.72 (s, 1H), 11.43 (s, 1H), 9.44 (s, 1H), 8.86 (s, 1H), 7.87 (d, J = 8.0 Hz, 1H), 7.31–7.20 (m, 2H), 6.73 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 157.16, 155.20, 151.64, 146.37, 142.93, 141.88, 130.97 (q, J = 31.5 Hz), 129.29, 128.63, 125.21 (q, J = 297.99 Hz), 124.81, 122.97 (J = 1.26 Hz), 122.65, 115.69 (q, J=2.84 Hz), 112.85 (q, J = 2.84 Hz).

LRMS: (ESI, *m*/z): $[M+H]^+$: 383.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{10}N_8O_3F_3$ $[M+H]^+$: 383.0822, found: 383.0822.



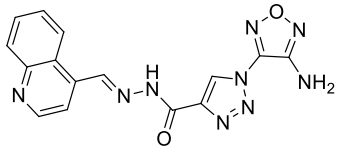
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-(trifluoromethoxy)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-36): white solid, 45 mg, 82.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.50 (s, 1H), 9.43 (s, 1H), 8.62 (s, 1H), 7.78 (d, J = 7.8 Hz, 1H), 7.72 (s, 1H), 7.63 (t, J = 8.0 Hz, 1H), 7.47 (d, J = 8.3 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.83, 152.19, 149.26, 147.73, 143.48, 142.69, 137.09, 131.51, 129.11, 127.10, 123.05, 120.49 (q, J = 192.15 Hz), 119.15.

LRMS: (ESI, *m*/z): $[M+H]^+$: 383.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{10}N_8O_3F_3$ $[M+H]^+$: 383.0822, found: 383.0822.



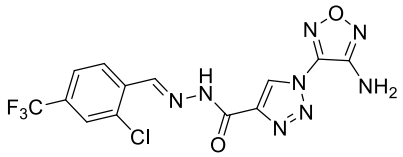
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(quinolin-4-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-37): white solid, 42 mg, 84.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.53 (s, 1H), 9.42 (s, 1H), 9.31 (s, 1H), 9.00 (s, 1H), 8.72 (d, J = 6.0 Hz, 1H), 8.12 (d, J = 8.2 Hz, 1H), 7.91–7.80 (m, 2H), 7.75 (s, 1H), 6.65 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.92, 152.23, 150.89, 148.93, 146.60, 143.50, 142.63, 137.68, 130.34, 130.17, 129.37, 128.13, 125.32, 124.57, 120.12.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 350.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{15}H_{12}N_9O_2$ $[M+H]^+$: 350.1108, found: 350.1109.



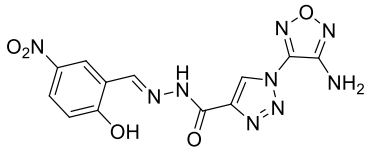
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-chloro-4-(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-38): white solid, 50 mg, 87.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.79 (s, 1H), 9.45 (d, J = 4.0 Hz, 1H), 9.05 (d, J = 3.3 Hz, 1H), 8.30–8.20 (m, 1H), 7.98 (s, 1H), 7.83 (d, J = 6.9 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.95, 152.19, 144.00, 143.47, 142.53, 136.00, 134.33, 131.59 (J = 34.02 Hz), 131.45, 129.30, 128.35, 127.41 (q, J =318.78 Hz).

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 401.0.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_9N_8O_2ClF_3$ $[M+H]^+$: 401.0484, found: 401.0485.



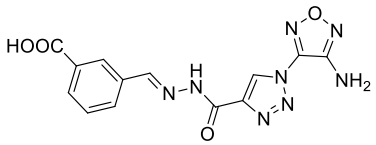
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxy-5-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-39): white solid, 42 mg, 81.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.74 (s, 1H), 12.18 (s, 1H), 9.44 (s, 1H), 8.87 (s, 1H), 8.59 (d, J = 2.8 Hz, 1H), 8.19 (m, 1H), 7.13 (d, J = 9.1 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 163.07, 155.78, 152.15, 145.71, 143.45, 142.42, 140.42, 129.14, 127.24, 124.03, 120.55, 117.60.

LRMS: (ESI, *m*/*z*): $[M+Na]^+$: 382.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_9N_9O_5Na$ $[M+Na]^+$: 382.0620, found: 382.0619.



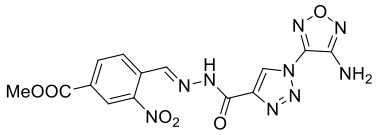
(*E*)-3-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbonyl)hydrazono)methyl)benzoic acid (JYQ-40): white solid, 42 mg, 85.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.45 (s, 1H), 9.43 (s, 1H), 8.66 (s, 1H), 8.34 (s, 1H), 8.00 (dd, J = 26.5, 7.8 Hz, 2H), 7.62 (t, J = 7.7 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 166.81, 155.22, 151.63, 147.93, 142.93, 142.21, 134.51, 131.52, 131.36, 130.70, 129.21, 128.51, 127.44.

LRMS: (ESI, *m*/*z*): $[M+Na]^+$: 365.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{10}N_8O_4Na$ $[M+Na]^+$: 365.0717, found: 365.0718.



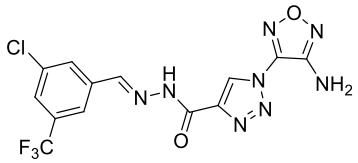
(*E*)-methyl4-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbonyl)hydrazono)methyl)-3-nitrobenzoate (JYQ-41): white solid, 51mg, 89.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.87 (s, 1H), 9.45 (s, 1H), 9.06 (s, 1H), 8.53 (d, J = 1.4 Hz, 1H), 8.32 (t, J = 9.7 Hz, 2H), 6.73 (s, 2H), 3.94 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 164.18, 155.50, 151.62, 148.08, 143.29, 142.90, 141.85, 133.45, 132.58, 131.08, 128.75, 128.66, 125.25, 52.78.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 402.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{14}H_{12}N_9O_6$ $[M+H]^+$: 402.0905, found: 402.0906.



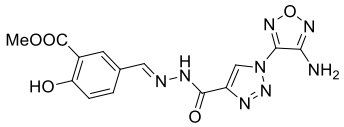
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-chloro-5-(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-42): white solid, 51 mg, 89.2% yield.

^{1}H NMR (400 MHz, DMSO-d_6) δ 12.67 (s, 1H), 9.44 (s, 1H), 8.63 (s, 1H), 8.10 (s, 1H), 8.05 (s, 1H), 7.94 (s, 1H), 6.73 (s, 2H).

^{13}C NMR (101 MHz, DMSO-d_6) δ 155.98, 152.17, 146.17, 143.46, 142.54, 138.03, 135.21, 131.84 (q, J = 30.87 Hz), 131.05, 129.22, 126.75, 123.60 (q, J = 341.46 Hz), 122.46.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 401.0.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_9N_8O_2ClF_3$ $[M+H]^+$: 401.0484, found: 401.0480.



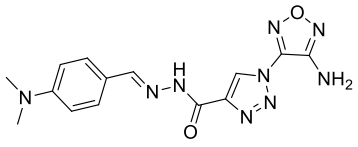
(*E*)-methyl 5-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1H-1,2,3-triazole-4-carbonyl)hydrazono)methyl)-2-hydroxybenzoate (JYQ-43): white solid, 44 mg, 82.8% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.28 (s, 1H), 10.79 (s, 1H), 9.39 (s, 1H), 8.52 (s, 1H), 8.15 (d, J = 2.1 Hz, 1H), 7.89–7.87 (m, 1H), 7.10 (d, J = 8.6 Hz, 1H), 6.73 (s, 2H), 3.94 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 168.93, 161.67, 155.56, 152.18, 148.32, 143.48, 142.88, 134.44, 129.53, 128.89, 126.13, 118.67, 114.42, 53.06.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 373.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{14}H_{13}N_8O_5$ $[M+H]^+$: 373.1003, found: 373.1004.



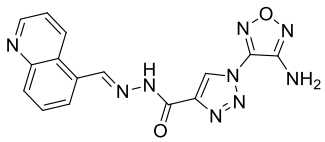
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-(dimethylamino)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-44): yellow solid, 41 mg, 84.1% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 11.96 (s, 1H), 9.33 (s, 1H), 8.41 (s, 1H), 7.55 (d, J = 7.8 Hz, 2H), 6.85–6.61 (m, 4H), 2.99 (s, 6H).

^{13}C NMR (126 MHz, DMSO-d_6) δ155.13, 152.16, 150.23, 143.50, 143.17, 129.11, 128.50, 121.81, 112.26, 40.19.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 342.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{14}H_{16}N_9O_2$ $[M+H]^+$: 342.1421, found: 342.1422.



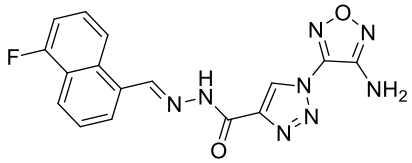
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(quinolin-5-ylmethylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-45): white solid, 41 mg, 82.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.46 (s, 1H), 9.45 (s, 1H), 9.35 (d, J = 8.5 Hz, 1H), 9.23 (s, 1H), 9.02–9.00 (m, 1H), 8.14 (d, J = 8.4 Hz, 1H), 8.02 (d, J = 6.6 Hz, 1H), 7.91–7.85 (m, 1H), 7.73–7.70 (m, 1H), 6.76 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.17, 151.66, 150.70, 148.24, 147.97, 142.95, 142.25, 132.77, 131.53, 129.99, 129.03, 128.54, 128.42, 125.42, 122.29.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 350.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{15}H_{12}N_9O_2$ $[M+H]^+$:350.1108, found: 350.1109.



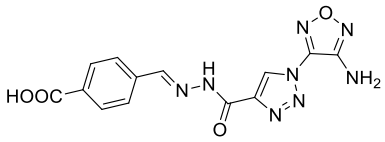
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-((5-fluoronaphthalen-1-yl)methylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-46): white solid, 45 mg, 86.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.46 (s, 1H), 9.45 (s, 1H), 9.33 (s, 1H), 8.63 (d, J = 8.6 Hz, 1H), 8.21 (d, J = 8.4 Hz, 1H), 8.10 (d, J = 7.2 Hz, 1H), 7.79–7.67 (m, 2H), 7.49–7.45 (m, 1H), 6.76 (s, 2H).

^{13}C NMR (125 MHz, DMSO-d_6) δ 158.68 (J = 250.74 Hz), 155.68, 152.21, 148.66, 143.50, 142.84, 132.19 (J = 3.78 Hz), 130.12, 129.09, 128.73, 127.95 (J = 8.82 Hz), 126.85, 124.95 (J = 16.38 Hz), 122.77 (J = 6.30 Hz), 120.82 (J = 5.04 Hz), 110.67 (J = 20.16 Hz).

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 367.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{16}H_{12}N_8O_2F$ $[M+H]^+$: 367.1062, found: 367.1062.



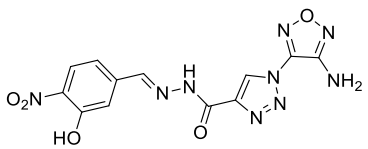
(*E*)-4-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbonyl)hydrazono)methyl)benzoic acid (JYQ-47): white solid, 40 mg, 83.3% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 13.13 (s, 1H), 12.49 (s, 1H), 9.43 (s, 1H), 8.65 (s, 1H), 8.04 (d, J = 8.3 Hz, 2H), 7.87 (d, J = 8.3 Hz, 2H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 166.79, 155.24, 151.63, 147.71, 142.92, 142.16, 138.06, 131.82, 129.73, 128.57, 127.18.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 343.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{16}H_{12}N_8O_2F$ $[M+H]^+$: 343.0898, found: 343.0897.



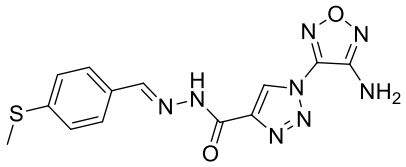
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(3-hydroxy-4-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-48): white solid, 42 mg, 81.9% yield.

^{1}H NMR (500MHz, DMSO-d_6) δ 12.57 (s, 1H), 11.22 (s, 1H), 9.44 (s, 1H), 8.56 (s, 1H), 7.98 (d, J=8.5 Hz, 1H), 7.54 (d, J=1.1Hz, 1H), 7.32 (dd, J = 8.6, 1.2 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.90, 152.78, 152.18, 147.08, 143.47, 142.61, 140.80, 137.87, 129.22, 126.44, 118.63, 117.03.

LRMS: (ESI, *m*/z): $[M+Na]^+$: 382.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_9N_9O_5Na$ $[M+Na]^+$:382.0619, found: 382.0620.



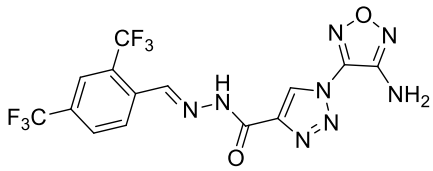
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(4-(methylthio)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-49): yellow solid, 42 mg, 85.5% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.27 (s, 1H), 9.39 (s, 1H), 8.53 (s, 1H), 7.68 (d, J = 8.4 Hz, 2H), 7.35 (d, J = 8.4 Hz, 2H), 6.73 (s, 2H), 2.53 (s, 3H).

^{13}C NMR (125 MHz, DMSO-d_6) δ 154.97, 151.61, 148.48, 142.92, 142.33, 141.22, 130.43, 128.30, 127.56, 125.55, 14.14.

LRMS: (ESI, *m*/z): $[M+H]^+$: 345.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{13}N_8O_2S$ $[M+H]^+$:345.0877, found: 345.0876.



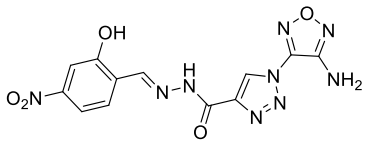
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2,4-bis(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-50): white solid, 55 mg, 88.7% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.94 (s, 1H), 9.47 (s, 1H), 9.06 (s, 1H), 8.48 (d, J = 8.3 Hz, 1H), 8.19 (d, J = 8.4 Hz, 1H), 8.11 (s, 1H), 6.75 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.56, 151.68, 142.94, 142.46, 141.96, 136.13, 129.72 (J = 6.30 Hz), 128.92, 128.26 (J = 441.0 Hz), 128.19, 127.64 (q, J = 31.5 Hz),123.08 (J = 2.52 Hz), 122.15 (J = 2.52 Hz), 99.47.

LRMS: (ESI, *m*/z): $[M+Na]^+$: 457.1.

HRMS: (ESI, *m*/z): calcd. for $C_{14}H_8N_8O_2F_6Na$ $[M+Na]^+$:457.0567, found: 457.0568.



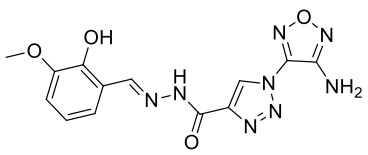
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxy-4-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-51): white solid, 42 mg, 81.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.74 (s, 1H), 11.52 (s, 1H), 9.44 (s, 1H), 8.88 (s, 1H), 7.96 (d, J = 8.6 Hz, 1H), 7.78–7.71 (m, 2H), 6.73 (s, 2H).

^{13}C NMR (125 MHz, DMSO-d_6) δ 157.64, 155.81, 152.16, 149.14, 145.47, 143.45, 142.42, 129.18, 129.01, 126.57, 114.68, 111.33.

LRMS: (ESI, *m*/z): $[M+H]^+$: 360.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_{10}N_9O_5$ $[M+H]^+$: 360.0799, found: 360.0800.



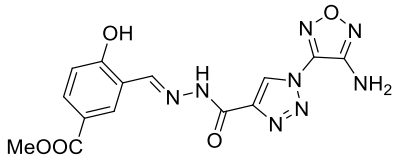
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxy-3-methoxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-52): white solid, 41 mg, 83.4% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.58 (s, 1H), 10.82 (s, 1H), 9.42 (s, 1H), 8.79 (s, 1H), 7.17 (dd, J = 7.9, 1.1 Hz, 1H), 7.08–7.04 (m, 1H), 6.88 (t, J = 7.9 Hz, 1H), 6.73 (s, 2H), 3.83 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 154.92, 151.62, 149.06, 147.90, 147.14, 142.91, 141.96, 128.47, 120.64, 119.01, 118.86, 113.93, 55.79.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 345.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_{13}N_8O_4$ $[M+H]^+$: 345.1054, found: 345.1055.



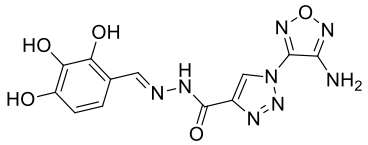
(*E*)-methyl 3-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbonyl)hydrazono)methyl)-4-hydroxybenzoate (JYQ-53): white solid, 42 mg, 79.0% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.65 (s, 1H), 11.70 (s, 1H), 9.43 (s, 1H), 8.85 (s, 1H), 8.30 (d, J = 2.2 Hz, 1H), 7.90 (dd, J = 8.6, 2.2 Hz, 1H), 7.05 (d, J = 8.6 Hz, 1H), 6.74 (s, 2H), 3.86 (s, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 165.59, 161.11, 155.12, 151.62, 146.86, 142.92, 141.94, 132.42, 129.80, 128.52, 120.79, 119.29, 116.63, 51.82.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 373.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{14}H_{13}N_8O_5$ $[M+H]^+$: 373.1003, found: 373.1003.



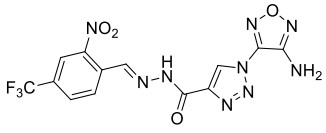
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2,3,4-trihydroxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-54): white solid, 43 mg, 80.8% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.49 (s, 1H), 11.42 (s, 1H), 9.54 (s, 1H), 9.39 (s, 1H), 8.60 (s, 1H), 8.53 (s, 1H), 6.80 (d, J = 8.5 Hz, 1H), 6.73 (s, 2H), 6.42 (d, J = 8.4 Hz, 1H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.17, 152.19, 151.74, 149.44, 148.05, 143.48, 142.60, 133.21, 128.92, 121.79, 111.25, 108.24.

LRMS: (ESI, *m*/*z*): $[M+H]^+$: 373.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{12}H_{11}N_8O_5$ $[M+H]^+$: 347.0847, found: 347.0848.



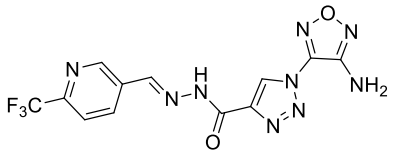
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-nitro-4-(trifluoromethyl)benzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (**JYQ-55**): white solid, 50 mg, 85.2% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.90 (s, 1H), 9.46 (s, 1H), 9.04 (s, 1H), 8.45 (s, 1H), 8.37 (d, J = 8.2 Hz, 1H), 8.21 (d, J = 8.2 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 156.09, 152.17, 148.80, 143.46, 143.36, 142.40, 132.87, 130.46, 129.83, 129.31, 123.40 (q, J = 272.16 Hz), 122.56 (J = 3.78 Hz), 100.00.

LRMS: (ESI, *m*/*z*): $[M+Na]^+$: 434.1.

HRMS: (ESI, *m*/*z*): calcd. for $C_{13}H_8N_9O_4F_3Na$ $[M+Na]^+$: 434.0544, found: 434.0544.



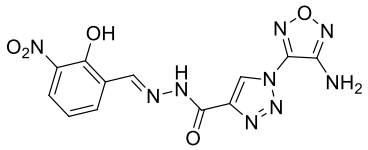
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-((6-(trifluoromethyl)pyridin-3-yl)methylene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-56): white solid, 46 mg, 87.7% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.20 (s, 1H), 9.27 (s, 1H), 9.04 (s, 1H), 8.64 (s, 1H), 8.37 (d, J = 7.8 Hz, 1H), 7.92 (d, J = 8.2 Hz, 1H), 6.42 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ155.97, 152.20, 149.43, 147.31 (J = 30.5 Hz), 145.17, 143.47, 142.54, 136.31, 133.89, 129.30, 122.04 (q, J = 373.42 Hz), 121.51.

LRMS: (ESI, *m*/z): $[M+H]^+$: 368.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_9N_9O_2F_3$ $[M+H]^+$: 368.0826, found: 368.0826.



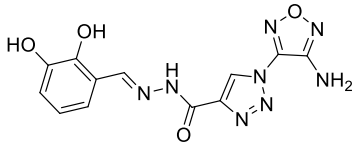
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2-hydroxy-3-nitrobenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-57): white soild, 44 mg, 85.8% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.97 (s, 1H), 12.71 (s, 1H), 9.47 (s, 1H), 8.86 (s, 1H), 8.03 (dd, J = 8.2, 1.5 Hz, 1H), 7.94 (dd, J = 7.7, 1.3 Hz, 1H), 7.14 (t, J = 7.9 Hz, 1H), 6.74 (s, 2H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.76, 152.20, 152.10, 148.47, 143.45, 142.16, 138.08, 135.58, 129.45, 127.27, 122.22, 119.78.

LRMS: (ESI, *m*/z): $[M+Na]^+$: 382.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_9N_9O_5Na$ $[M+Na]^+$: 382.0619, found: 382.0619.



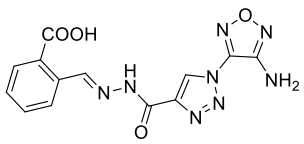
(*E*)-1-(4-amino-1,2,5-oxadiazol-3-yl)-*N*'-(2,3-dihydroxybenzylidene)-1*H*-1,2,3-triazole-4-carbohydrazide (JYQ-58): white solid, 40 mg, 84.8% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 12.62 (s, 1H), 11.02 (s, 1H), 9.42 (s, 1H), 9.24 (s, 1H), 8.74 (s, 1H), 6.98 (d, J = 7.7 Hz, 1H), 6.91–6.87 (m, 1H), 6.7 –6.72 (m, 3H).

^{13}C NMR (126 MHz, DMSO-d_6) δ 155.49, 152.18, 150.58, 146.65, 146.12, 143.47, 142.48, 129.07, 120.55, 119.71, 119.22, 118.07.

LRMS: (ESI, *m*/z): $[M+H]^+$: 333.1.

HRMS: (ESI, *m*/z): calcd. for $C_{12}H_{11}N_8O_4$ $[M+H]^+$: 331.0898, found: 331.0897.



(*E*)-2-((2-(1-(4-amino-1,2,5-oxadiazol-3-yl)-1*H*-1,2,3-triazole-4-carbonyl)hydrazono)methyl)benzoic acid (JYQ-59): white solid, 41 mg, 83.9% yield.

^{1}H NMR (500 MHz, DMSO-d_6) δ 13.39 (s, 1H), 12.53 (s, 1H), 9.42 (s, 1H), 9.29 (s, 1H), 8.08 (d, J = 7.7 Hz, 1H), 7.93 (dd, J = 7.8, 0.8 Hz, 1H), 7.68 (t, J = 7.4 Hz, 1H), 7.58–7.55 (m, 1H), 6.74 (s, 2H).

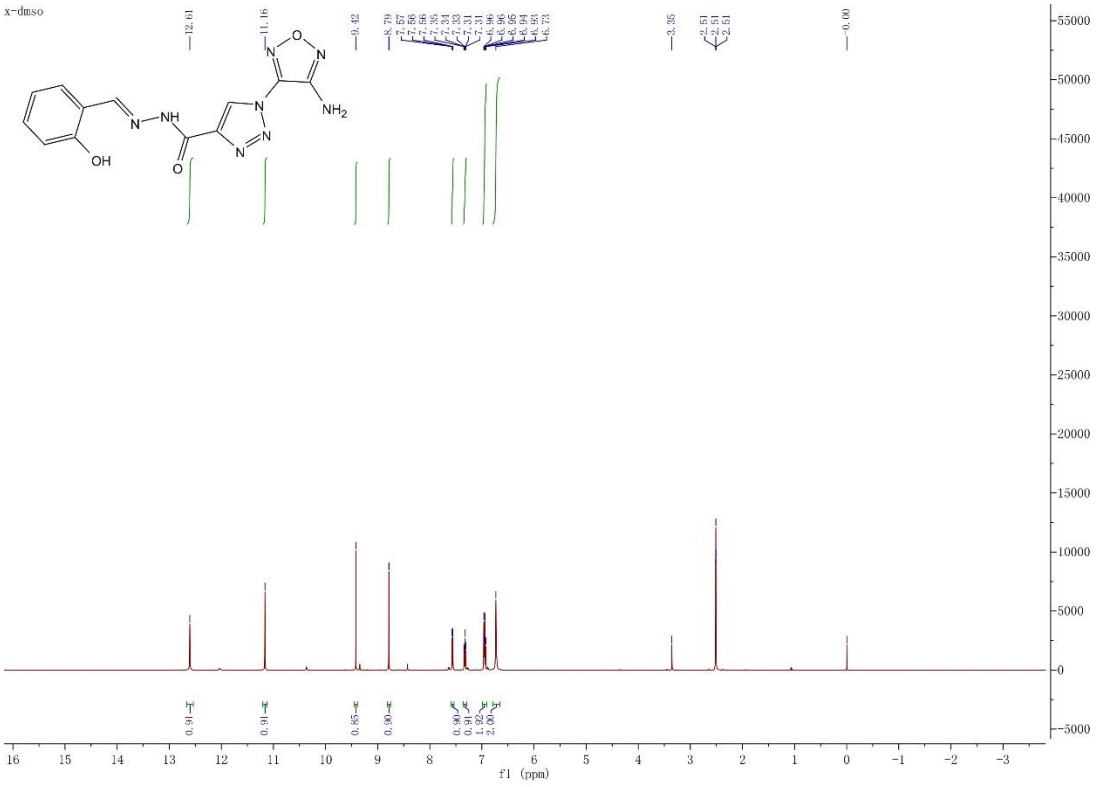
^{13}C NMR (126 MHz, DMSO-d_6) δ 168.50, 155.84, 152.13, 148.41, 143.48, 142.75, 134.93, 132.51, 131.33, 130.80, 130.30, 128.75, 127.30.

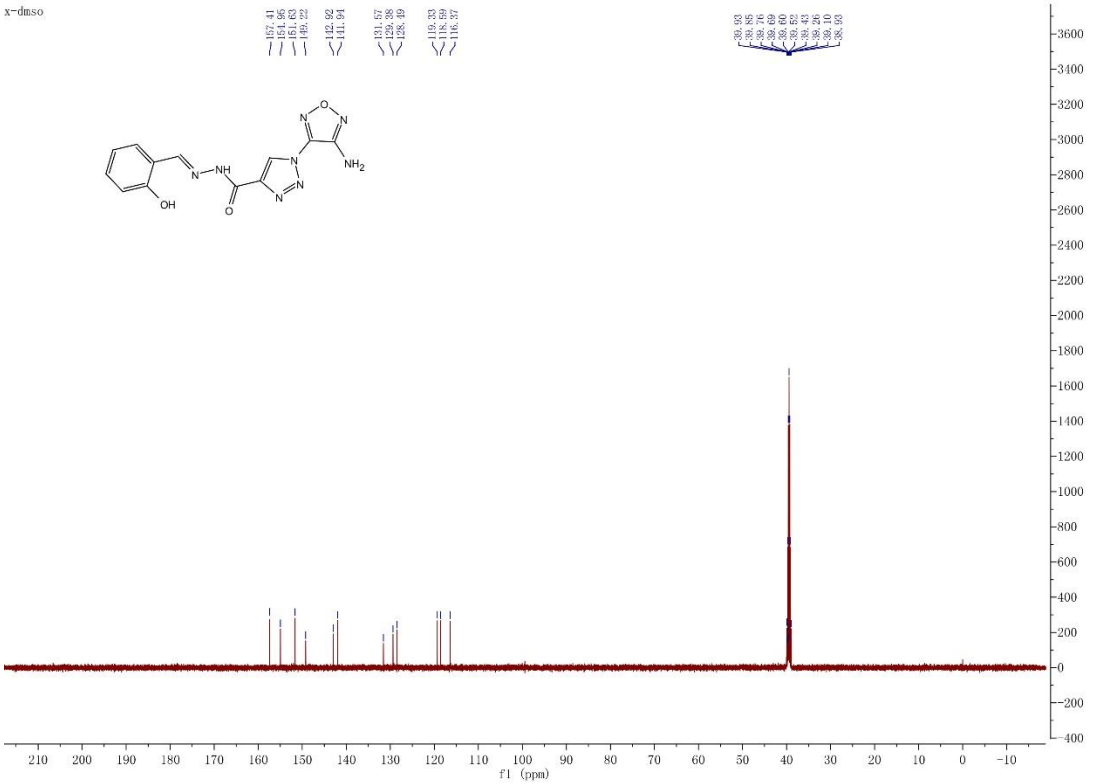
LRMS: (ESI, *m*/z): $[M+H]^+$: 343.1.

HRMS: (ESI, *m*/z): calcd. for $C_{13}H_{11}N_8O_4$ $[M+H]^+$: 343.0898, found: 343.0899.

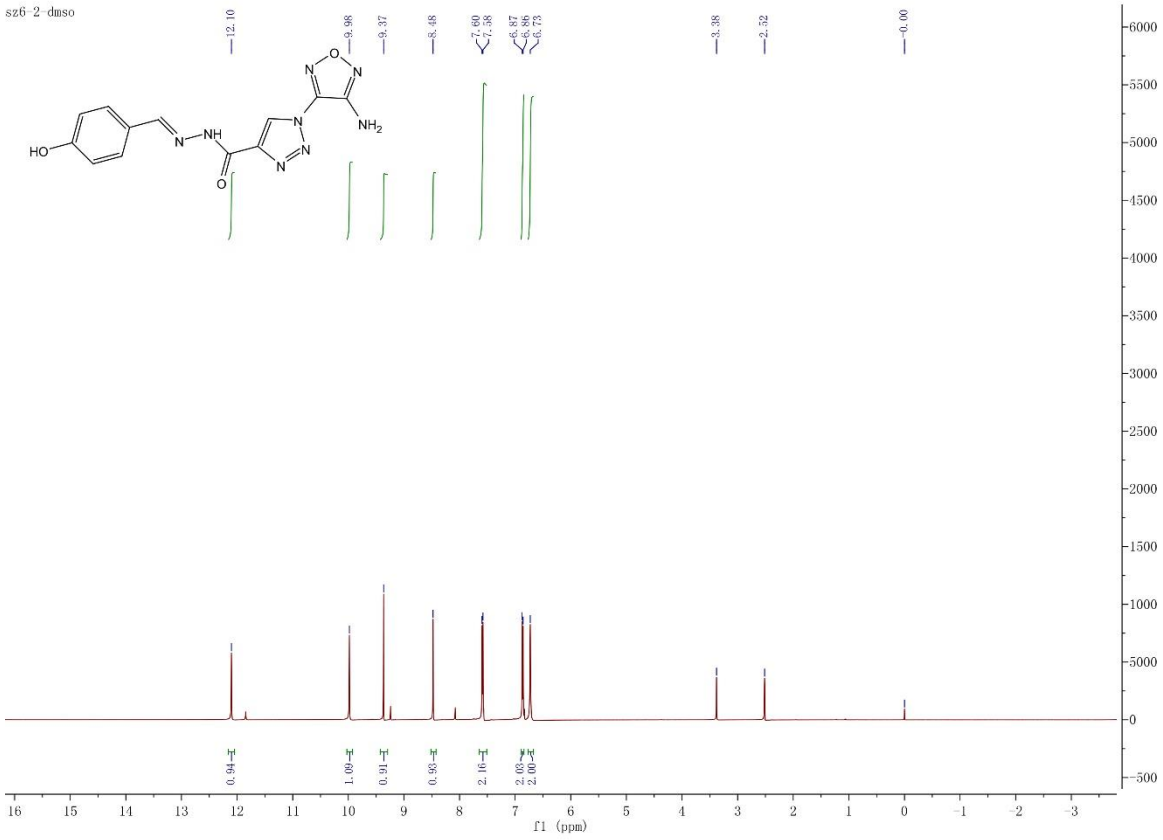
NMR spectra of compounds in this article

JYQ-1





JYQ-2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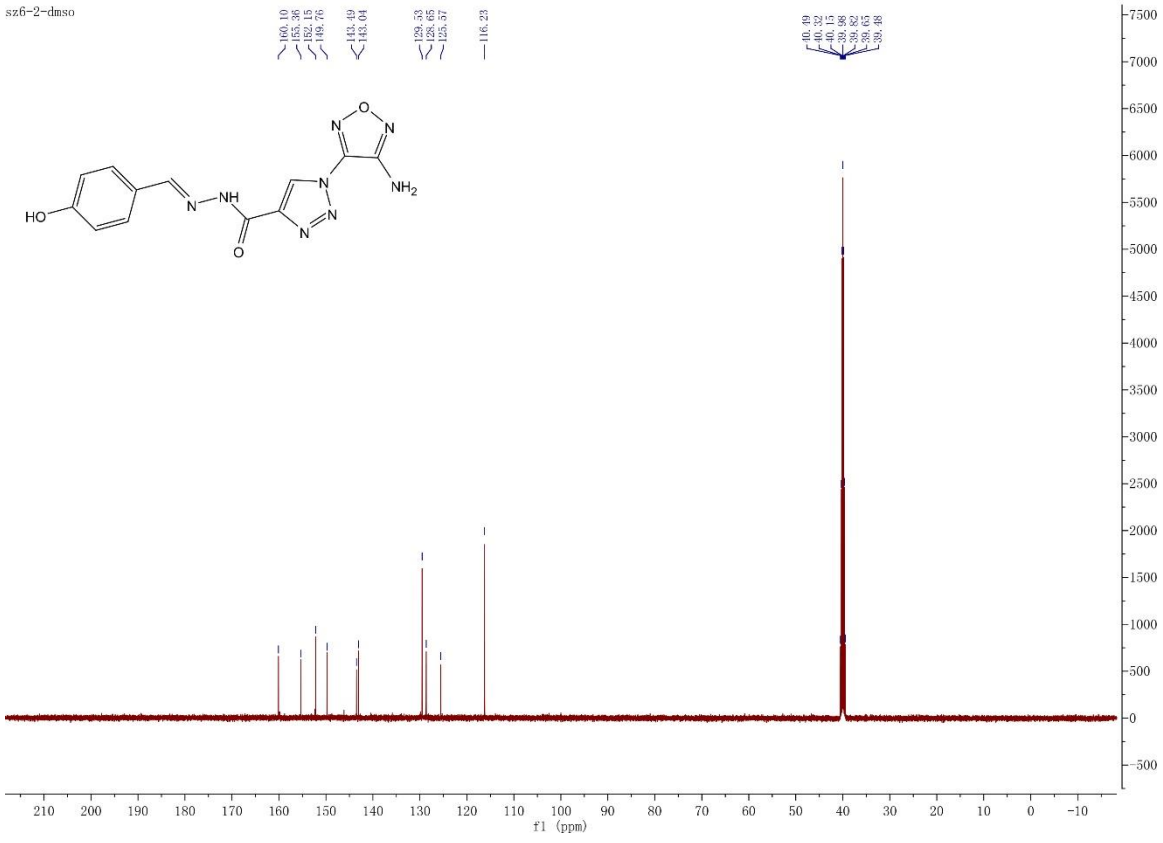
9.98
9.37
8.48
7.60
7.58
6.87
6.86
6.73
3.38
2.52
0.00
0.94
1.09
0.91
0.93
2.16
2.03
2.00
f1 (ppm)


sz6-2-dmso
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155.36
152.15
149.76
143.49
143.04
129.23
128.85
125.57
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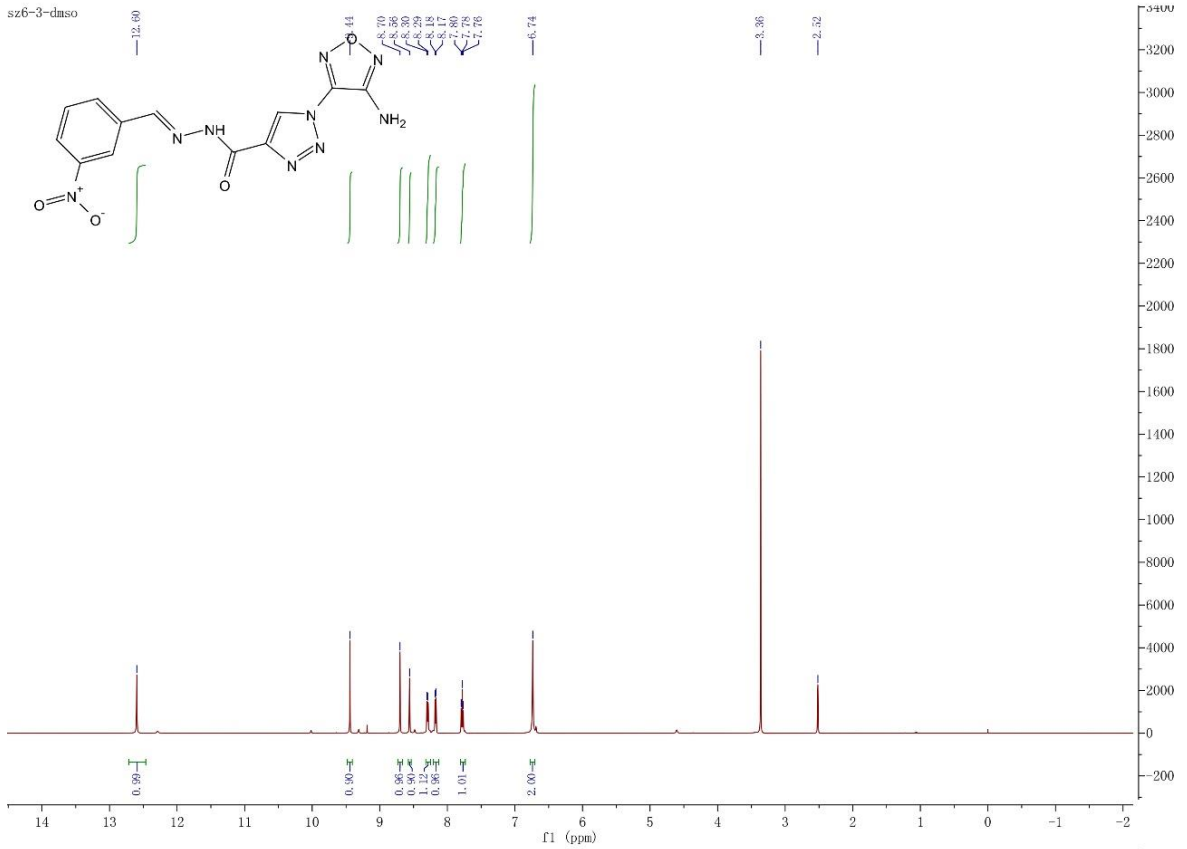
40.15
39.98
39.82
39.65
39.48
f1 (ppm)

JYQ-3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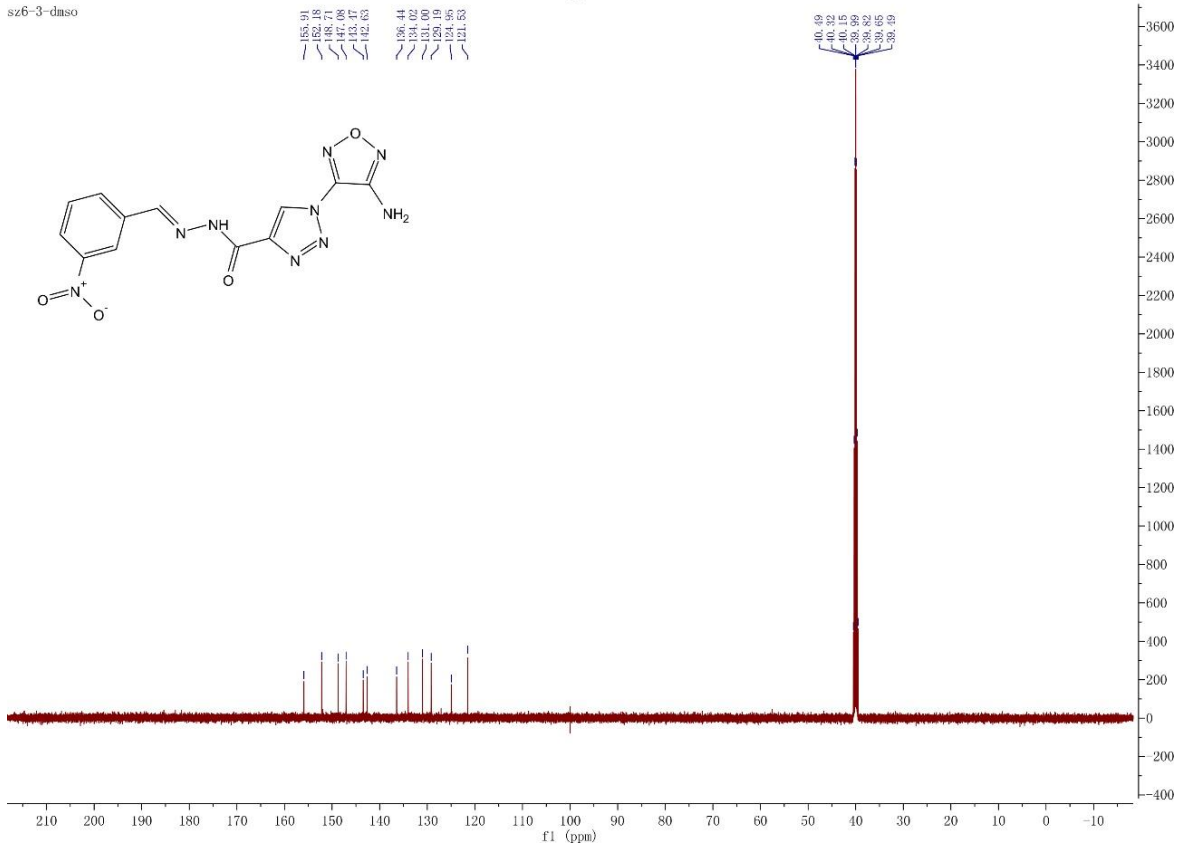
8.30
8.29
8.18
8.17
7.80
7.79
7.76
6.74
3.36
2.52
0.99
0.90
0.96
0.90
1.12
0.86
1.01
2.00
f1 (ppm)


sz6-3-dmso
155.91
152.18
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147.08
143.47
142.63
136.44
134.02
131.00
129.19
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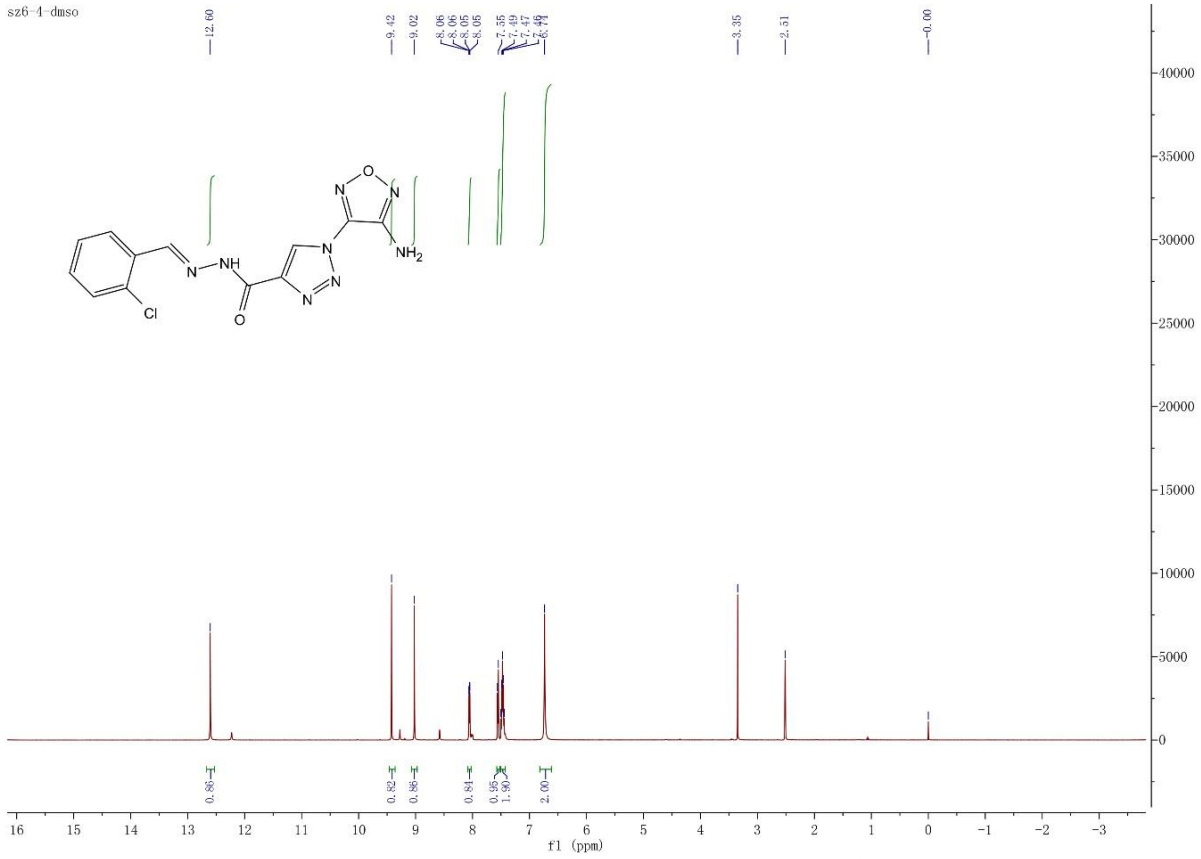
39.82
39.65
39.49
f1 (ppm)

JYQ-4


sz6-4-dmso
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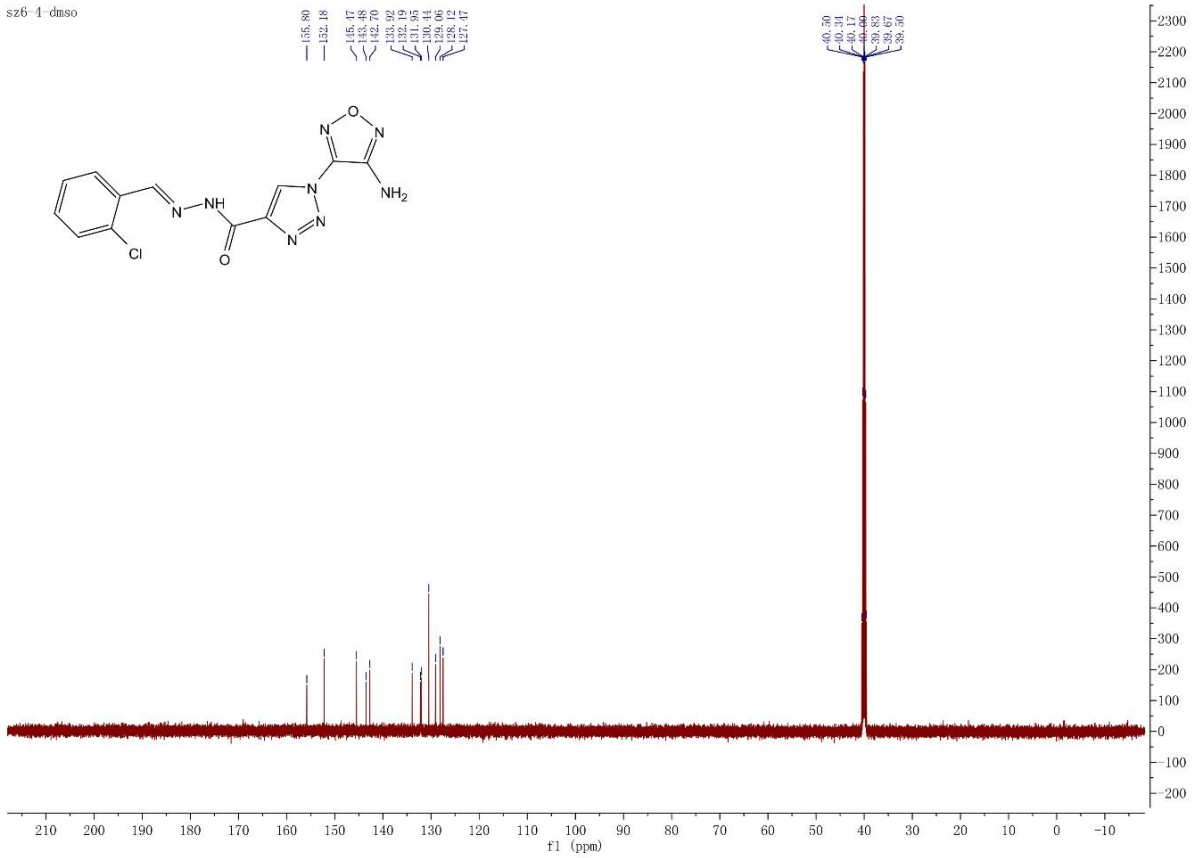
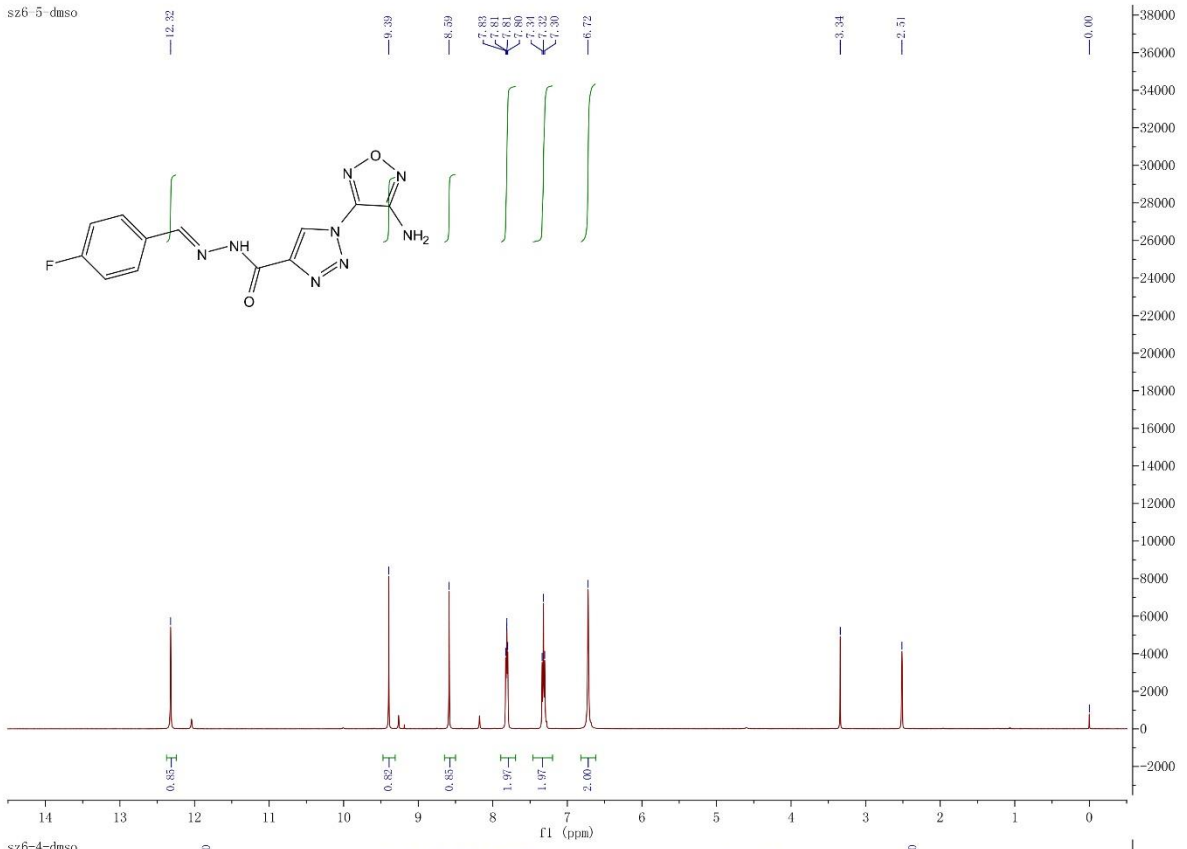
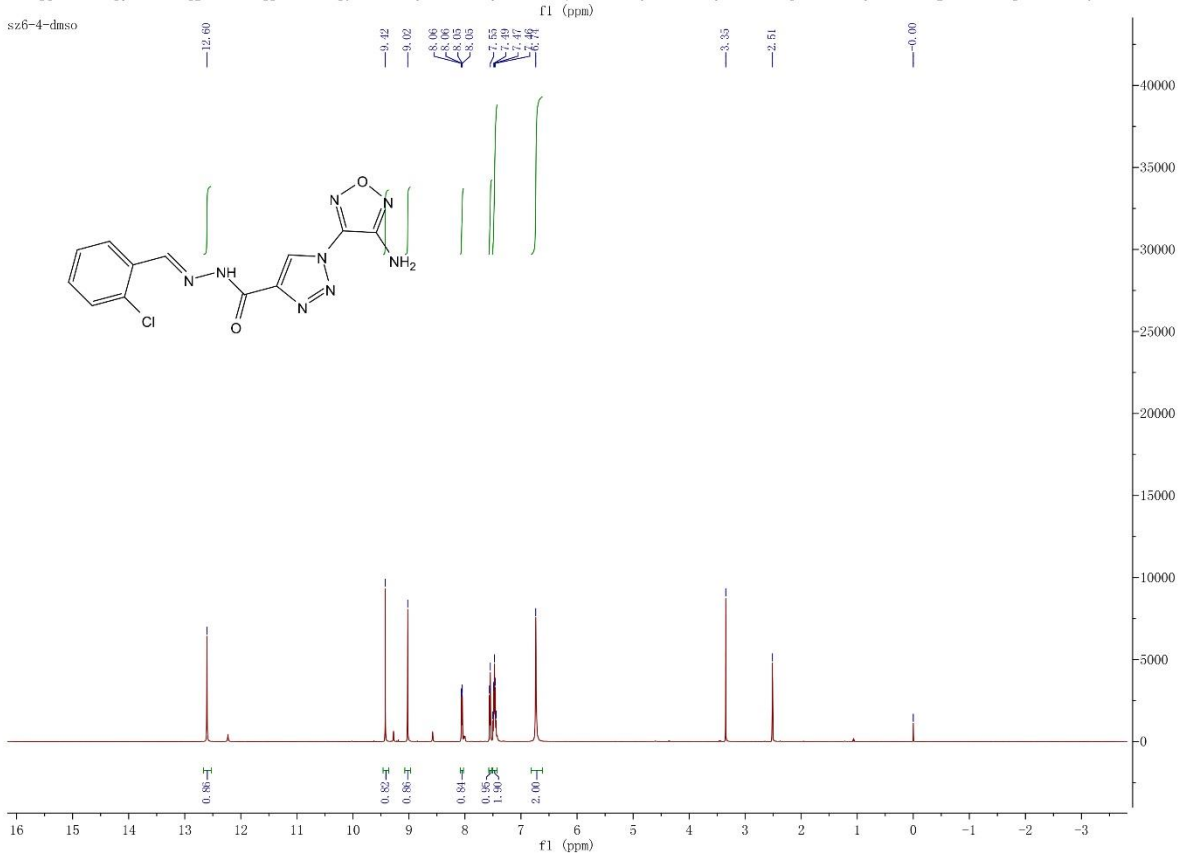
9.42
9.02
8.06
8.06
8.05
8.05
7.55
7.49
7.47
7.47
6.74
3.35
2.51
0.00
0.86
0.82
0.98
0.84
0.95
1.89
2.00
f1 (ppm)

