CTS-1027

Cat. No.: HY-10398

CAS No.: 193022-04-7

Molecular Formula: $C_{19}H_{20}ClNO_6S$

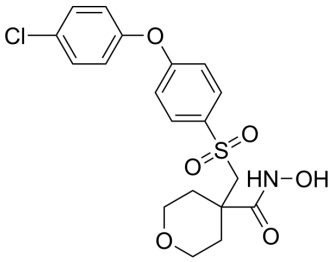
Molecular Weight: 425.88

Target: MMP

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (234.81 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.3481 mL	11.7404 mL	23.4808 mL
5 mM	0.4696 mL	2.3481 mL	4.6962 mL
10 mM	0.2348 mL	1.1740 mL	2.3481 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.87 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.87 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.87 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

CTS-1027 is a potent small molecule inhibitor of MMPs, with IC_{50}s of 0.3 nM, 0.5 nM for MMP2, MMP13, respectively, and has > 1,000 fold selectivity over MMP1.

IC_{50} & Target

IC50: 0.2 nM (MMP2), 0.5 nM (MMP13), 0.7 nM (MMP12), 0.9 nM (MMP8), 9.5 nM (MMP3), 15 nM (MMP14)

In Vivo

CTS-1027 significantly reduces the hepatocyte apoptosis, features of cholestatic liver injury, amd markers of hepatic

fibrogenesis in the BDL mouse. CTS-1027 improves overall animal survival following 14 days of BDL in mice[1]. In male animals treated for 8 weeks the terminal plasma concentration of RS-130830 is 311±45 nM. Treatment of male mice with RS-130830 for 8 weeks causes an 89% increase in plasma triglyceride concentration, but there is no corresponding effect in female mice treated for 12 weeks. The plaque lipid content of animals receiving RS-130830 is increased by 81% at 12 weeks, and increased by 41% at 16 weeks[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [1]

For experimental procedures, mice are anesthetized with ketamine 60 mg/kg plus xylazine 10 mg/kg body weight by intraperitoneal injection. After a midline upper-abdominal incision, the peritoneal cavity is opened, the abdominal wall retracted, and the common hepatic bile duct is double-ligated below the bifurcation and transected between the ligatures as previously described by us in detail. Sham-operated mice, used as controls, also underwent similar laparotomy with exposure but without ligation of the common bile duct. The fascia and skin of the midline abdominal incision are closed with sterile surgical 5-0 sutures. Either CTS-1027 or the vector carboxymethylcellulose are administered by gavage in a dose of 10 mg/kg body weight once a day. Drugs are prepared freshly on the day of the study. After 14 days of BDL and gavage, mice are re-anesthetized, sacrificed and blood is obtained from the inferior vena cava for serum total bilirubin and ALT determinations and the liver is removed, cut into small pieces and either snap-frozen in liquid nitrogen for storage at −80°C or fixed in freshly prepared 4% paraformaldehyde in phosphate-buffered saline (PBS) for 48 hours at 4°C for additional studies. Liver tissue is also subjected to RNA extraction using the Trizol reagent. Serum bilirubin and ALT determinations are performed as previously described.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- ACS Comb Sci. 2019 Dec 9;21(12):805-816.

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REFERENCES

[1]. Kahraman A, et al. Matrix metalloproteinase inhibitor, CTS-1027, attenuates liver injury and fibrosis in the bile duct-ligated mouse. Hepatol Res. 2009 Aug;39(8):805-813.

[2]. Johnson JL, et al. Effect of broad-spectrum matrix metalloproteinase inhibition on atherosclerotic plaque stability. Cardiovasc Res. 2006 Aug 1;71(3):586-595.

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