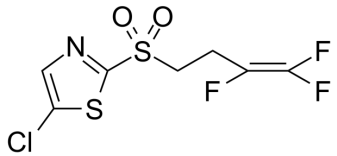
Fluensulfone

Cat. No.:	HY-107771
CAS No.:	318290-98-1
Molecular Formula:	$C_7H_5ClF_3NO_2S_2$
Molecular Weight:	291.7
Target:	Parasite
Pathway:	Anti-infection
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 (342.82 mM; Need ultrasonic)
H_2O : 0.73 mg/mL (2.50 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.4282 mL	17.1409 mL	34.2818 mL
	5 mM	0.6856 mL	3.4282 mL	6.8564 mL
	10 mM	0.3428 mL	1.7141 mL	3.4282 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 (8.57 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.57 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.57 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Fluensulfone is a new nematicide for chemical control of plant parasitic nematodes.

In Vitro

Lower concentrations of Fluensulfone delay development: 100 μM Fluensulfone causes a slight delay as at 66 h fewer worms have reached the adult stage whilst at 300 μM no worms reach the adult stage at 66 h and some fail to reach L4. Adult hermaphrodites lay fewer eggs in the presence of 1 mM Fluensulfone. Fluensulfone is also found to reduce the viability of eggs. After 3 h incubation with 100 μM to 1 mM Fluensulfone the thrashing rate is significantly inhibited, with maximal inhibition occurring with 1 mM. After 1 h both 300 μM and 1 mM Fluensulfone cause a significant and reversible inhibition of

	pharyngeal pumping relative to the vehicle control. Fluensulfone (500 μM) inhibits the frequency of body bends in one day old adult hermaphrodites off food after 2 h exposure[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	In an in vivo investigation, female mice are treated with Fluensulfone (or isoniazid as a positive control) for 3 and 7 days. Quantification of the cell proliferation by manual counting of BrdU-positive and BrdU-negative cells in the bronchiolar epithelium reveals an approximately fourfold increase of cell proliferation upon treatment with Fluensulfone and the positive control isoniazid compare with control. Increased cell proliferation is observed at 3 days but have reverted to the control level at day 7 [2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	For these assays worms of different developmental stages are incubated in liquid with and without Fluensulfone for up to 24 h, and paralysis is scored. 400 μL of M9 phosphate buffer with either Fluensulfone (100 μM, 200 μM or 1 mM) or vehicle (0.5% acetone) is put into each well of a 24 well plate (5 replicates for each Fluensulfone concentration). 5 μL suspension of age synchronised C. elegans (L1, L2/3, L4 or one day old adult) is added to each well. Each well contains approximately 50 to100 worms. The number of worms not moving at 1, 2, 3, 4, 5, 6 and 24 h is determined. The experiment is conducted on two separate occasions with five replicates[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Groups of 10 female specific pathogen-free CD-1 mice each are treated with untreated diet, diet containing 1200 mg/kg Fluensulfone (high dose in carcinogenicity study), or 1305 mg/kg of isoniazid as a positive control substance for 3 or 7 days, respectively. Two and 14 h before sacrifice, the animals are injected ip with 100 μL of a 10 mg/mL aqueous bromodeoxyuridine (BrdU)-solution. Sacrifice by exsanguination under deep irreversible pentobarbital narcosis is performed early in the morning to assure that the animals are exposed to the test item until shortly before sacrifice[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Kearn J, et al. Fluensulfone is a nematicide with a mode of action distinct from anticholinesterases and macrocyclic lactones. Pestic Biochem Physiol. 2014 Feb;109:44-57.

[2]. Strupp C, et al. Relationship of metabolism and cell proliferation to the mode of action of fluensulfone-induced mouse lung tumors: analysis of their human relevance using the IPCS framework. Toxicol Sci. 2012 Jul;128(1):284-94.

Caution: Product has not been fully validated for medical applications. For research use only.

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