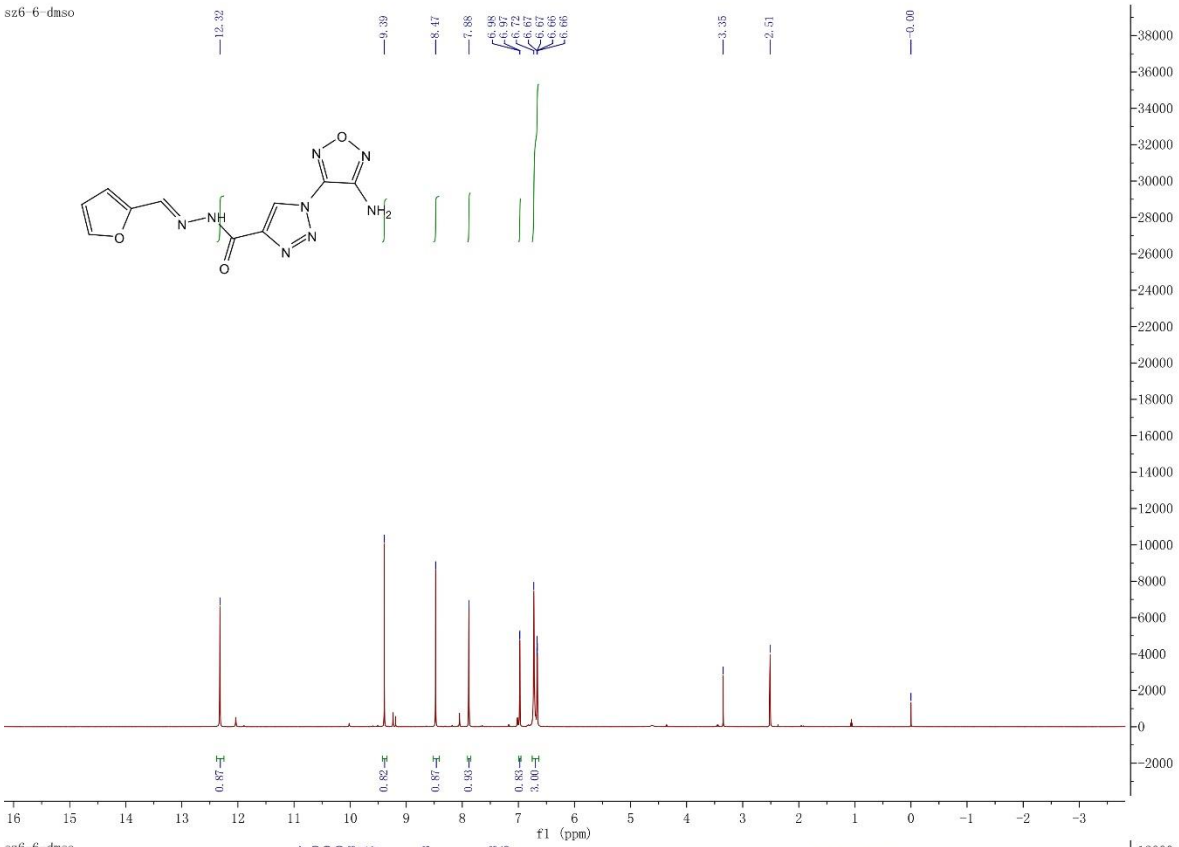

sz6-4-dmso
155.80
152.18
145.47
143.48
142.70
133.92
132.19
131.95
130.44
129.06
128.12
127.47
40.50
40.34
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

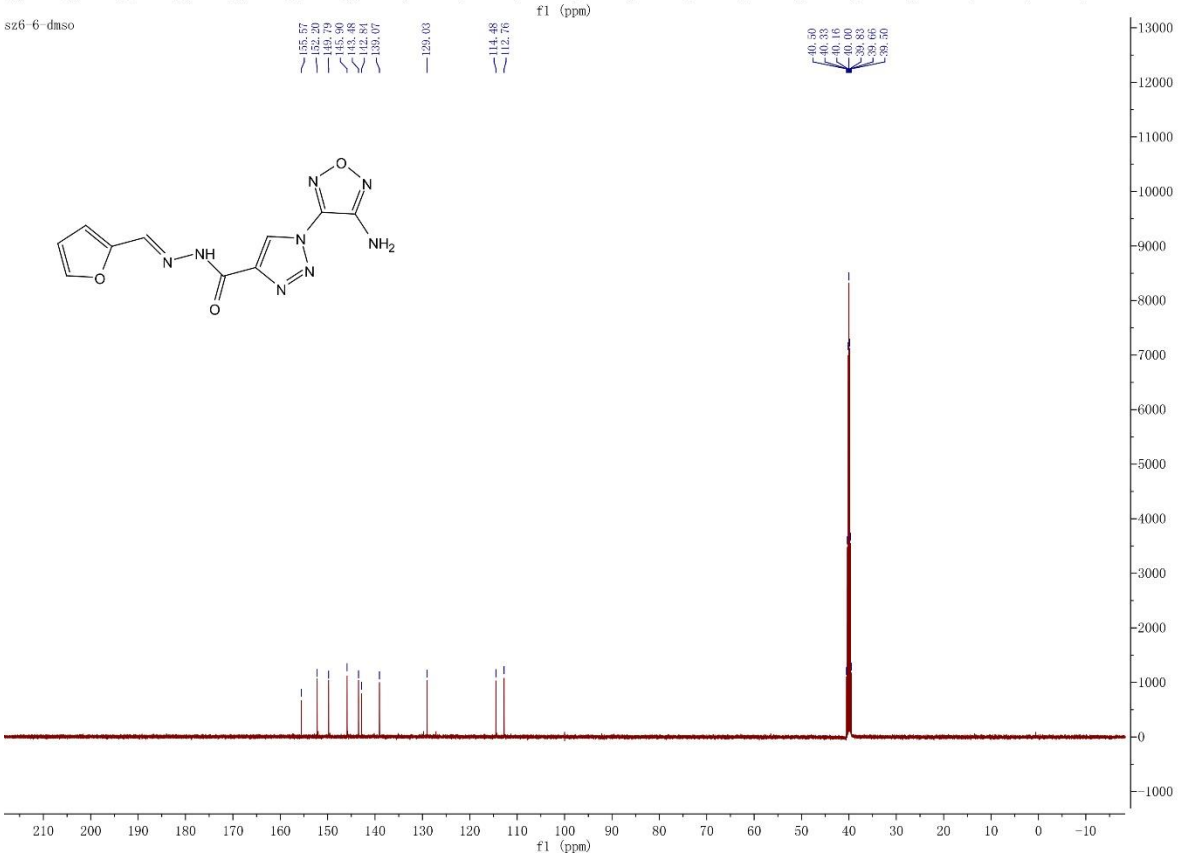
JYQ-5


sz6-5-dmso
12.32
9.39
8.59
7.83
7.81
7.81
7.80
7.34
7.32
7.30
6.72
3.34
2.51
0.00
0.85
0.82
0.85
1.97
1.97
2.00
f1 (ppm)

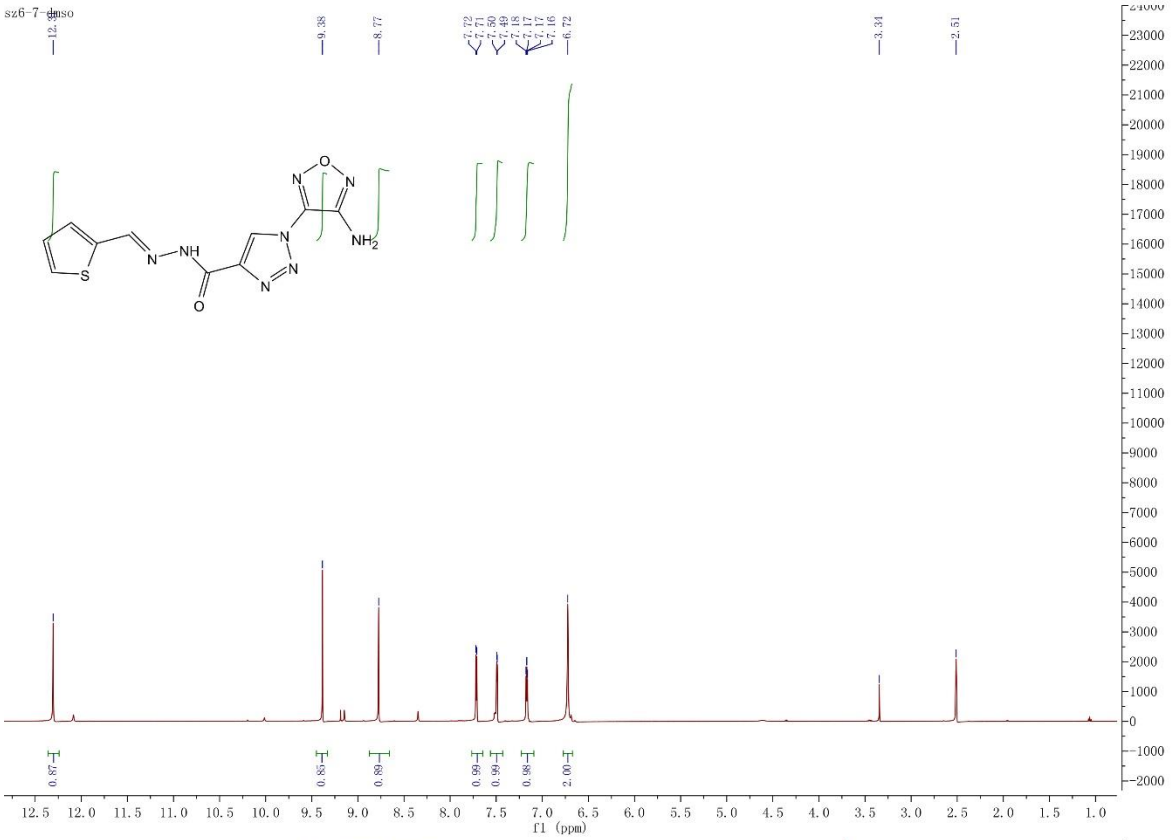

sz6-4-dmso
12.60
9.42
9.02
8.06
8.06
8.05
8.05
7.53
7.49
7.47
7.46
6.71
3.33
2.51
0.00
0.88
0.82
0.86
0.84
0.95
1.90
2.00
f1 (ppm)

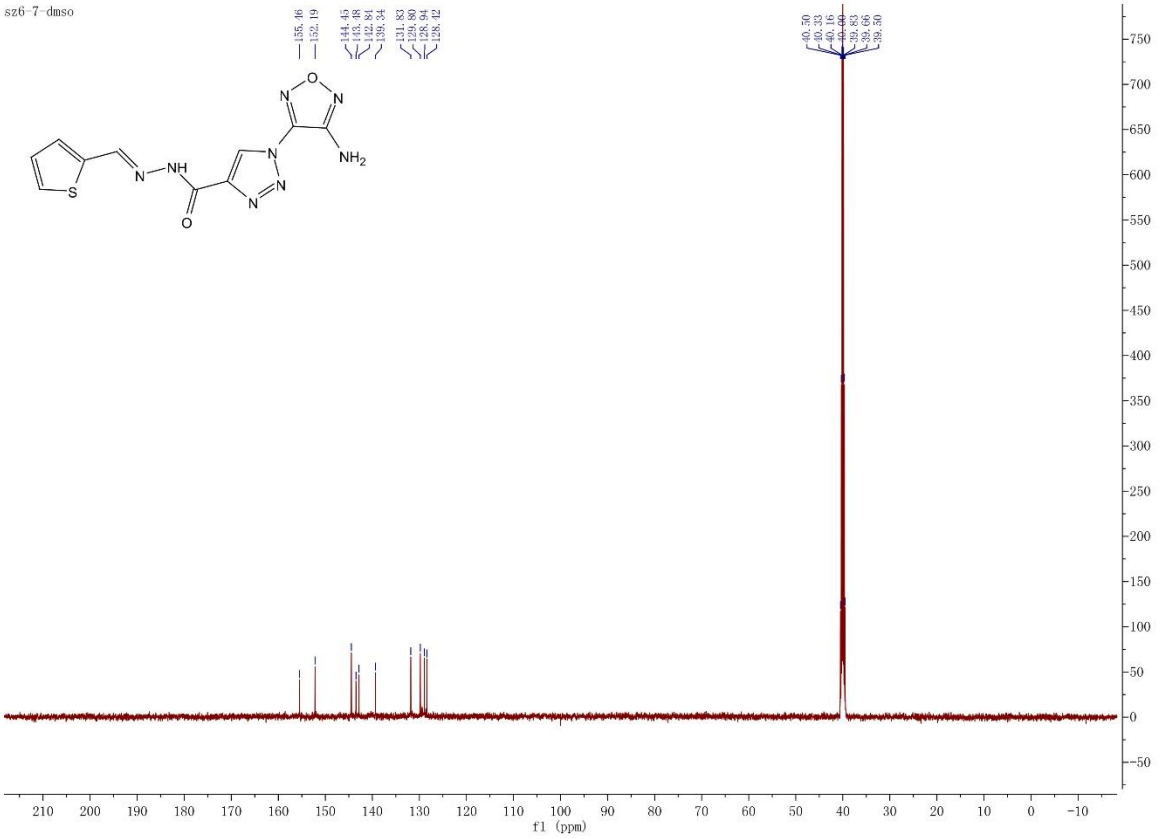
JYQ-6


sz6-6-dmso
12.32
9.39
8.47
7.88
6.98
6.97
6.72
6.67
6.67
6.66
6.66
3.35
2.51
0.00
0.87
0.82
0.87
0.93
0.83
3.00
f1 (ppm)

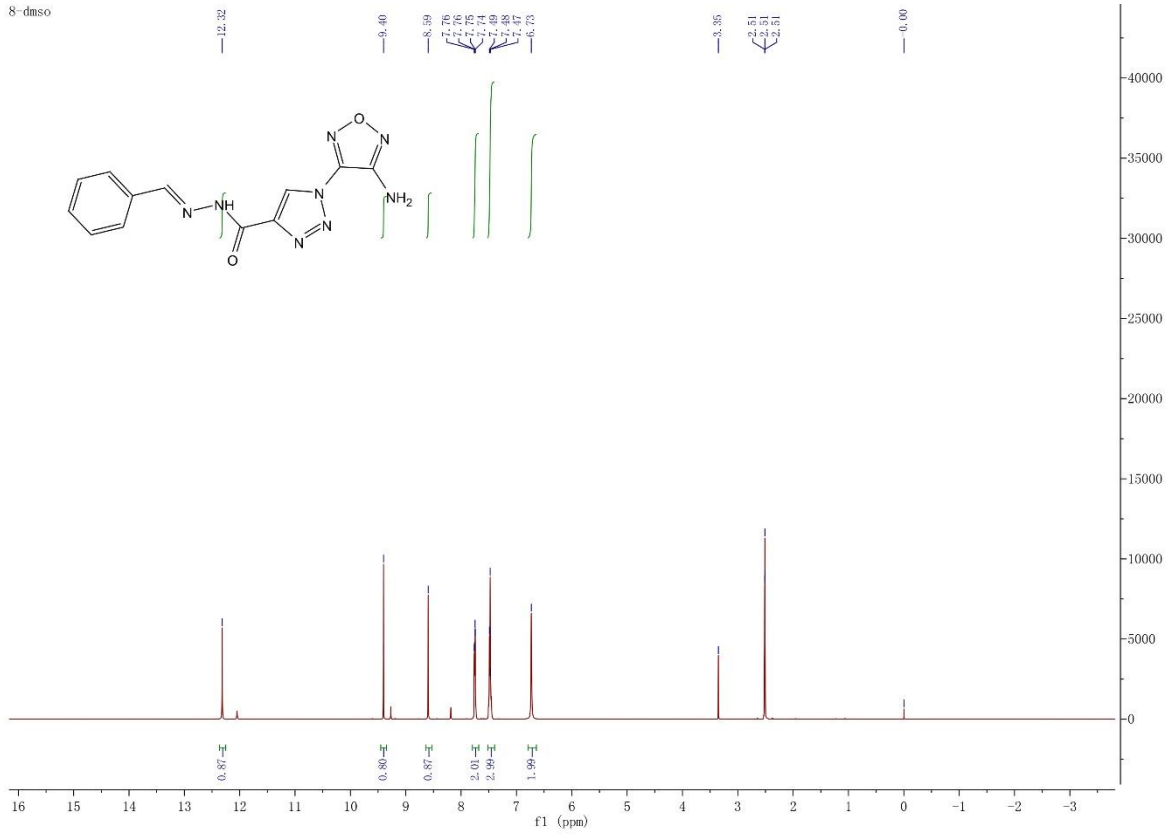

sz6-6-dmso
155.57
152.39
149.79
145.90
143.48
112.84
139.07
129.03
114.48
112.76
40.50
40.33
40.16
40.00
39.83
39.66
39.50
f1 (ppm)

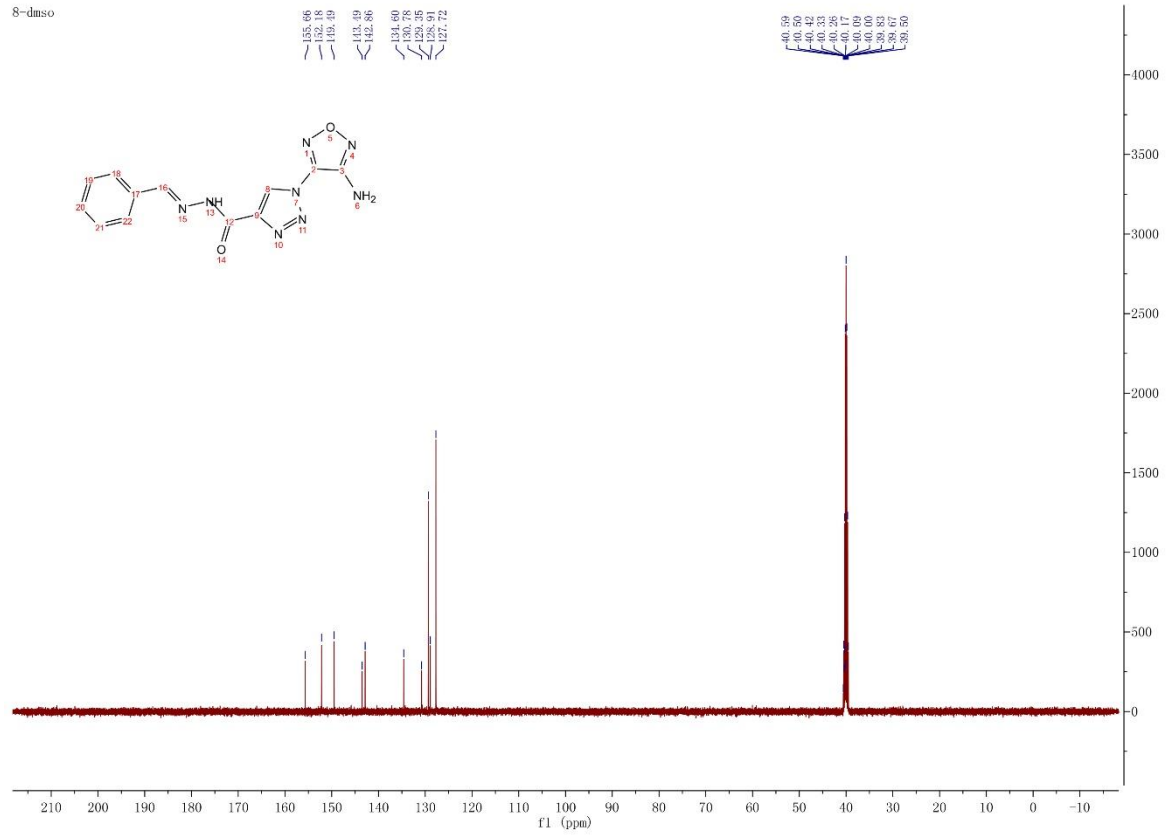
JYQ-7


sz6-7-dmso
12.58
9.38
8.77
7.72
7.71
7.50
7.49
7.18
7.17
7.17
7.16
6.72
3.34
2.51
0.87
0.85
0.89
0.99
0.99
0.88
2.00
f1 (ppm)

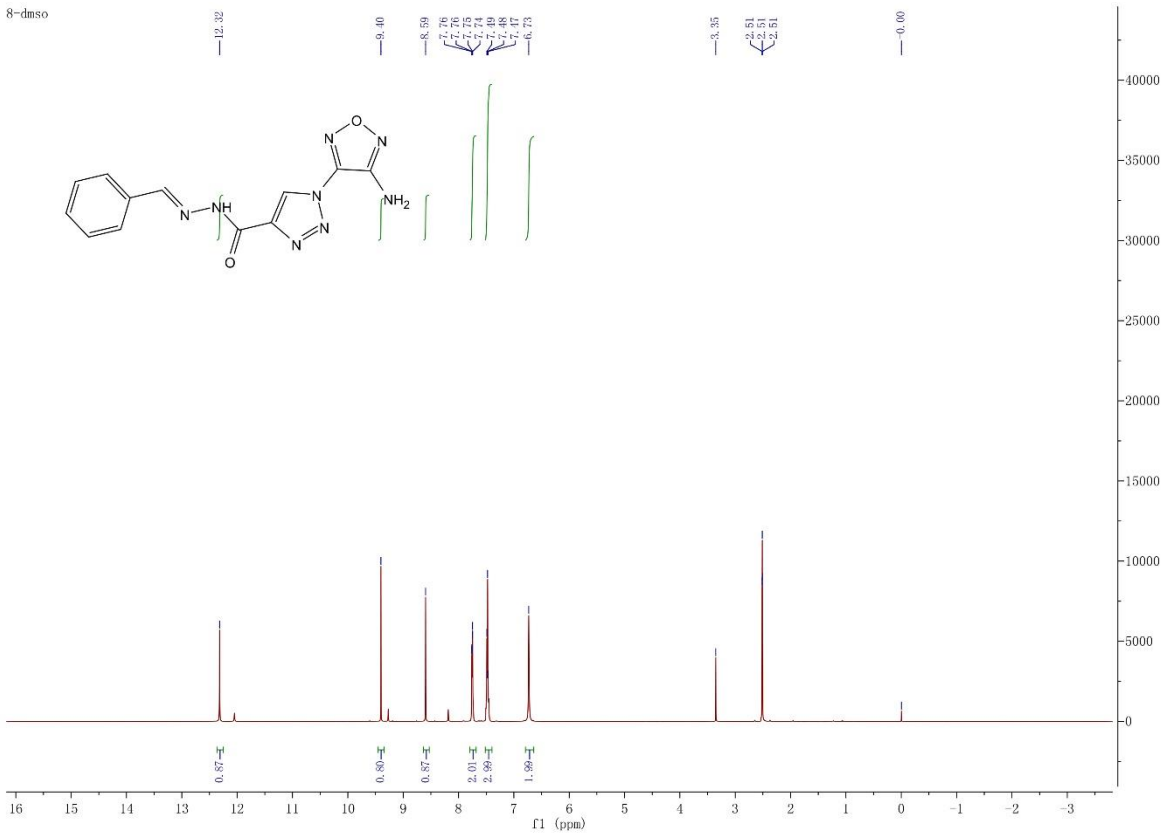

sz6-7-dmso
155.46
152.19
144.45
143.48
142.84
139.04
131.83
129.80
128.94
128.72
40.50
40.33
40.16
39.99
39.83
39.66
39.50
f1 (ppm)

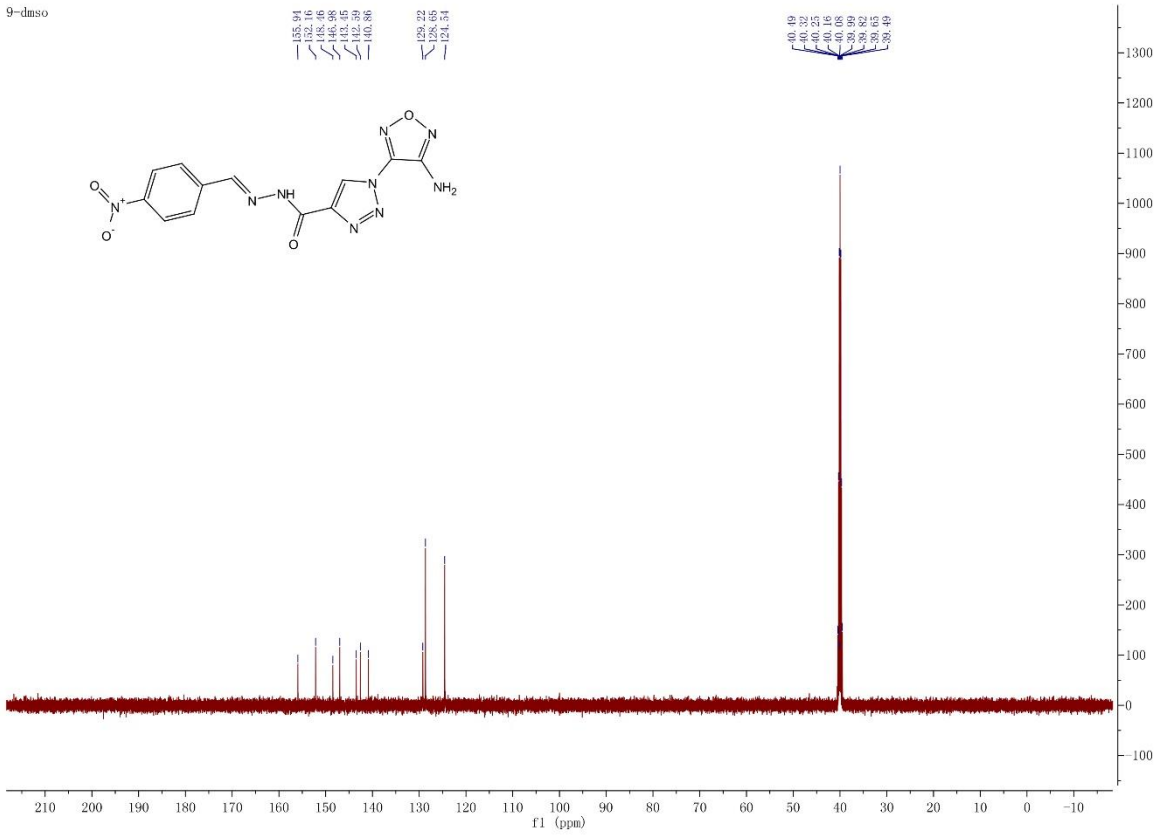
JYQ-8


8-dmso
12.32
9.40
8.39
7.76
7.76
7.75
7.74
7.49
7.48
7.47
6.73
3.35
2.51
2.51
2.51
0.00
0.87
0.80
0.87
2.01
2.99
1.99
f1 (ppm)

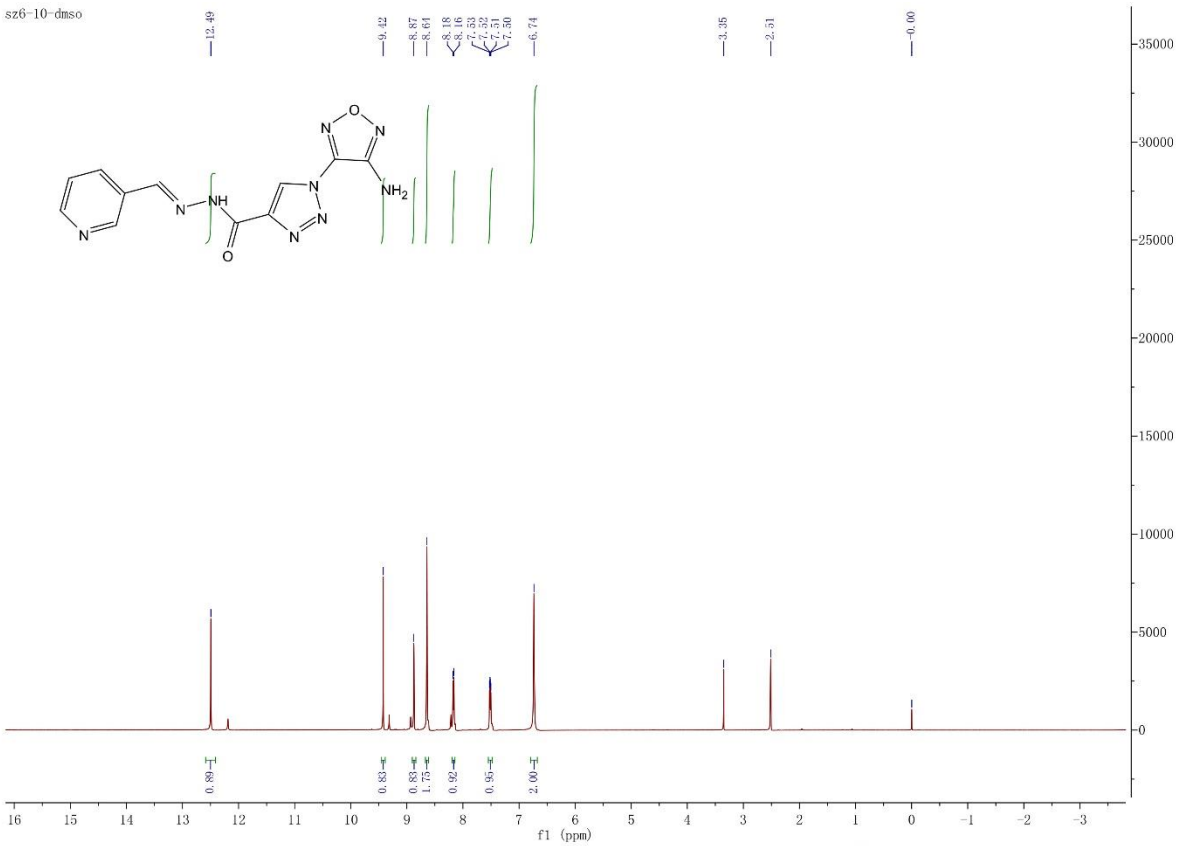

8-dmso
155.66
152.18
149.49
143.49
142.86
134.60
130.78
129.35
128.91
127.72
40.59
40.50
40.42
40.33
40.26
40.17
40.09
40.00
39.83
39.67
39.50
f1 (ppm)

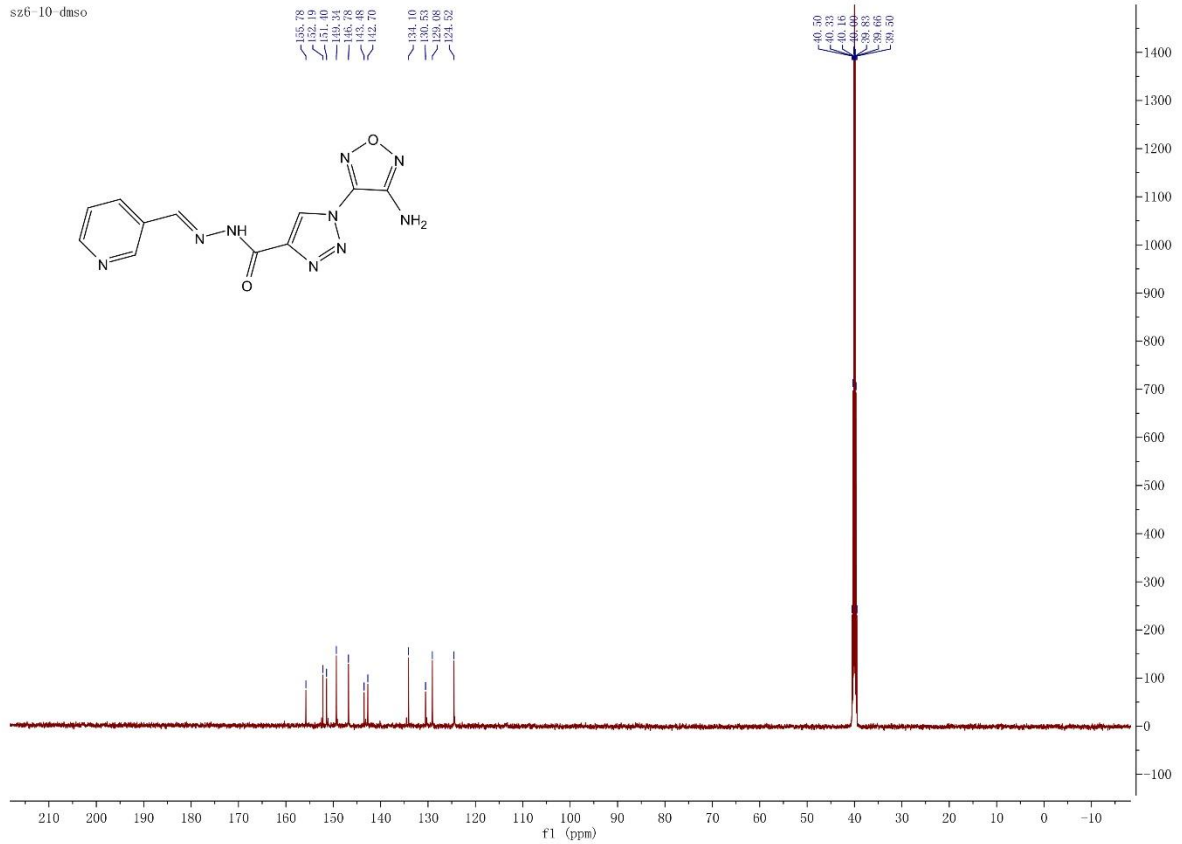
JYQ-9


8-dmso
12.32
9.40
8.59
7.76
7.76
7.75
7.74
7.49
7.48
7.47
7.47
6.73
3.35
2.51
2.51
2.51
0.00
0.87
0.80
0.87
2.01
2.99
1.99
f1 (ppm)

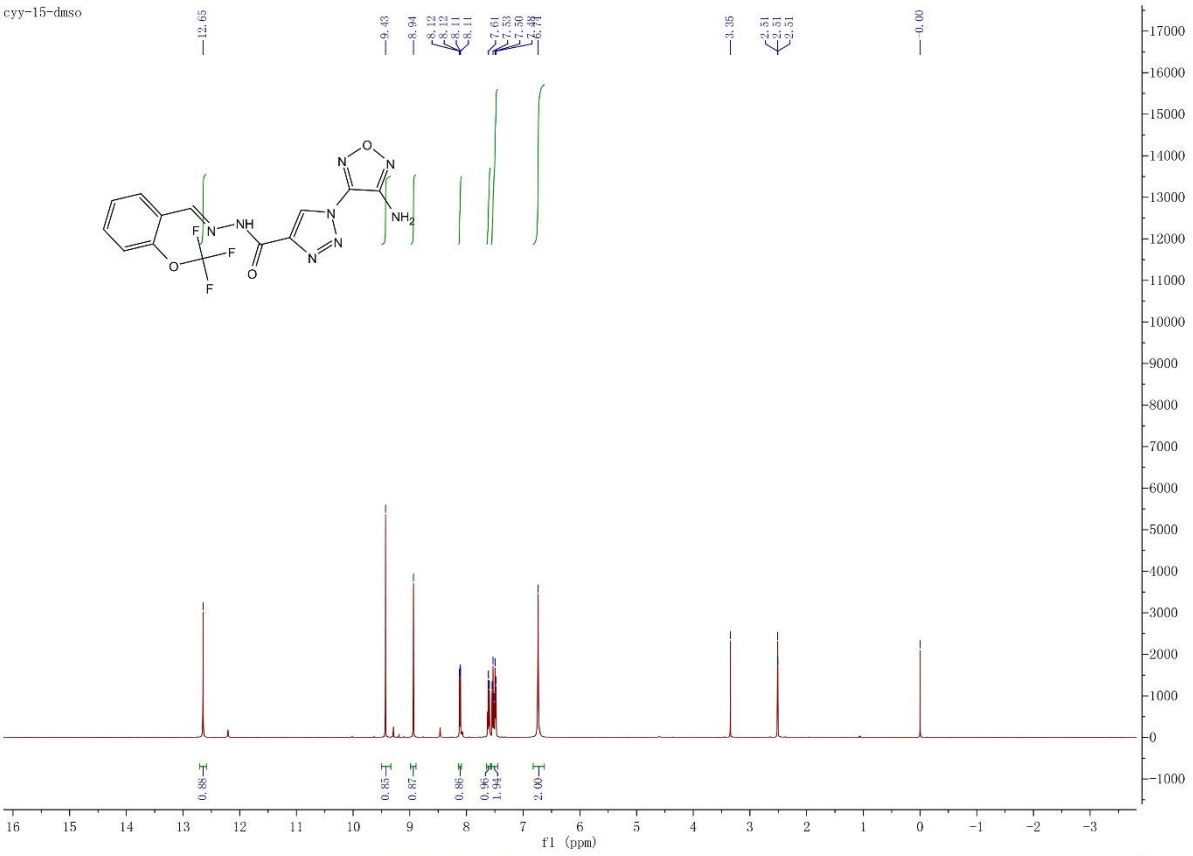

9-dmso
155.94
152.16
148.46
146.98
143.45
142.39
140.86
129.22
128.65
124.34
40.49
40.32
40.25
40.16
40.08
39.99
39.82
39.65
39.49
f1 (ppm)

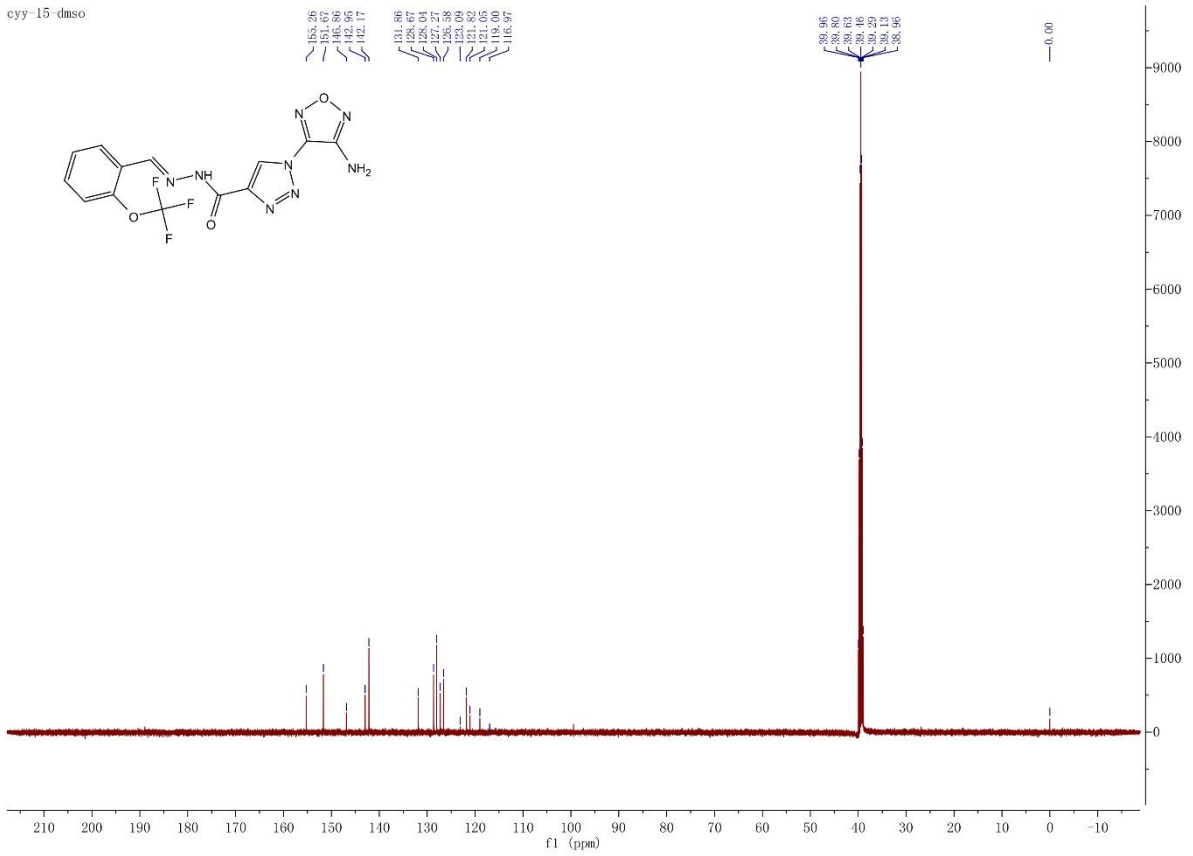
JYQ-10


sz6-10-dmso
12.49
9.42
8.87
8.61
8.18
8.16
7.53
7.52
7.51
7.50
6.74
3.35
2.51
0.00
0.89
0.83
0.83
1.75
0.92
0.95
2.00
f1 (ppm)

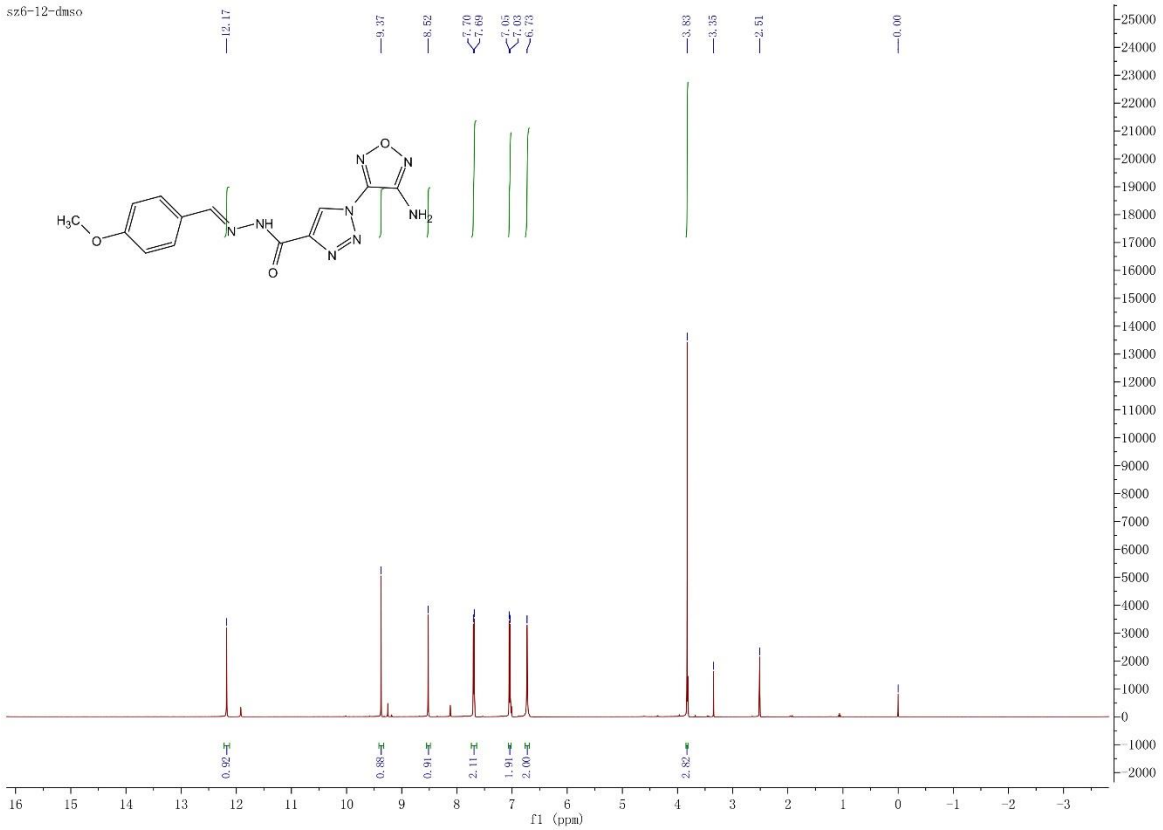

sz6-10-dmso
155.78
152.19
151.40
149.34
146.78
143.48
142.70
134.10
130.53
129.08
124.52
40.50
40.33
40.16
40.00
39.83
39.66
39.50
f1 (ppm)

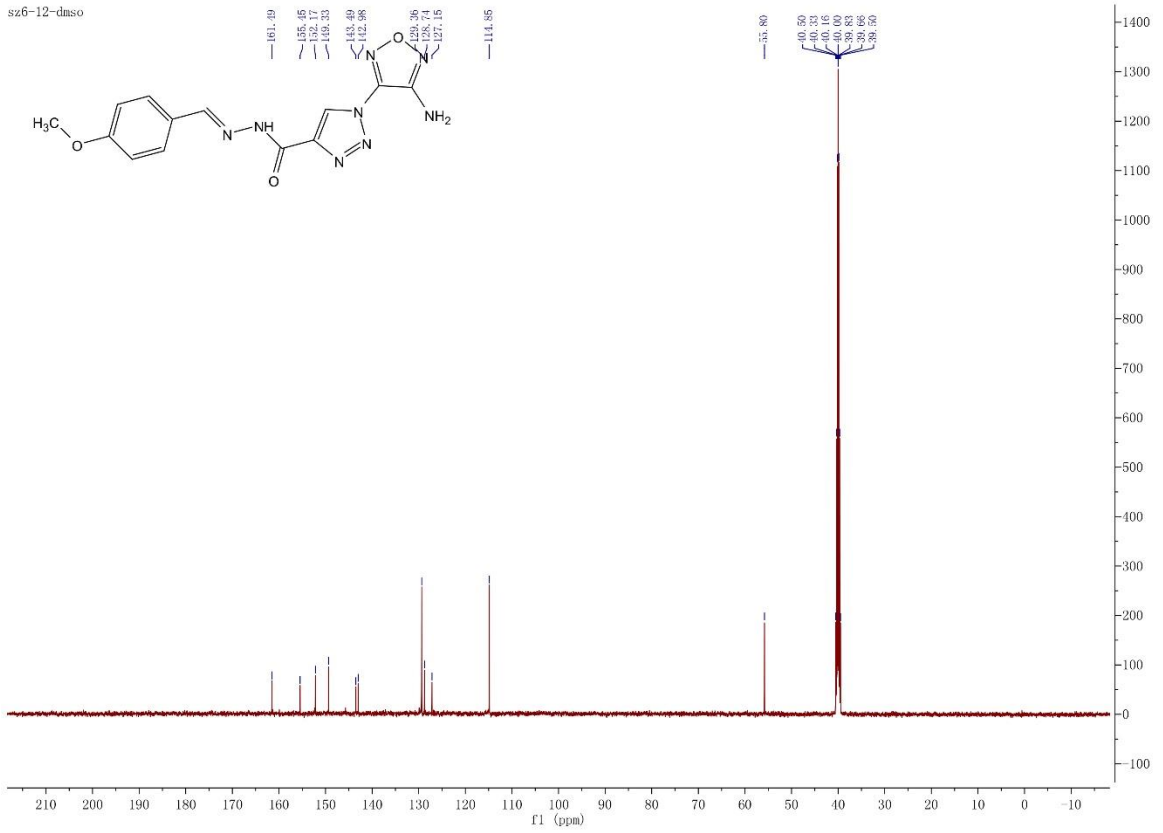
JYQ-11


cyy-15-dmso
12.65
9.43
8.94
8.12
8.12
8.11
8.11
7.61
7.53
7.50
6.44
3.35
2.51
2.51
2.51
0.00
0.88
0.85
0.87
0.85
0.96
1.94
2.00
f1 (ppm)

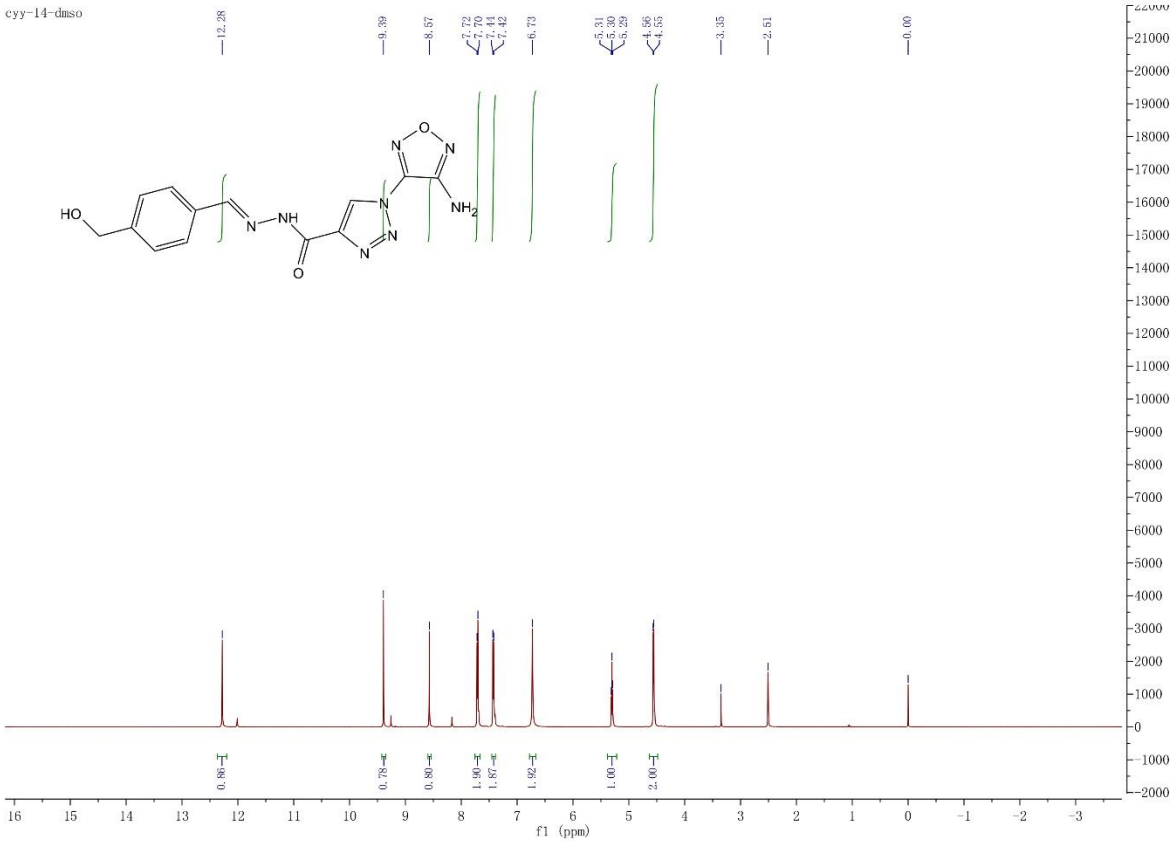

cyy-15-dmso
155.26
151.67
146.86
142.95
142.17
131.86
128.67
128.04
127.27
126.38
123.09
121.52
121.05
119.00
116.97
39.96
39.80
39.63
39.46
39.29
39.13
38.96
0.00
f1 (ppm)

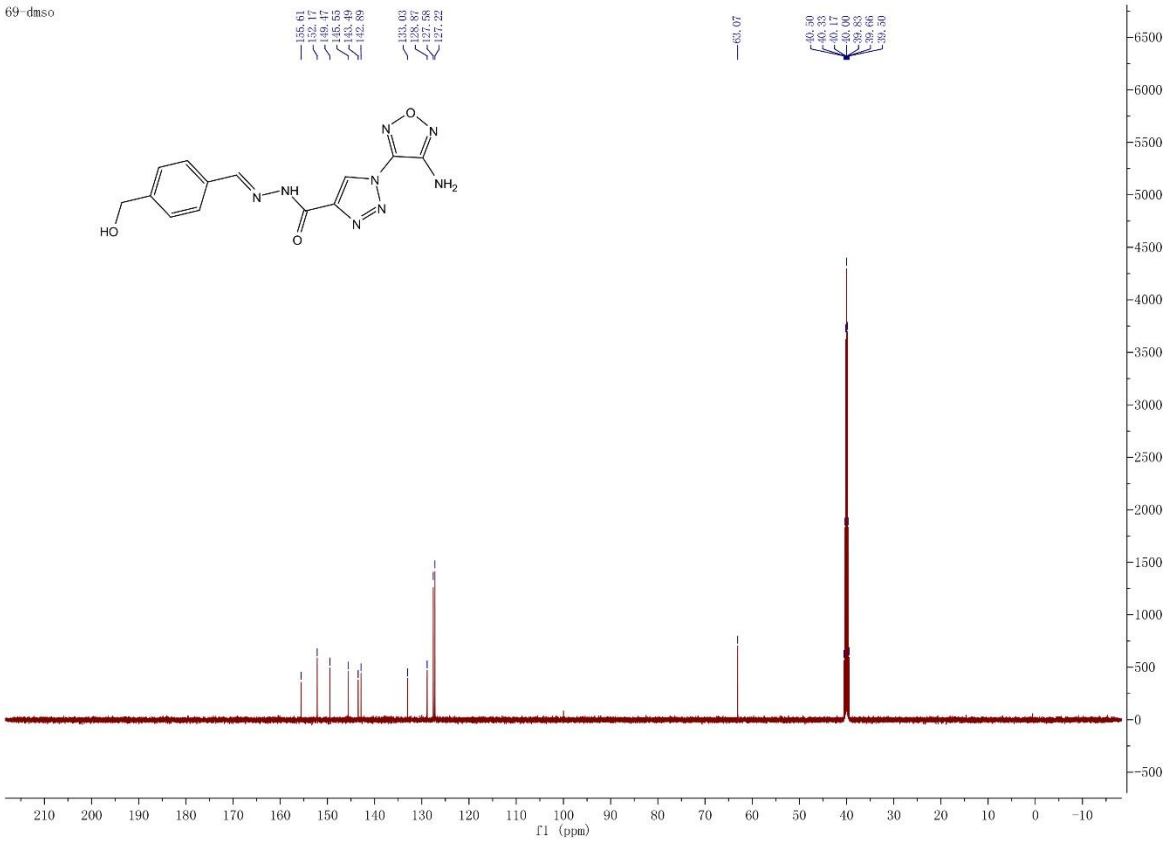
JYQ-12


sz6-12-dmso
12.17
9.37
8.52
7.70
7.69
7.05
7.03
6.73
3.83
3.35
2.51
0.00
0.92
0.88
0.91
2.11
1.91
2.00
2.82
f1 (ppm)

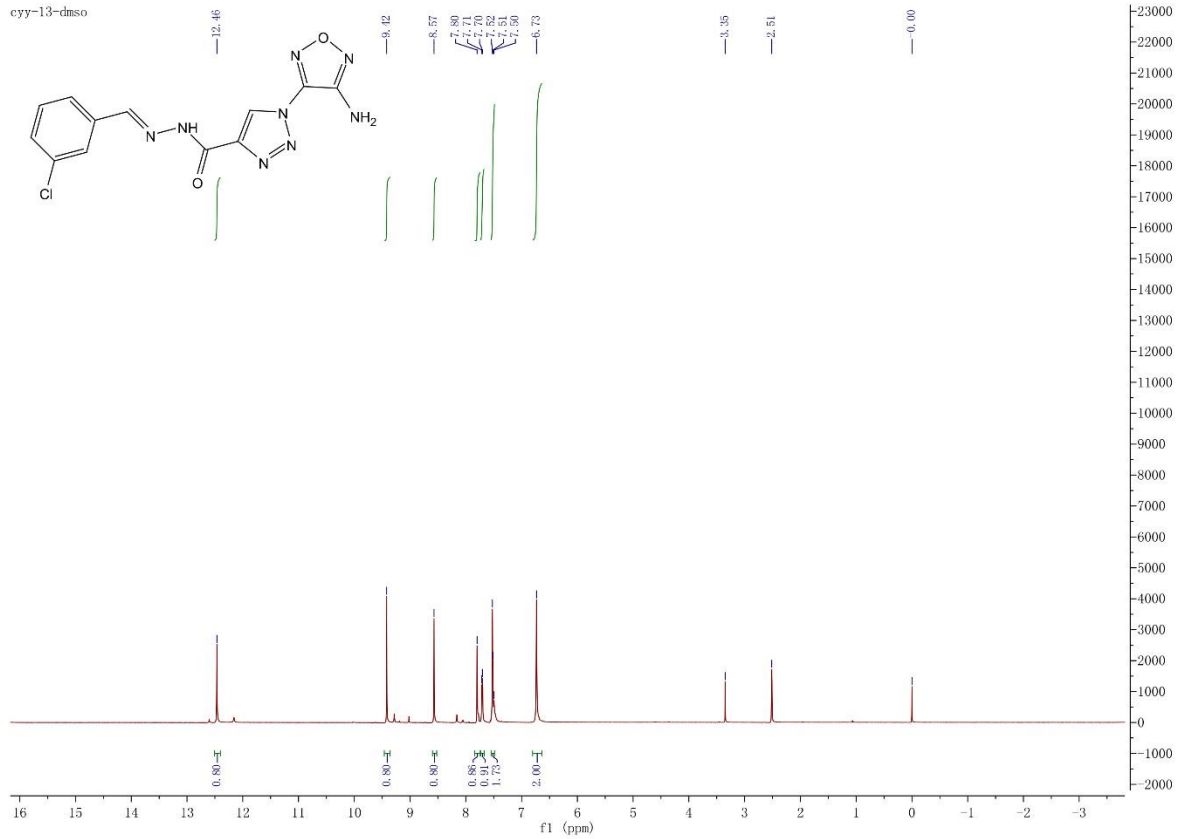

sz6-12-dmso
161.49
155.45
152.17
149.33
143.49
142.98
129.36
128.74
127.15
114.85
55.80
40.50
40.33
40.16
40.00
39.83
39.66
39.50
f1 (ppm)

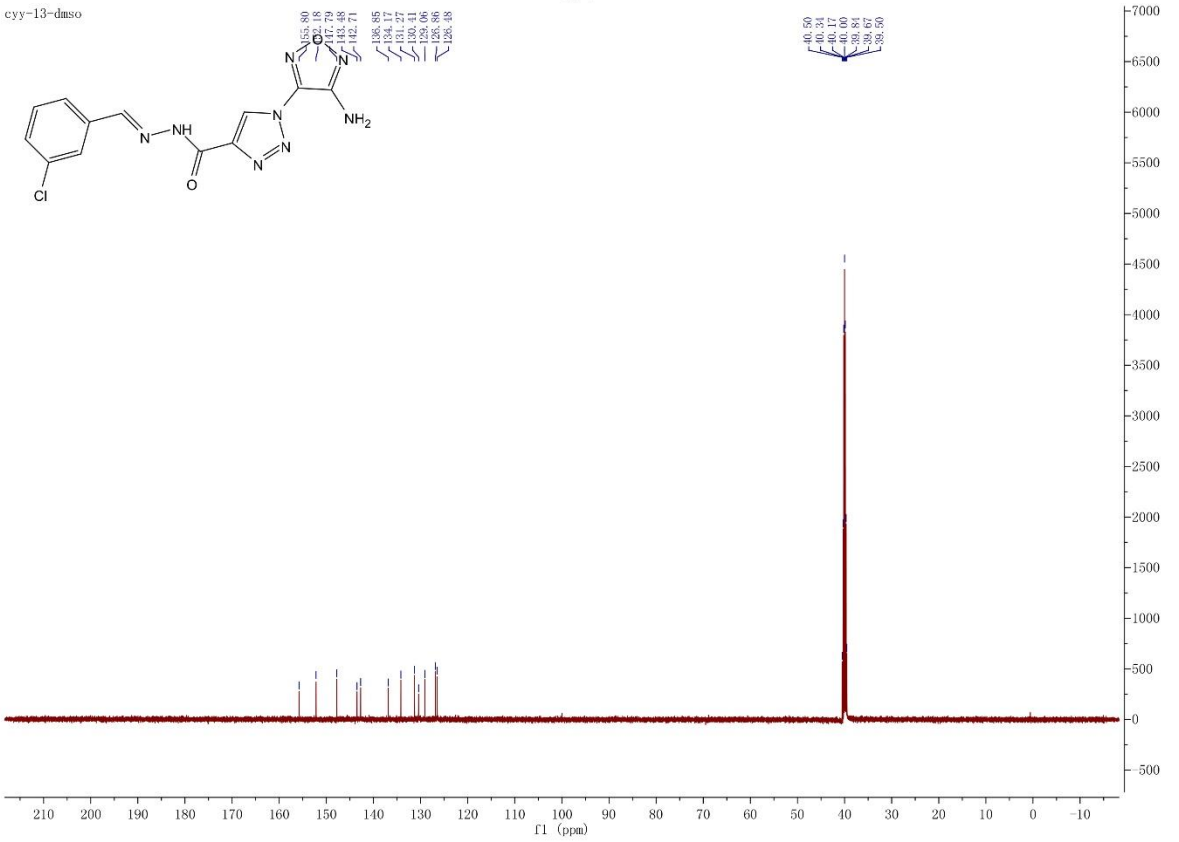
JYQ-13


cyy-14-dmso
12.28
9.39
8.57
7.72
7.70
7.44
7.42
6.73
5.31
5.30
5.29
4.56
4.55
3.35
2.51
0.00
HO
NH
NH2
O
0.86
0.78
0.80
1.90
1.87
1.92
1.00
2.00
f1 (ppm)

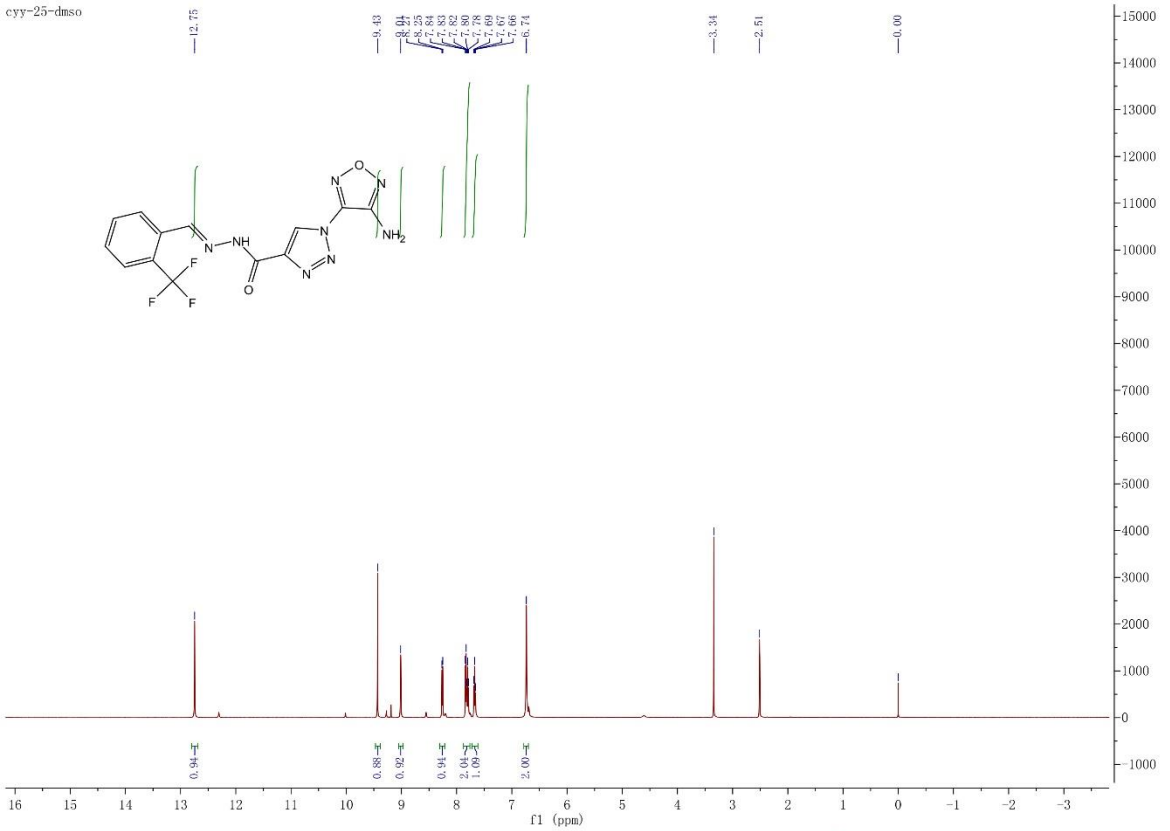

69-dmso
155.61
152.17
149.47
145.55
143.49
142.89
133.03
128.87
127.68
127.22
63.07
40.50
40.33
40.17
40.00
39.83
39.66
39.50
HO
NH
NH2
O
f1 (ppm)

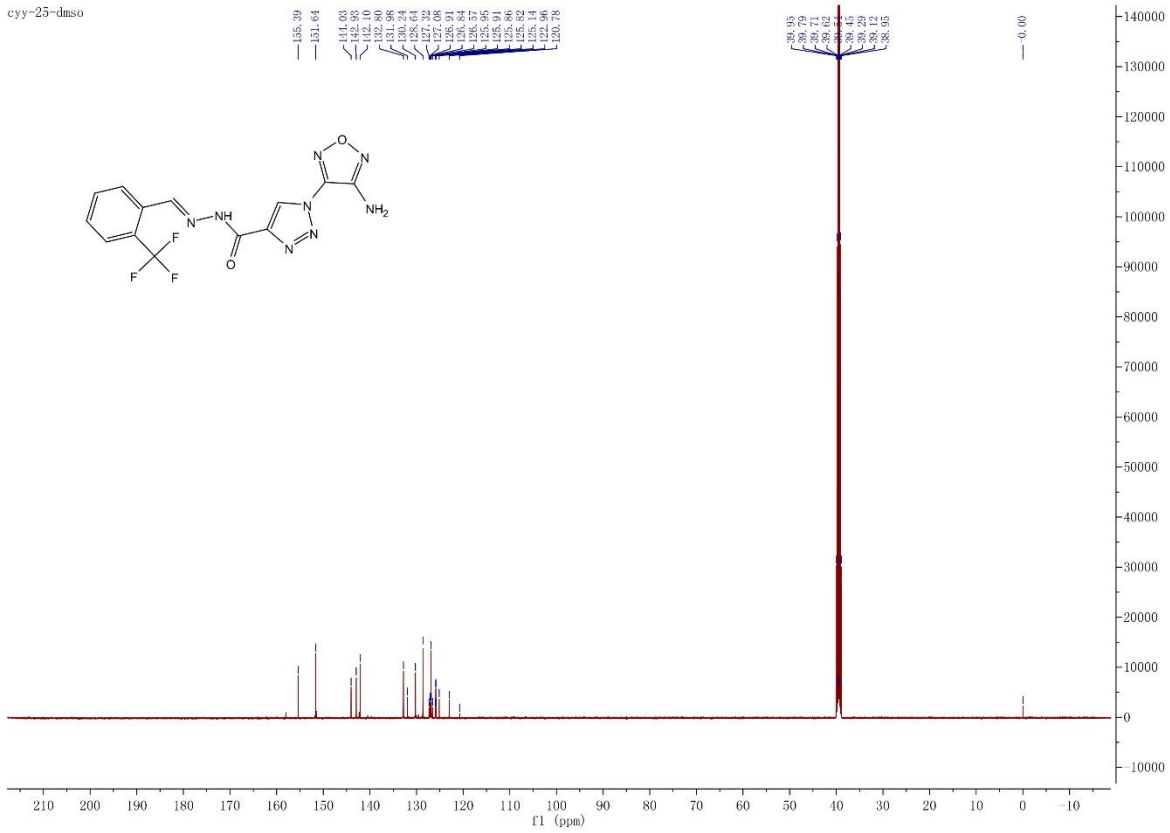
JYQ-14


cyy-13-dmso
12.46
9.42
8.57
7.80
7.71
7.70
7.52
7.51
7.50
6.73
3.35
2.51
0.00
0.80
0.80
0.80
0.86
0.91
1.73
2.00
f1 (ppm)

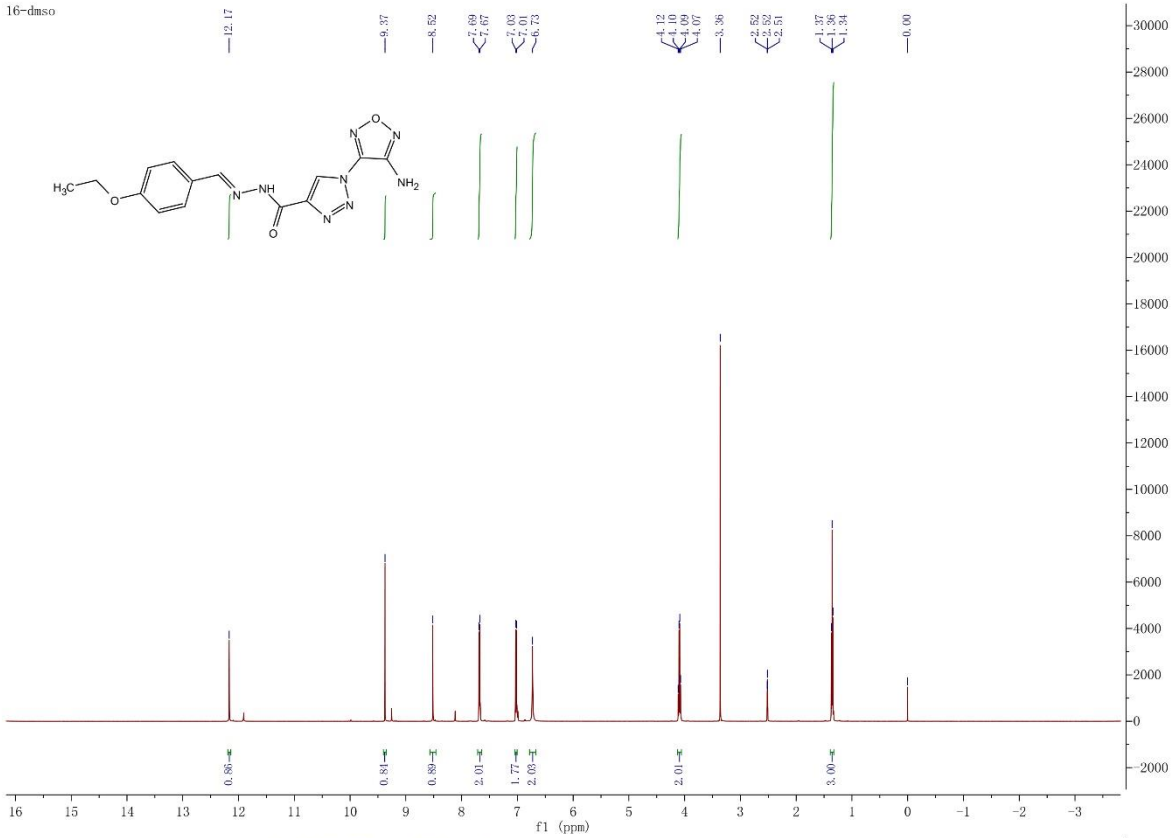

cyy-13-dmso
155.80
148.18
147.79
143.48
142.71
136.85
134.17
131.27
130.41
129.06
126.86
126.48
40.50
40.34
40.17
40.00
39.84
39.67
39.50
f1 (ppm)

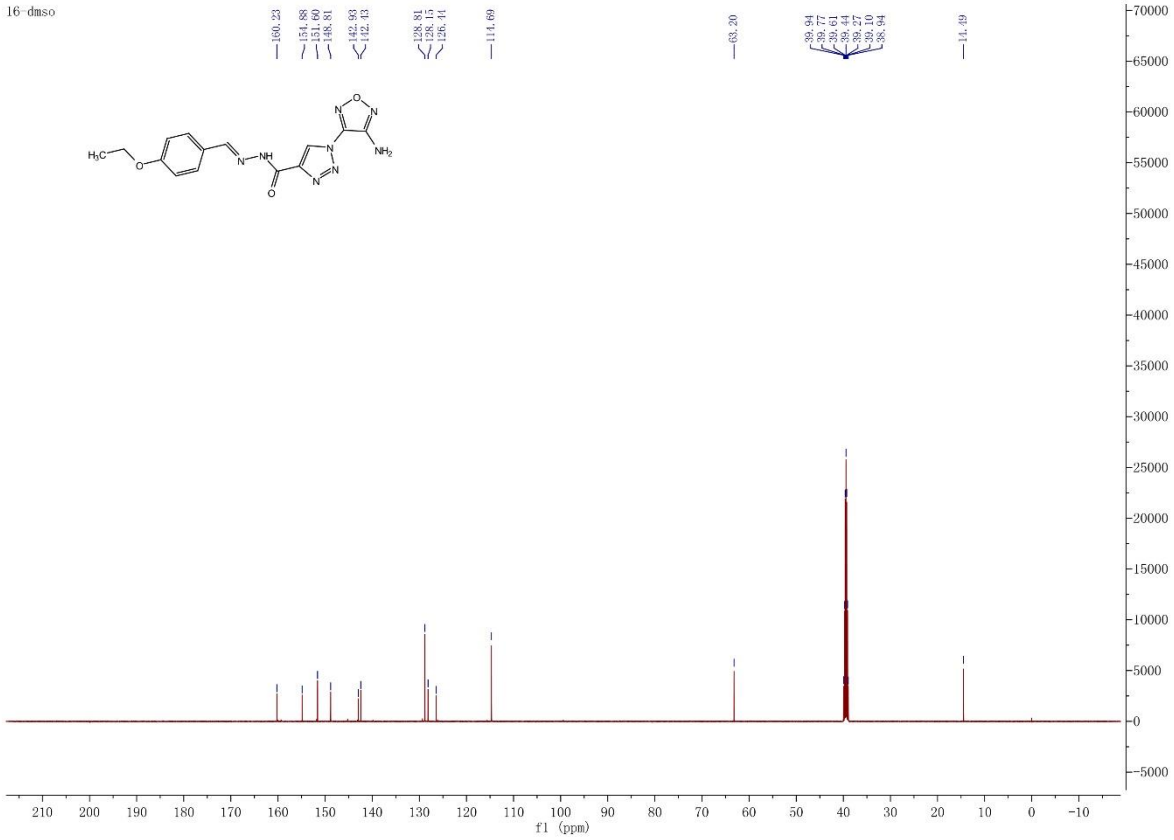
JYQ-15


cyy-25-dmso
12.75
9.43
8.41
8.25
7.84
7.83
7.80
7.78
7.69
7.67
7.66
6.74
3.34
2.51
0.00
0.94
0.88
0.92
0.94
2.04
1.09
2.00
f1 (ppm)

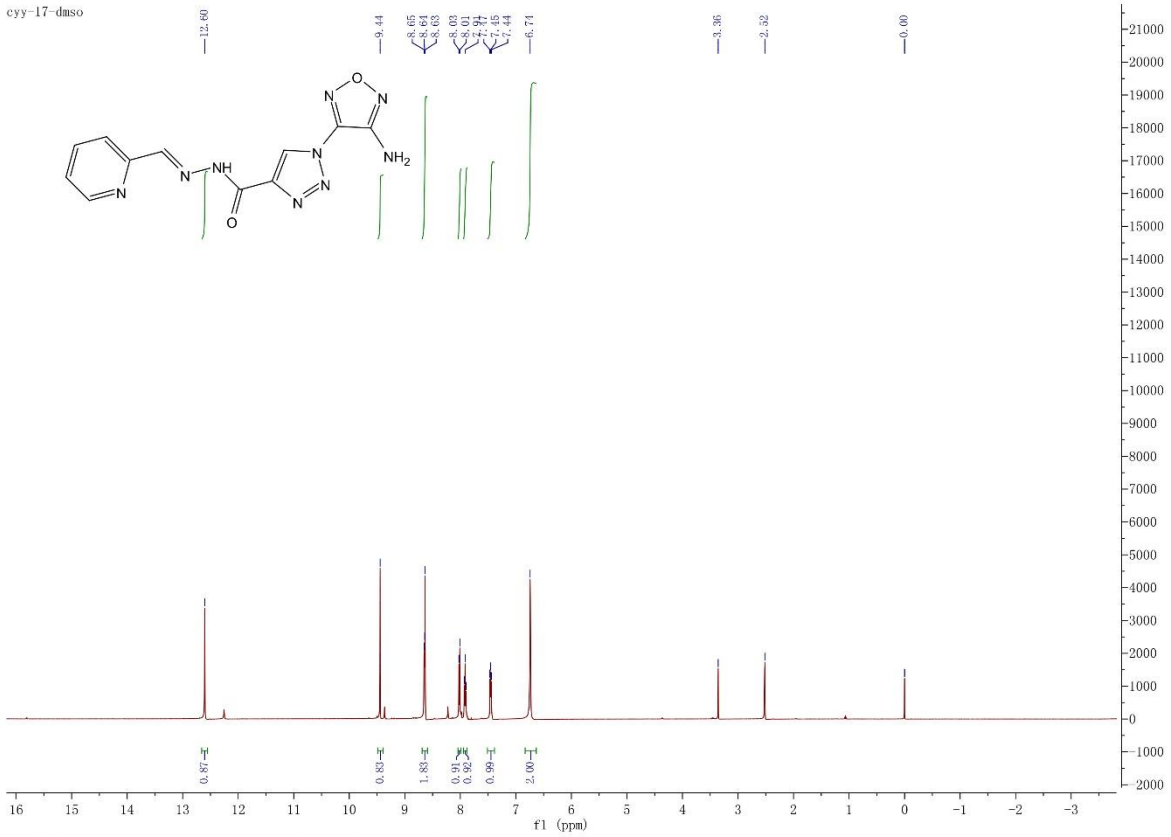

cyy-25-dmso
155.39
151.64
141.03
142.93
142.10
132.80
131.98
130.24
129.64
127.32
127.08
126.91
126.84
126.57
125.95
125.91
125.86
125.82
125.14
122.96
120.78
39.95
39.79
39.71
39.62
39.45
39.29
39.12
38.95
0.00
f1 (ppm)

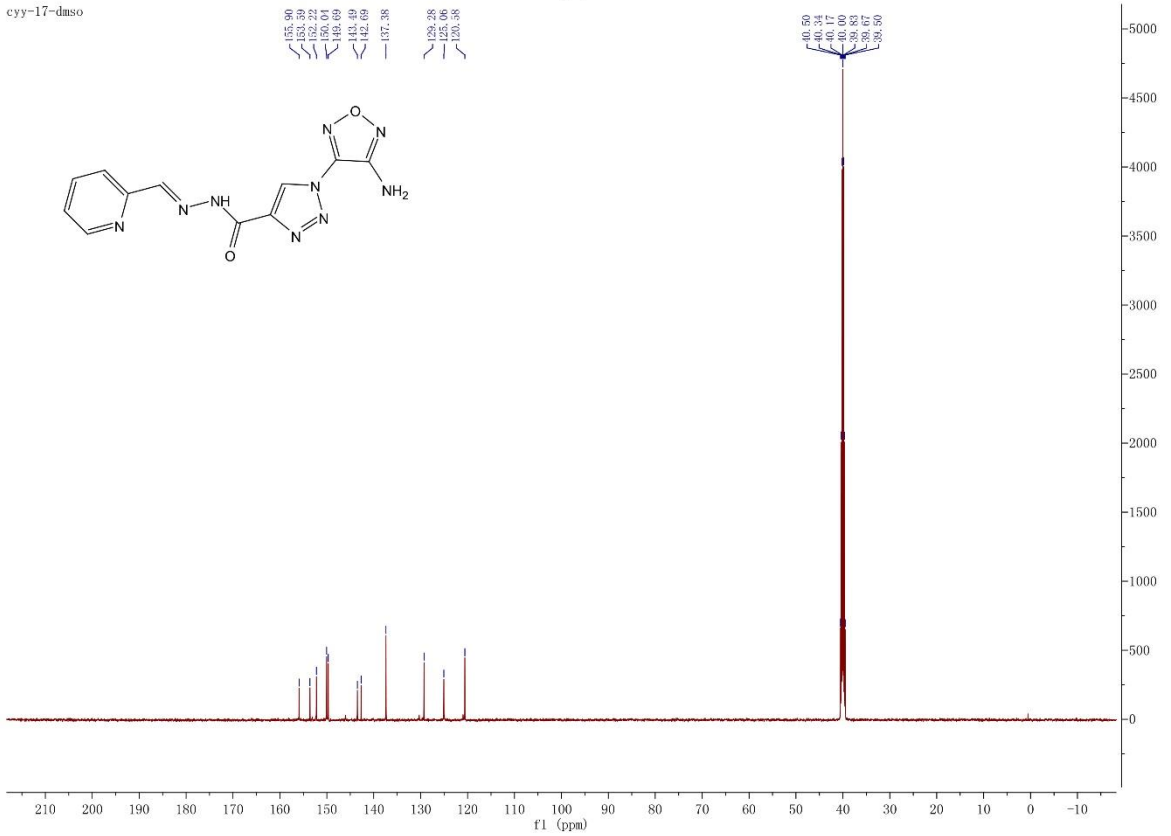
JYQ-16


16-dmso
12.17
9.37
8.52
7.69
7.67
7.03
7.01
6.73
4.12
4.10
4.09
4.07
3.36
2.52
2.52
2.51
1.37
1.36
1.34
0.00
0.86
0.84
0.89
2.01
1.77
2.03
2.01
3.00
f1 (ppm)

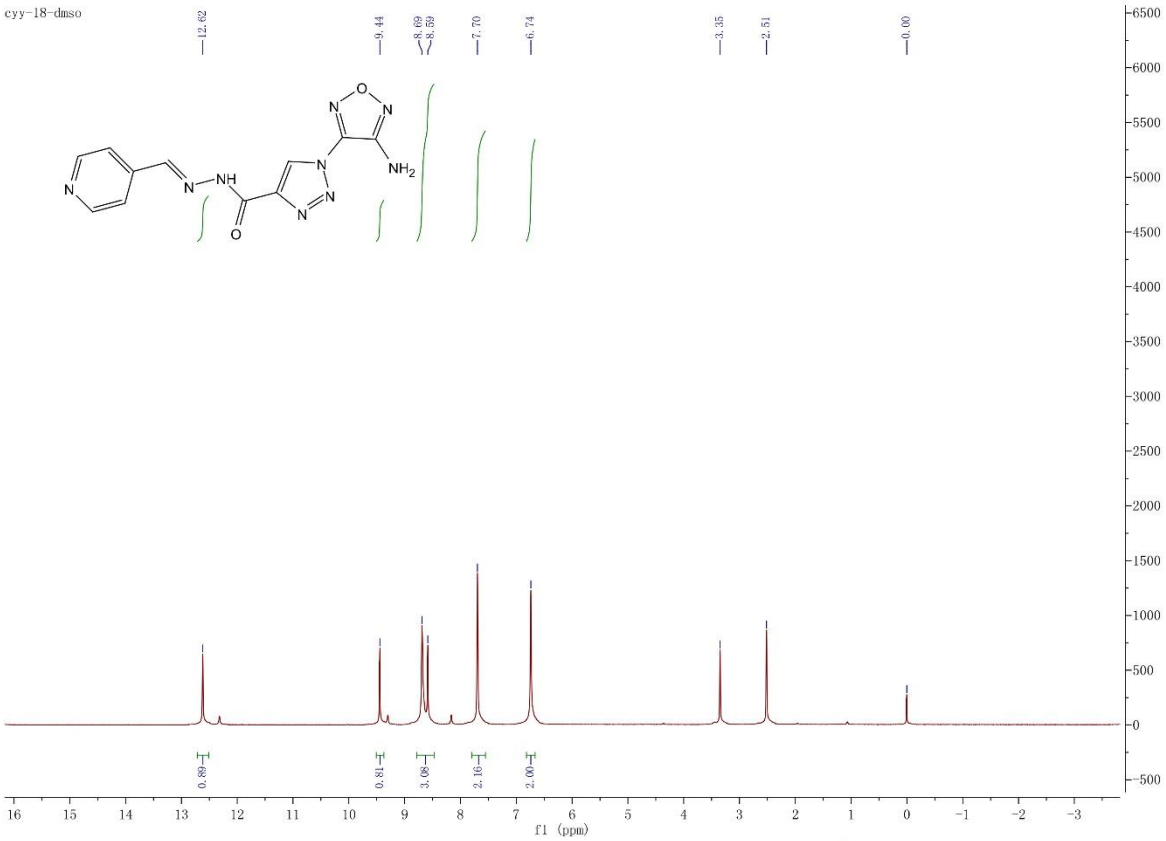

16-dmso
160.23
154.88
151.60
148.81
142.93
142.43
128.81
128.15
126.74
114.69
63.20
39.94
39.77
39.61
39.44
39.27
39.10
38.94
14.49
f1 (ppm)

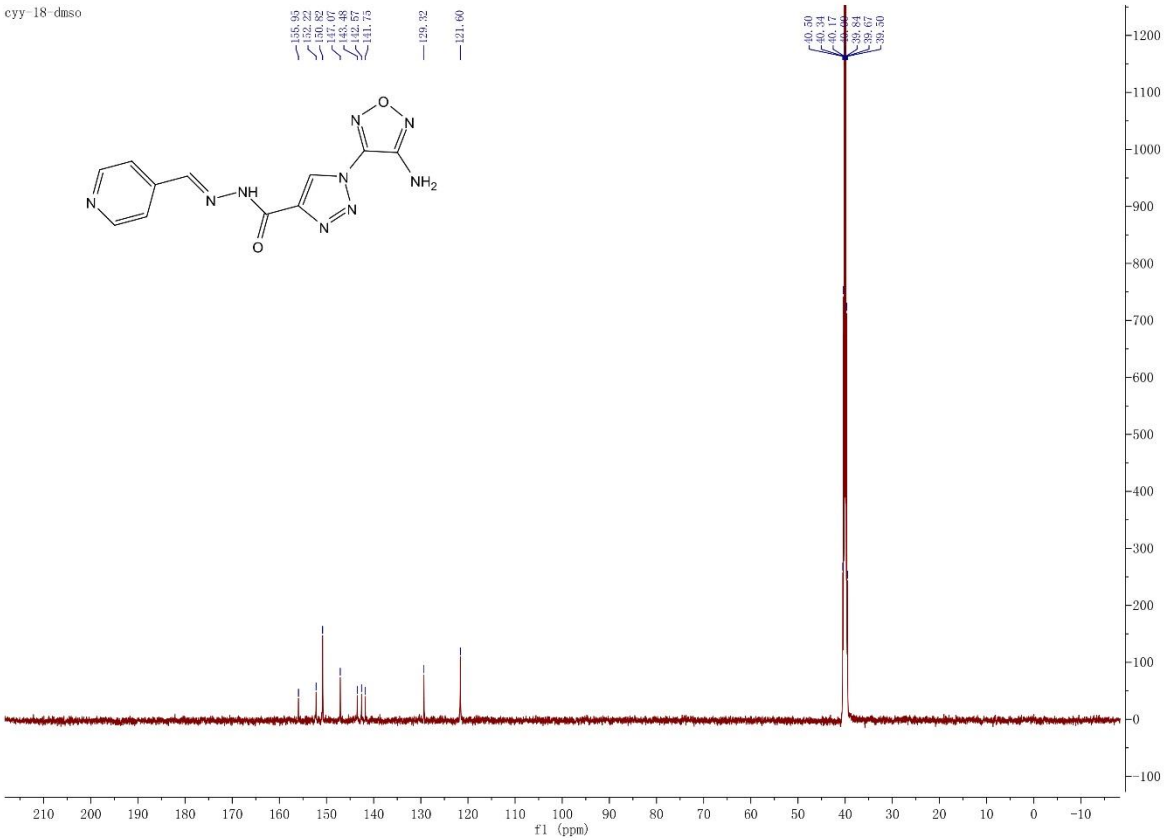
JYQ-17


cyy-17-dmso
12.80
9.44
8.65
8.64
8.63
8.03
8.01
7.47
7.45
7.44
6.71
3.36
2.52
0.00
0.87
0.83
1.83
0.91
0.92
0.99
2.00
f1 (ppm)

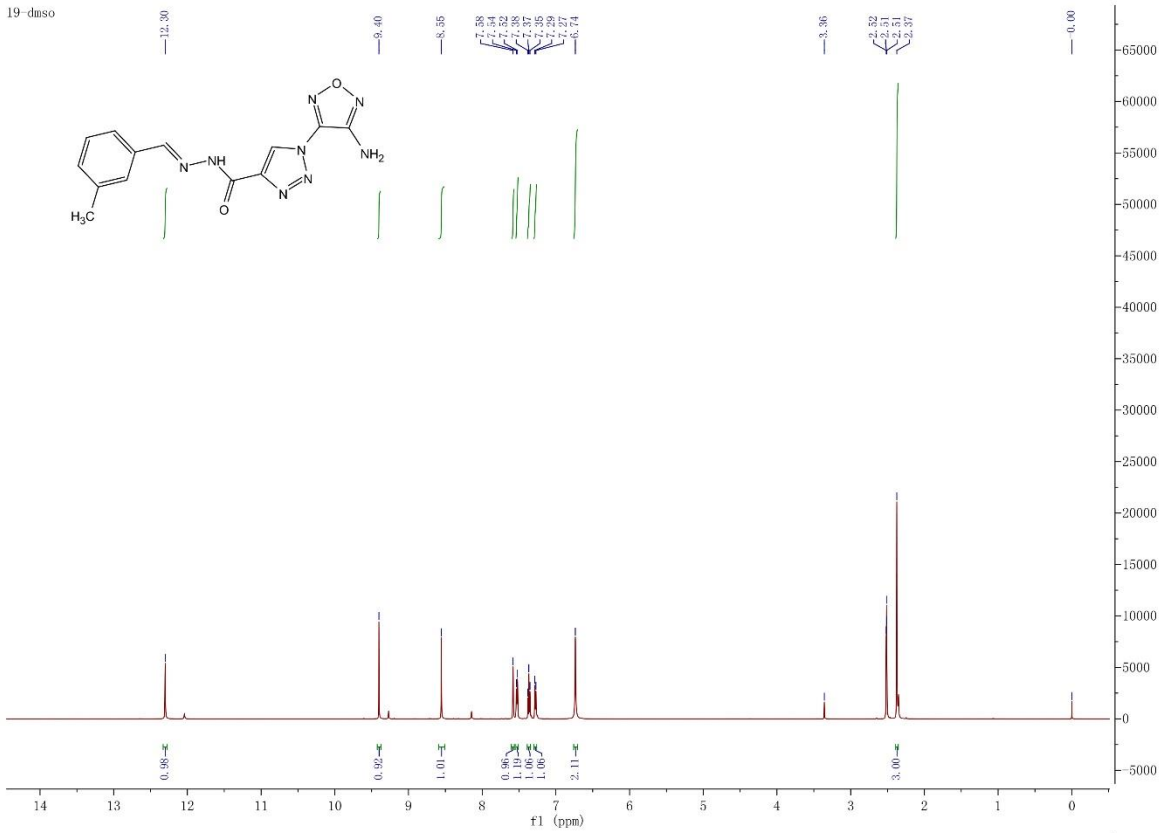

cyy-17-dmso
155.90
153.59
152.22
150.04
148.69
143.49
142.69
137.38
129.28
125.06
120.38
40.50
40.34
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

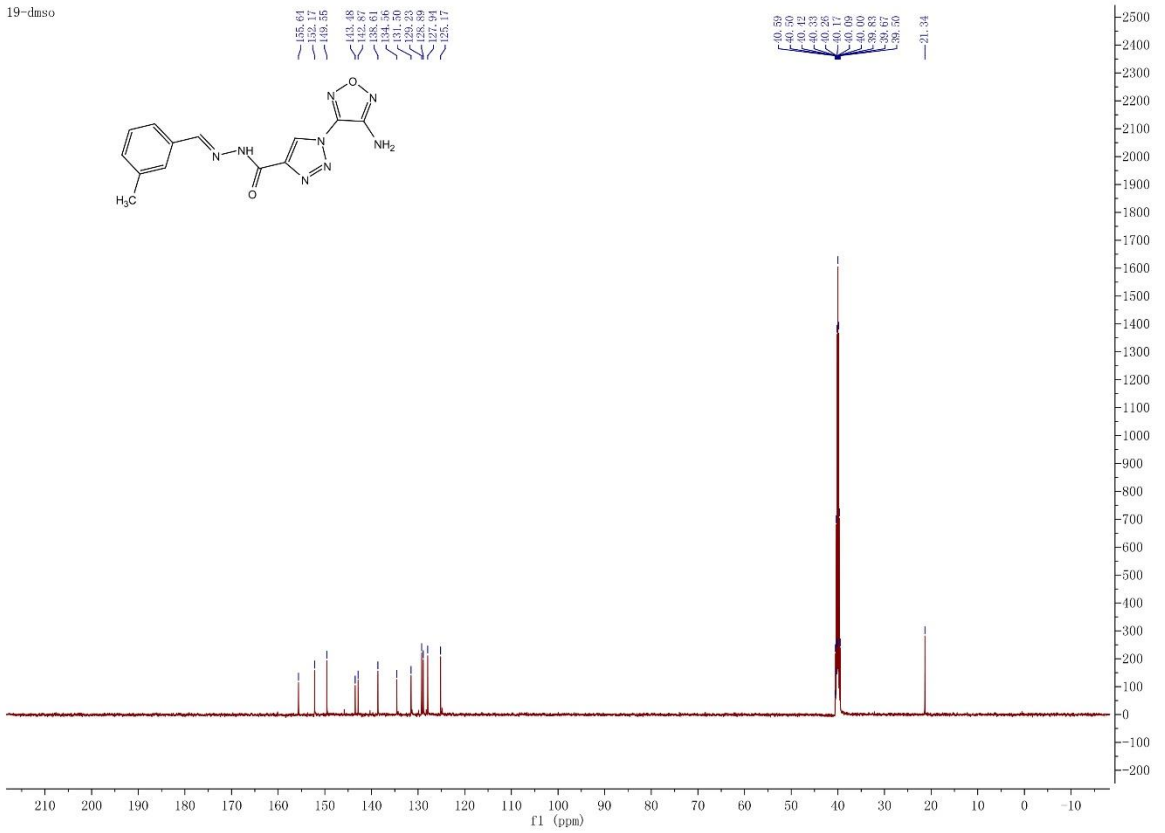
JYQ-18


cyy-18-dmso
12.62
9.44
8.69
8.59
7.70
6.74
3.35
2.51
0.00
0.89
0.81
3.08
2.16
2.00
f1 (ppm)

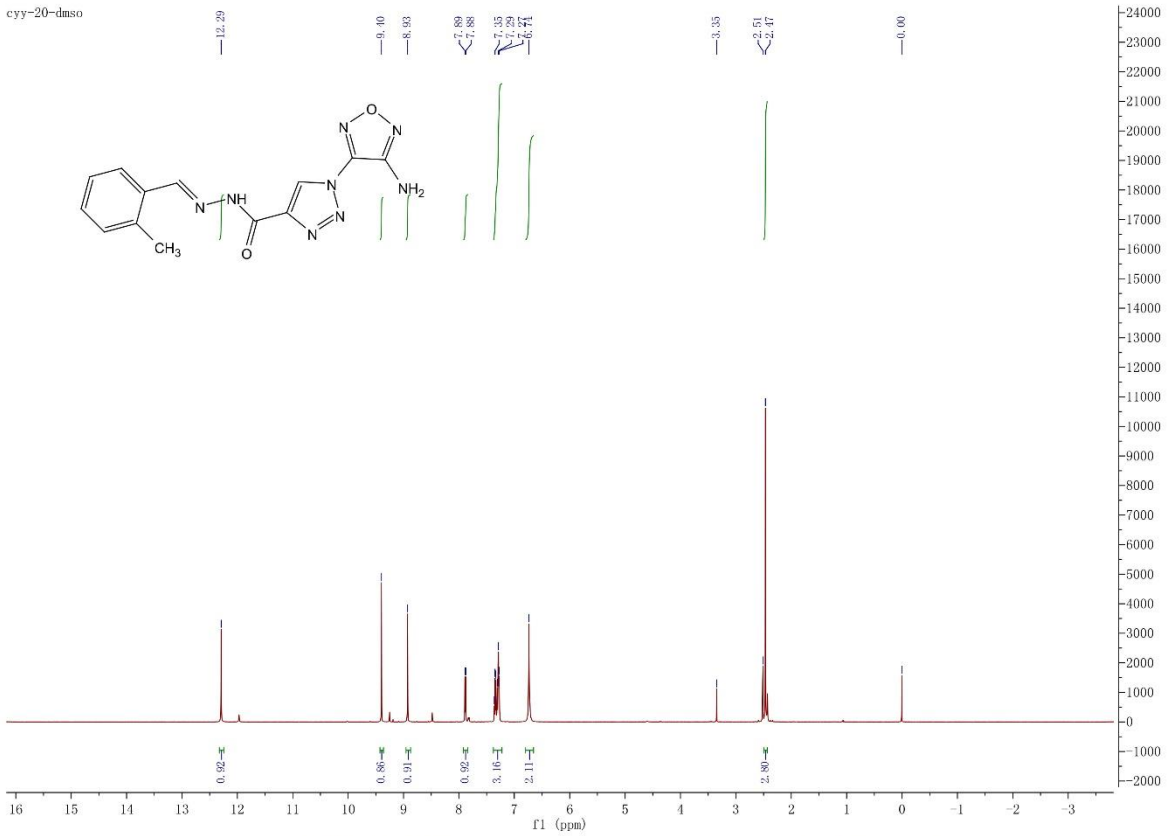

cyy-18-dmso
155.95
152.22
150.82
147.07
143.48
142.57
141.75
129.32
121.60
40.50
40.34
40.17
39.84
39.67
39.50
f1 (ppm)

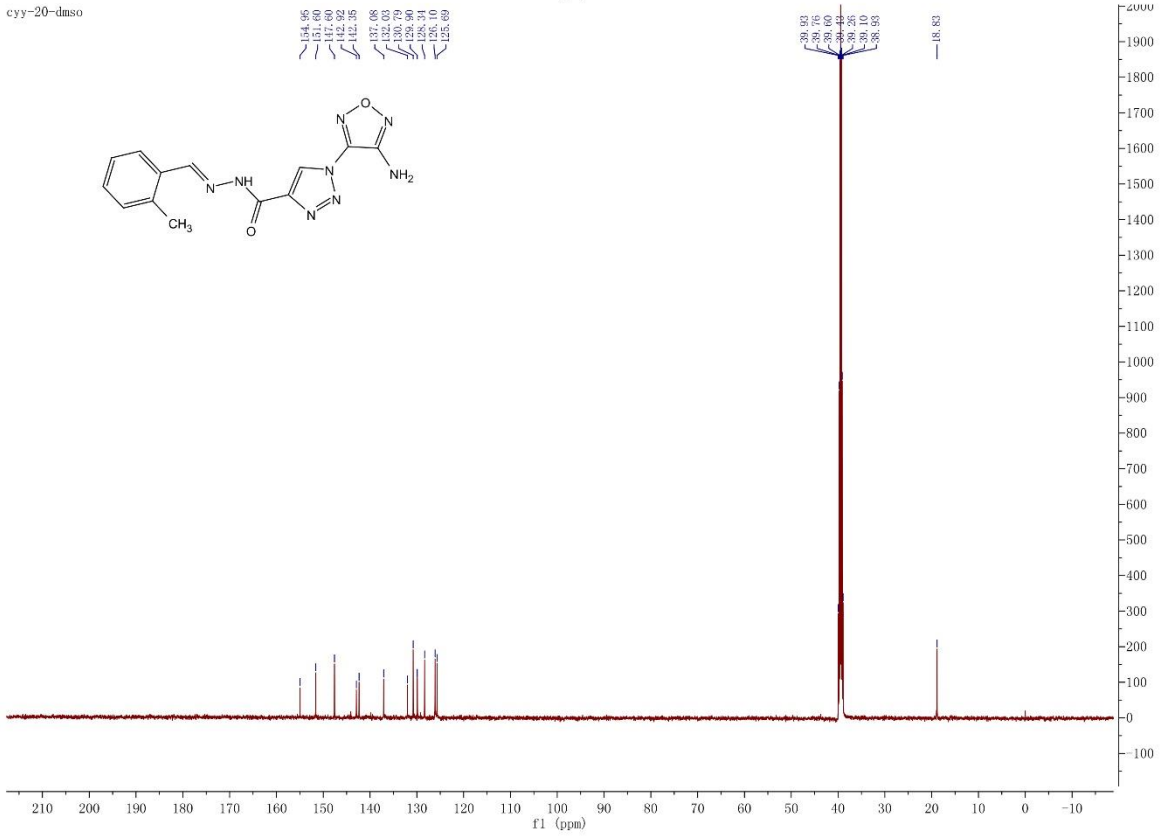
JYQ-19


19-dmso
12.30
9.40
8.55
7.58
7.54
7.52
7.38
7.37
7.35
7.29
7.27
6.74
3.36
2.52
2.51
2.51
2.37
0.00
0.98
0.92
1.01
0.96
1.19
1.06
1.06
2.11
3.00
f1 (ppm)

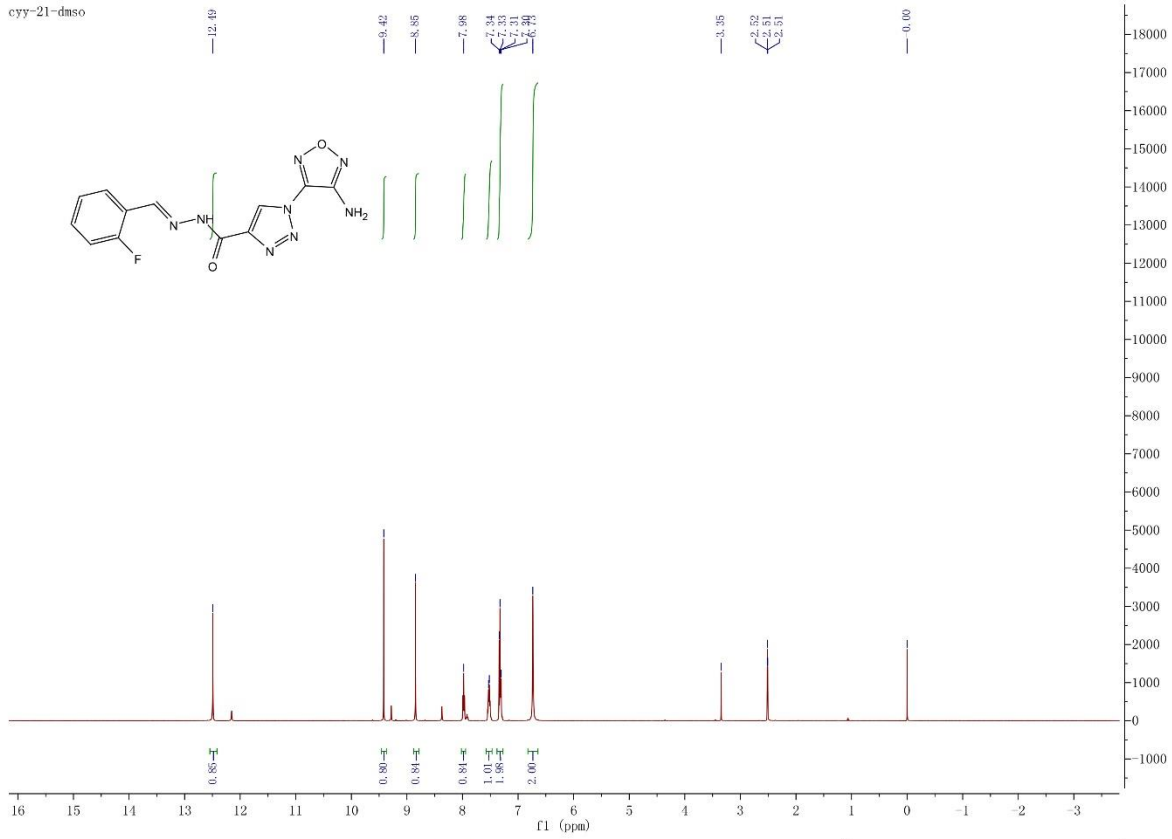

19-dmso
155.64
152.17
149.35
143.48
142.87
138.61
134.56
131.50
129.23
128.99
127.94
125.17
40.59
40.50
40.42
40.33
40.25
40.17
40.09
40.00
39.83
39.67
39.50
21.34
f1 (ppm)

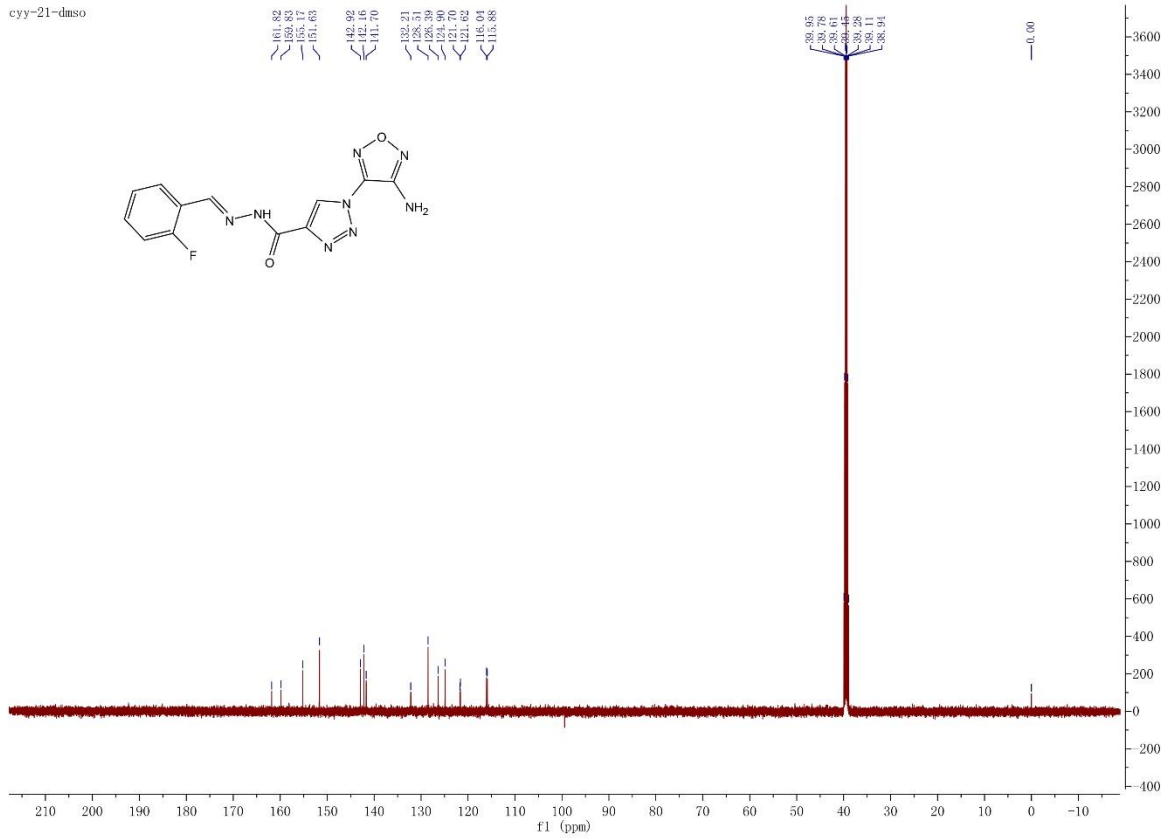
JYQ-20


cyy-20-dmso
12.29
9.40
8.93
7.89
7.88
7.35
7.29
7.27
6.71
3.35
2.51
2.47
0.00
0.92
0.86
0.91
0.92
3.16
2.11
2.80
f1 (ppm)

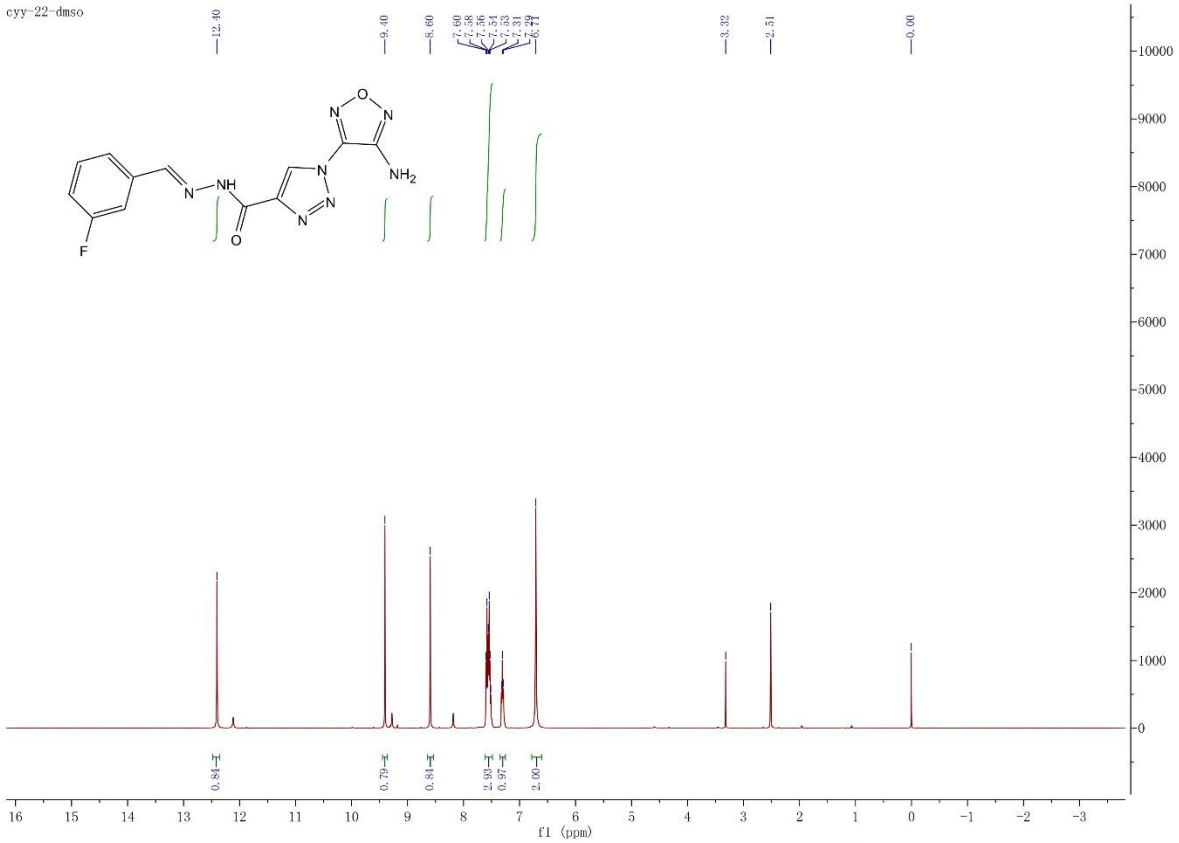

cyy-20-dmso
154.95
151.60
147.69
142.92
142.35
137.08
132.03
130.79
129.90
128.34
126.10
125.69
39.93
39.76
39.60
39.43
39.25
39.10
38.93
18.83
f1 (ppm)

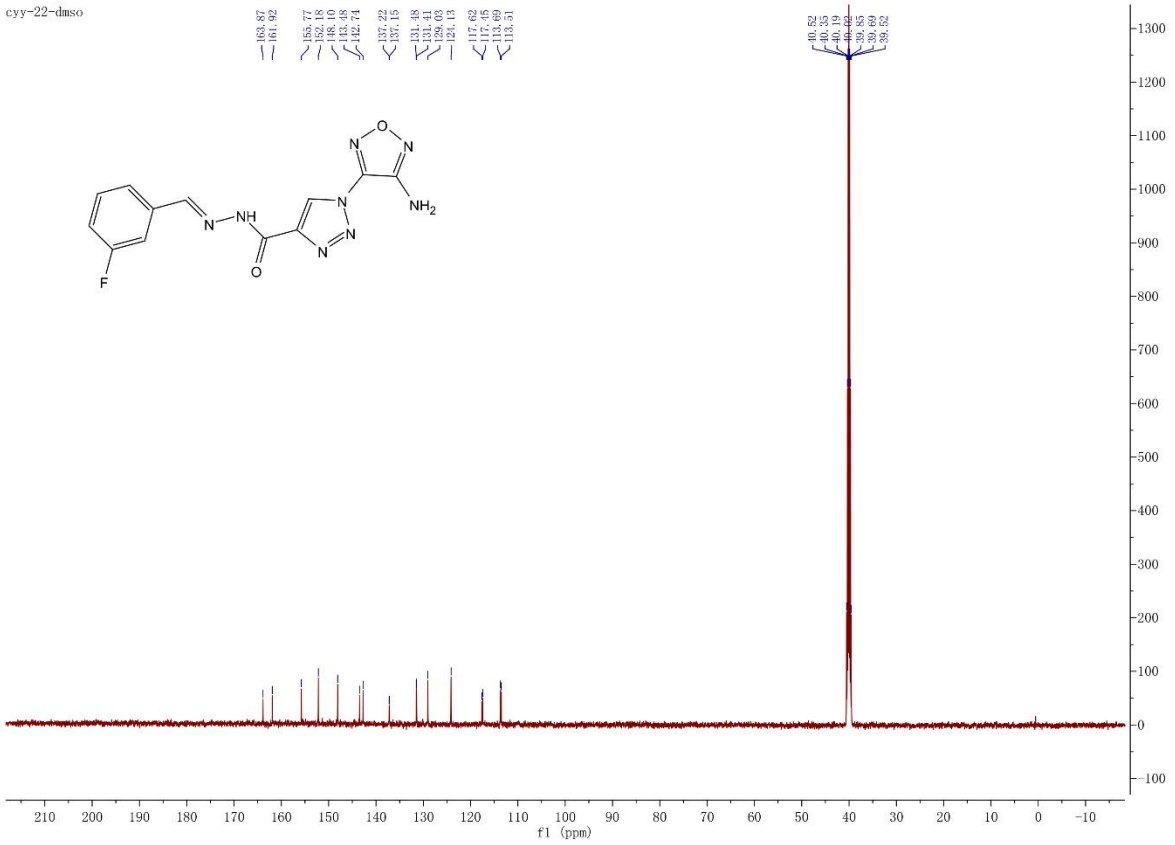
JYQ-21


cyy-21-dmso
12.49
9.42
8.85
7.98
7.34
7.33
7.31
7.30
6.99
3.35
2.52
2.51
2.51
0.00
0.85
0.80
0.84
0.84
1.01
1.98
2.00
f1 (ppm)

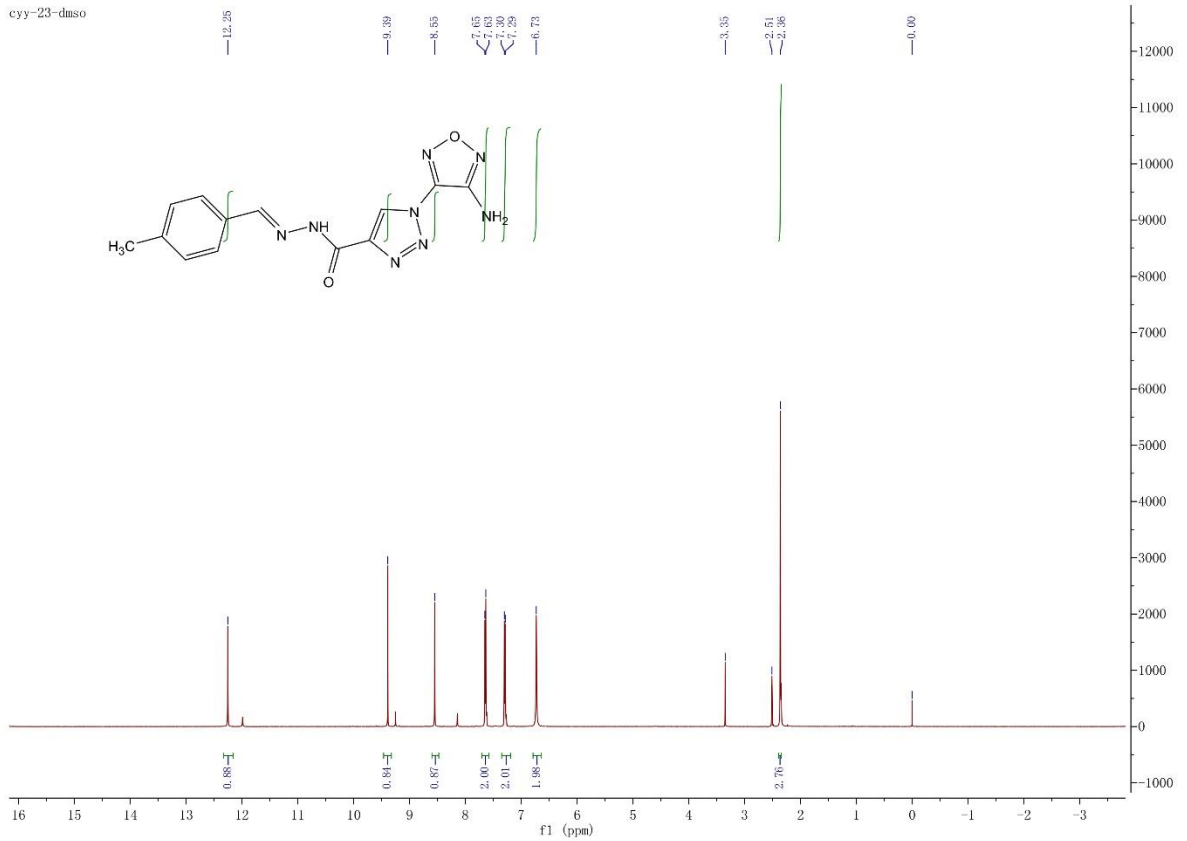

cyy-21-dmso
161.82
159.63
155.17
151.63
142.92
142.16
141.70
132.21
128.51
126.39
124.90
121.70
121.62
116.04
115.88
39.95
39.78
39.61
39.44
39.28
39.11
38.94
0.00
f1 (ppm)

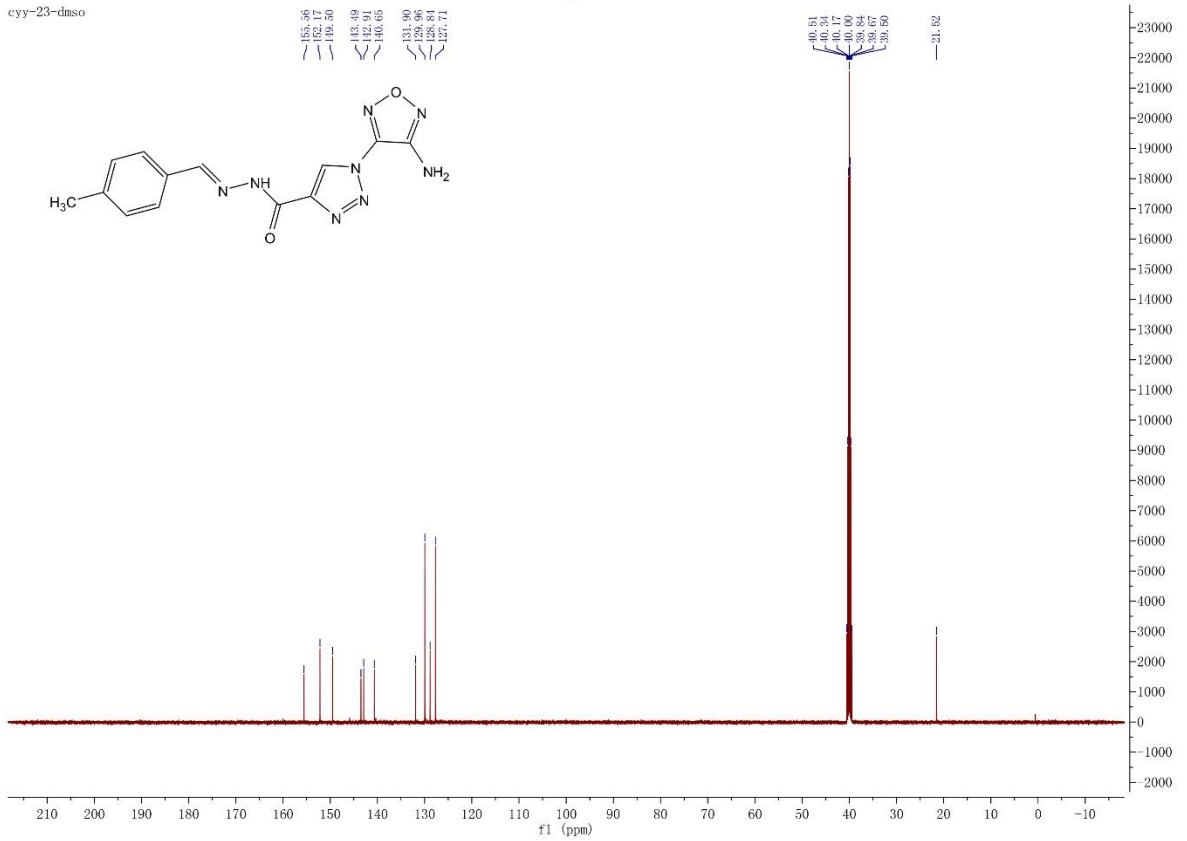
JYQ-22


cyy-22-dmso
12.40
9.40
8.60
7.60
7.58
7.56
7.54
7.53
7.31
7.29
6.71
3.32
2.51
0.00
0.84
0.79
0.84
2.93
0.97
2.00
f1 (ppm)

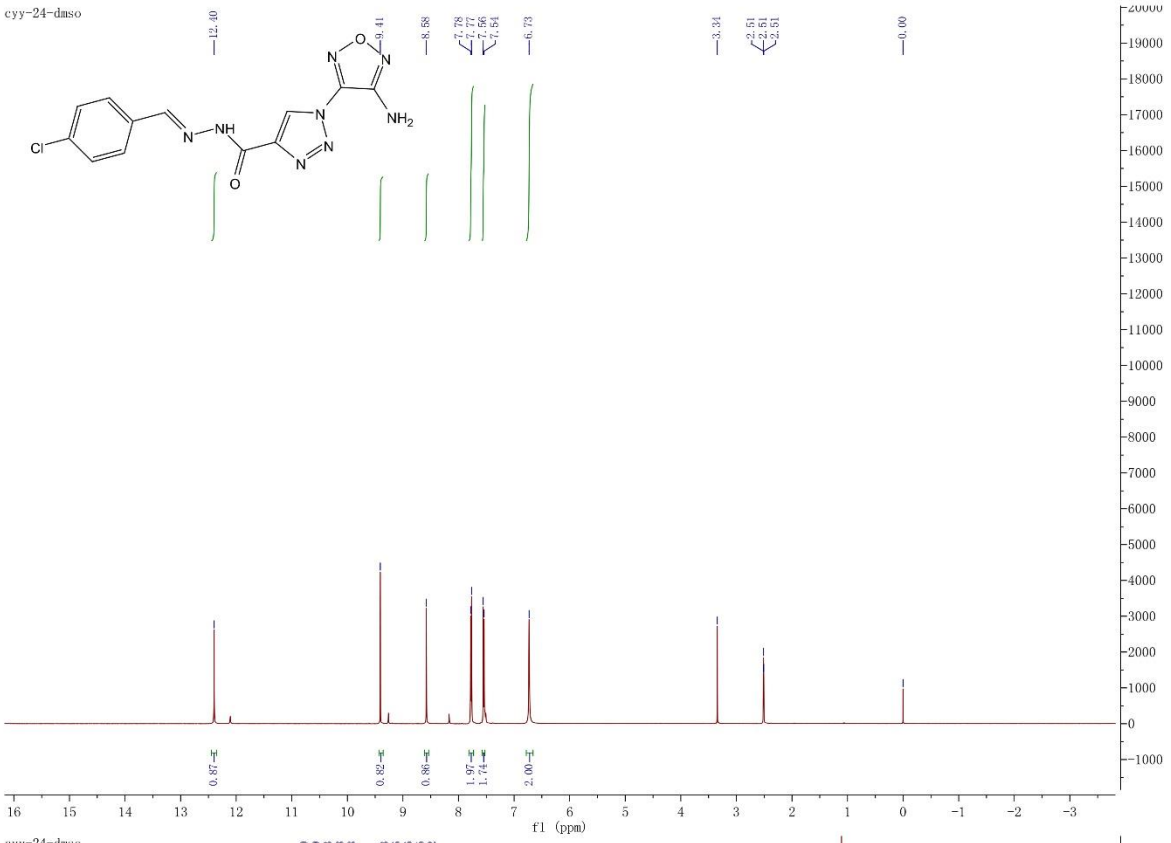

cyy-22-dmso
163.87
161.92
155.77
152.18
148.10
143.48
142.74
137.22
137.15
131.48
131.41
130.05
121.13
117.62
117.45
113.69
113.51
40.52
40.35
40.19
40.02
39.85
39.69
39.52
f1 (ppm)

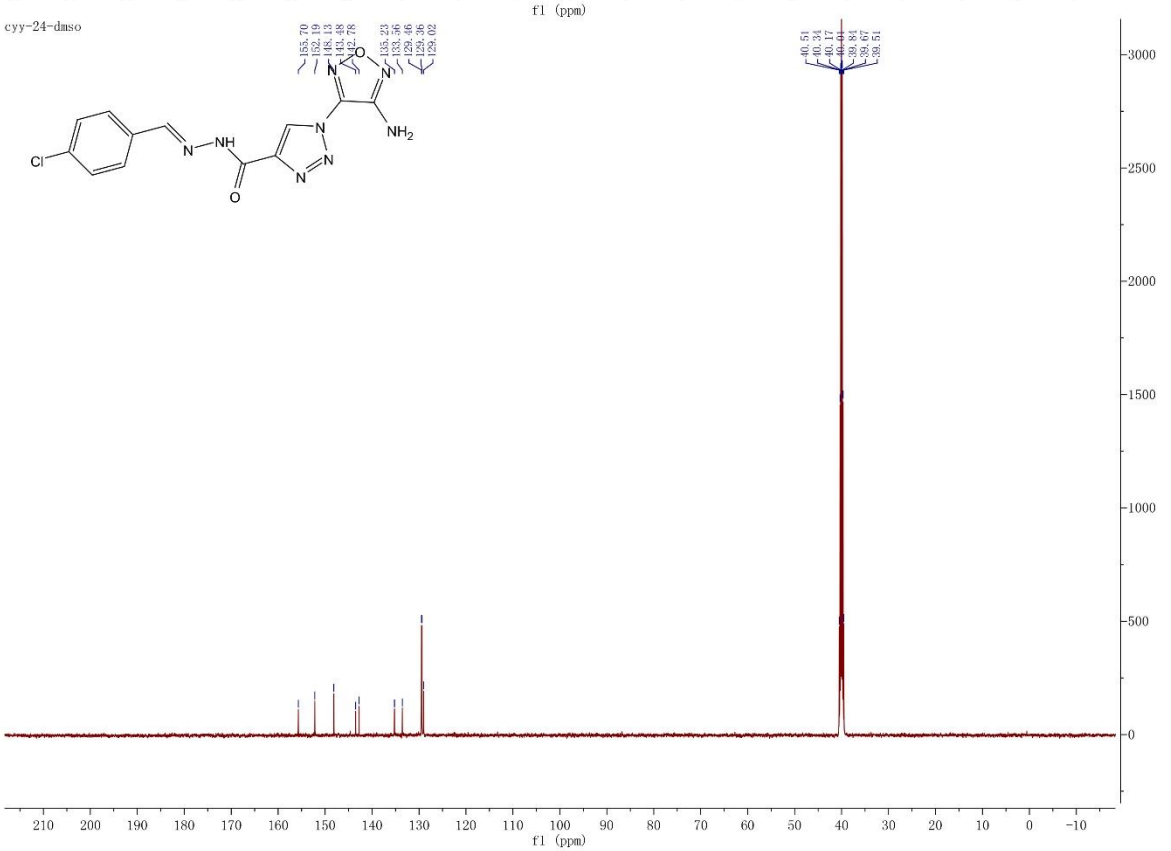
JYQ-23


cyy-23-dmso
12.25
9.39
8.55
7.65
7.63
7.30
7.29
6.73
3.35
2.51
2.36
0.00
0.88
0.84
0.87
2.00
2.01
1.98
2.76
f1 (ppm)

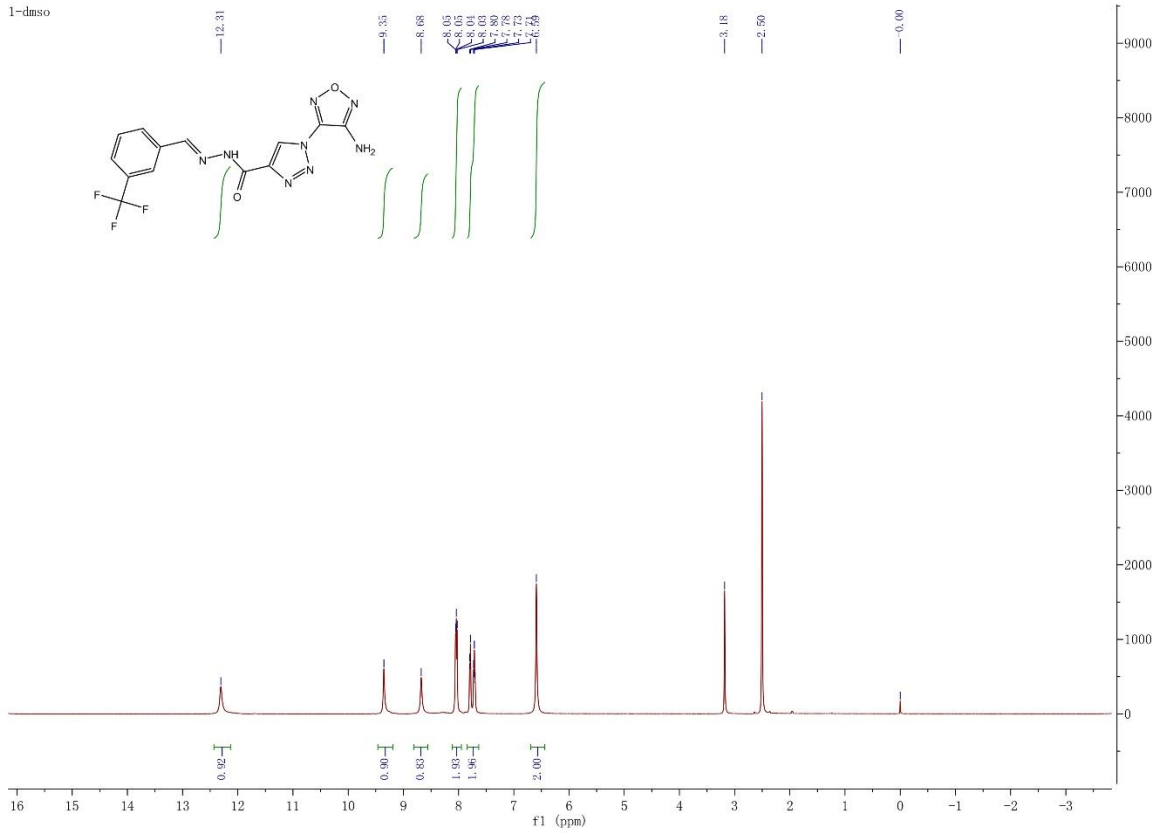

cyy-23-dmso
155.56
152.17
149.50
143.49
142.91
140.65
131.90
129.96
128.84
127.71
40.51
40.34
40.17
40.00
39.84
39.67
39.50
21.52
f1 (ppm)

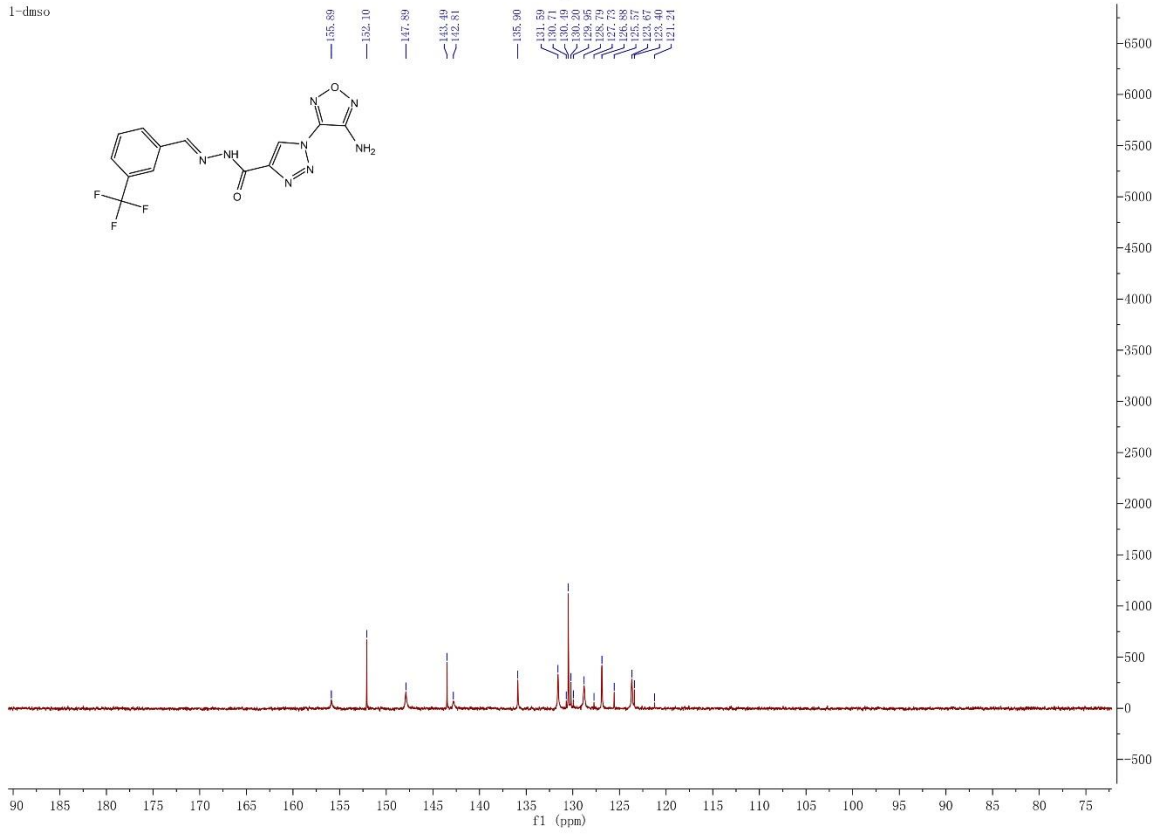
JYQ-24


cyy-24-dmso
12.40
9.41
8.88
7.78
7.77
7.56
7.54
6.73
3.34
2.51
2.51
2.51
0.00
0.87
0.82
0.86
1.97
1.74
2.00
f1 (ppm)

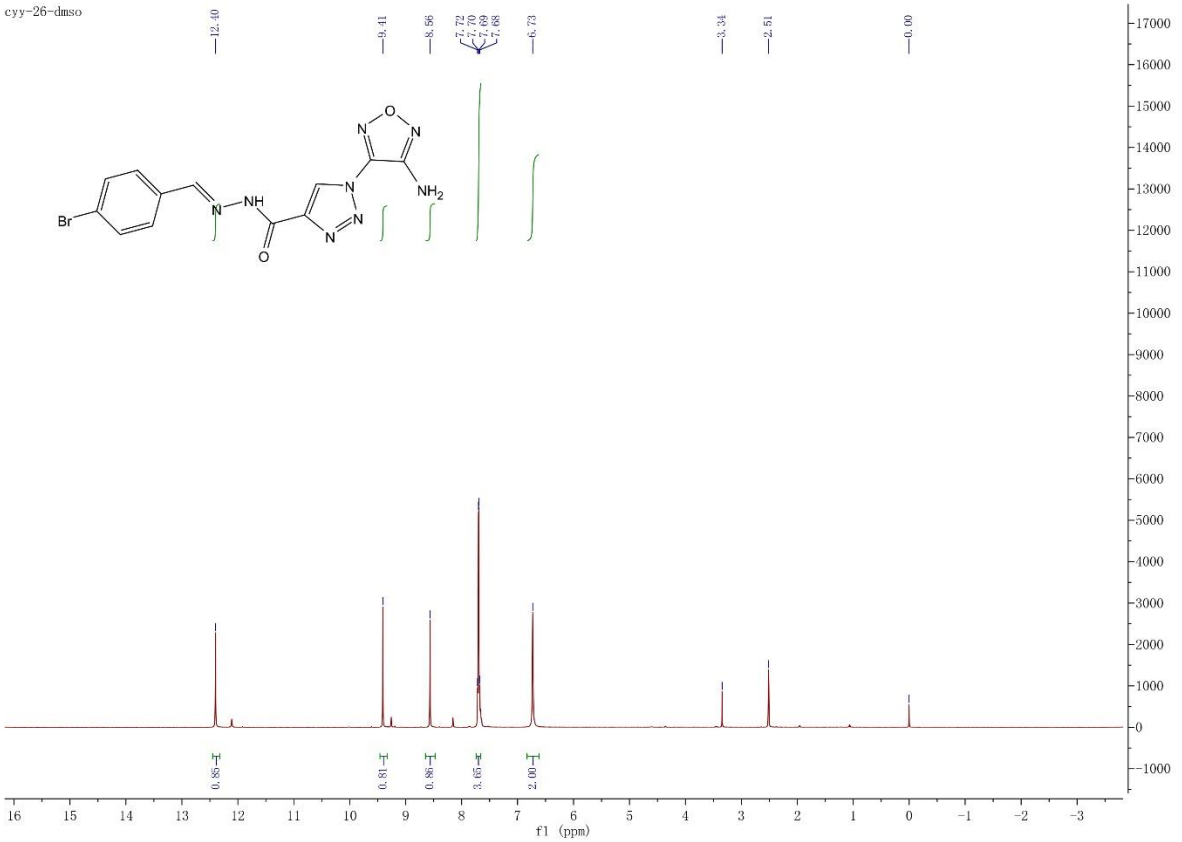

cyy-24-dmso
155.70
152.19
148.13
143.48
142.78
135.23
133.56
129.46
129.36
129.02
40.51
40.34
40.17
40.01
39.84
39.67
39.51
f1 (ppm)

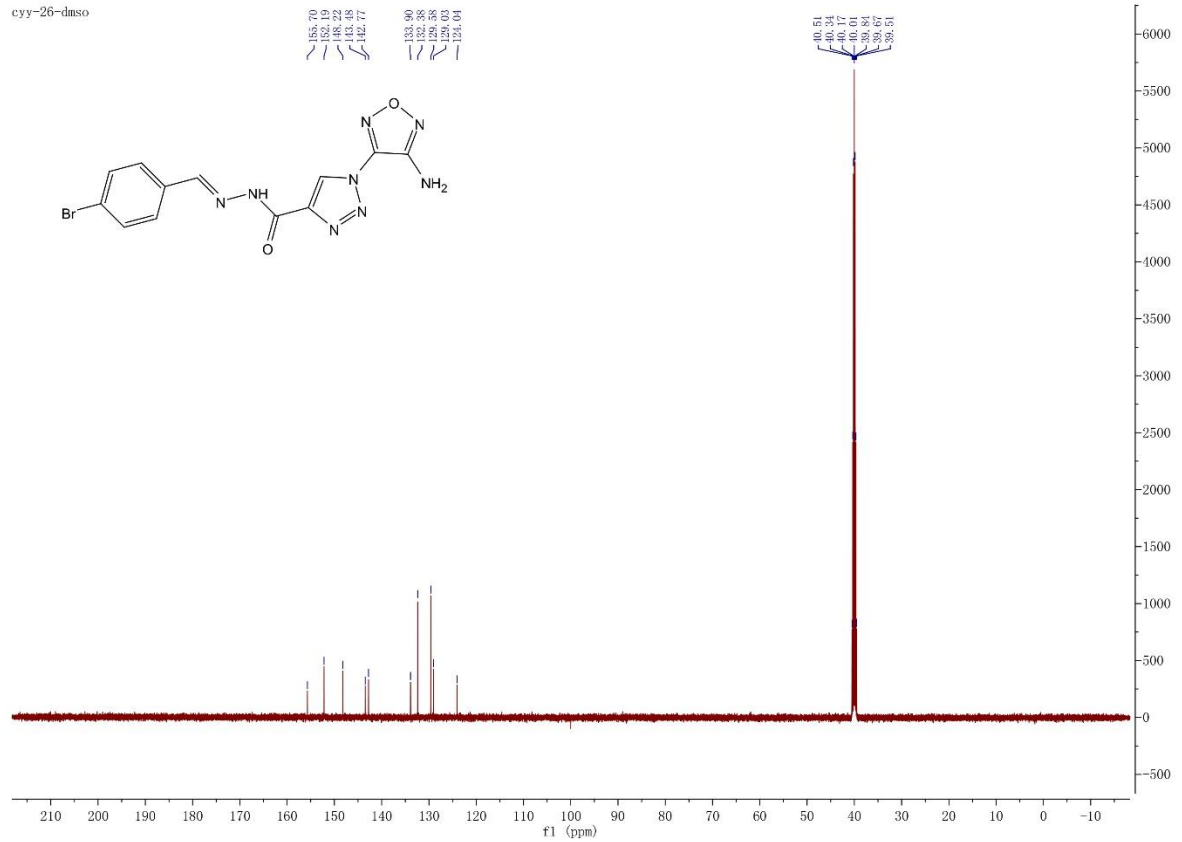
JYQ-25


1-dmso
12.31
9.35
8.68
8.05
8.01
8.01
8.03
7.80
7.78
7.73
7.73
6.69
3.18
2.50
0.00
0.92
0.90
0.83
1.93
1.96
2.00
f1 (ppm)

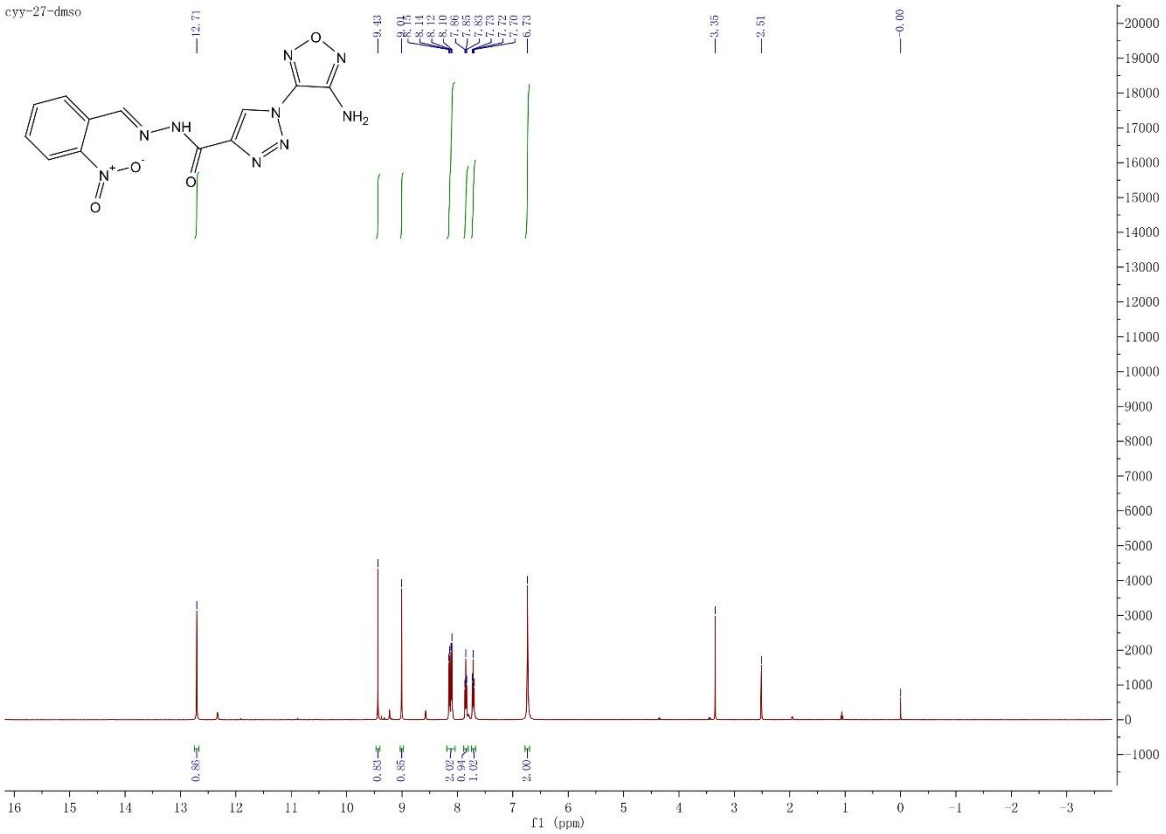

1-dmso
155.89
152.10
147.89
143.49
142.81
135.90
131.59
130.71
130.49
130.20
129.95
128.79
127.73
126.88
125.57
123.67
123.40
121.24
f1 (ppm)

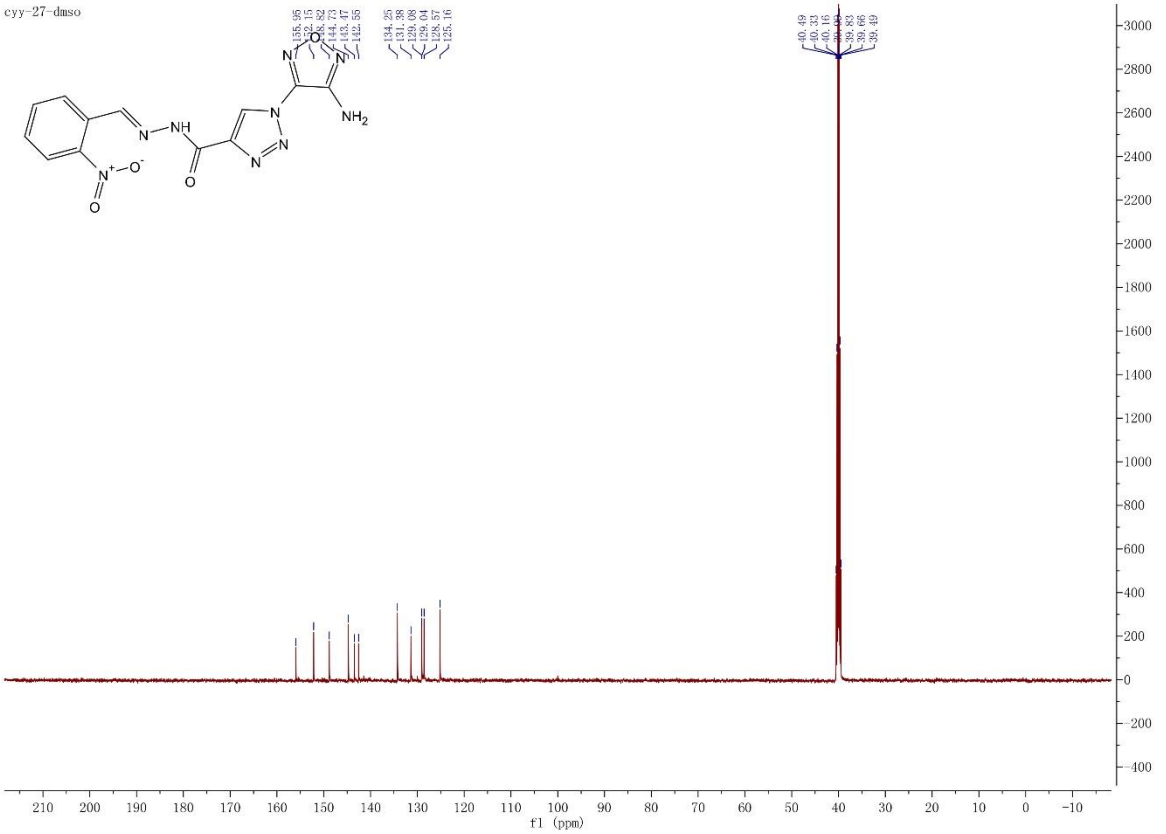
JYQ-26


cyy-26-dmso
12.40
9.41
8.56
7.72
7.70
7.69
7.68
6.73
3.34
2.51
0.00
0.88
0.81
0.86
3.65
2.00
f1 (ppm)

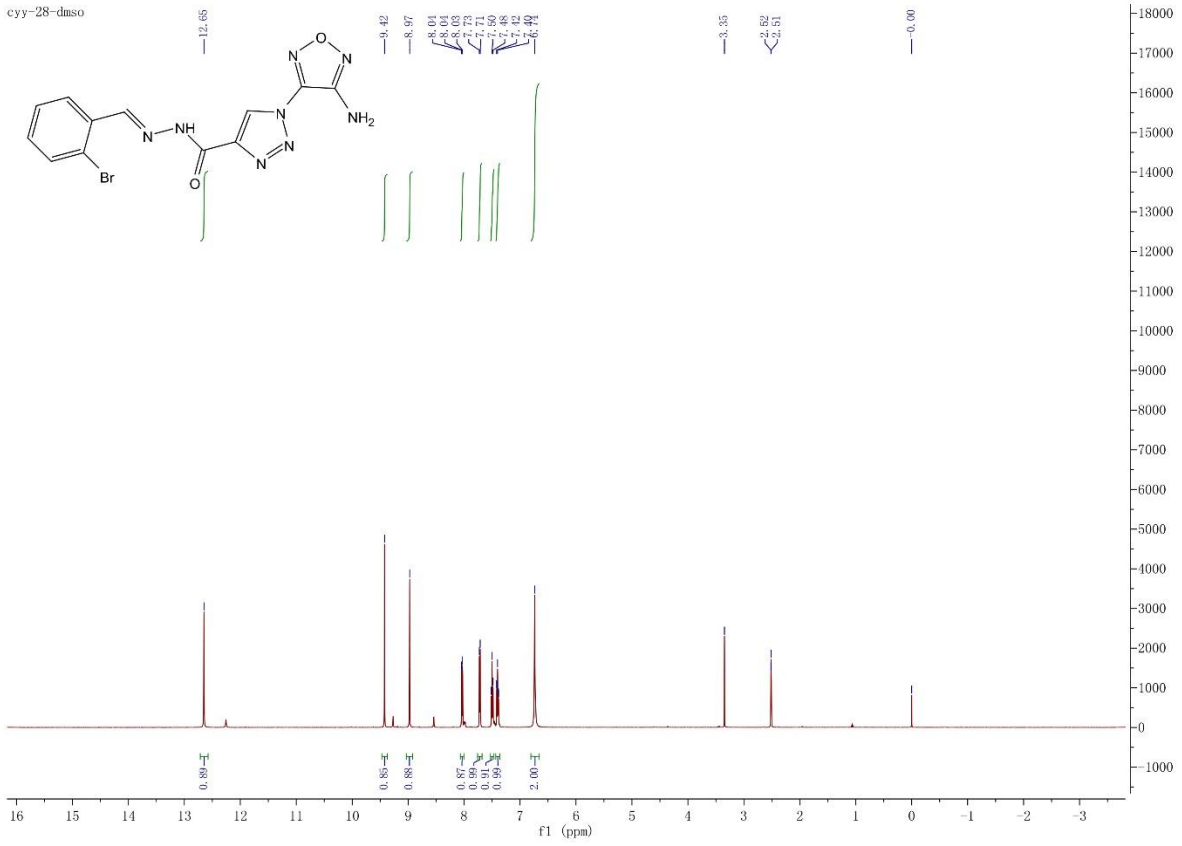

cyy-26-dmso
155.70
152.19
148.22
143.48
142.77
133.90
132.38
129.58
129.03
124.04
40.51
40.34
40.17
40.01
39.84
39.67
39.51
f1 (ppm)

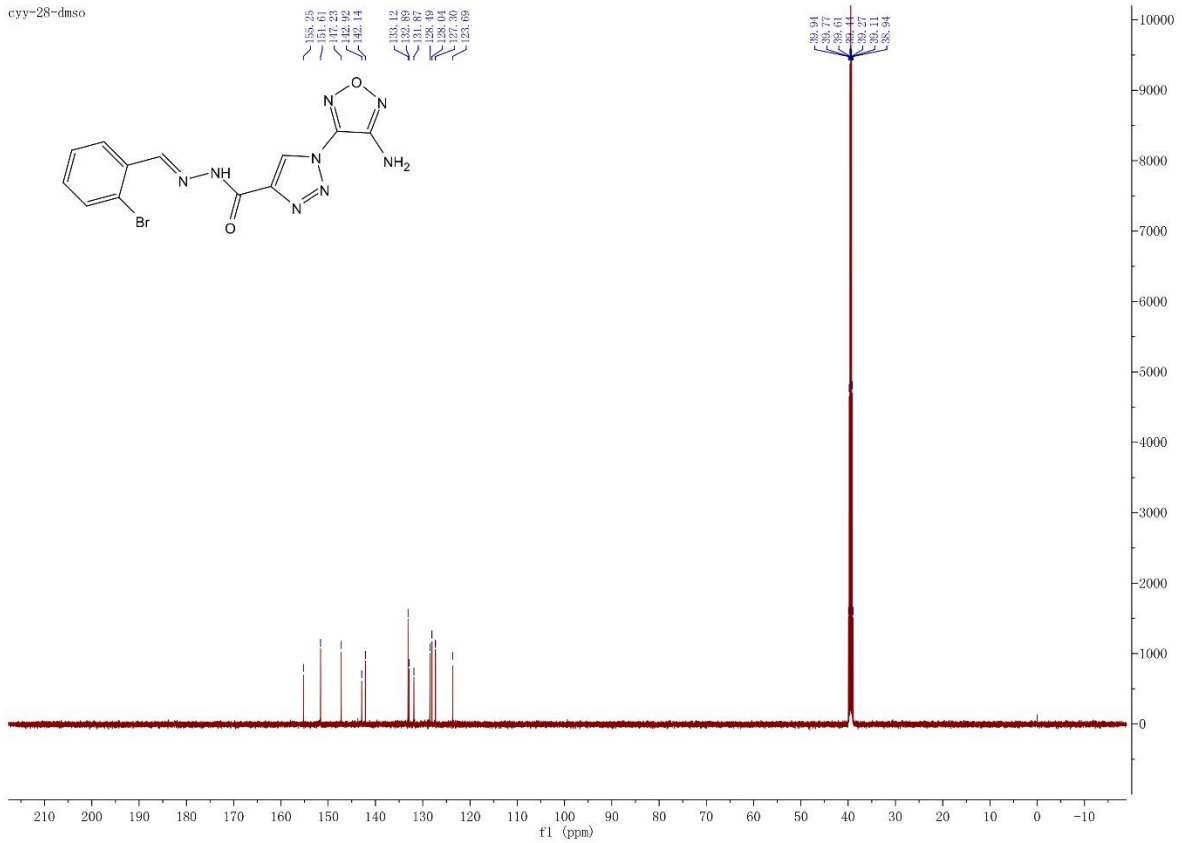
JYQ-27


cyy-27-dmso
12.71
9.43
8.01
8.15
8.14
8.12
8.10
7.86
7.85
7.83
7.73
7.72
7.70
6.73
3.35
2.51
0.00
0.86
0.83
0.85
2.02
0.94
1.02
2.00
f1 (ppm)

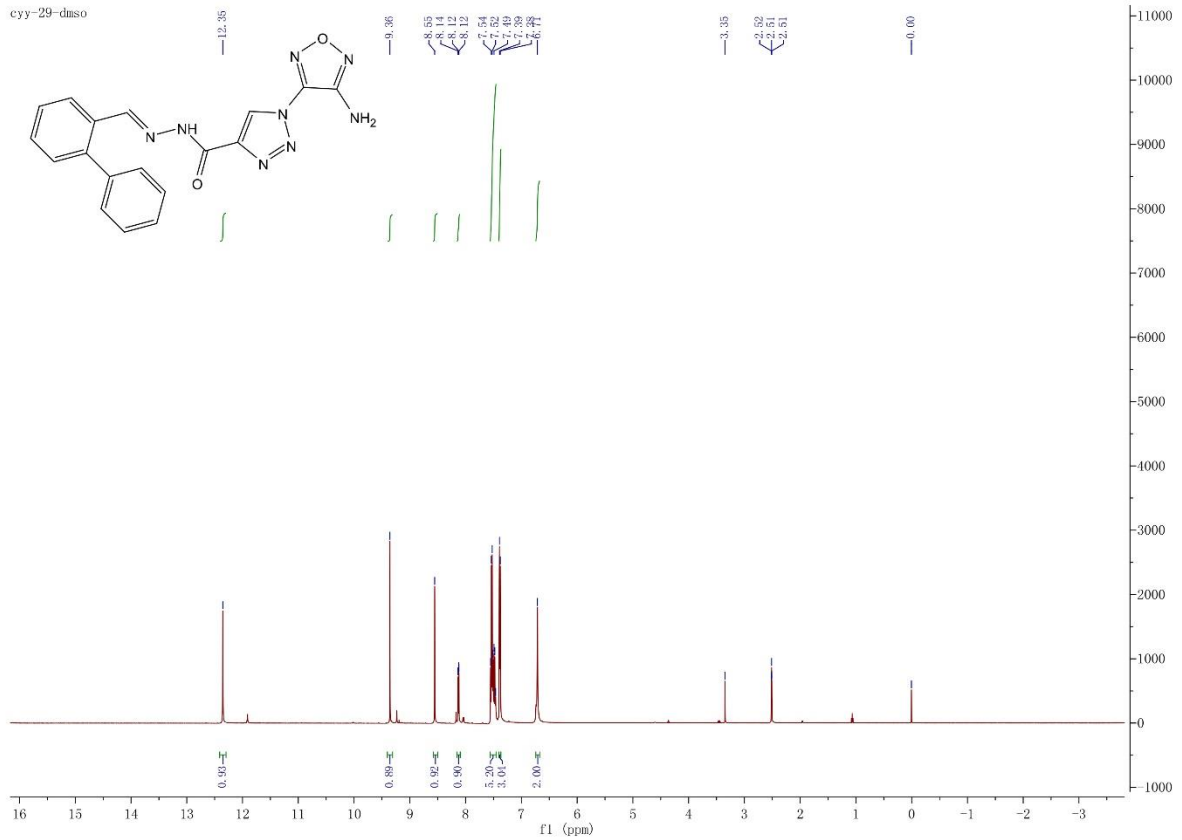

cyy-27-dmso
155.95
152.15
148.52
144.73
143.47
142.55
134.25
131.38
129.08
129.04
128.57
125.16
40.49
40.33
40.16
39.83
39.66
39.49
f1 (ppm)

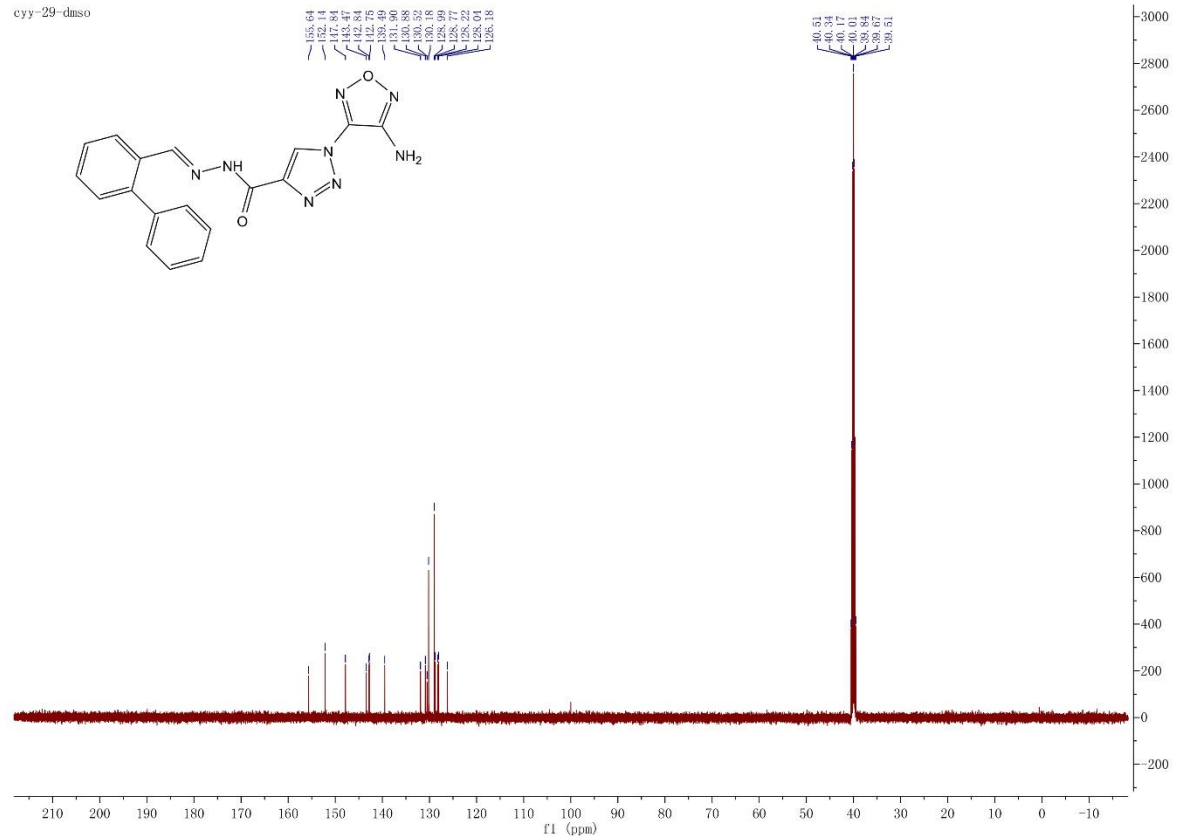
JYQ-28


cyy-28-dmso
12.65
9.42
8.97
8.04
8.04
7.73
7.71
7.50
7.48
7.42
7.42
3.35
2.62
2.51
0.00
0.89
0.85
0.88
0.87
0.99
0.91
0.99
2.00
f1 (ppm)

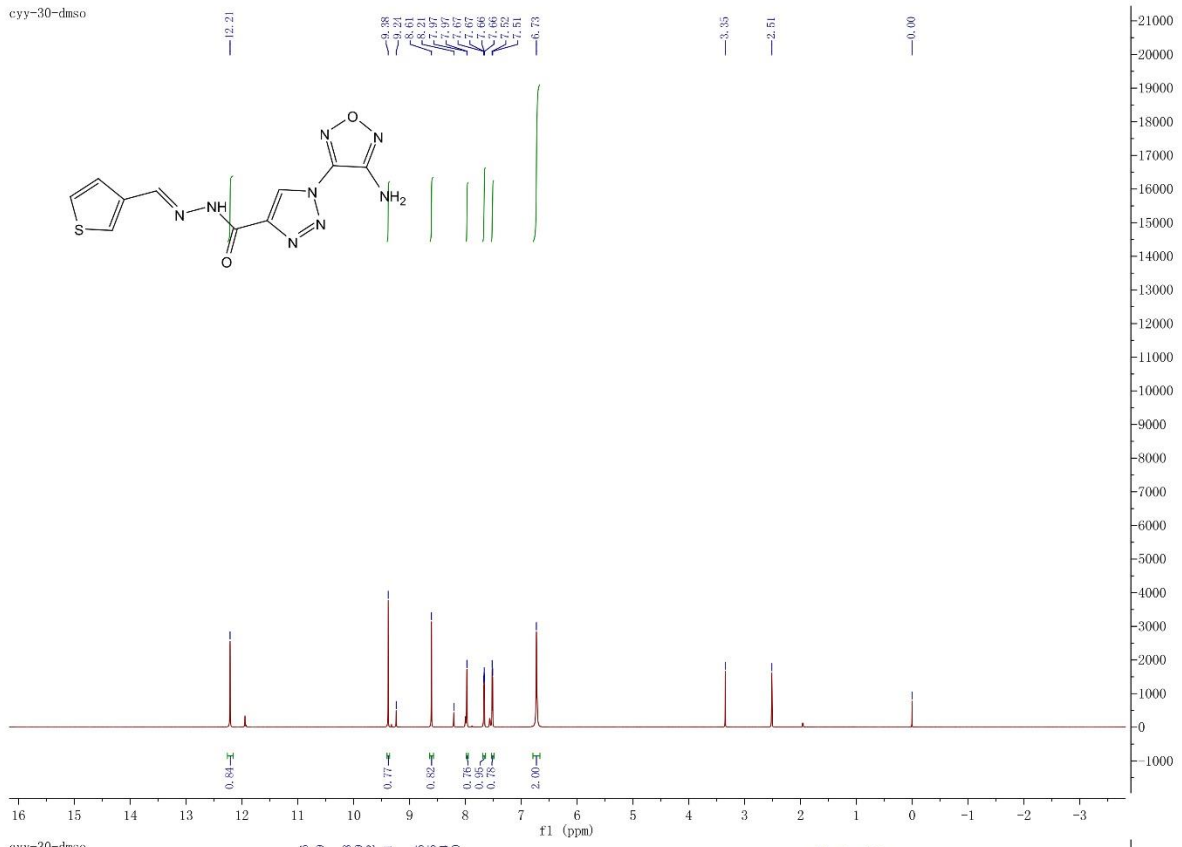

cyy-28-dmso
155.25
151.61
147.23
142.92
142.14
133.12
132.89
131.87
128.49
128.04
127.96
123.69
39.94
39.77
39.61
39.44
39.27
39.11
38.94
f1 (ppm)

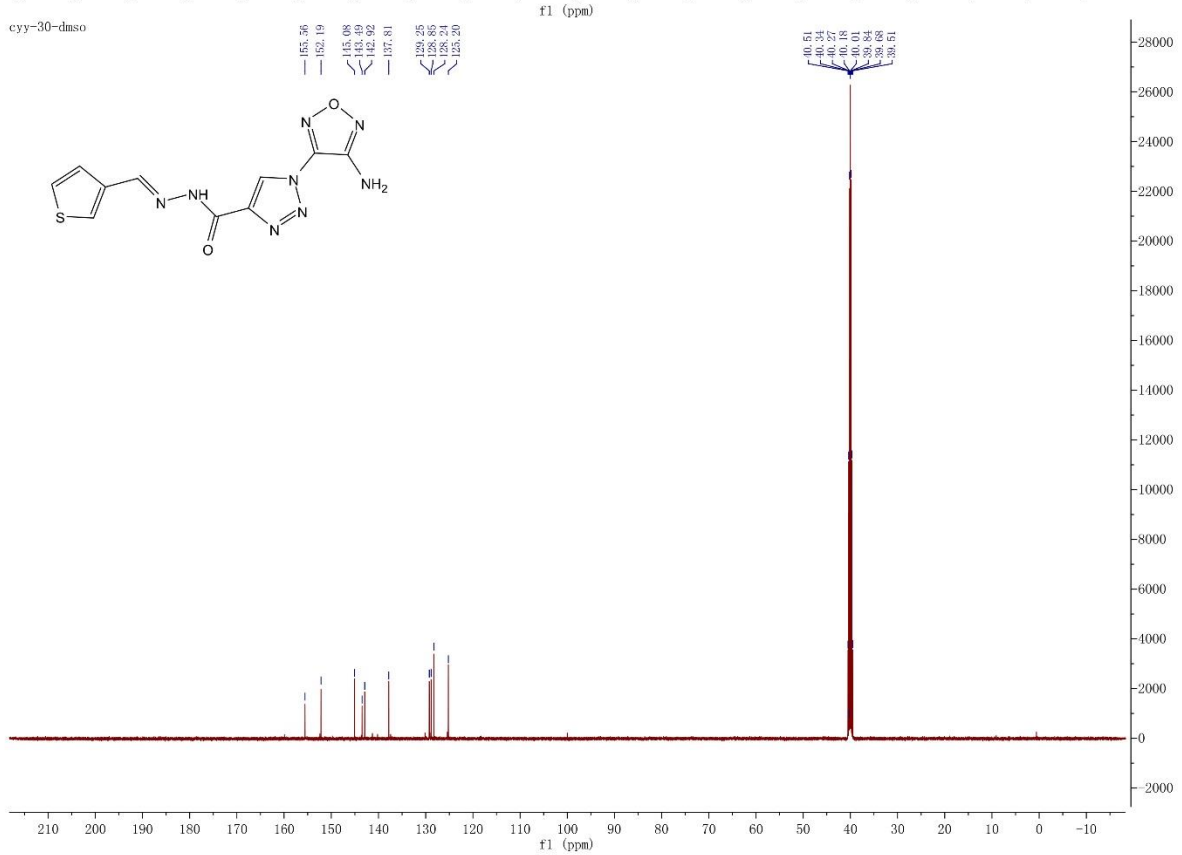
JYQ-29


cyy-29-dmso
12.35
9.38
8.55
8.14
8.12
8.12
7.54
7.52
7.49
7.39
7.38
6.71
3.35
2.52
2.51
2.51
0.00
0.93
0.89
0.92
0.90
5.20
3.01
2.00
f1 (ppm)

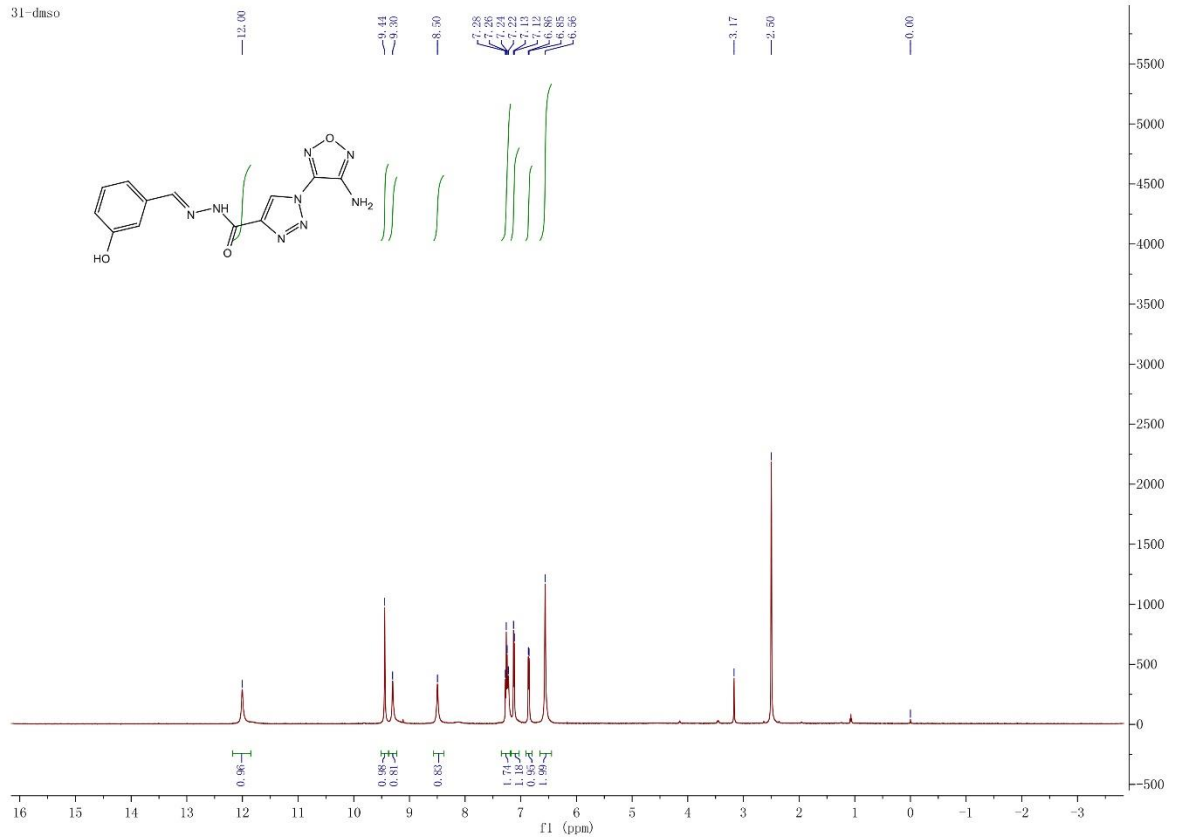

cyy-29-dmso
155.64
152.14
147.84
143.47
142.84
141.75
139.49
131.90
130.88
130.52
130.18
128.99
128.77
128.22
128.04
126.18
40.51
40.34
40.17
40.01
39.84
39.67
39.51
f1 (ppm)

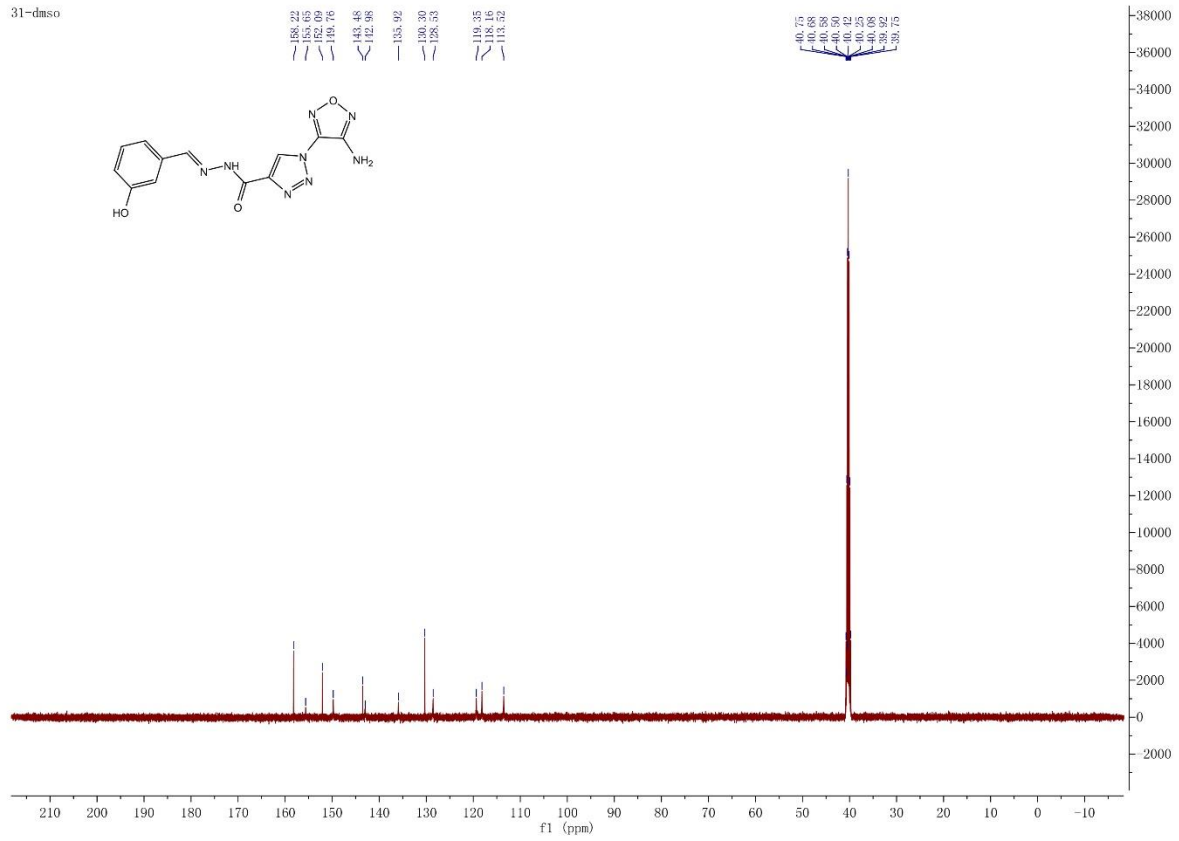
JYQ-30


cyy-30-dmso
12.21
9.38
9.21
8.61
8.21
7.97
7.67
7.66
7.52
7.51
6.73
3.35
2.51
0.00
0.84
0.77
0.82
0.76
0.95
0.78
2.00
f1 (ppm)

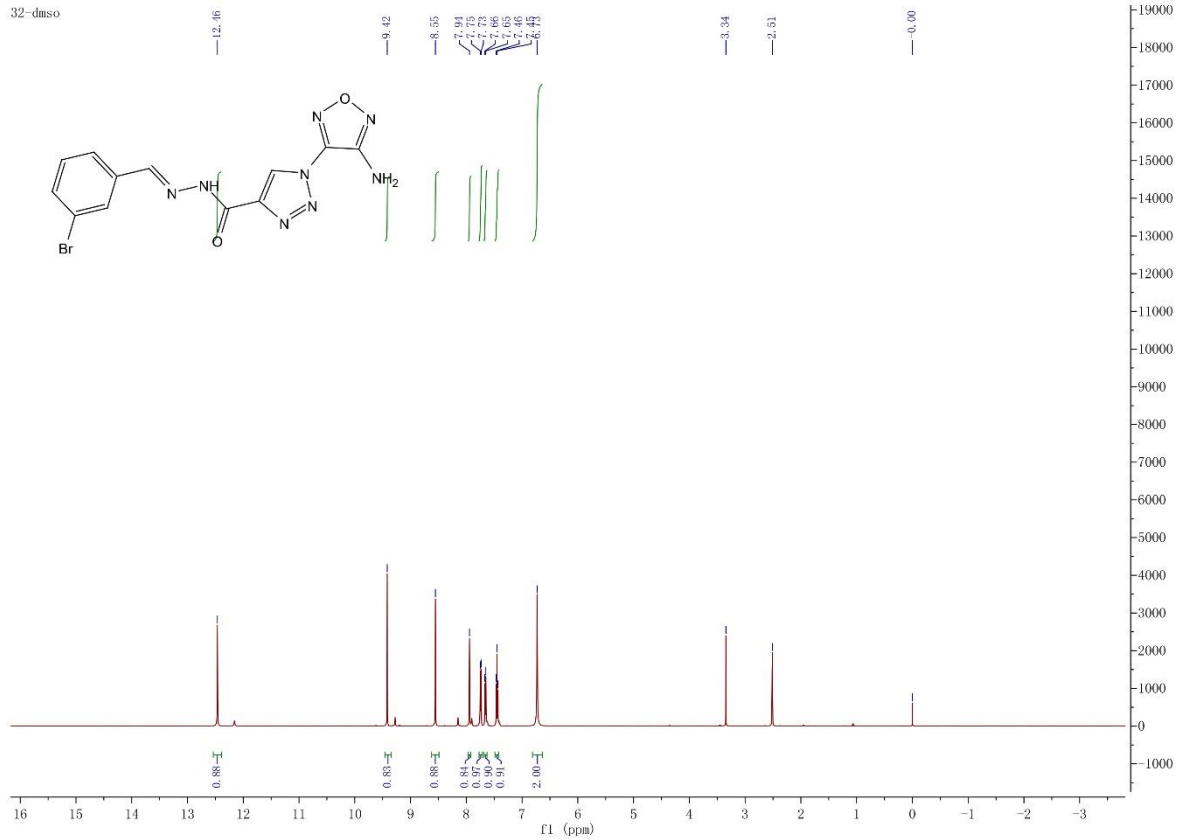

cyy-30-dmso
155.36
152.19
143.08
143.49
142.92
137.81
129.25
128.85
128.24
125.20
40.51
40.34
40.17
40.18
40.01
39.84
39.68
39.51
f1 (ppm)

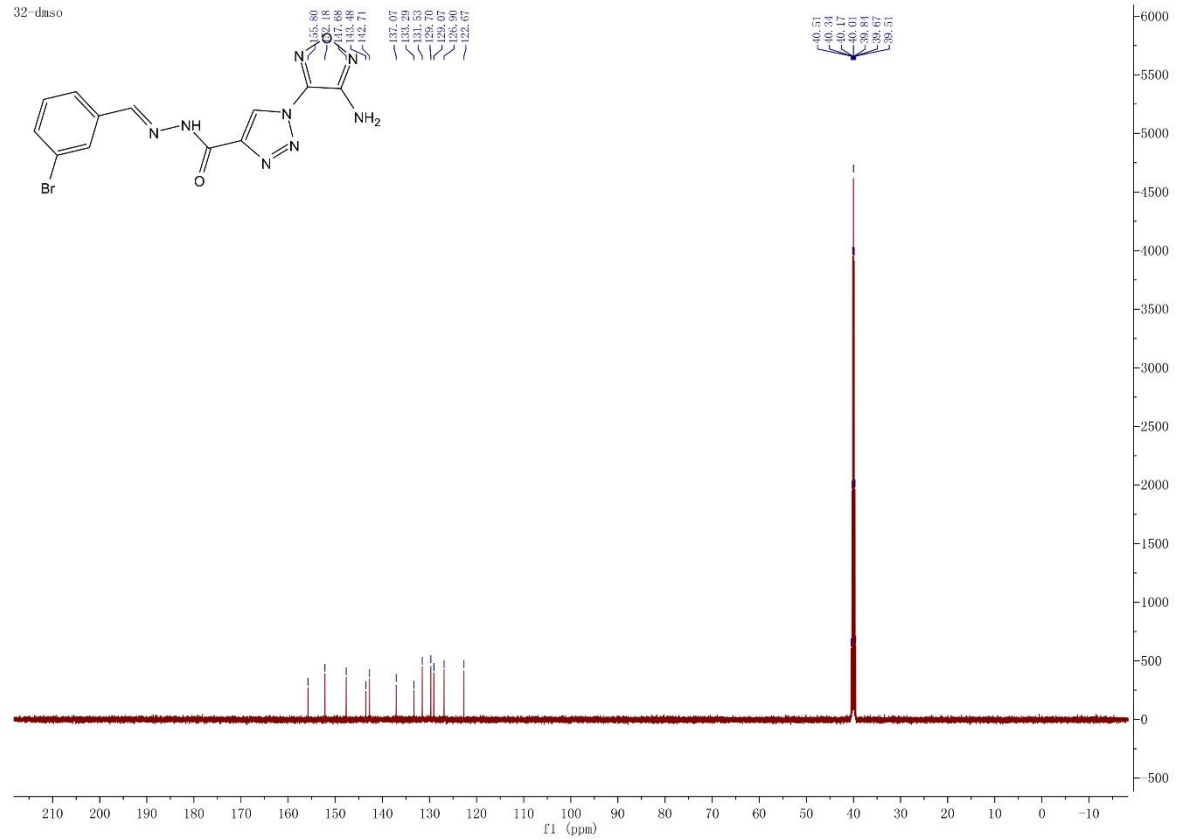
JYQ-31


31-dmso
12.00
9.44
9.30
8.50
7.28
7.26
7.24
7.22
7.13
7.12
6.86
6.85
6.66
3.17
2.50
0.00
0.98
0.98
0.81
0.83
1.74
1.18
0.95
1.69
f1 (ppm)

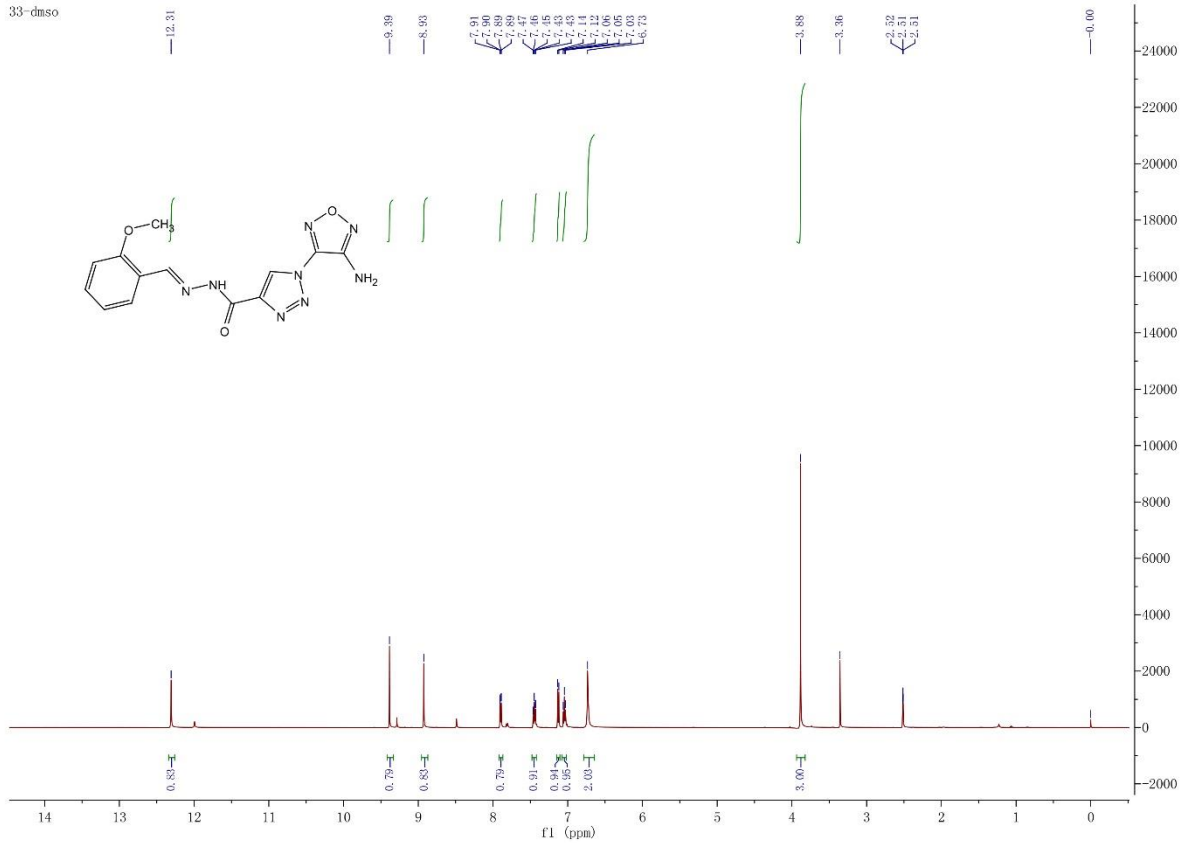

31-dmso
158.22
155.65
152.09
149.76
143.48
142.98
133.92
130.30
128.53
119.35
118.16
113.52
40.75
40.68
40.58
40.50
40.42
40.33
40.08
39.92
39.75
f1 (ppm)

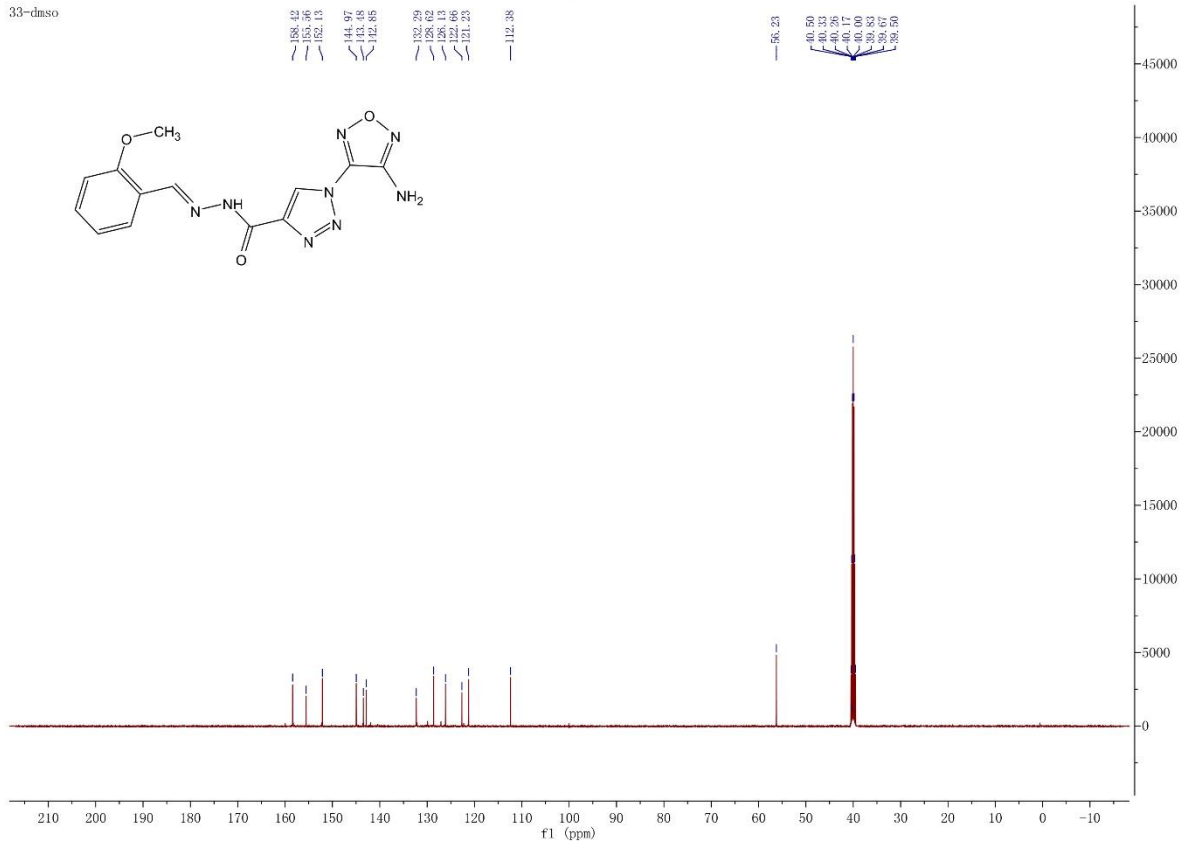
JYQ-32


32-dmso
12.46
9.42
8.55
7.94
7.75
7.73
7.66
7.65
7.46
7.45
6.45
3.34
2.51
0.00
0.88
0.83
0.88
0.84
0.97
0.90
0.91
2.00
f1 (ppm)

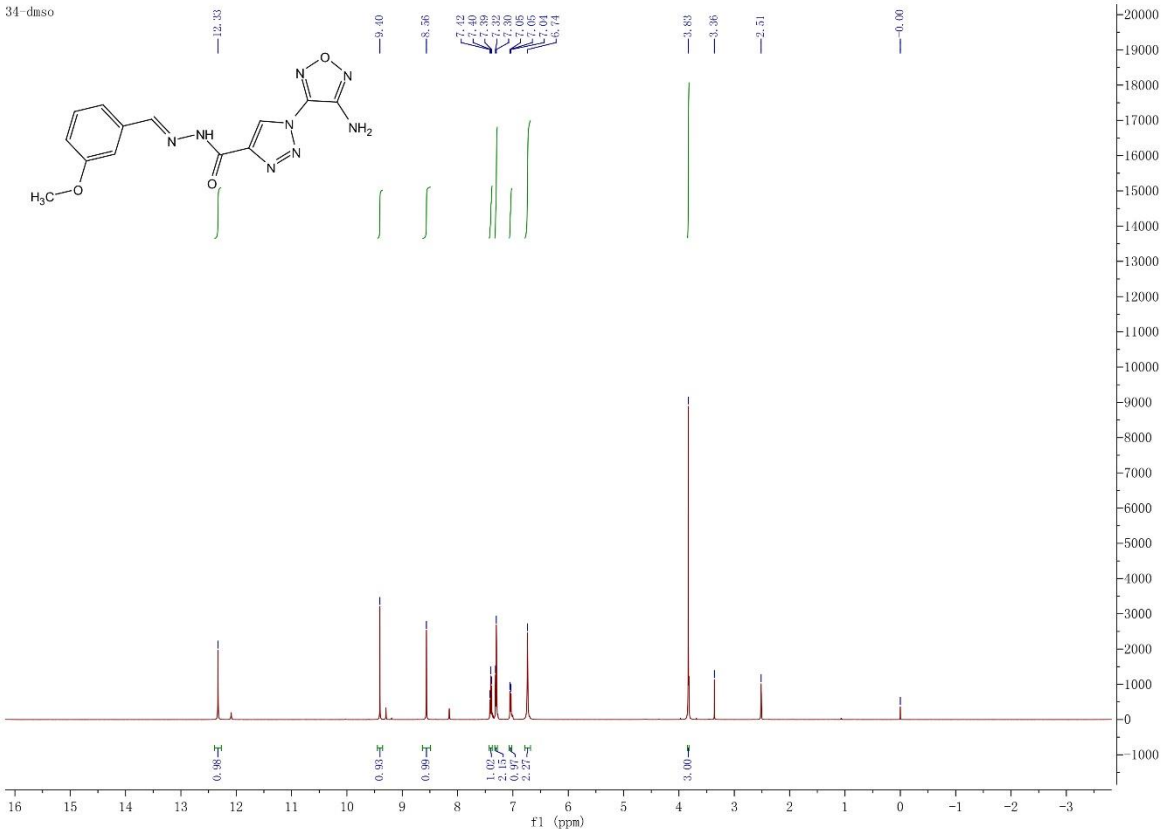

32-dmso
155.80
152.18
147.68
143.48
142.71
137.07
133.29
131.53
129.70
128.67
126.90
122.67
40.51
40.34
40.17
40.01
39.84
39.67
39.51
f1 (ppm)

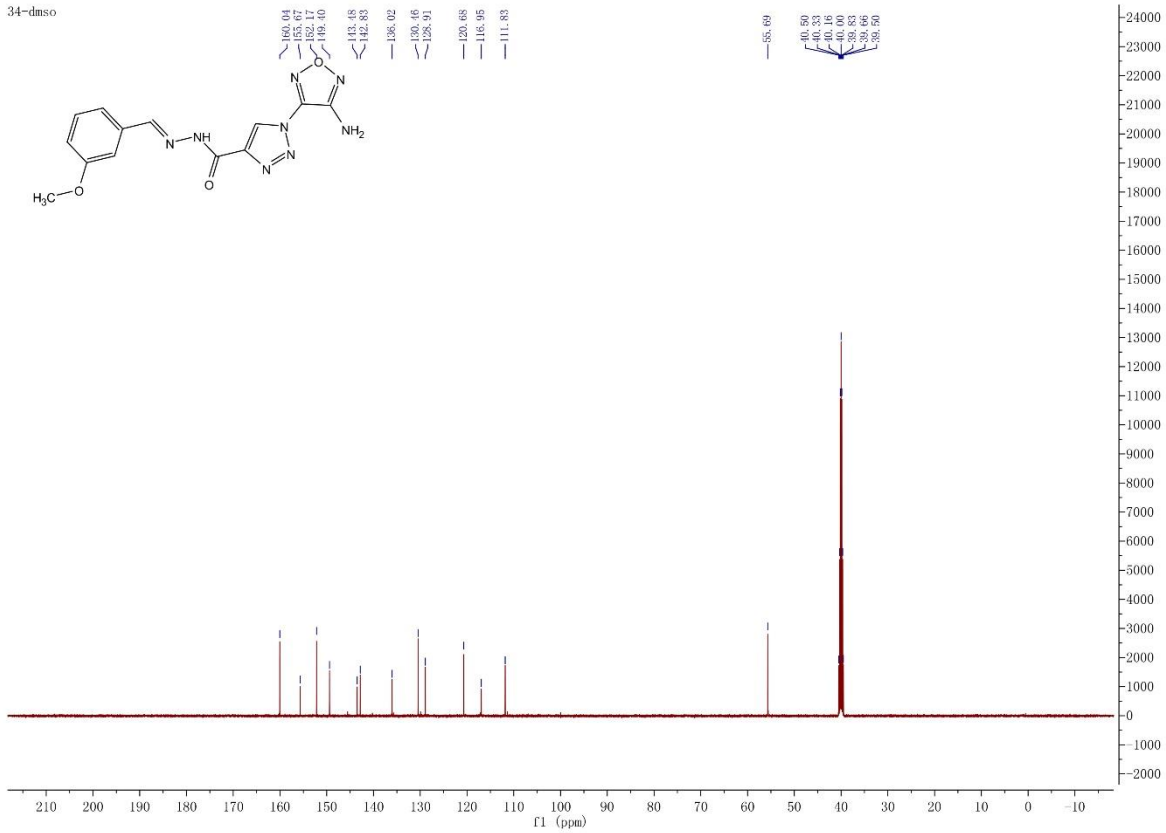
JYQ-33


33-dmso
12.31
9.39
8.93
7.91
7.90
7.89
7.47
7.46
7.45
7.43
7.43
7.14
7.12
7.06
7.05
7.03
6.73
3.88
3.36
2.52
2.51
2.51
0.00
0.83
0.79
0.83
0.79
0.91
0.94
0.95
2.03
3.00
f1 (ppm)

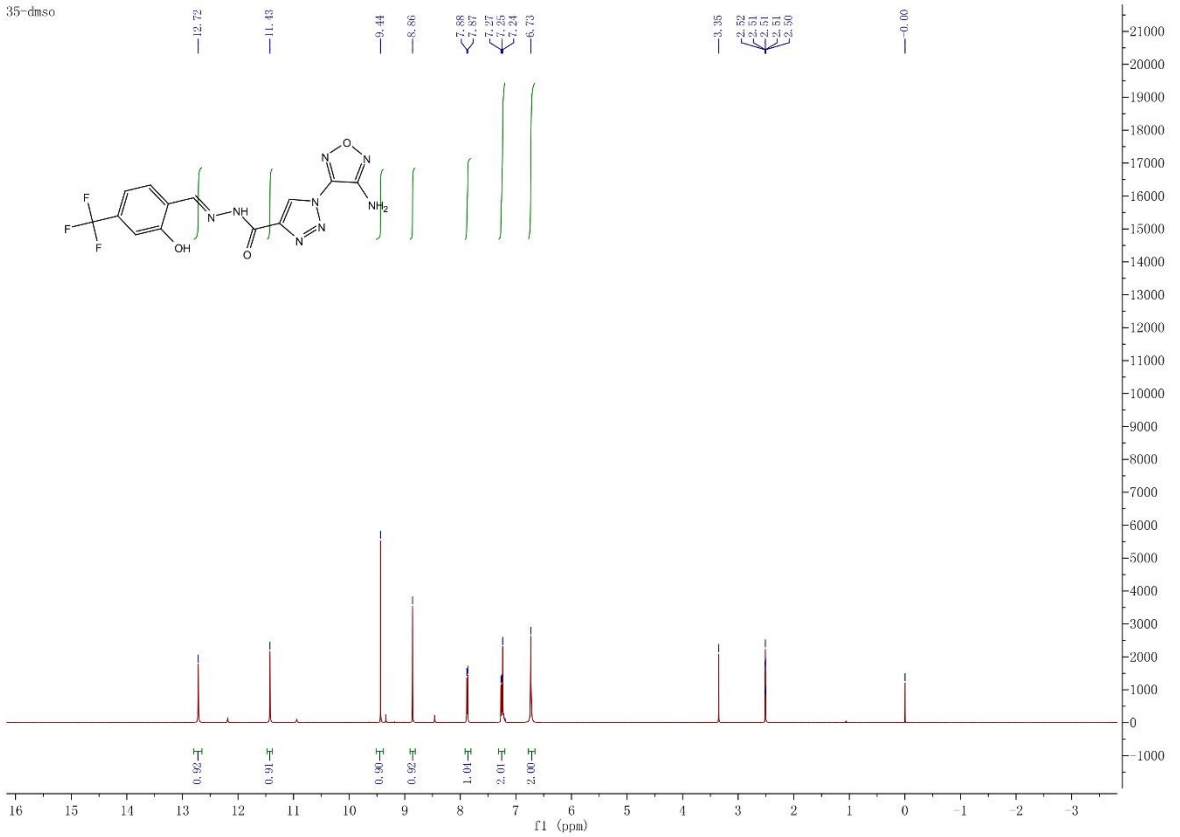

33-dmso
158.42
155.36
152.13
144.97
143.48
142.85
132.29
128.62
126.13
122.66
121.23
112.38
56.23
40.50
40.33
40.25
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

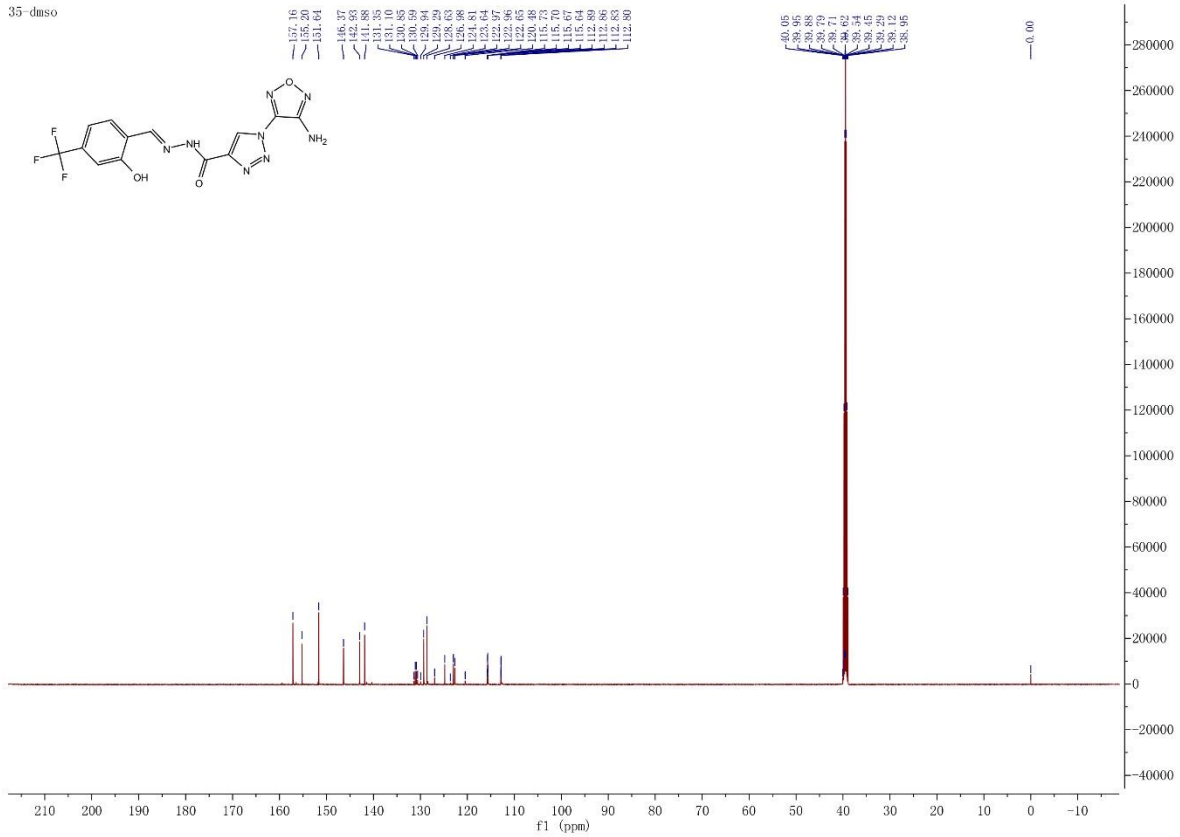
JYQ-34


34-dmso
12.33
9.40
8.56
7.42
7.40
7.39
7.32
7.30
7.05
7.05
7.04
6.74
3.83
3.36
2.51
0.00
0.98
0.93
0.99
1.02
2.15
0.97
2.27
3.00
f1 (ppm)

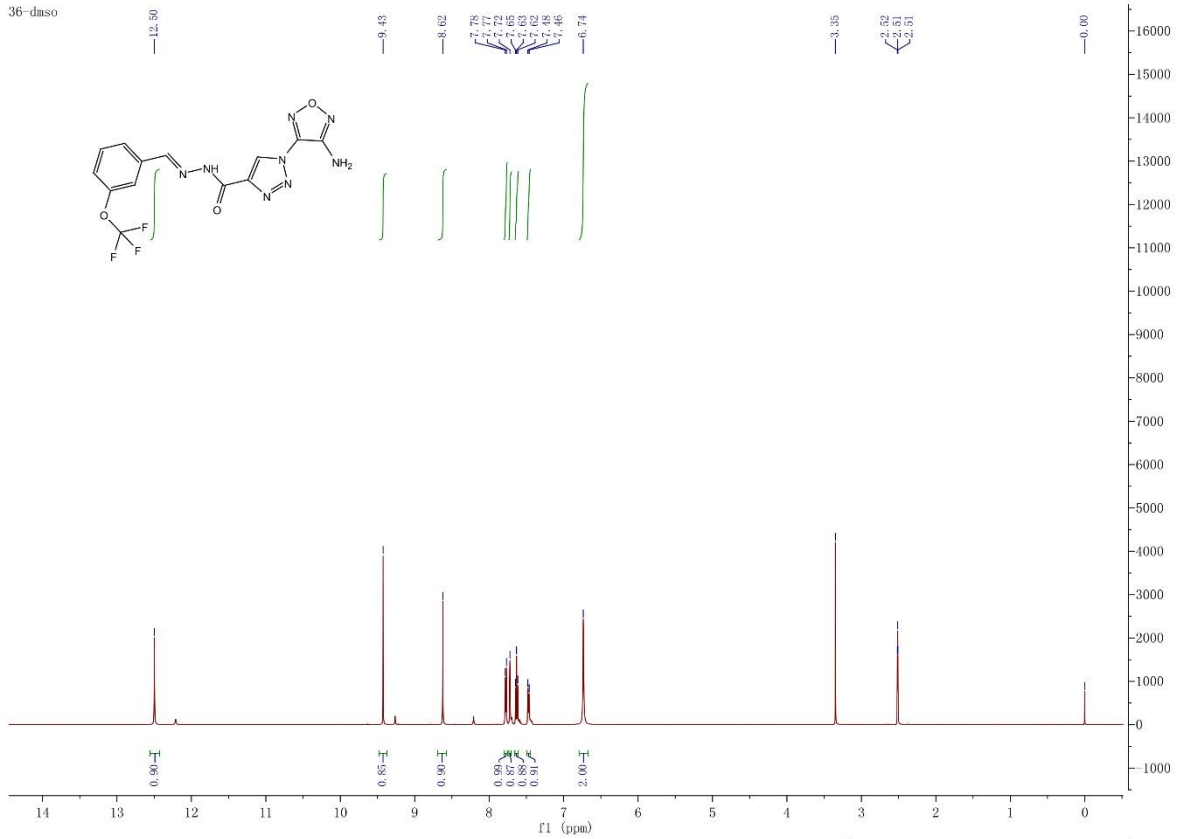

34-dmso
160.04
155.67
152.17
149.40
143.48
142.83
136.02
130.46
128.91
120.68
116.95
111.83
55.69
40.50
40.33
40.16
40.00
39.83
39.66
39.50
f1 (ppm)

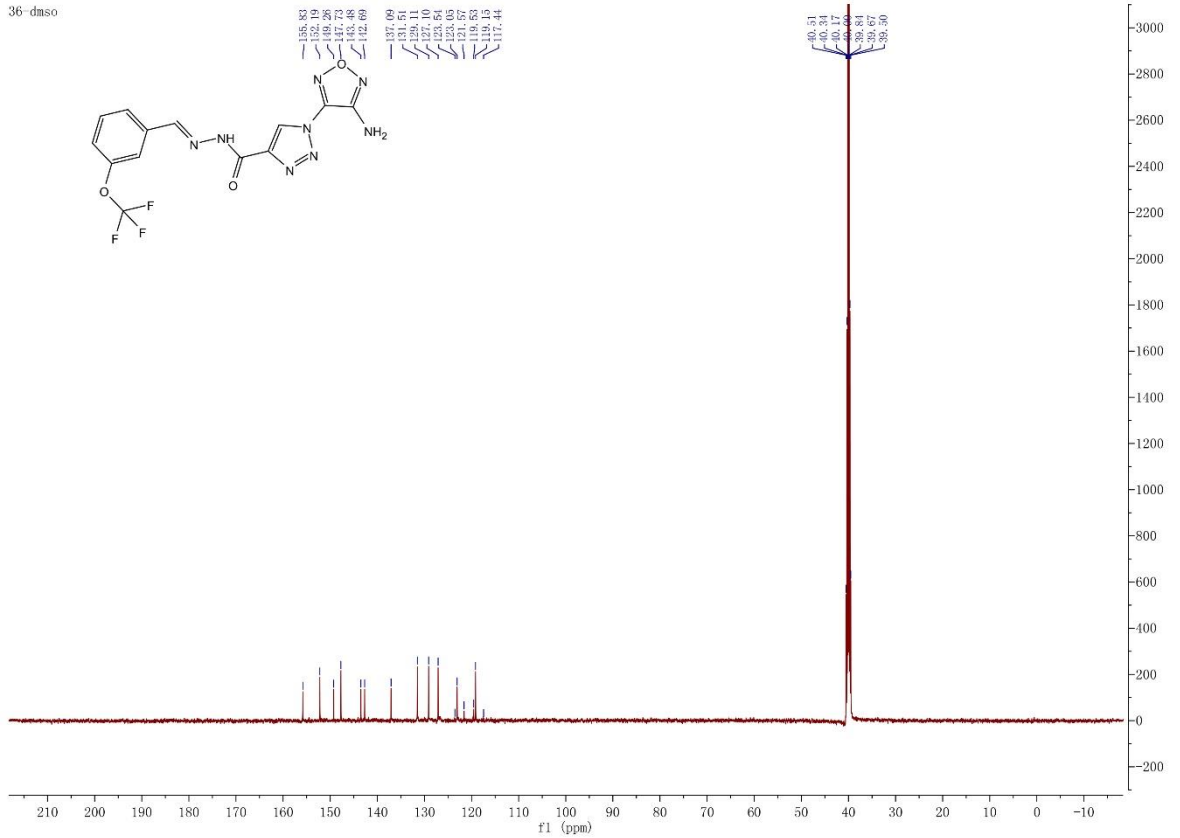
JYQ-35


35-dmso
12.72
11.43
9.44
8.86
7.88
7.87
7.27
7.25
7.24
6.73
3.35
2.52
2.51
2.51
2.50
0.00
0.92
0.91
0.90
0.92
1.04
2.01
2.00
f1 (ppm)

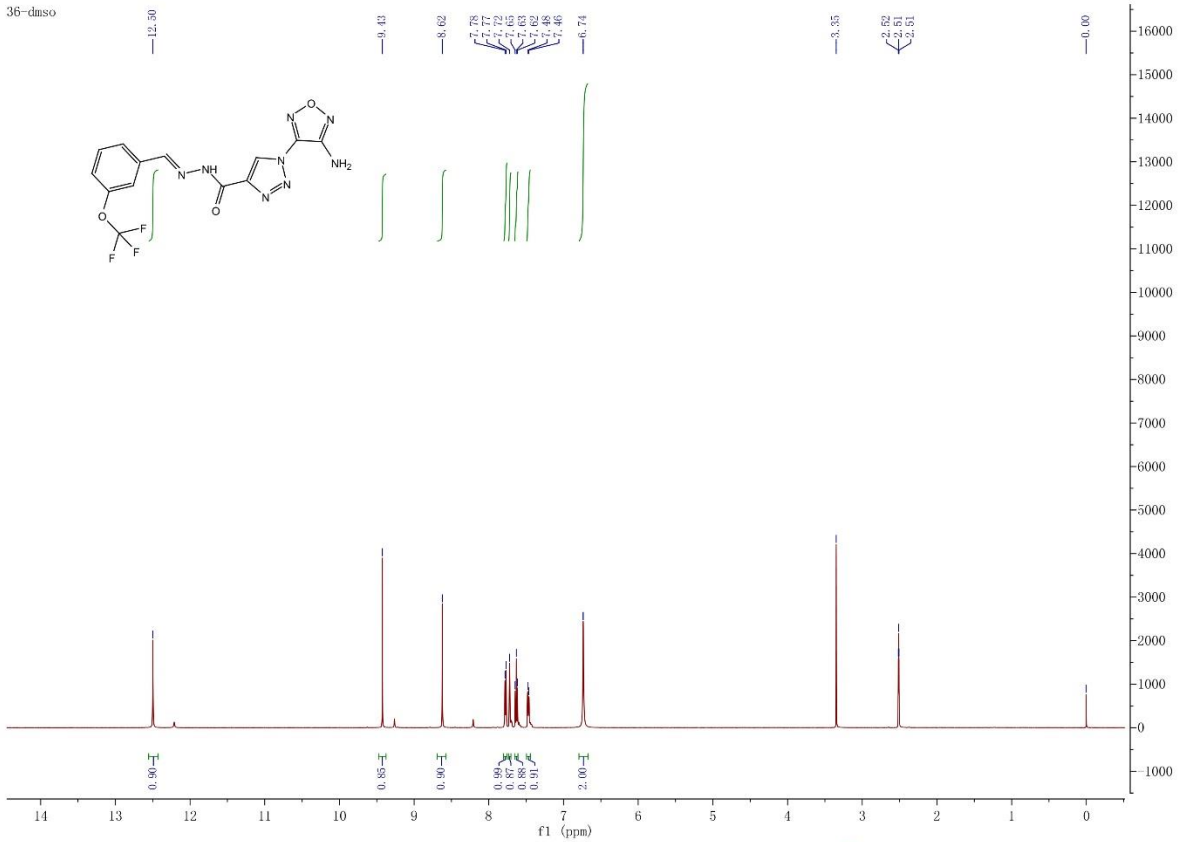

35-dmso
157.16
155.20
151.64
146.37
142.93
141.98
131.35
131.10
130.59
129.94
129.29
128.63
126.98
124.81
123.64
122.97
122.46
122.05
120.48
115.73
115.70
115.67
112.89
112.86
112.85
112.80
40.05
39.95
39.88
39.79
39.71
39.62
39.54
39.45
39.29
39.12
38.95
0.00
f1 (ppm)

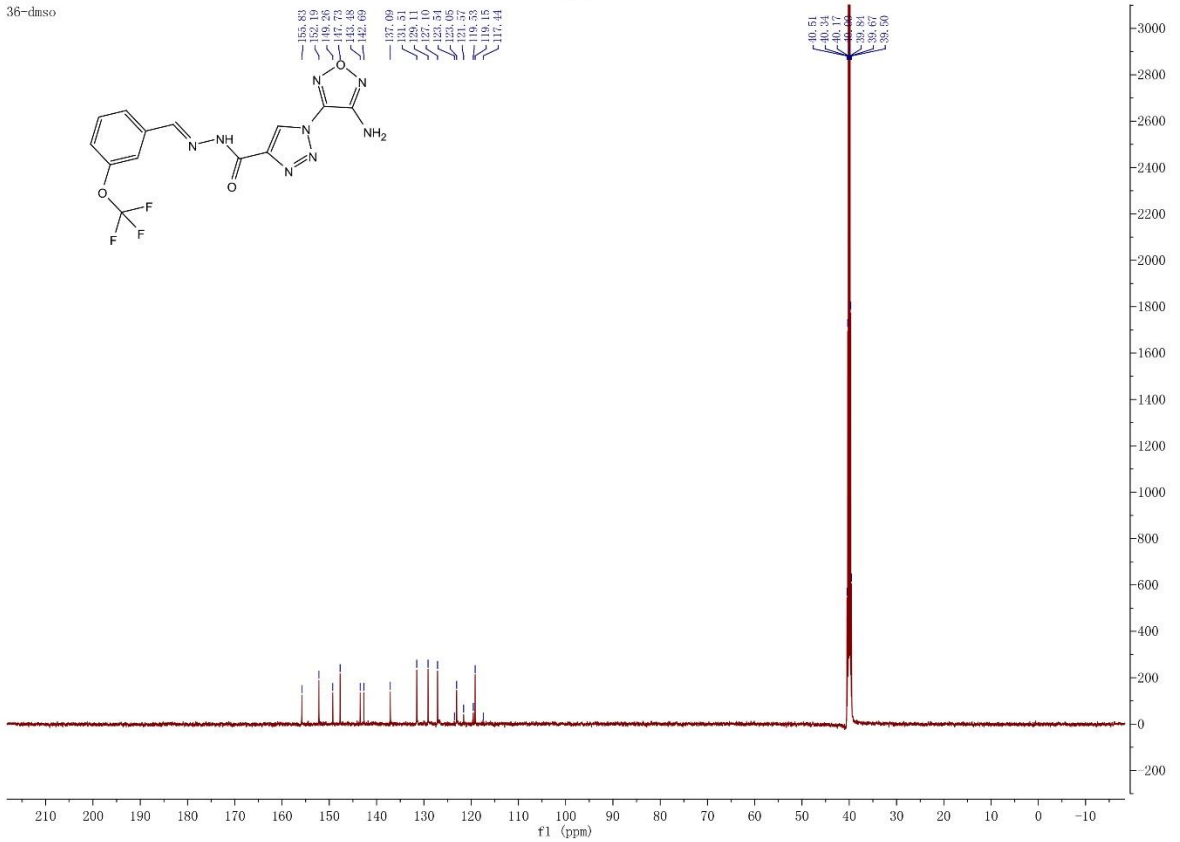
JYQ-36


36-dmso
12.50
9.43
8.62
7.78
7.77
7.72
7.65
7.63
7.62
7.48
7.46
6.74
3.35
2.52
2.51
2.51
0.00
0.90
0.85
0.90
0.99
0.87
0.88
0.91
2.00
f1 (ppm)

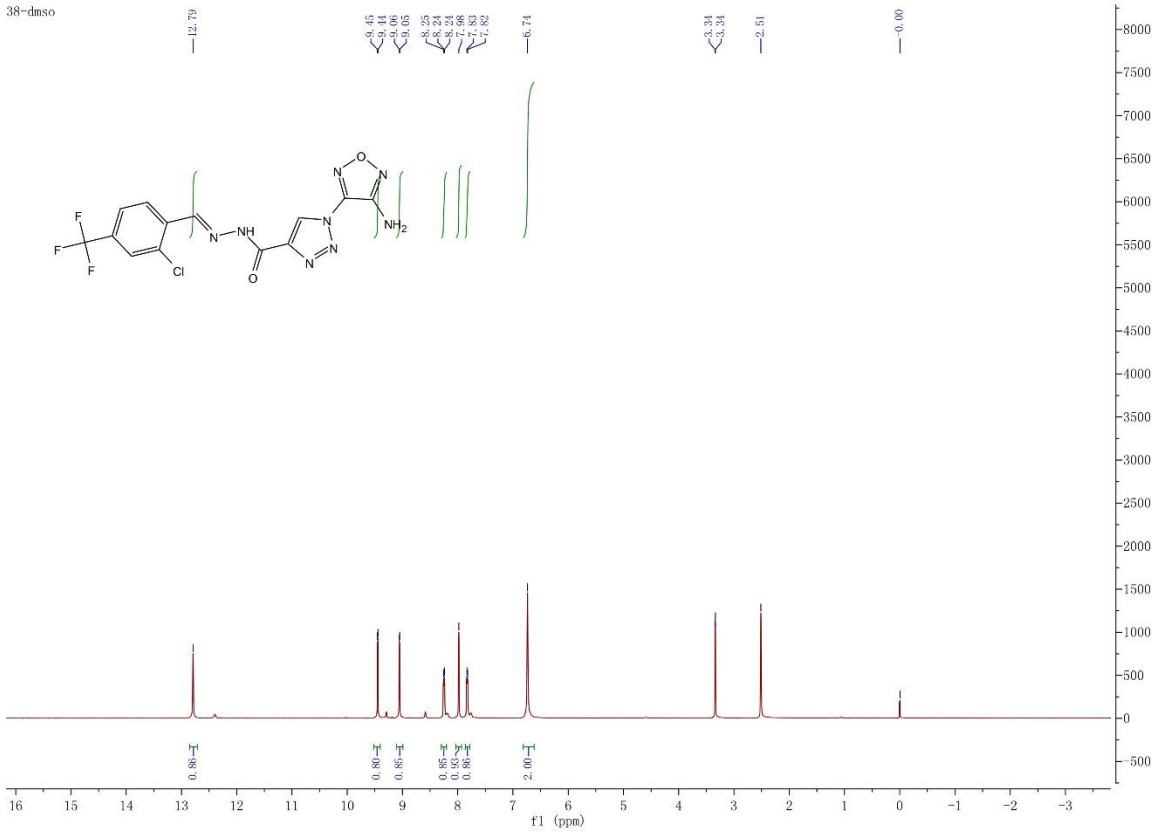

36-dmso
155.83
152.19
149.26
147.73
145.84
142.69
137.09
131.51
129.11
127.10
123.54
123.05
121.57
119.53
119.15
117.44
40.51
40.34
40.17
39.84
39.67
39.50
f1 (ppm)

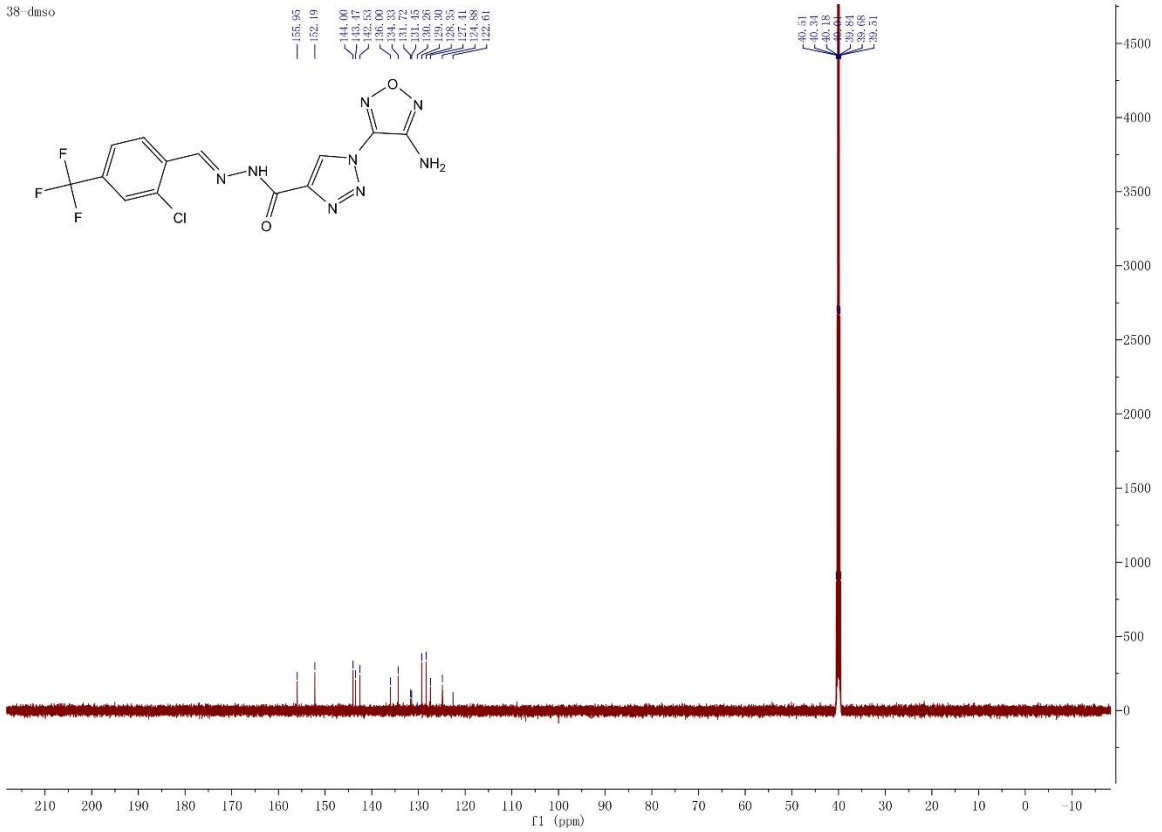
JYQ-37


36-dmso
12.50
9.43
8.62
7.78
7.77
7.72
7.65
7.63
7.62
7.48
7.46
6.74
3.35
2.62
2.51
2.51
0.00
0.90
0.85
0.90
0.99
0.87
0.88
0.91
2.00
f1 (ppm)

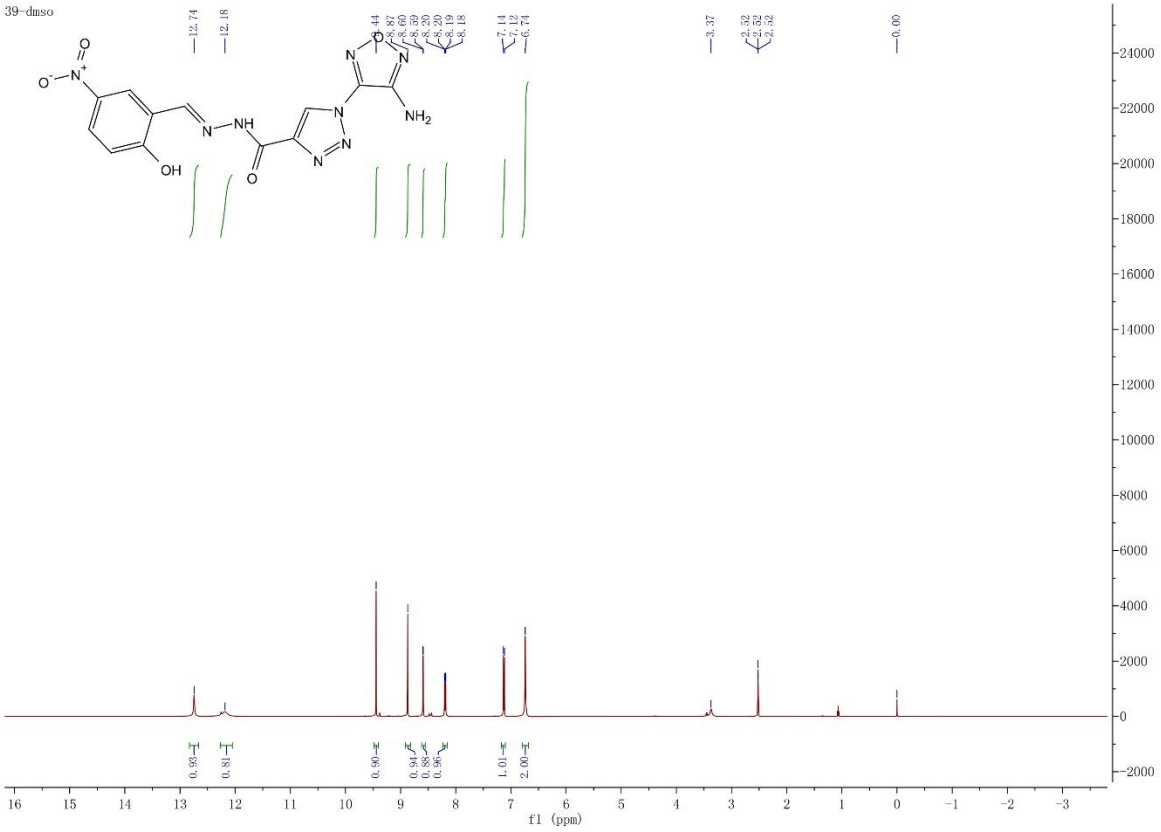

36-dmso
155.83
152.19
149.26
147.73
145.48
142.69
137.09
131.51
129.11
127.10
125.54
125.05
121.77
119.53
119.15
117.44
40.51
40.34
40.17
39.84
39.67
39.50
f1 (ppm)

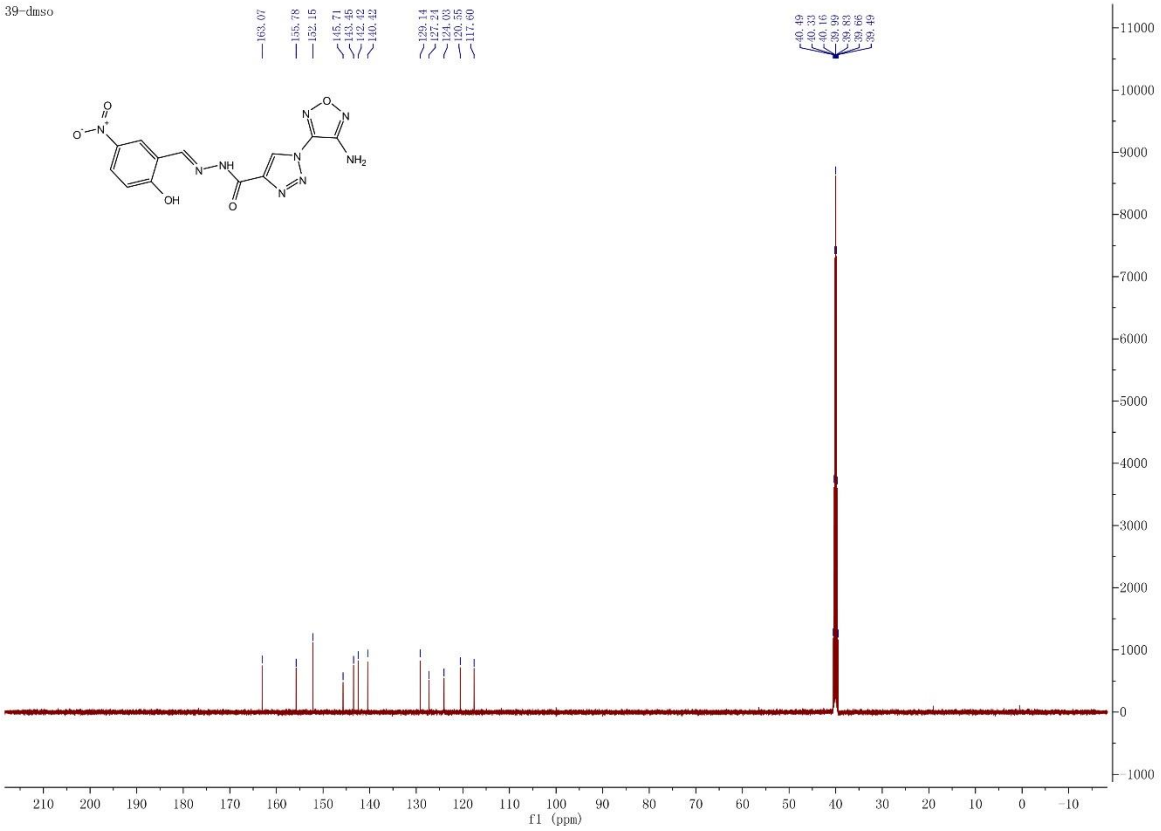
JYQ-38


38-dmso
12.79
9.45
9.44
9.06
9.05
8.25
8.24
7.84
7.83
7.82
6.74
3.34
3.34
2.51
0.00
0.86
0.80
0.85
0.85
0.93
0.86
2.00
f1 (ppm)

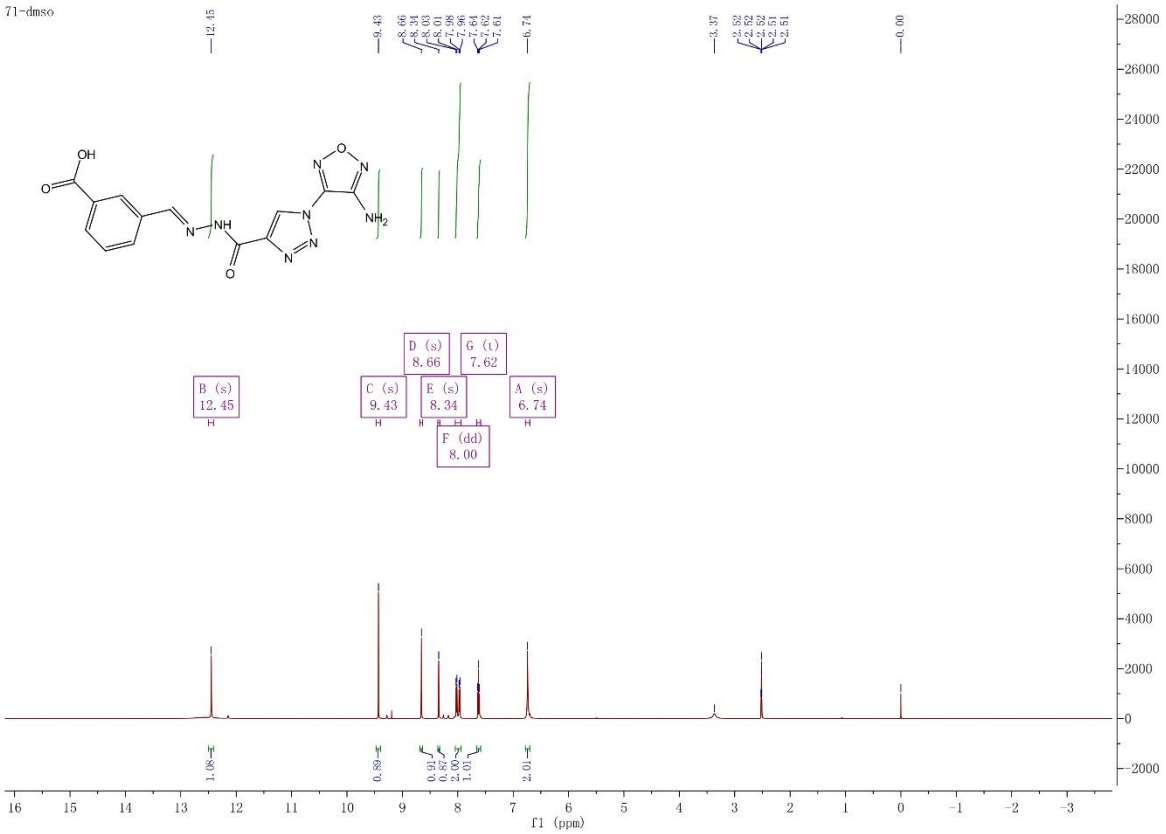

38-dmso
155.95
152.19
144.00
143.47
142.53
136.69
134.33
131.72
131.45
130.26
129.30
128.55
127.41
124.88
122.61
40.51
40.34
40.18
40.01
39.84
39.68
39.51
f1 (ppm)

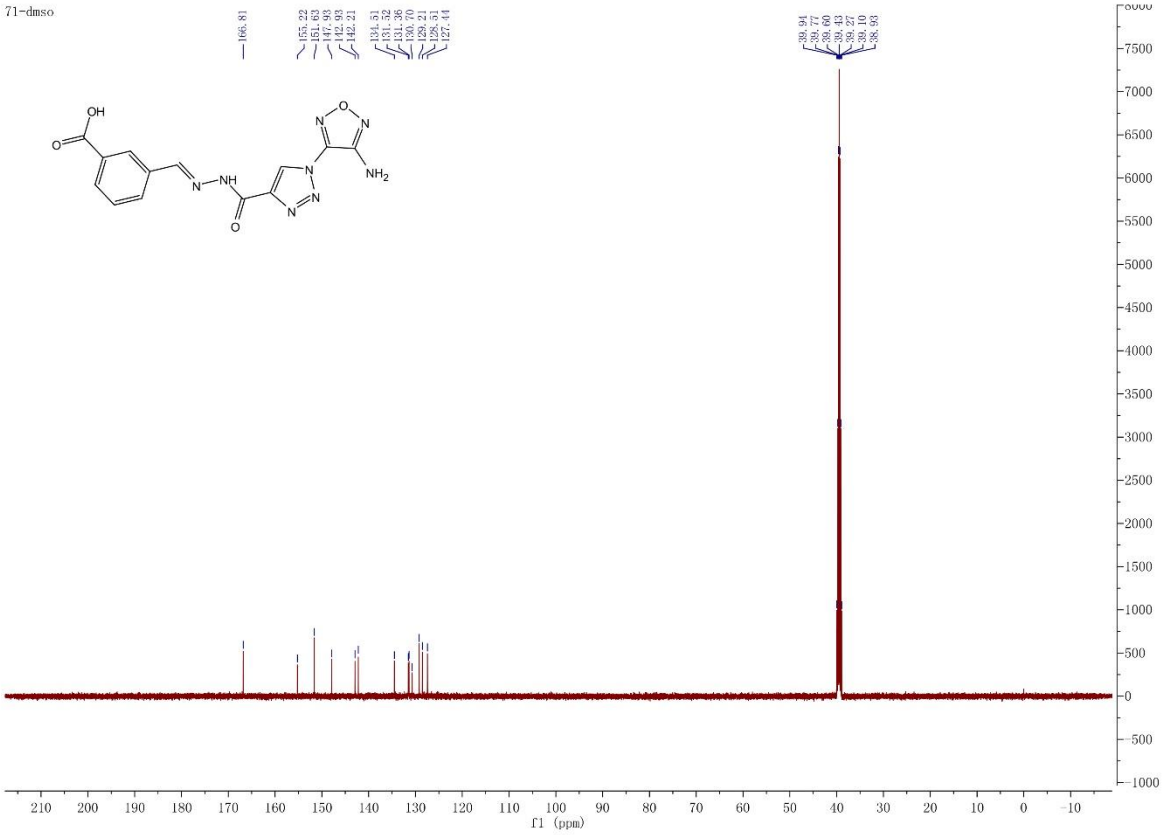
JYQ-39


39-dmso
12.74
12.18
9.44
8.87
8.60
8.59
8.20
8.19
8.18
7.14
7.12
6.74
3.37
2.52
2.52
2.52
0.00
0.93
0.81
0.90
0.94
0.88
0.96
1.01
2.00
f1 (ppm)

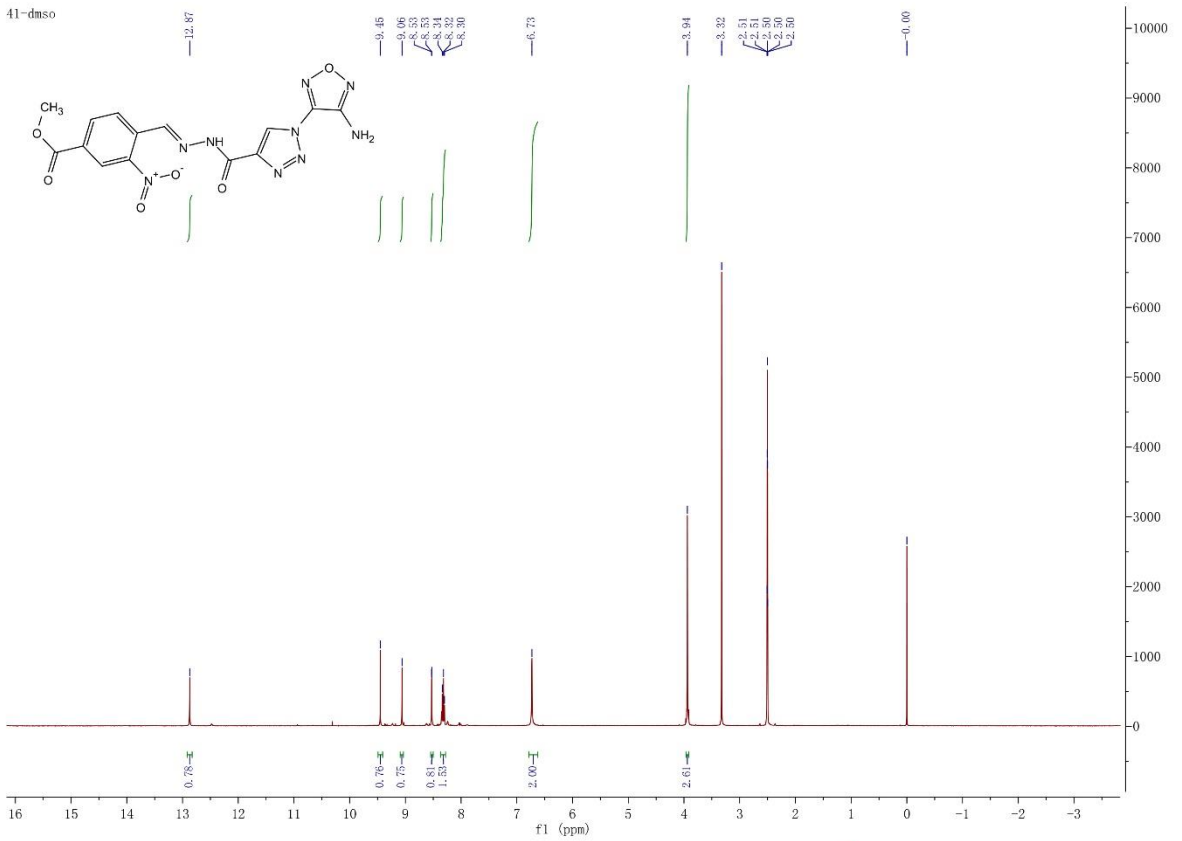

39-dmso
163.07
155.78
152.15
145.71
143.45
142.42
140.42
129.14
127.24
124.03
122.55
117.60
40.49
40.33
40.16
39.99
39.83
39.66
39.49
f1 (ppm)

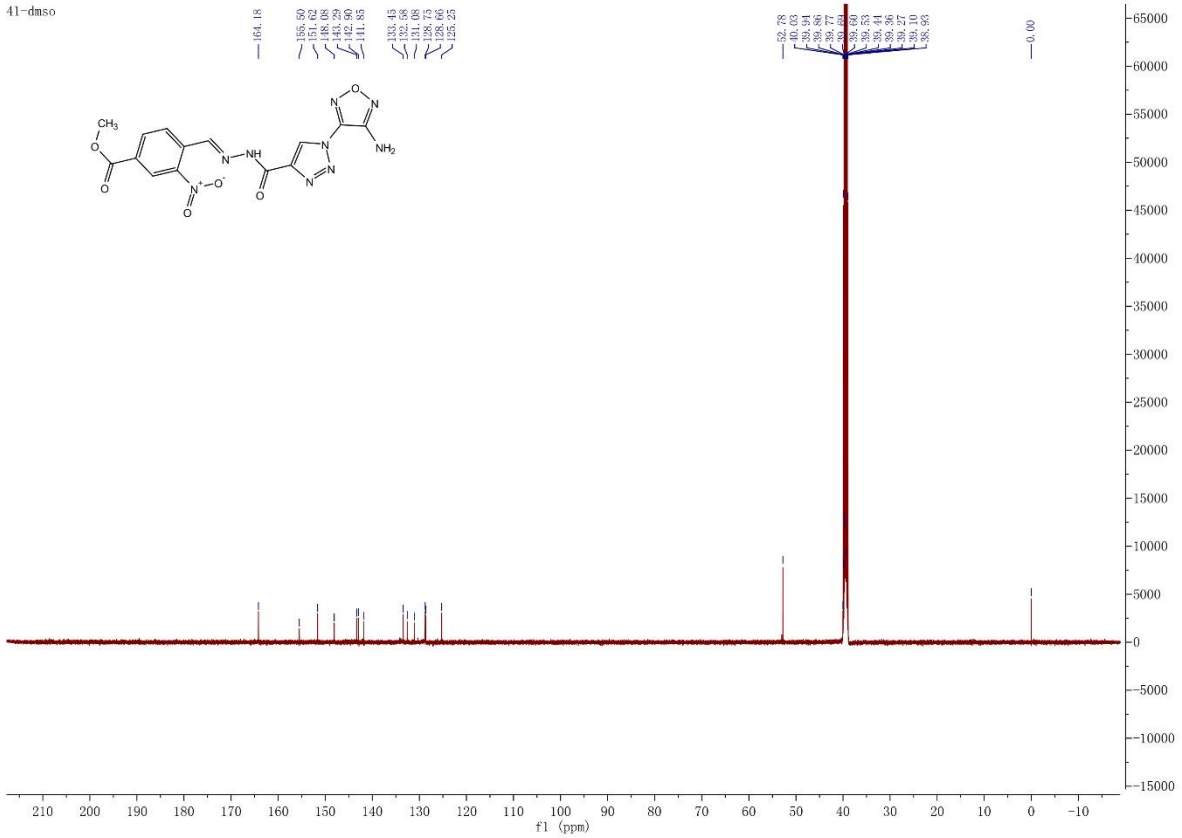
JYQ-40


71-dmso
12.45
9.43
8.66
8.34
8.03
8.01
7.98
7.96
7.64
7.62
7.61
6.74
3.37
2.52
2.52
2.52
2.51
2.51
0.00
B (s) 12.45
C (s) 9.43
D (s) 8.66
E (s) 8.34
F (dd) 8.00
G (t) 7.62
A (s) 6.74
1.08
0.89
0.91
0.87
2.00
1.01
2.01
f1 (ppm)

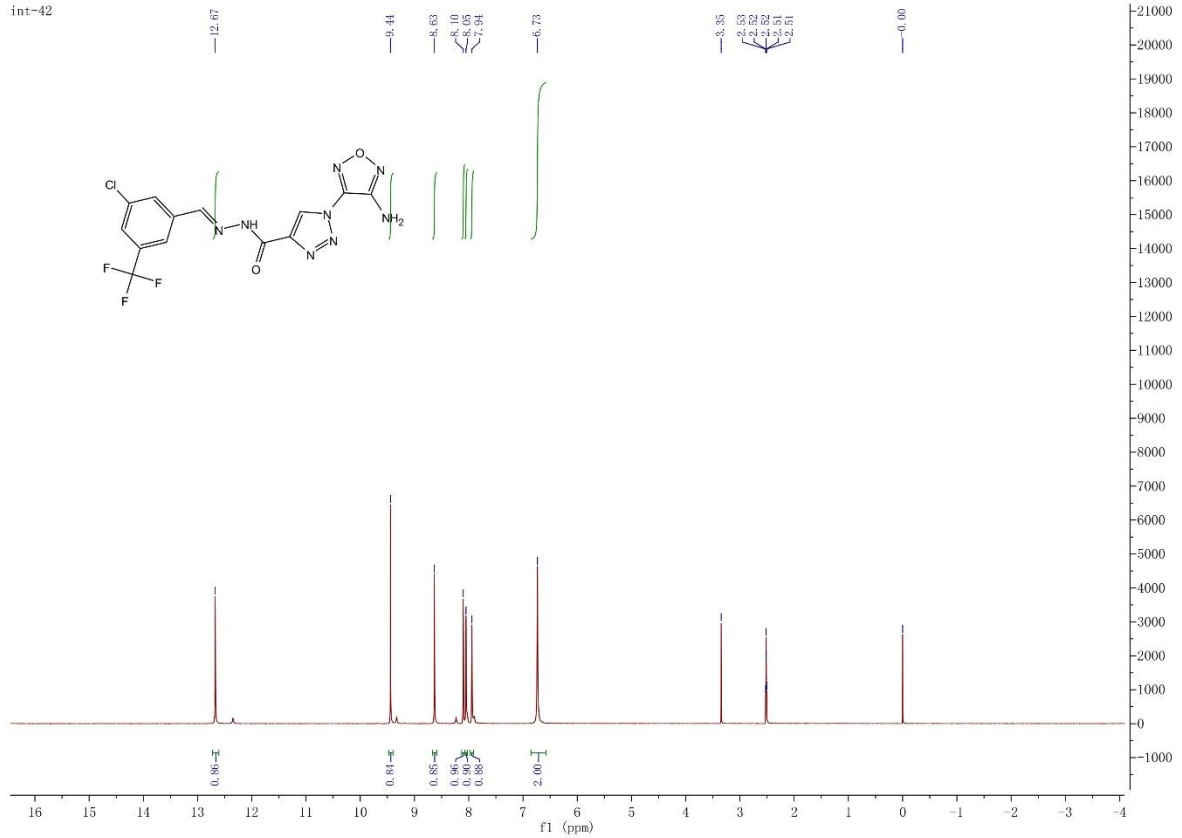

71-dmso
166.81
155.22
151.63
147.93
142.93
142.21
134.51
131.32
131.36
130.70
129.21
128.31
127.44
39.94
39.77
39.60
39.43
39.27
39.10
38.93
f1 (ppm)

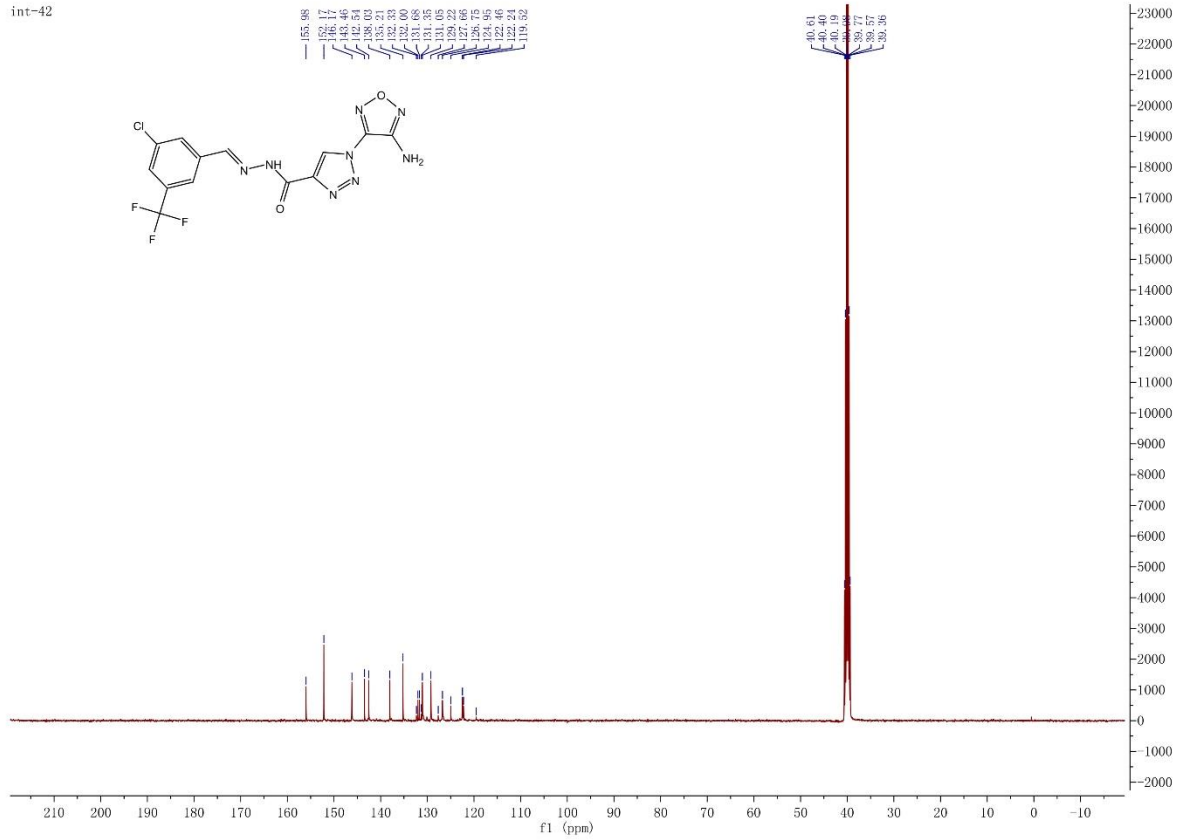
JYQ-41


41-dmso
12.87
9.45
9.06
8.53
8.34
8.32
8.30
6.73
3.94
3.32
2.51
2.50
2.50
2.50
0.00
0.78
0.76
0.75
0.81
1.53
2.00
2.61
f1 (ppm)

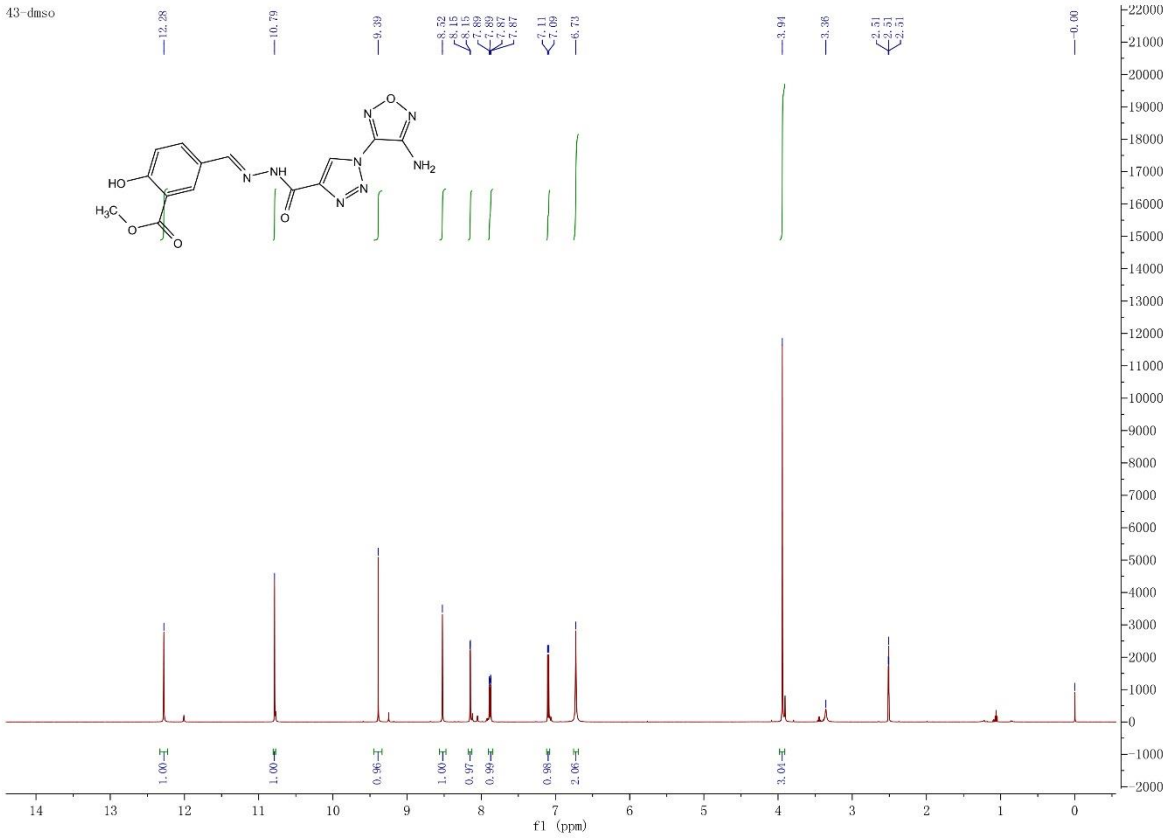

41-dmso
164.18
155.50
151.62
148.08
143.29
142.90
141.85
133.45
132.58
131.08
128.75
126.66
125.25
52.78
40.03
39.94
39.86
39.77
39.69
39.60
39.53
39.44
39.36
39.27
39.10
38.93
0.00
f1 (ppm)

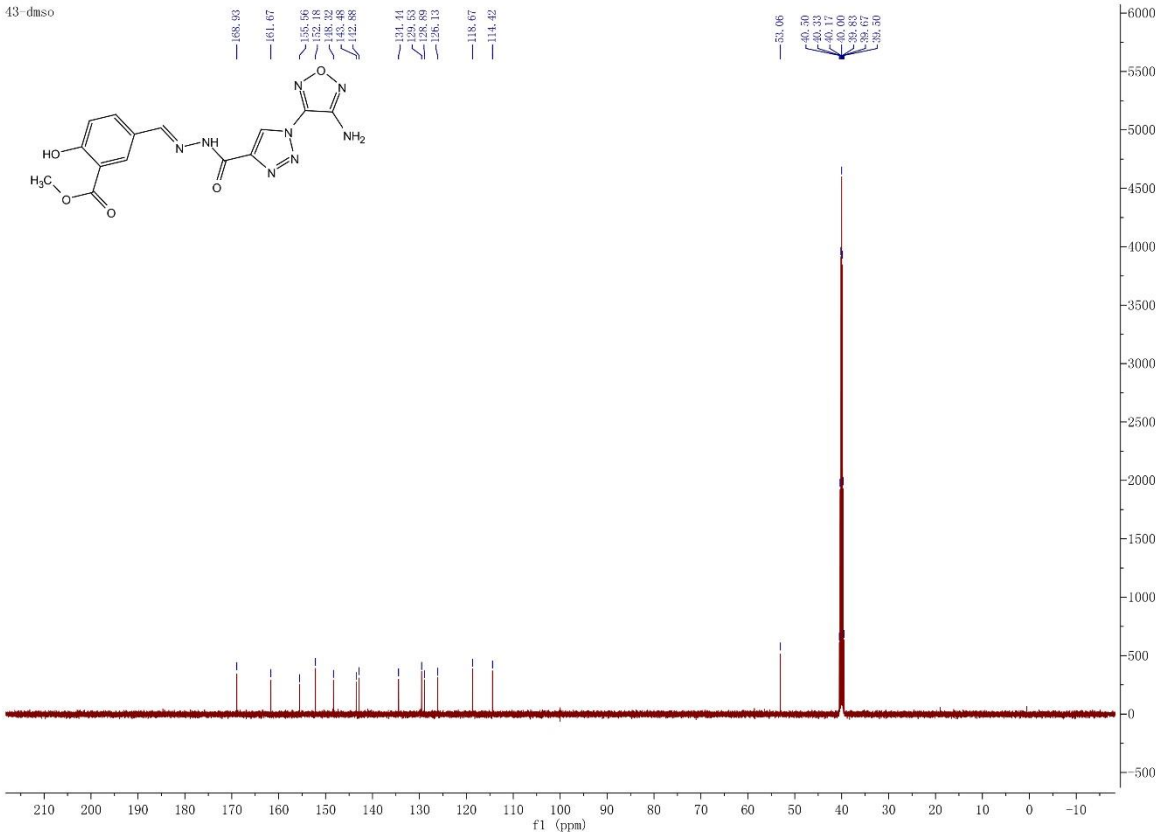
JYQ-42


int-42
12.67
9.44
8.63
8.10
8.05
7.94
6.73
3.35
2.53
2.52
2.52
2.51
2.51
0.00
0.86
0.84
0.85
0.96
0.90
0.88
2.00
f1 (ppm)

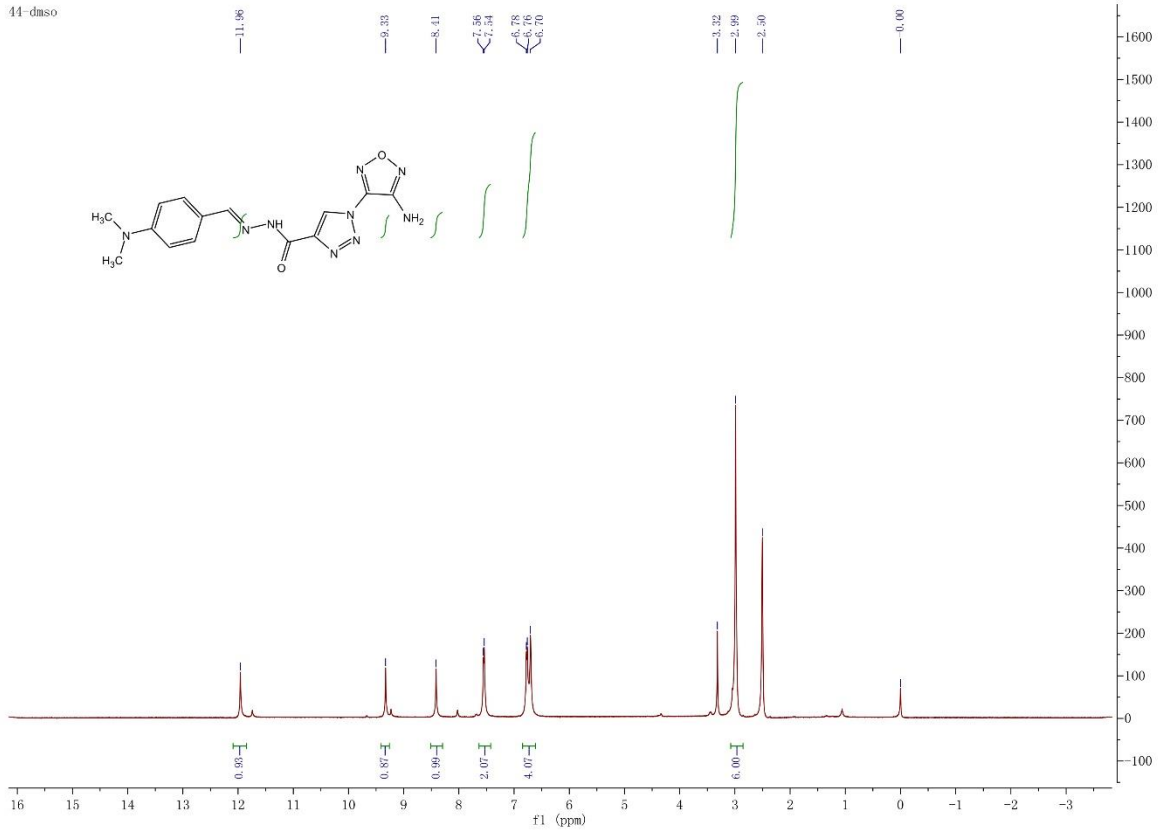

int-42
155.98
152.17
146.17
143.46
142.54
138.03
135.21
132.33
132.00
131.68
131.35
131.05
129.22
127.66
126.75
124.95
122.46
122.24
120.52
119.32
40.61
40.40
40.19
39.98
39.77
39.57
39.36
f1 (ppm)

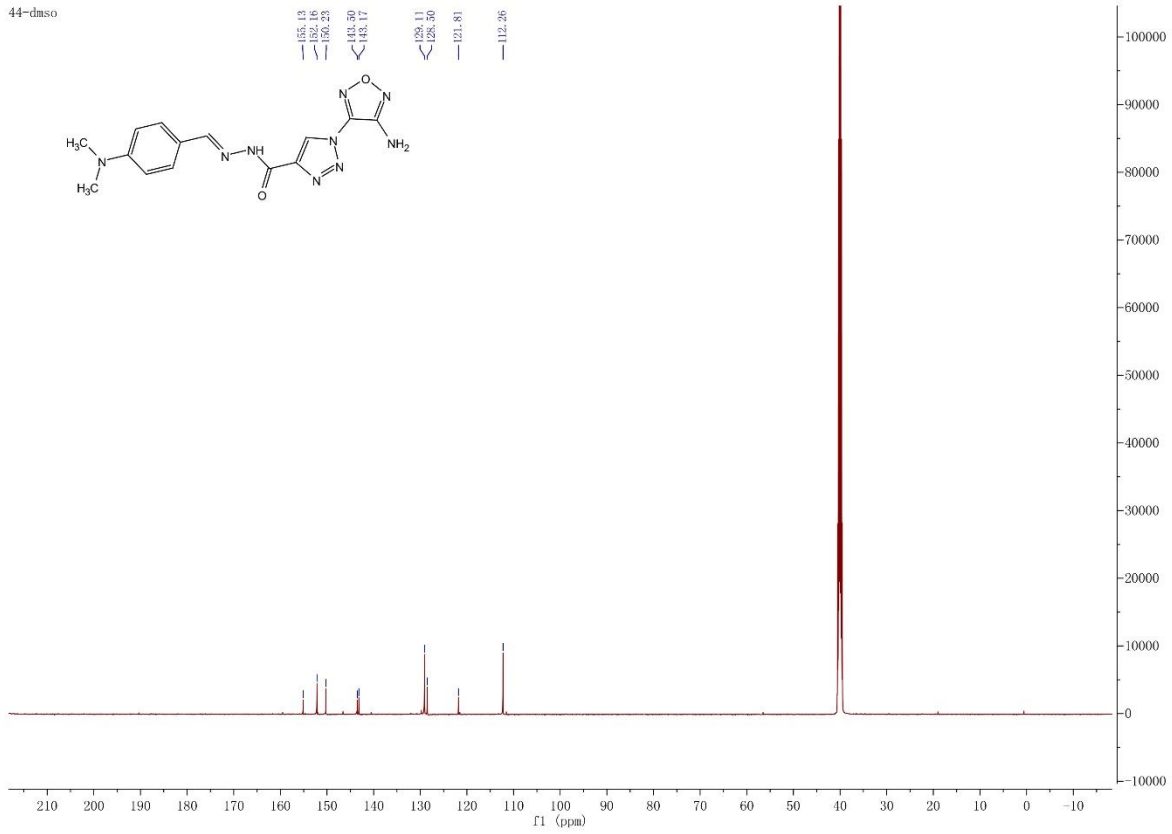
JYQ-43


43-dmso
12.28
10.79
9.39
8.52
8.15
8.15
7.89
7.89
7.87
7.87
7.11
7.09
6.73
3.94
3.36
2.51
2.51
2.51
0.00
HO
H3C
O
O
O
N
O
N
NH
N
N
N
NH2
1.00
1.00
0.96
1.00
0.97
0.99
0.98
2.06
3.04
f1 (ppm)

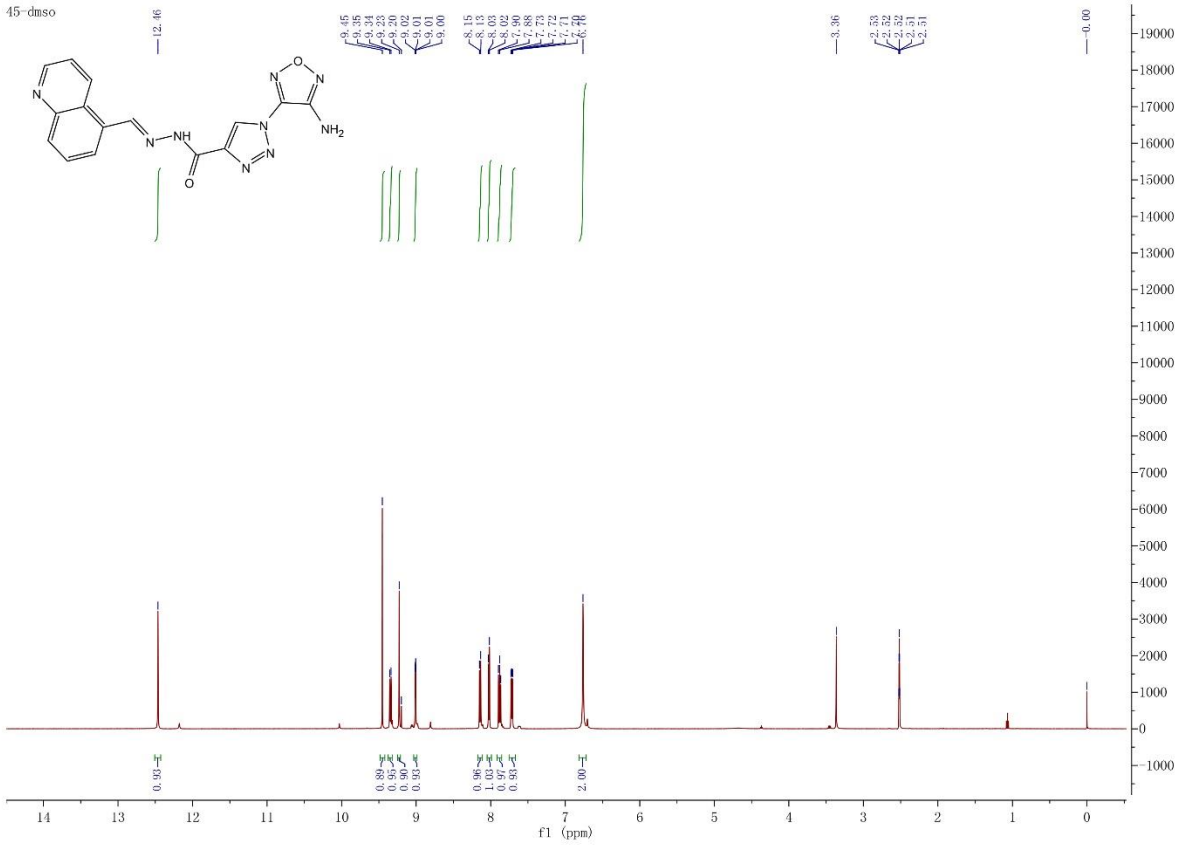

43-dmso
168.93
161.67
155.66
152.18
148.32
143.48
142.88
134.44
129.53
128.89
126.13
118.67
114.42
53.06
40.50
40.33
40.17
40.00
39.83
39.67
39.50
HO
H3C
O
O
O
N
O
N
NH
N
N
N
NH2
f1 (ppm)

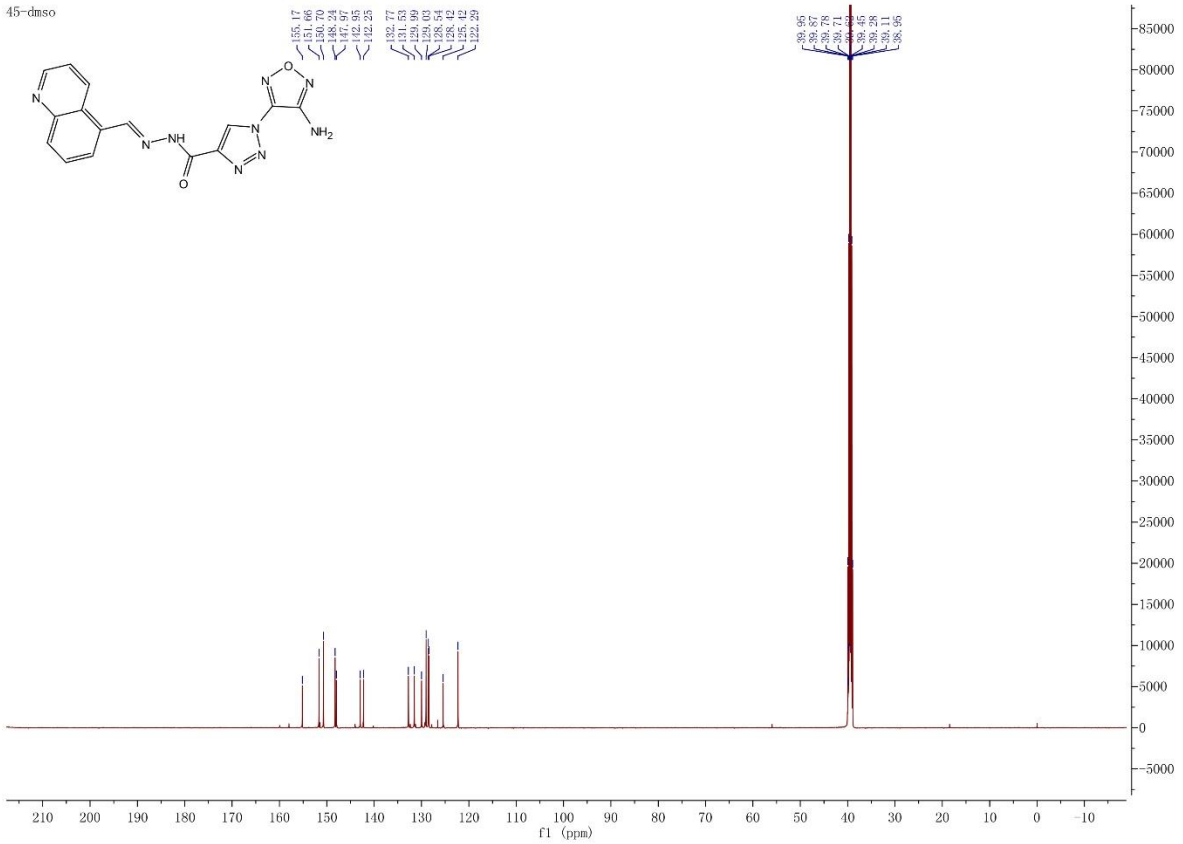
JYQ-44


44-dmso
11.96
9.33
8.41
7.56
7.54
6.78
6.76
6.70
3.32
2.99
2.50
0.00
0.93
0.87
0.99
2.07
4.07
6.00
f1 (ppm)

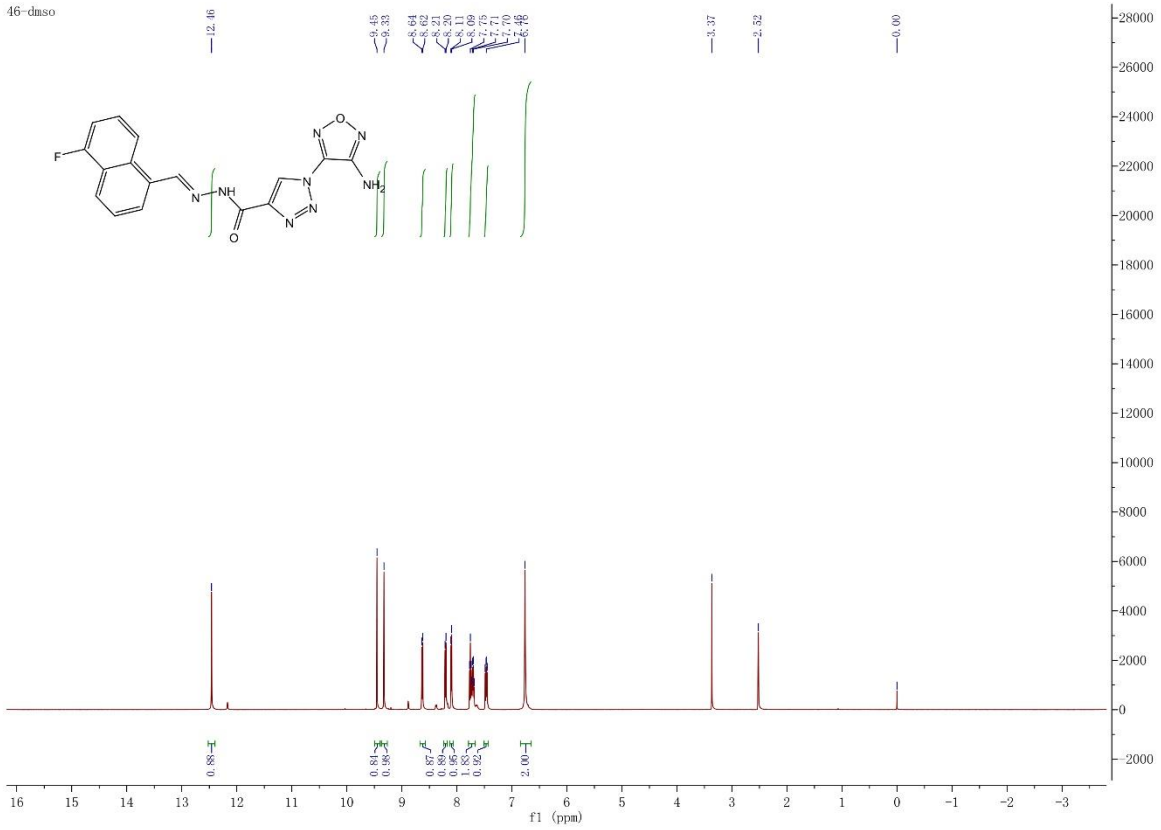

44-dmso
155.13
152.16
150.23
143.50
143.17
129.11
128.50
121.81
112.26
f1 (ppm)

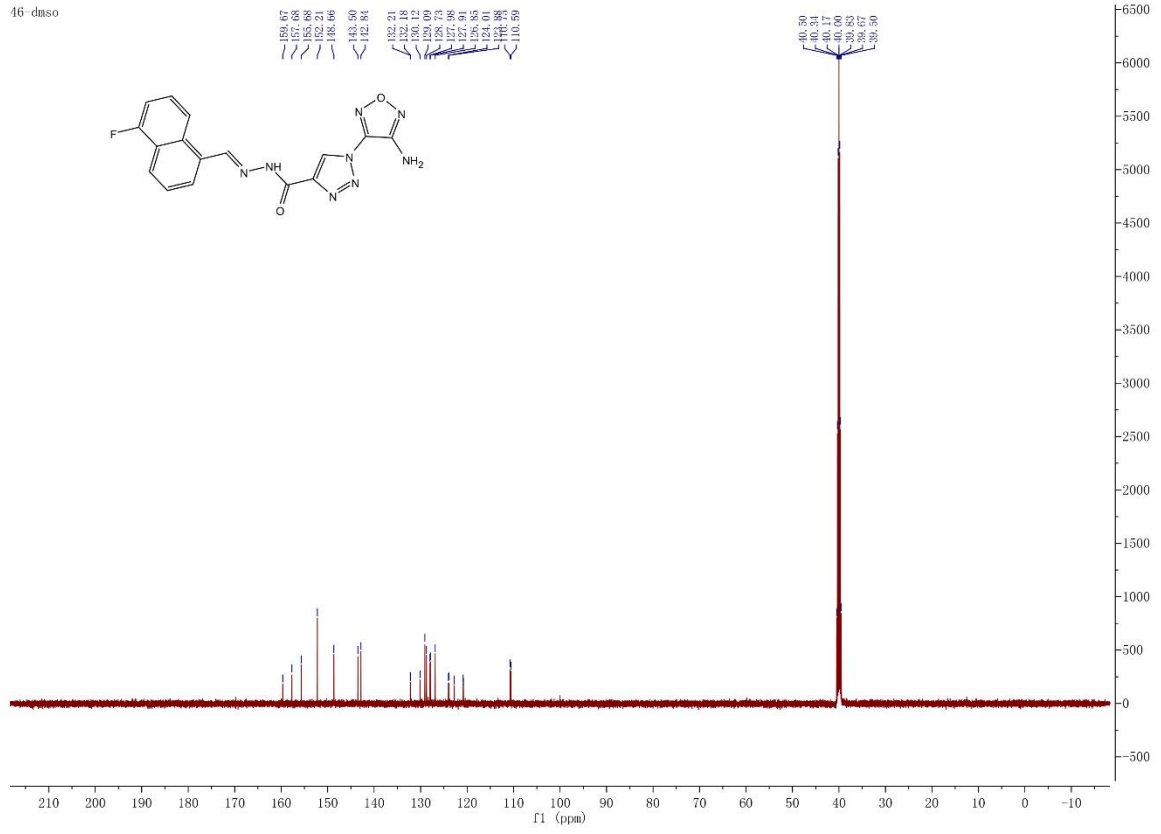
JYQ-45



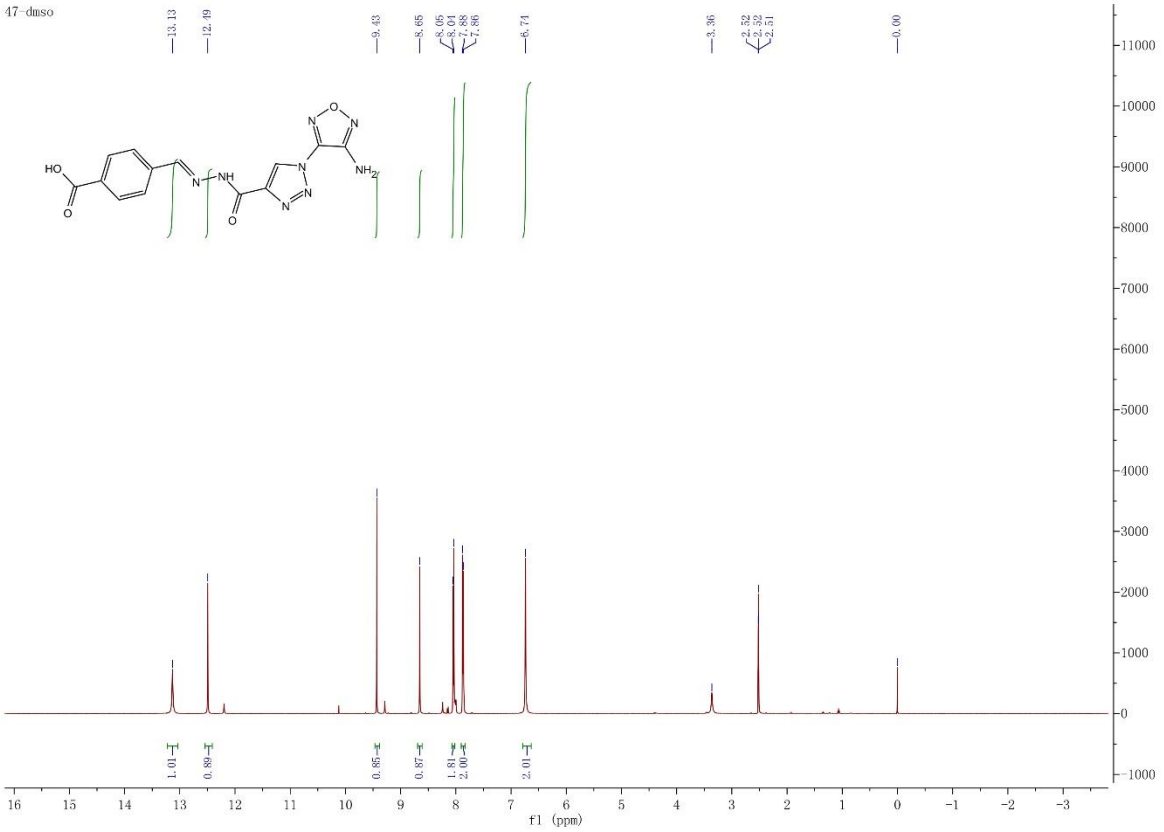


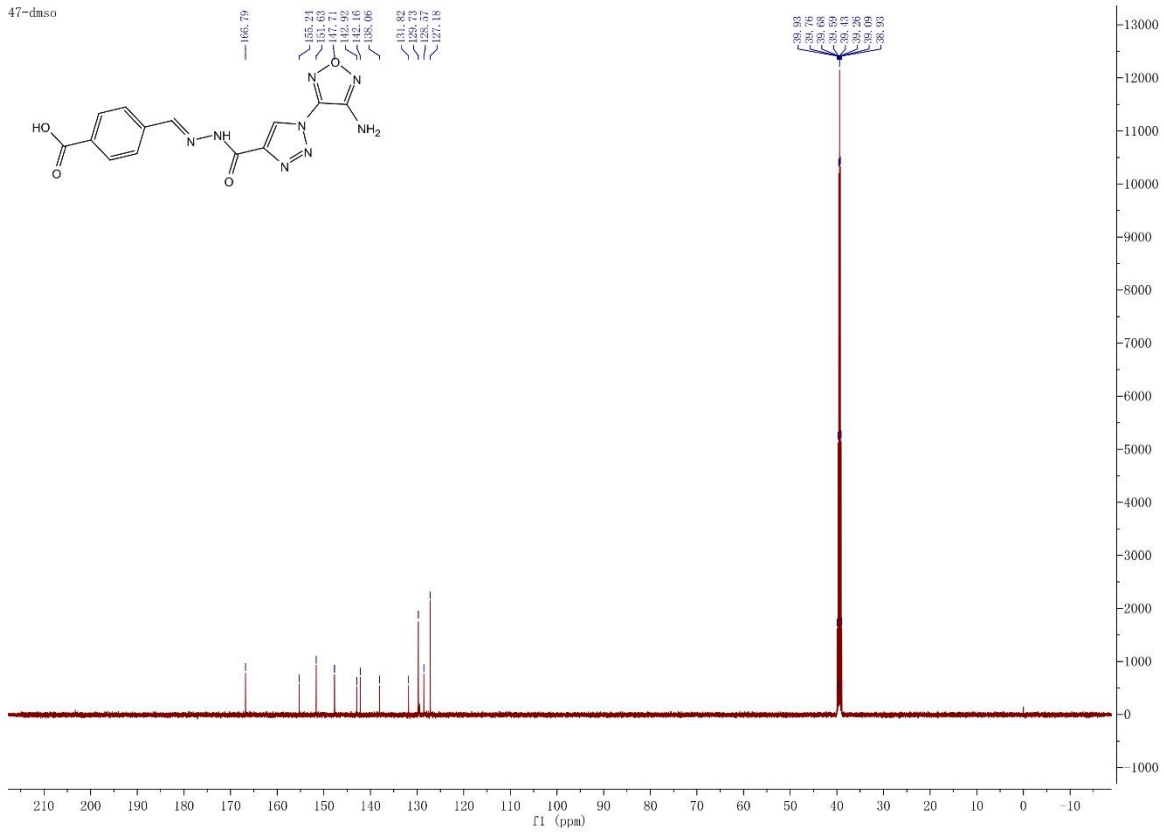
JYQ-46


46-dmso
12.46
8.45
8.33
8.64
8.62
8.21
8.20
8.11
7.98
7.75
7.71
7.70
7.46
3.37
2.52
0.00
0.88
0.84
0.98
0.87
0.89
0.95
1.83
0.92
2.00
f1 (ppm)

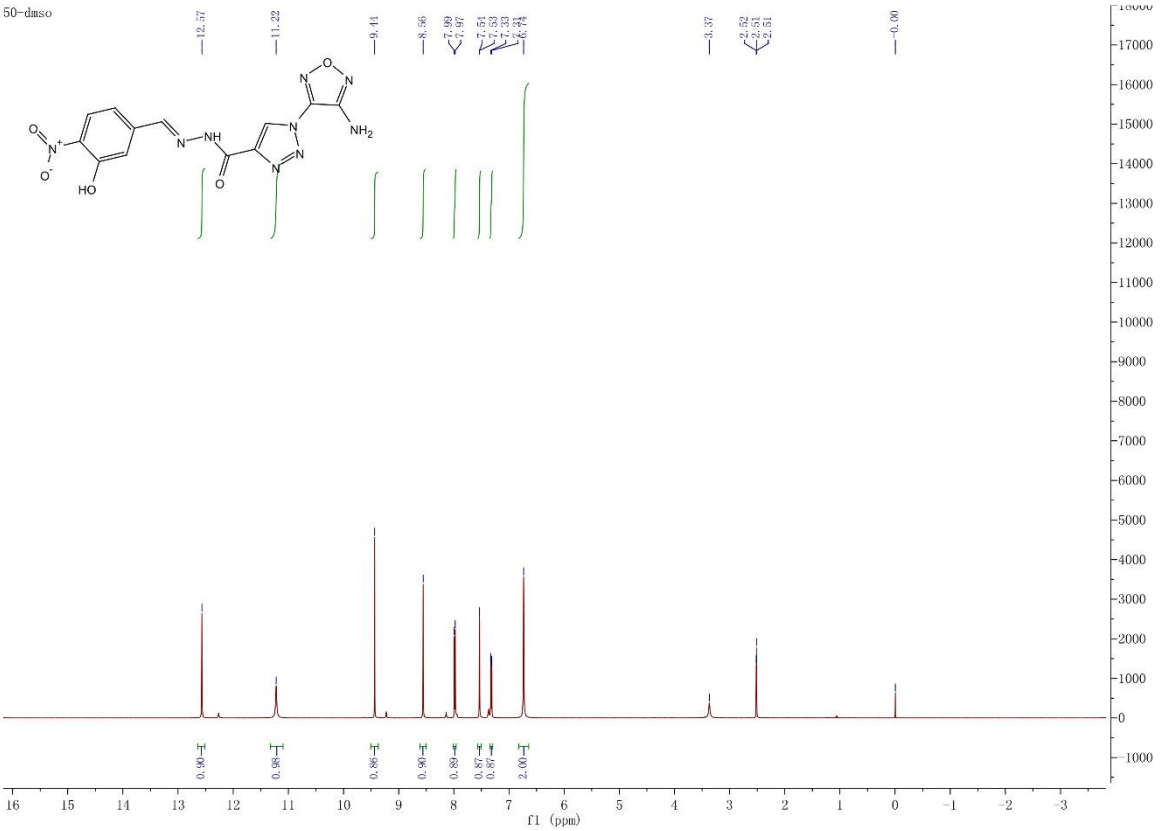

46-dmso
159.67
157.68
155.68
152.21
148.66
143.50
142.84
132.21
132.18
130.12
129.09
128.73
127.98
127.91
126.85
124.01
118.88
110.59
40.50
40.34
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

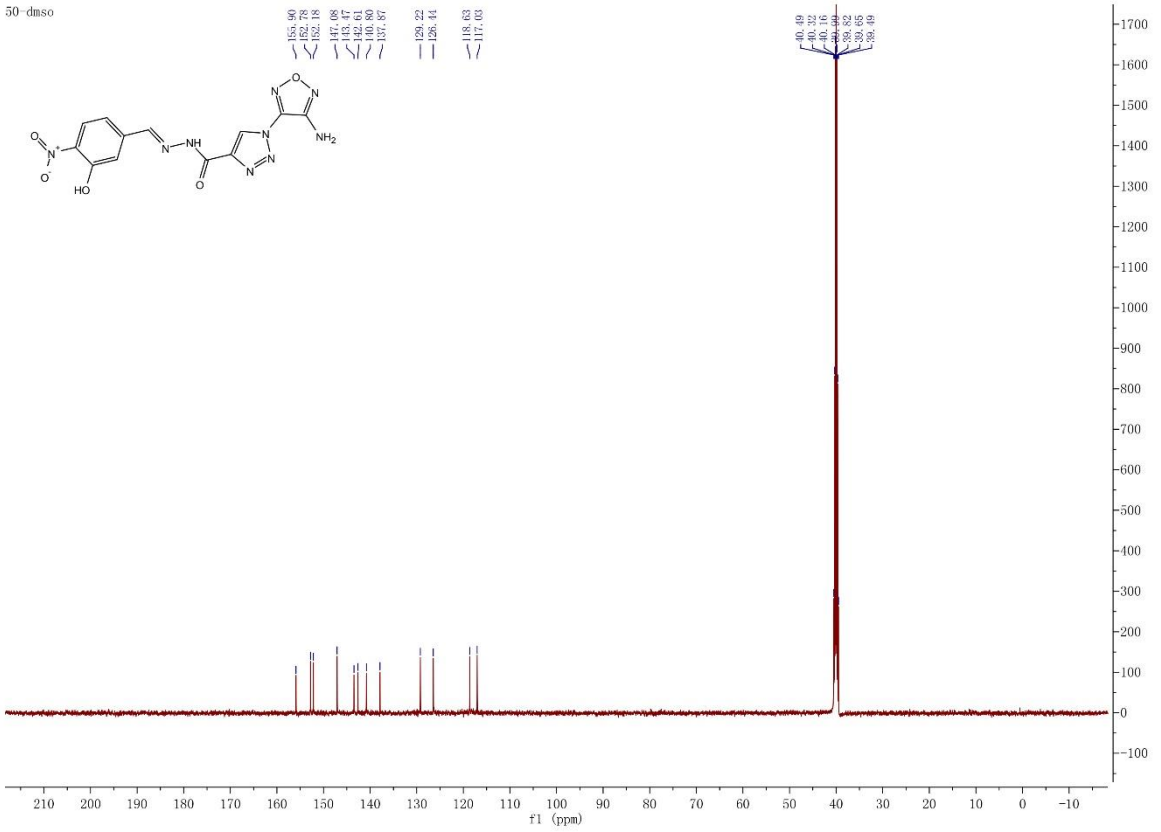
JYQ-47


47-dmso
13.13
12.49
9.43
8.65
8.05
8.04
7.88
7.86
6.74
3.36
2.52
2.32
2.51
0.00
1.01
0.89
0.85
0.87
1.81
2.00
2.01
f1 (ppm)

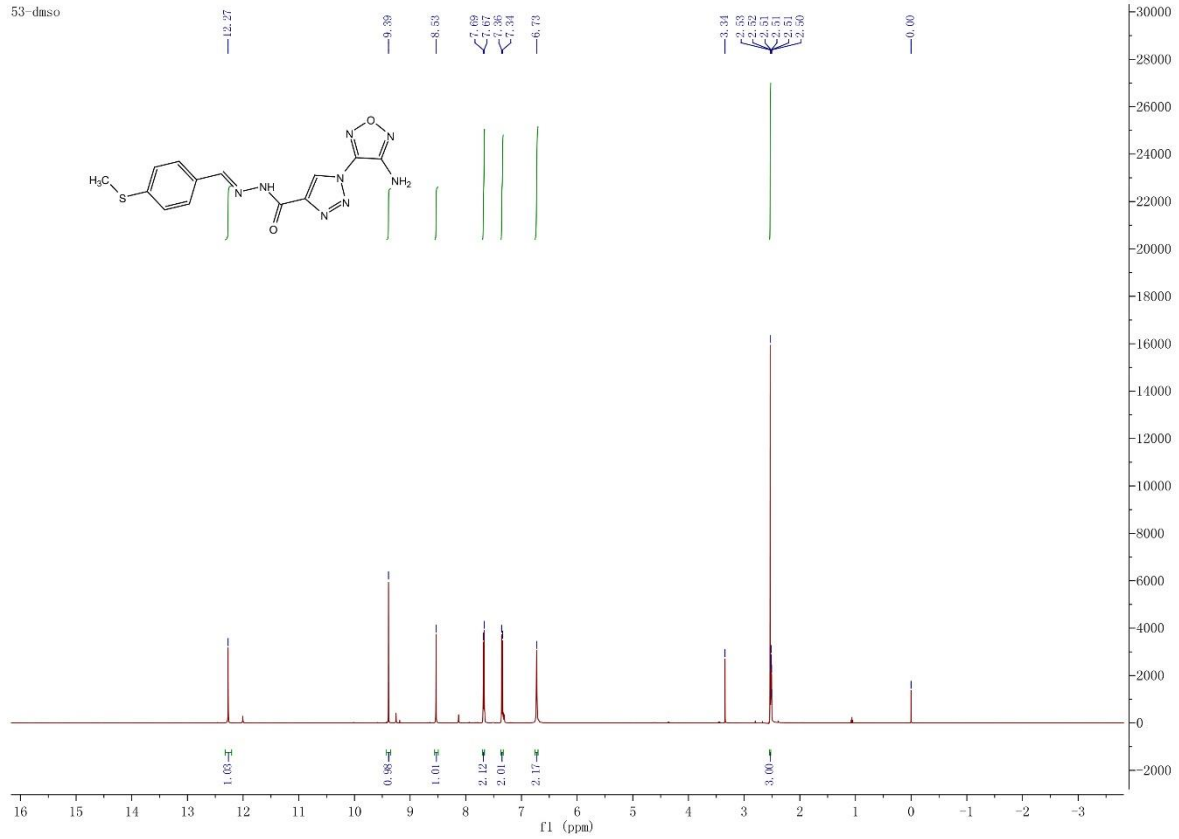

47-dmso
166.79
155.24
151.63
147.71
142.98
142.16
138.06
131.82
129.73
128.57
127.18
39.93
39.76
39.68
39.59
39.43
39.26
39.09
38.93
f1 (ppm)

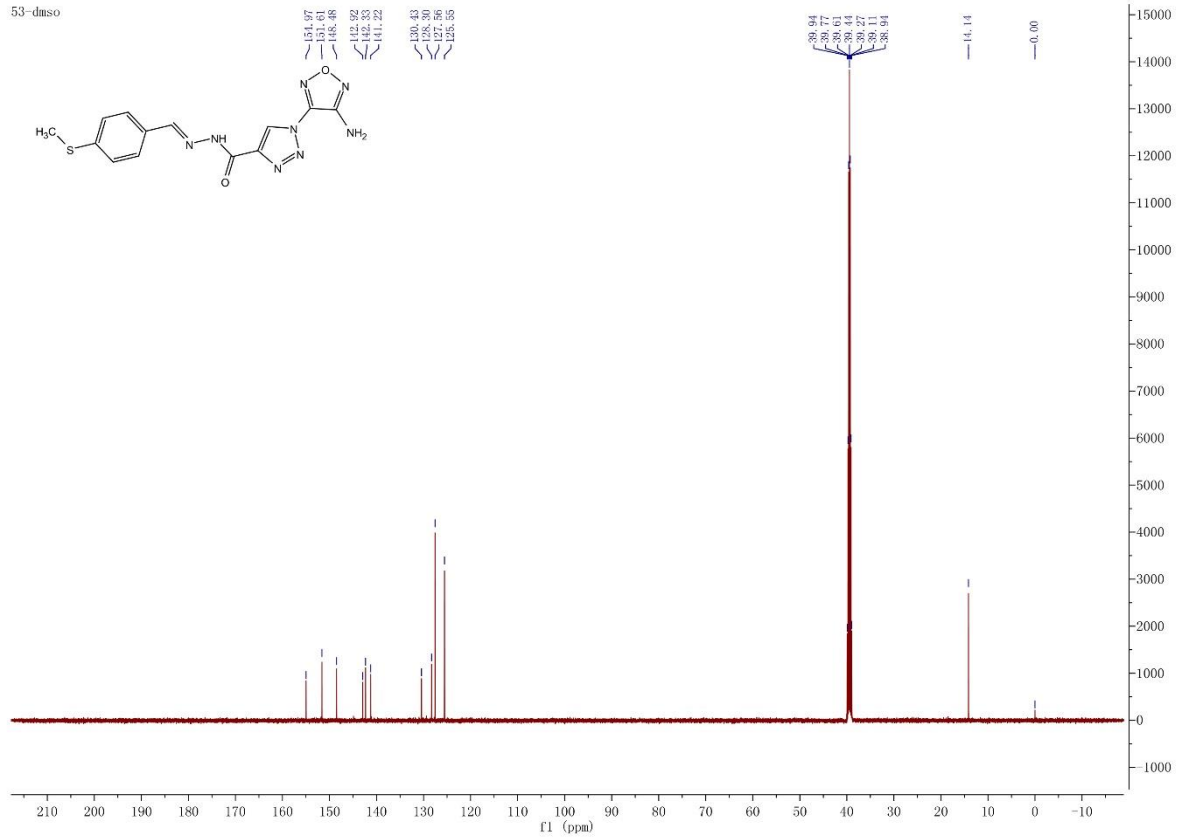
JYQ-48


50-dmso
12.57
11.22
9.44
8.56
7.99
7.97
7.54
7.53
7.33
6.74
3.37
2.52
2.51
2.51
0.00
0.90
0.98
0.88
0.90
0.89
0.87
0.87
2.00
f1 (ppm)

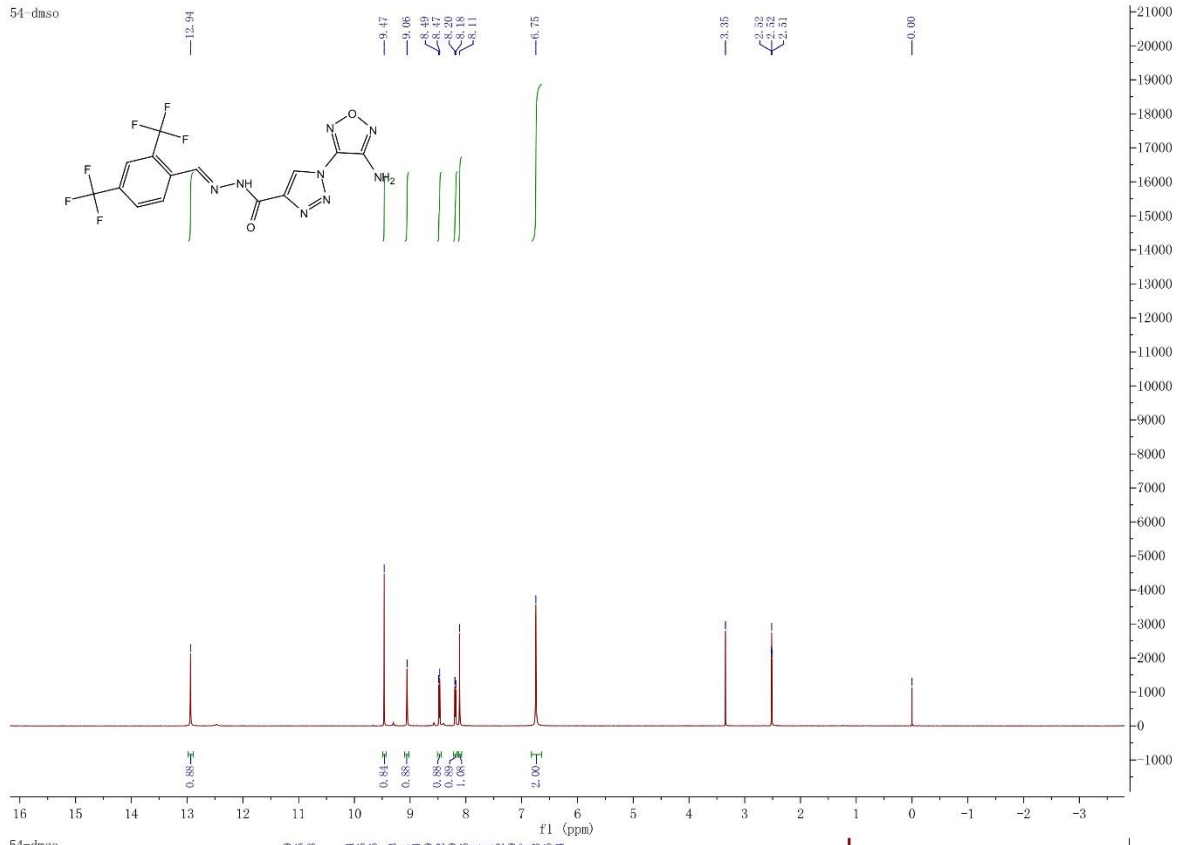

50-dmso
155.90
152.78
152.18
147.08
143.47
142.61
140.80
137.87
129.22
126.44
118.63
117.03
40.49
40.32
40.16
39.82
39.65
39.49
f1 (ppm)

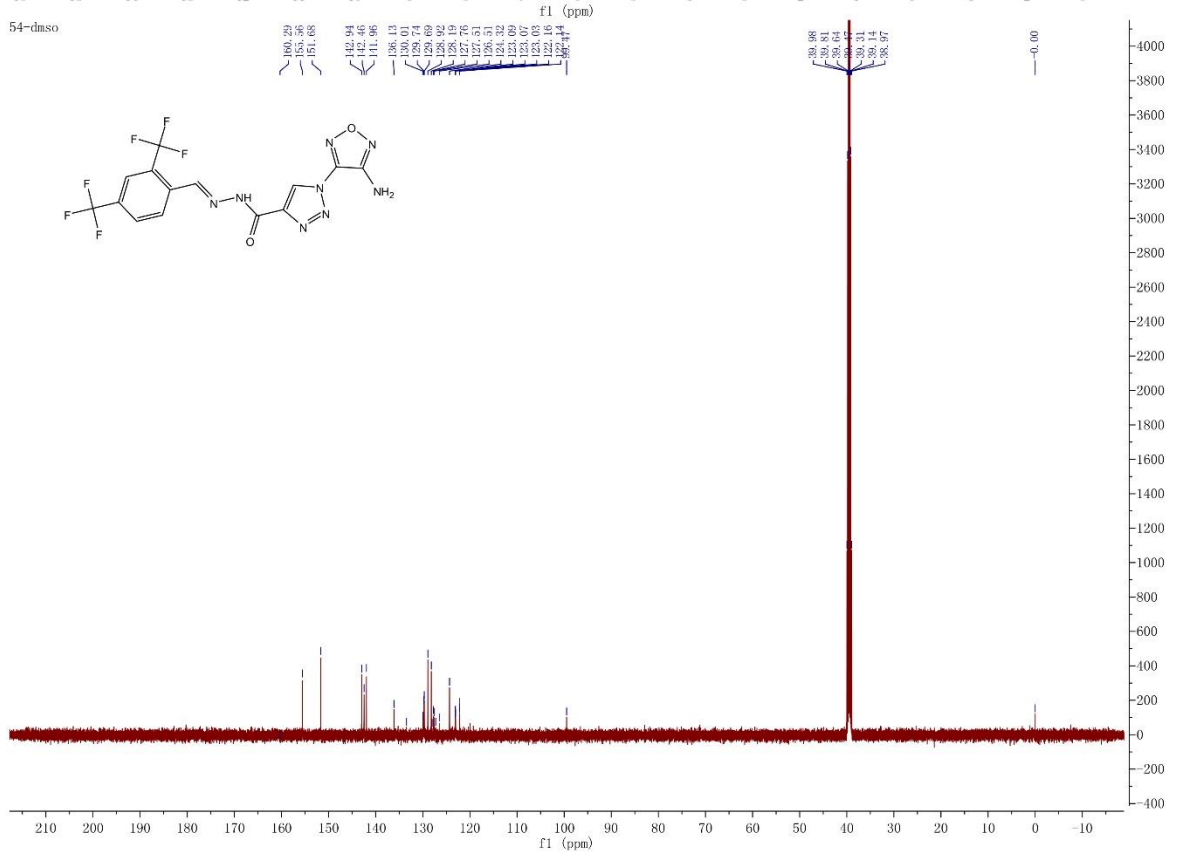
JYQ-49


53-dmso
12.27
9.39
8.53
7.69
7.67
7.36
7.34
6.73
3.34
2.53
2.52
2.51
2.51
2.50
0.00
1.03
0.98
1.01
2.12
2.01
2.17
3.00
f1 (ppm)

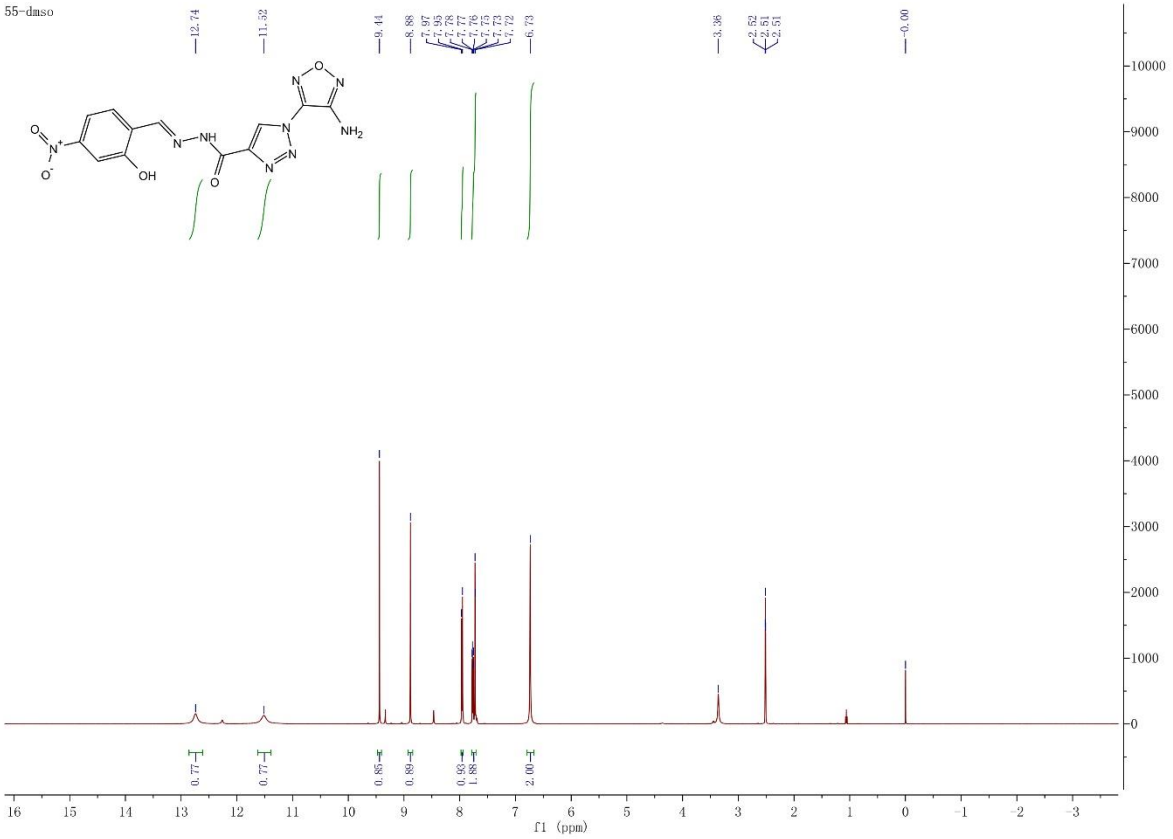

53-dmso
154.97
151.61
148.48
142.92
142.33
141.22
130.43
129.30
127.56
125.55
39.94
39.77
39.61
39.44
39.27
39.11
38.94
14.14
0.00
f1 (ppm)

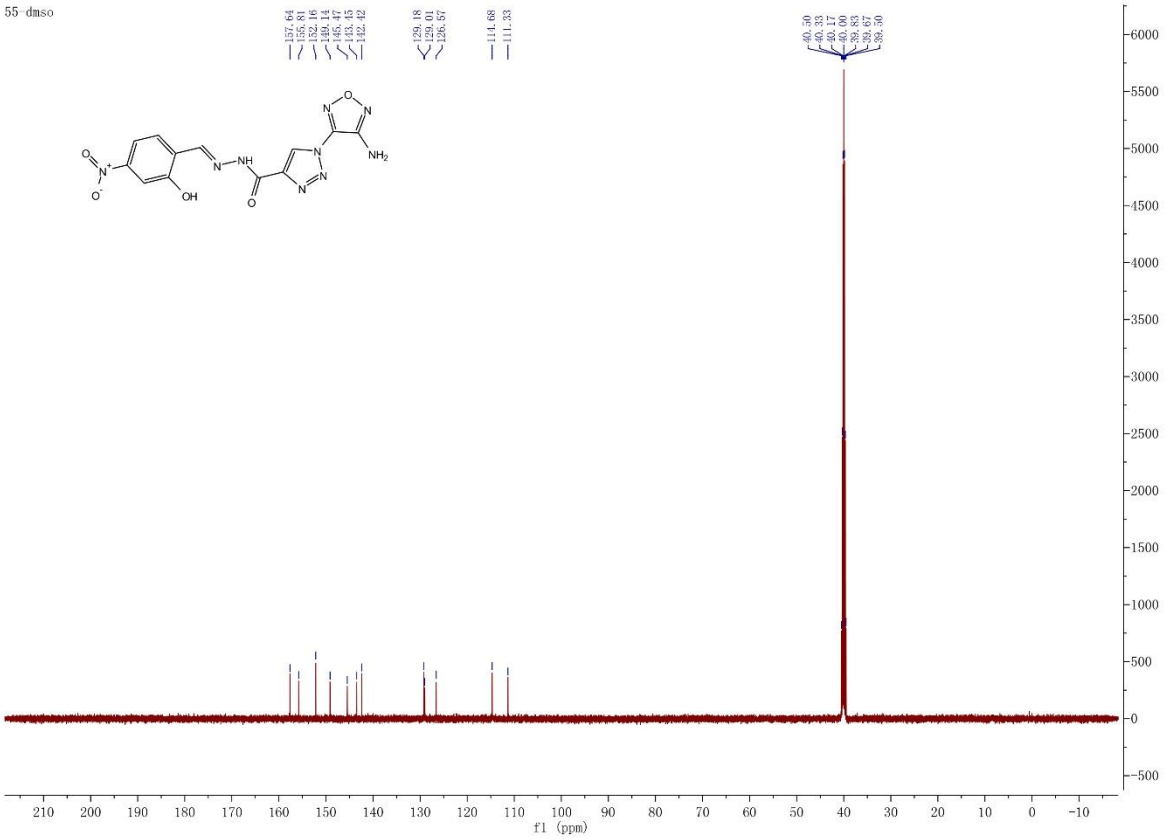
JYQ-50


54-dmso
12.94
9.47
9.06
8.49
8.47
8.20
8.18
8.11
6.75
3.35
2.52
2.52
2.51
0.00
0.88
0.84
0.88
0.89
0.89
1.06
2.00
f1 (ppm)

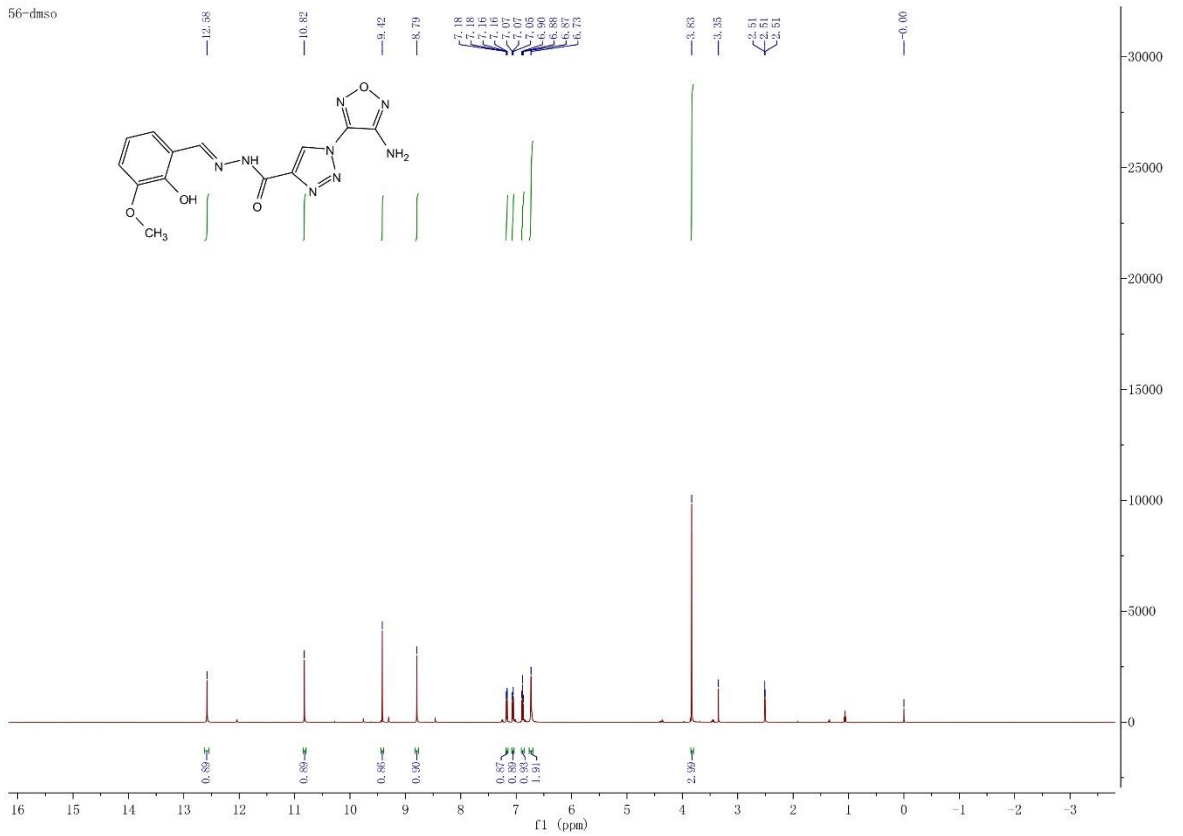

54-dmso
160.79
155.68
151.68
142.94
142.46
141.96
136.13
130.01
129.74
129.69
128.92
128.19
127.76
127.51
126.51
124.32
123.69
123.07
123.03
122.16
39.98
39.81
39.64
39.47
39.31
39.14
38.97
0.00
f1 (ppm)

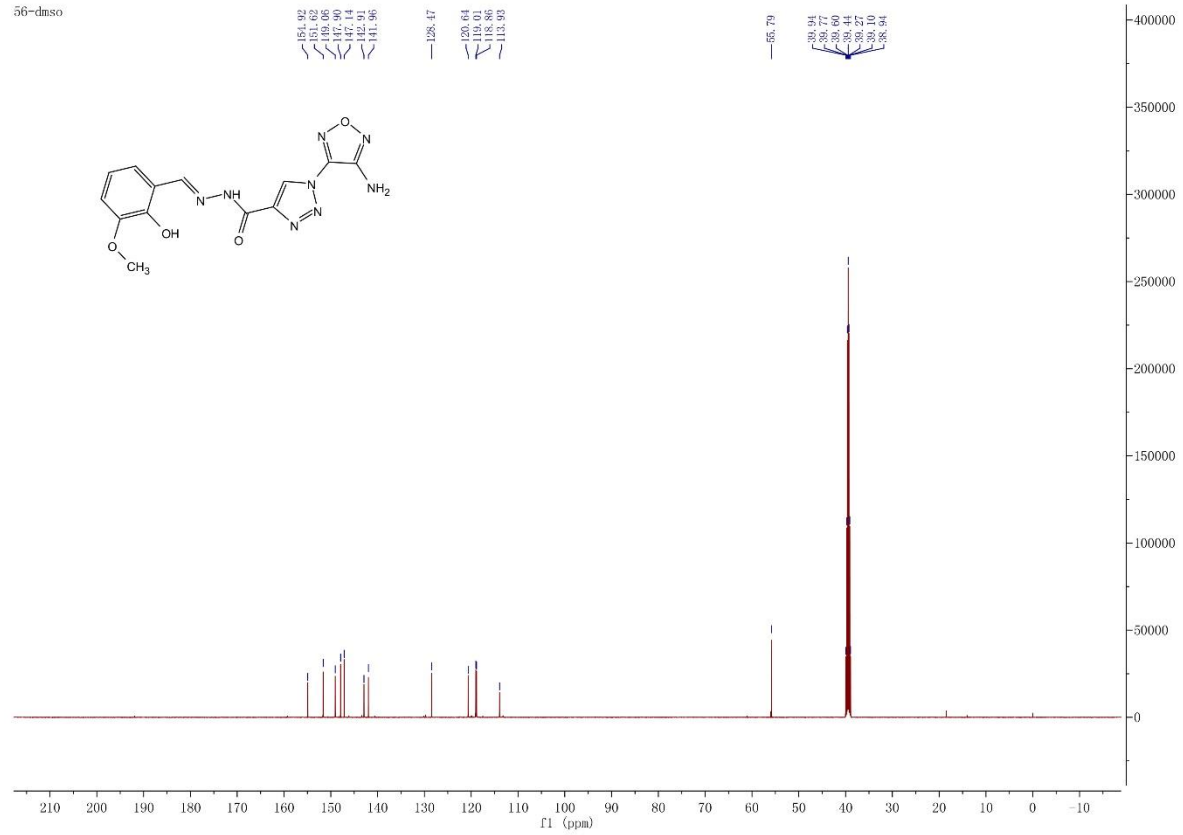
JYQ-51


55-dmso
12.74
11.52
9.44
8.88
7.97
7.95
7.78
7.77
7.76
7.75
7.73
7.72
6.73
3.36
2.52
2.51
2.51
0.00
0.77
0.77
0.85
0.89
0.93
1.88
2.00
f1 (ppm)

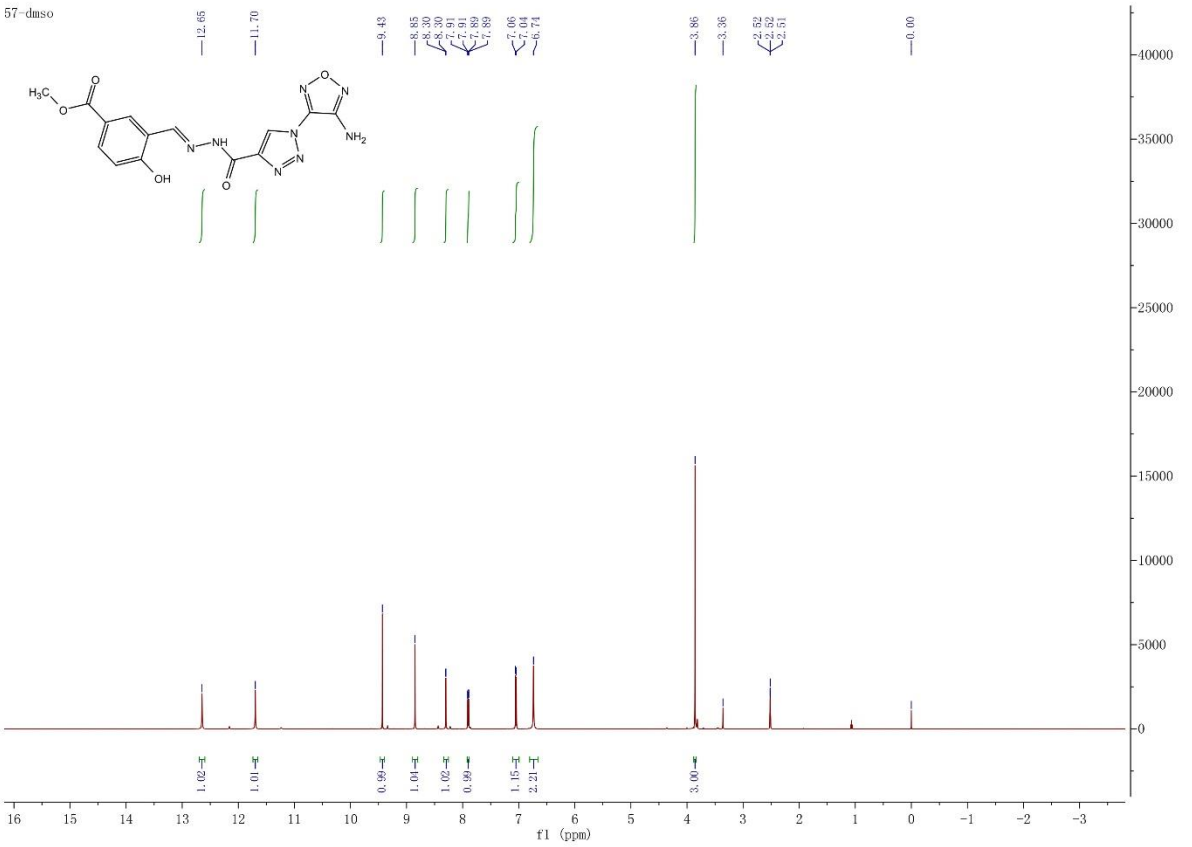

55-dmso
157.64
155.81
152.16
149.14
145.47
143.45
142.42
129.18
129.01
126.57
114.68
111.33
40.50
40.33
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

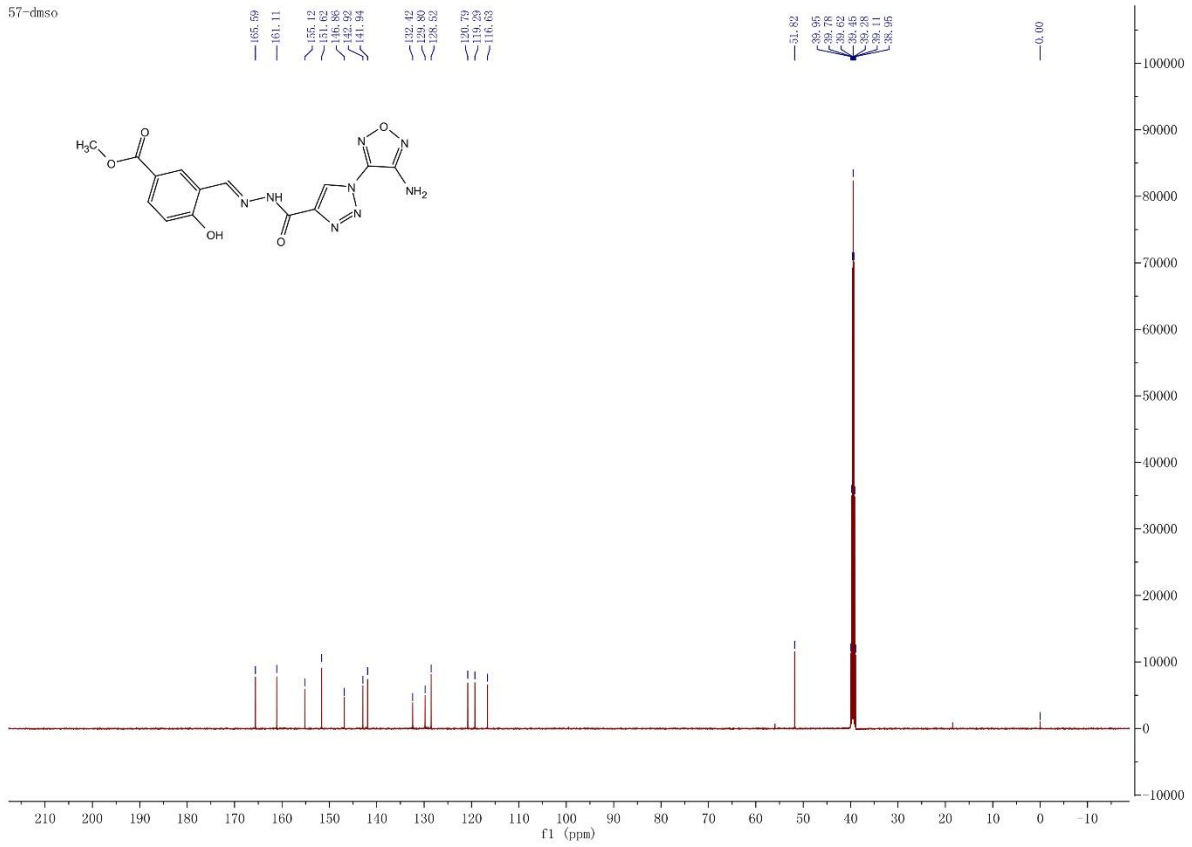
JYQ-52


56-dmso
12.88
10.82
9.42
8.79
7.18
7.18
7.16
7.16
7.07
7.07
7.05
6.90
6.88
6.87
6.73
3.83
3.35
2.51
2.51
2.51
0.00
0.89
0.89
0.88
0.90
0.87
0.89
0.93
1.91
2.99
f1 (ppm)

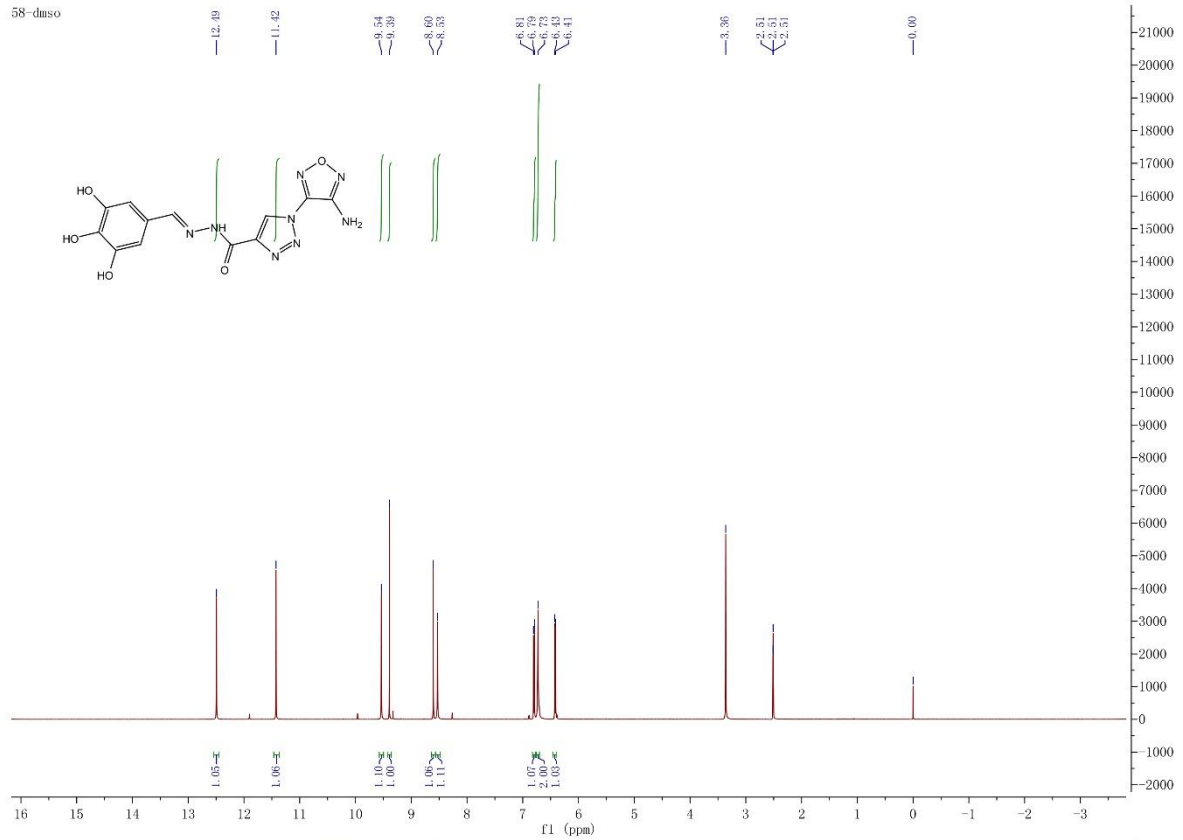

56-dmso
154.92
151.62
149.06
147.49
147.14
142.91
141.96
128.47
120.64
119.01
118.86
113.93
55.79
39.94
39.77
39.60
39.44
39.27
39.10
38.94
f1 (ppm)

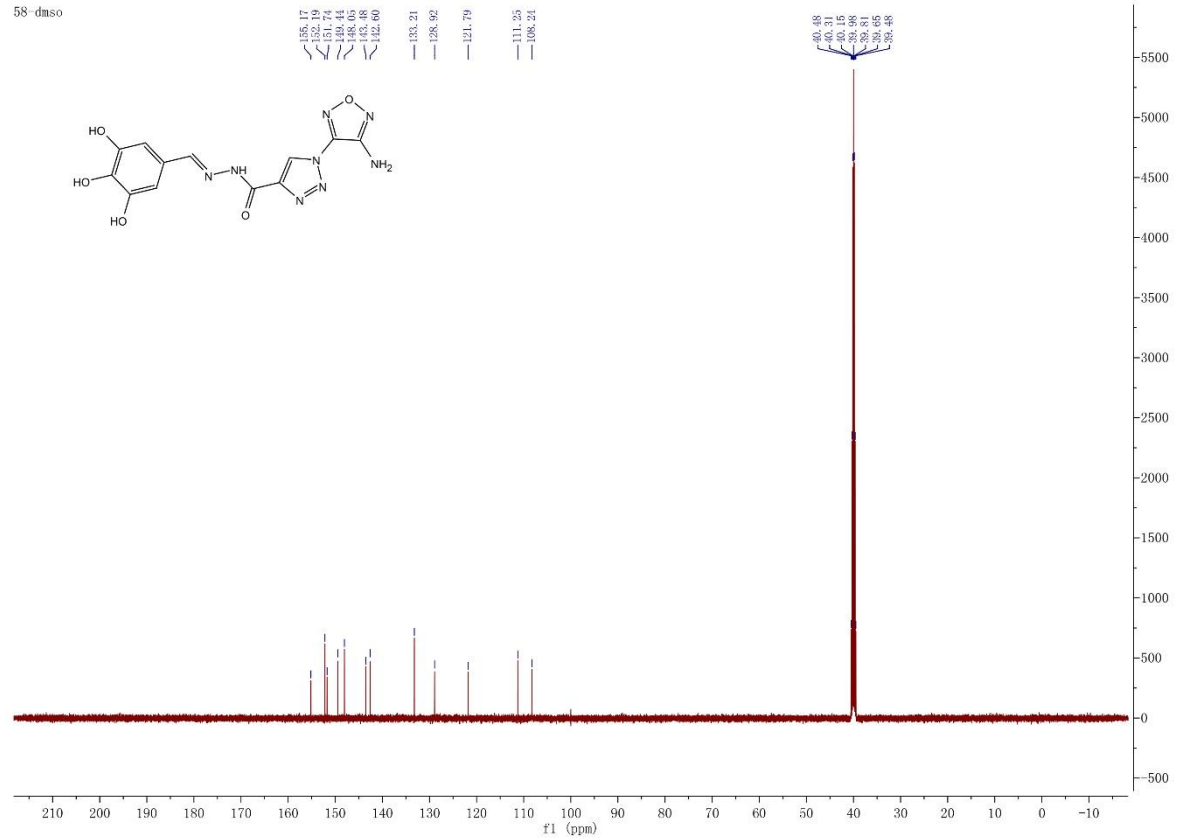
JYQ-53


57-dmso
12.65
11.70
9.43
8.85
8.30
8.01
7.91
7.89
7.89
7.06
7.04
6.74
3.86
3.36
2.52
2.52
2.51
0.00
1.02
1.01
0.99
1.04
1.02
0.99
1.15
2.21
3.00
f1 (ppm)

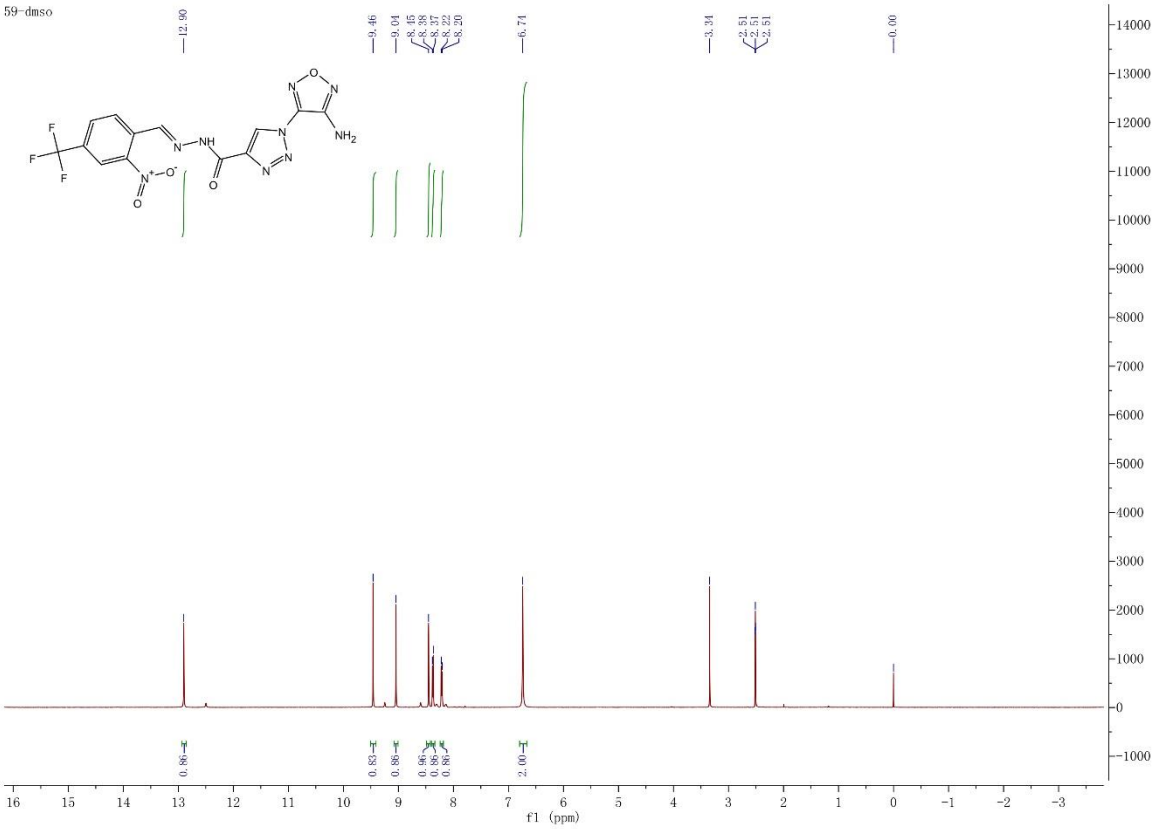

57-dmso
165.69
161.11
155.12
151.62
146.86
142.92
141.94
132.42
129.80
128.52
120.79
119.39
116.63
51.82
39.95
39.78
39.62
39.45
39.28
39.11
38.96
0.00
f1 (ppm)

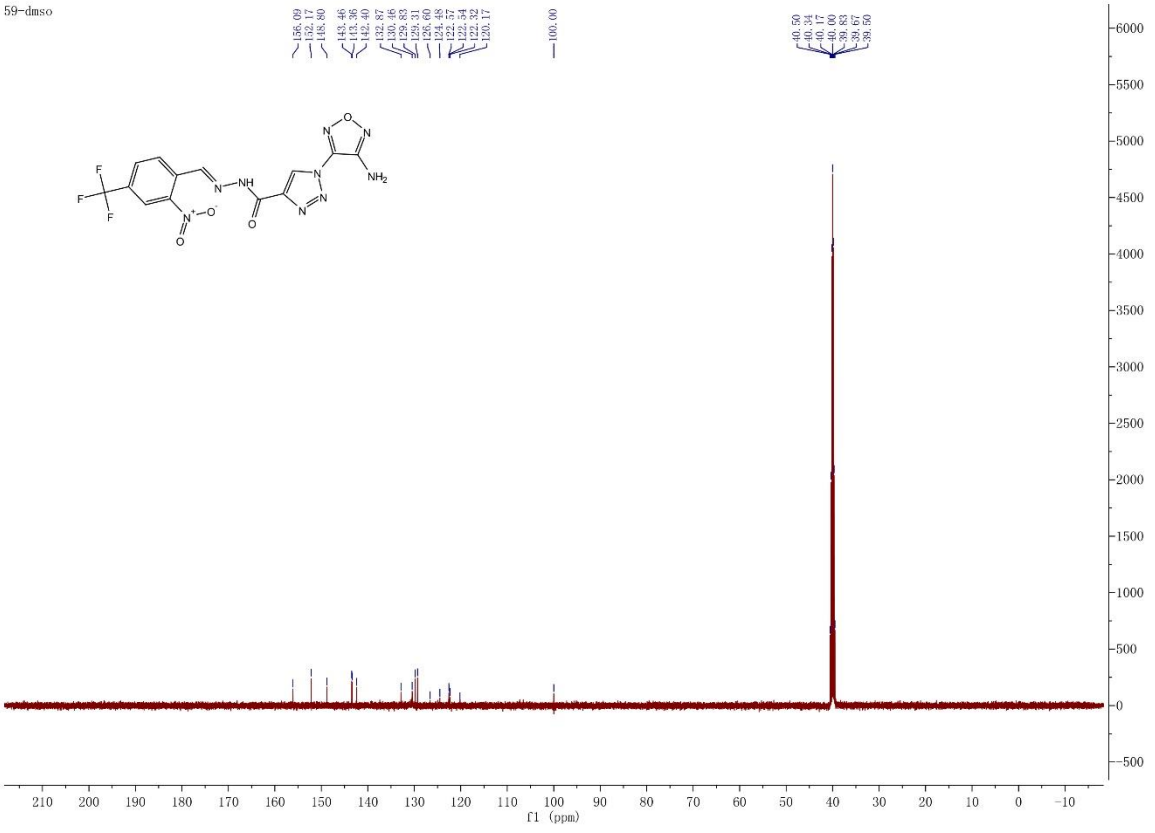
JYQ-54


58-dmso
12.49
11.42
9.54
9.39
8.60
8.33
6.81
6.79
6.73
6.43
6.41
3.36
2.51
2.51
2.51
0.00
1.05
1.06
1.10
1.00
1.06
1.11
1.07
2.00
1.03
f1 (ppm)

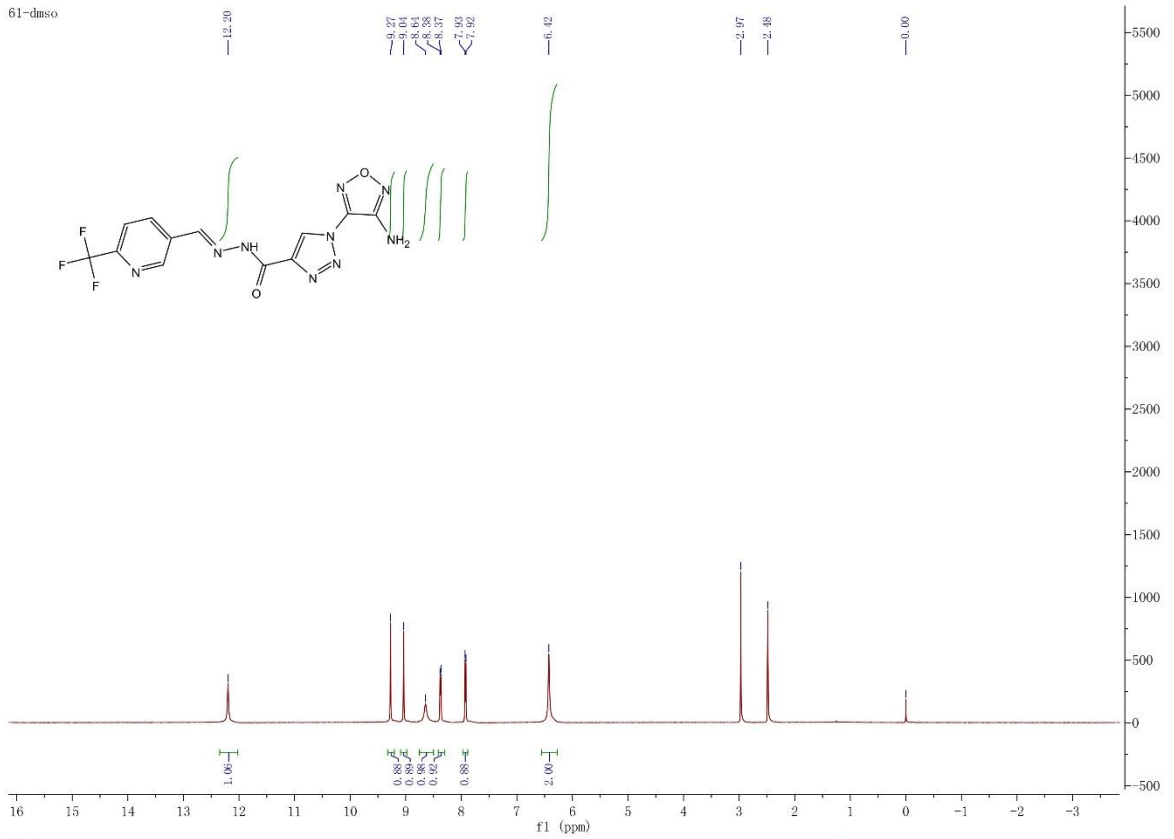

58-dmso
155.17
152.19
151.74
149.44
148.05
143.48
142.60
133.21
128.92
121.79
111.25
108.24
40.48
40.31
40.15
39.98
39.81
39.65
39.48
f1 (ppm)

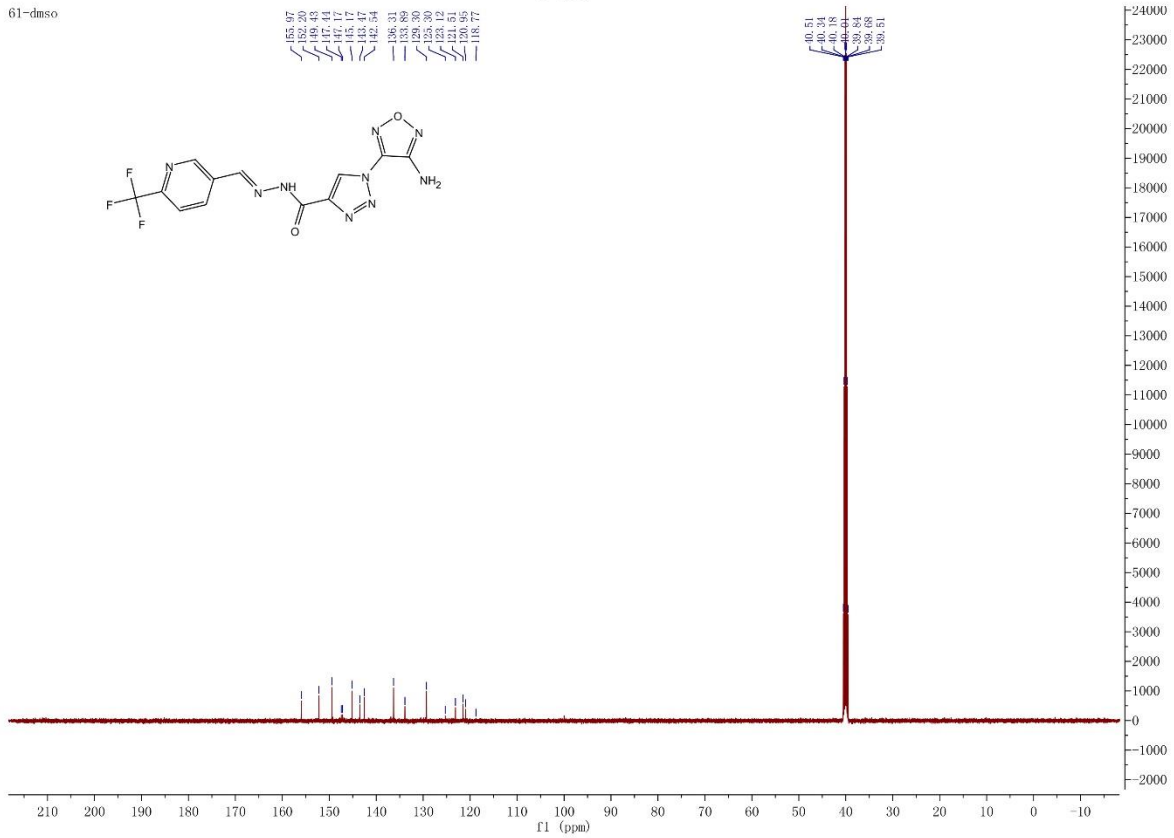
JYQ-55


59-dmso
12.90
9.46
9.04
8.45
8.38
8.37
8.22
8.20
6.74
3.34
2.51
2.51
2.51
0.00
0.86
0.83
0.88
0.96
0.88
0.86
2.00
f1 (ppm)

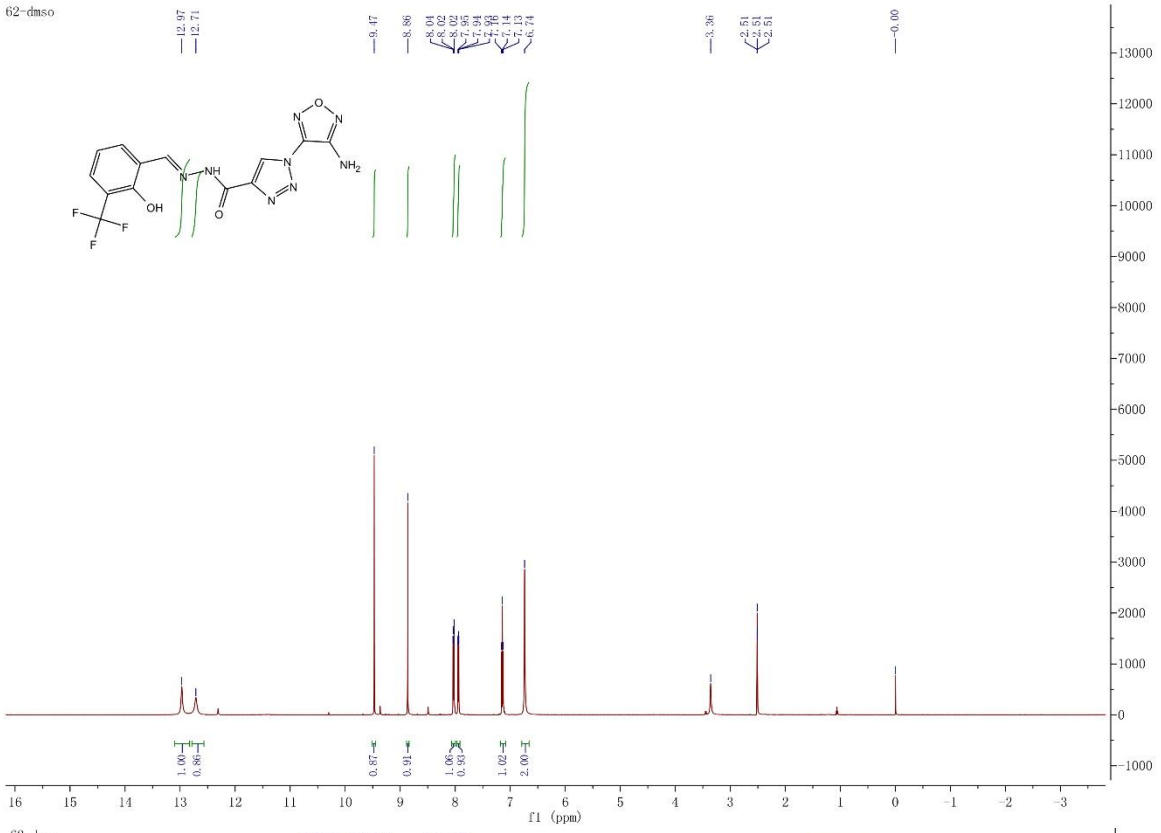

59-dmso
156.09
152.17
145.80
143.46
143.36
142.40
132.87
130.46
129.83
129.31
126.60
124.48
122.57
122.54
122.32
120.17
100.00
40.50
40.34
40.17
40.00
39.83
39.67
39.50
f1 (ppm)

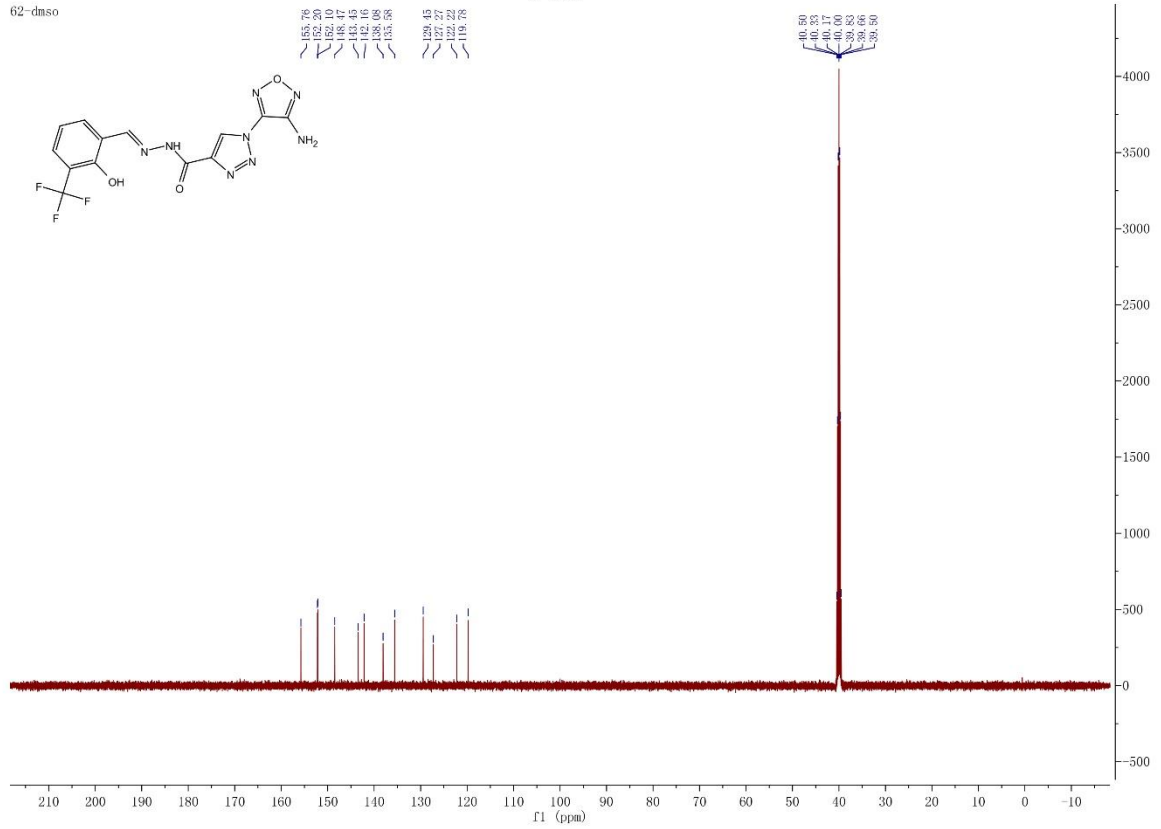
JYQ-56


61-dmso
12.20
9.27
9.04
8.84
8.58
8.37
7.93
7.92
6.42
2.97
2.48
0.00
1.06
0.88
0.89
0.98
0.92
0.88
2.00
f1 (ppm)

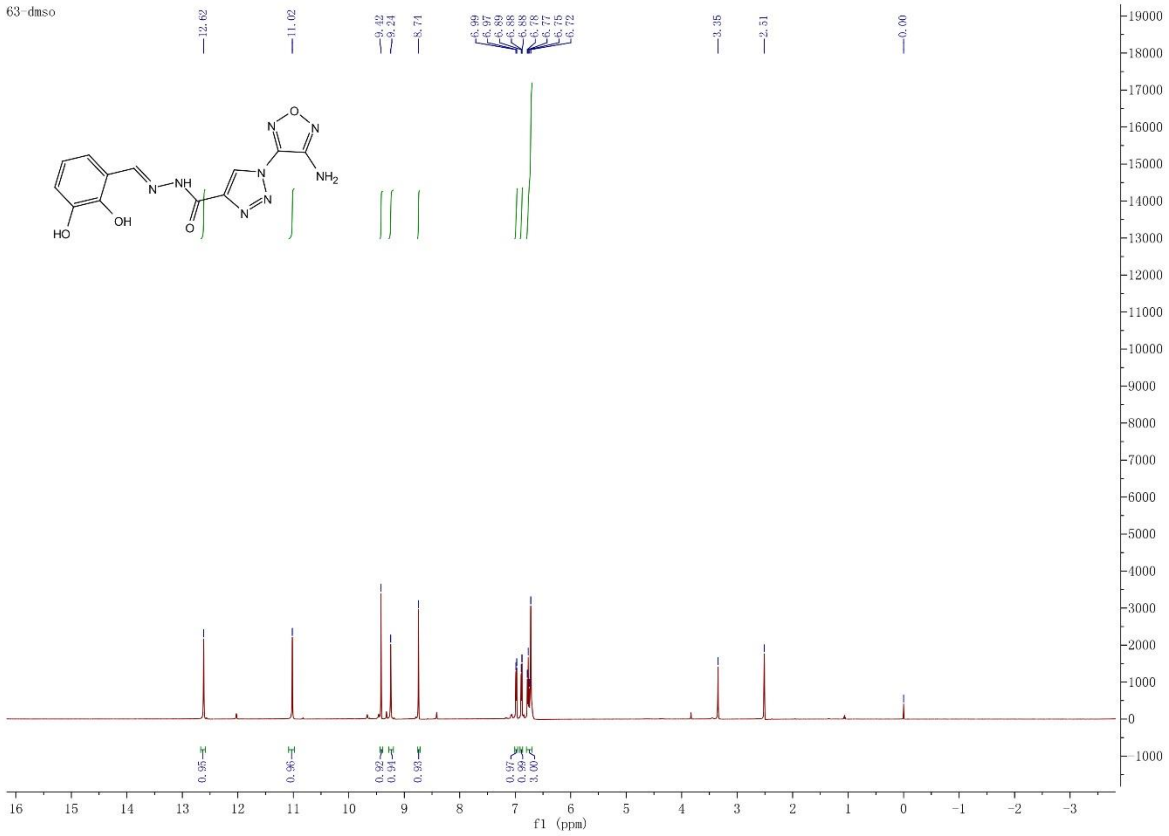

61-dmso
155.97
152.20
149.43
147.44
147.17
145.17
143.47
142.54
136.31
133.89
129.30
128.30
123.12
121.51
120.95
118.77
40.51
40.34
40.18
40.01
39.84
39.68
39.51
f1 (ppm)

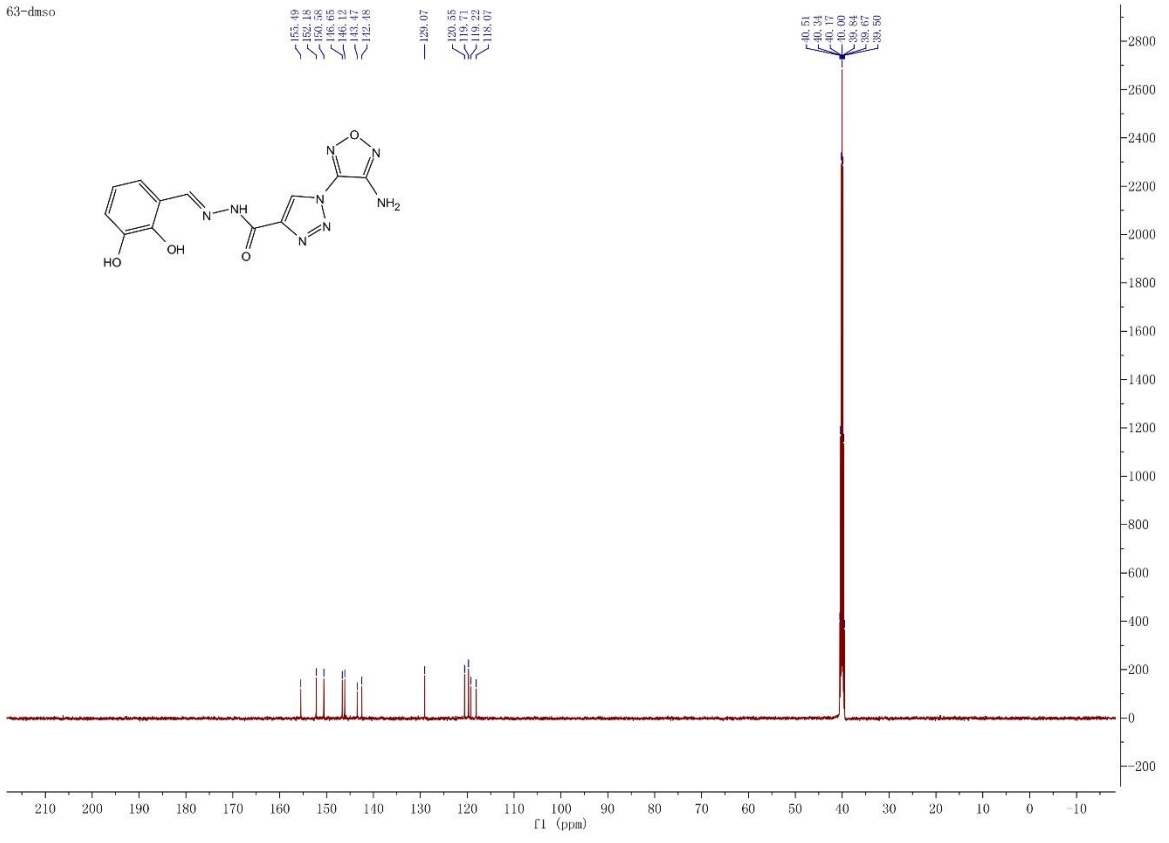
JYQ-57


62-dmso
12.97
12.71
9.47
8.86
8.04
8.02
8.02
7.95
7.94
7.18
7.14
7.13
6.74
3.36
2.51
2.51
2.51
0.00
1.00
0.86
0.87
0.91
1.06
0.93
1.02
2.00
f1 (ppm)

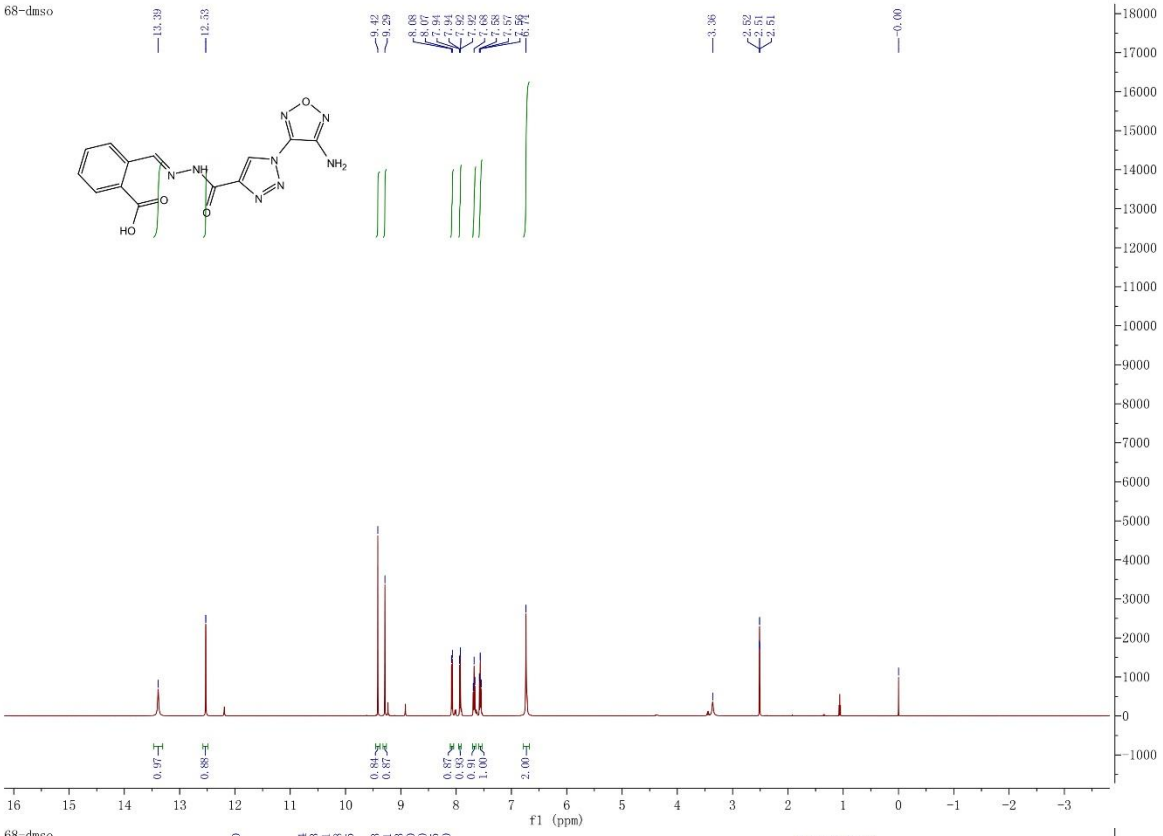

62-dmso
155.76
152.20
152.10
148.47
143.45
142.16
138.08
135.58
129.45
127.27
122.22
119.78
40.50
40.33
40.17
40.00
39.83
39.66
39.50
f1 (ppm)

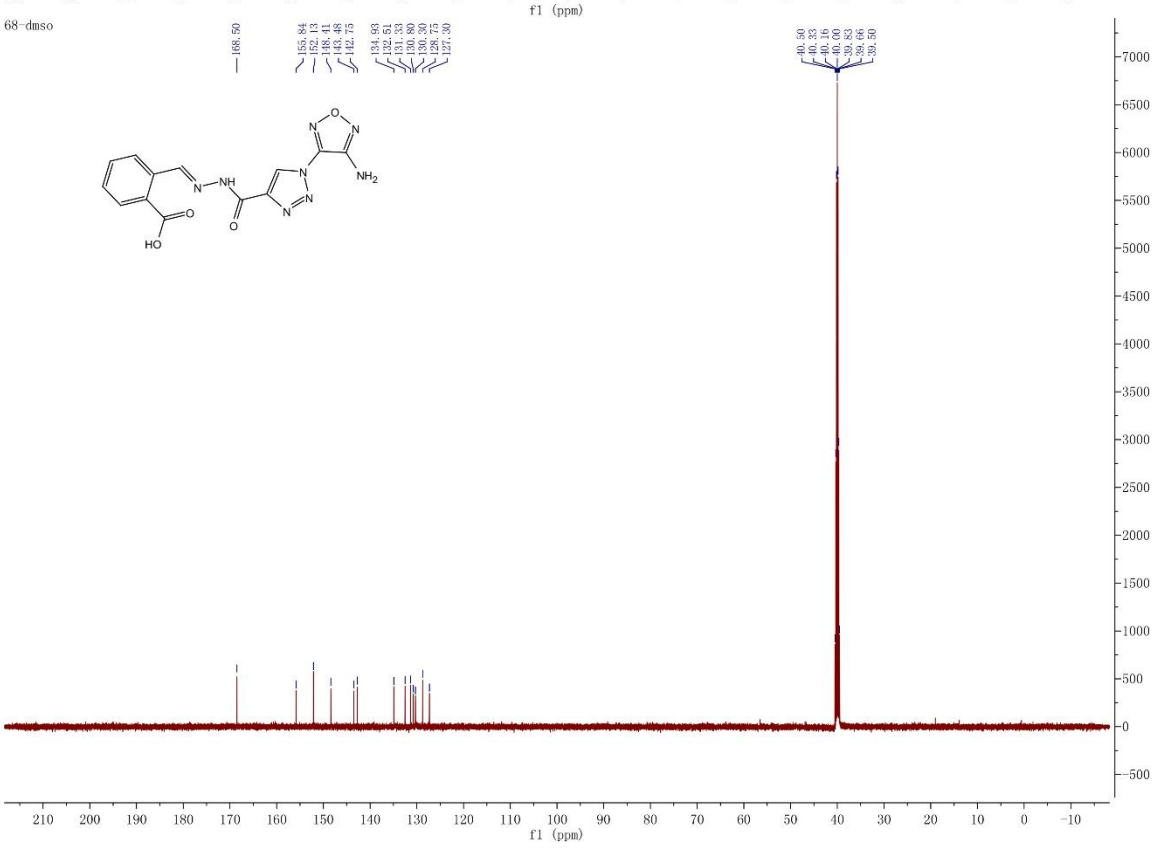
JYQ-58


63-dmso
12.62
11.02
9.42
9.24
8.74
6.99
6.97
6.89
6.88
6.88
6.78
6.77
6.75
6.72
3.35
2.51
0.00
0.95
0.96
0.92
0.94
0.93
0.97
0.99
3.00
f1 (ppm)

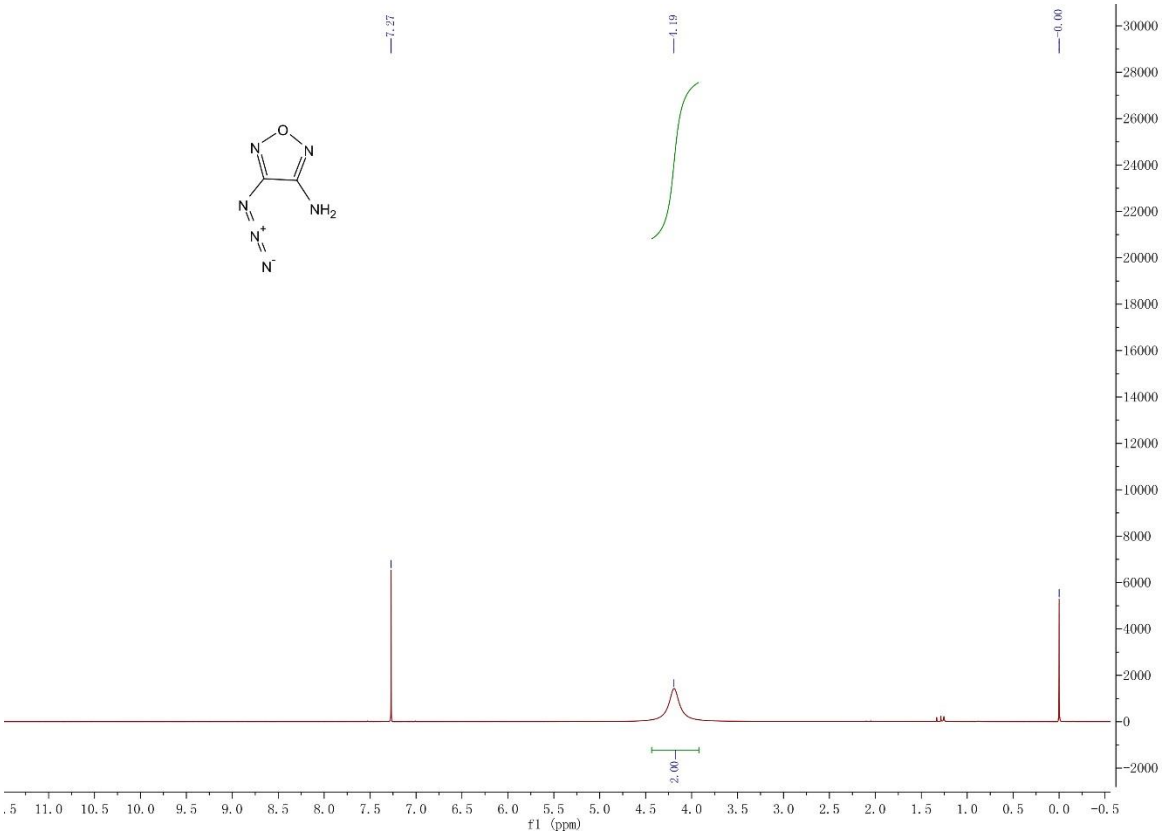

63-dmso
153.49
152.18
150.58
146.65
146.12
143.47
142.48
129.07
120.55
119.71
119.22
118.07
40.51
40.34
40.17
40.00
39.84
39.67
39.50
f1 (ppm)

JYQ-59

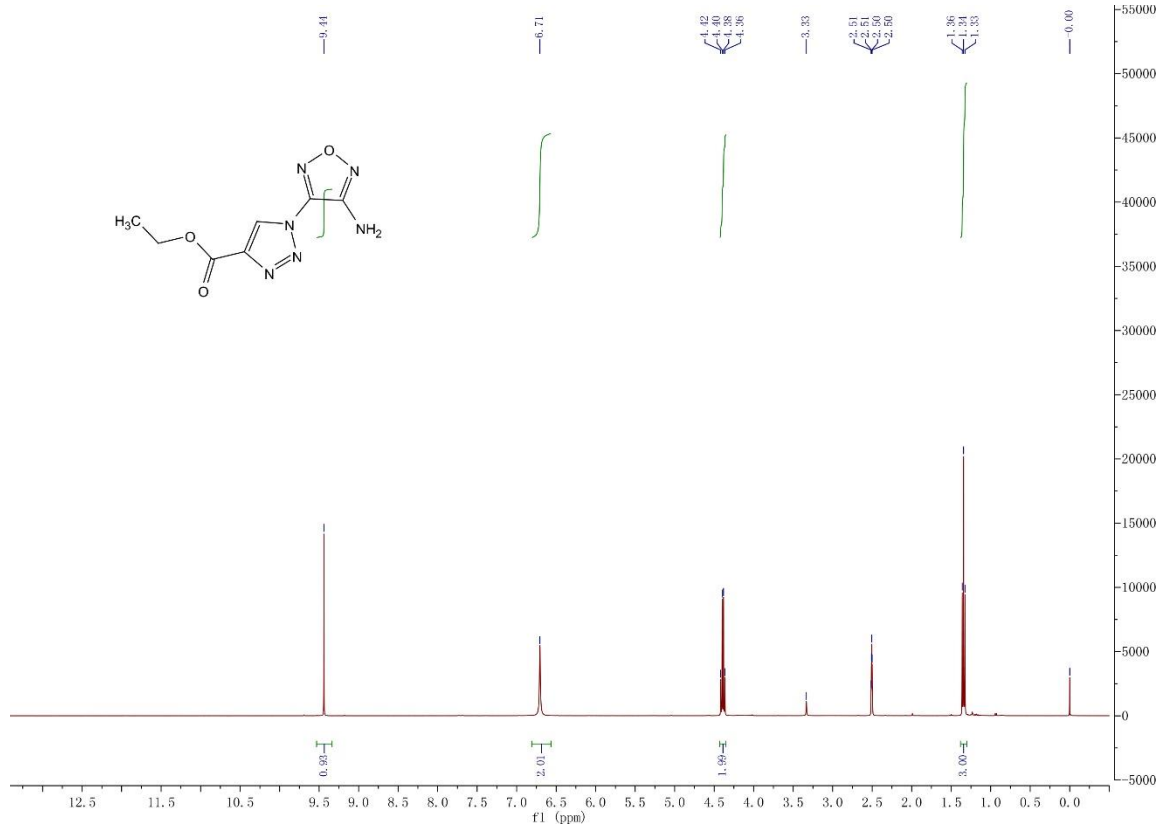

68-dmso
13.39
12.53
9.42
9.29
8.08
8.07
7.94
7.94
7.92
7.92
7.68
7.68
7.57
7.56
6.71
3.36
2.52
2.51
2.51
0.00
0.97
0.88
0.84
0.87
0.87
0.93
0.91
1.08
2.00
f1 (ppm)


68-dmso
168.50
155.94
152.13
148.41
143.48
142.75
134.93
132.51
132.33
131.80
130.30
128.75
127.30
40.50
40.33
40.16
40.00
39.83
39.66
39.50
f1 (ppm)

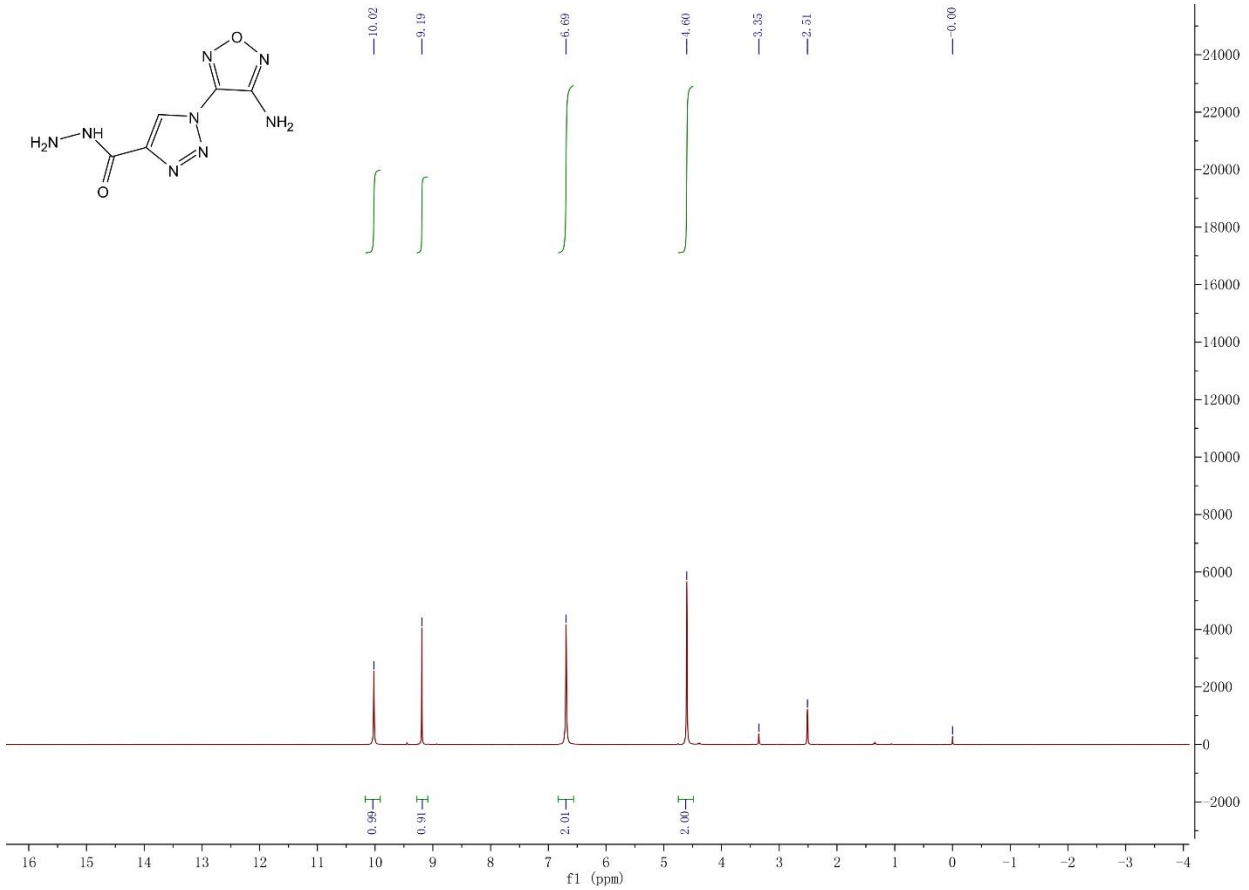
Int-1


7.27
4.19
0.00
2.00
f1 (ppm)

Int-2


9.44
6.71
4.42
4.40
4.38
4.36
3.33
2.51
2.51
2.50
2.50
1.36
1.34
1.33
0.00
0.93
2.01
1.99
3.00
f1 (ppm)

Int-3



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