Pentoxifylline

Cat. No.: HY-B0715

CAS No.: 6493-05-6

Molecular Formula: $C_{13}H_{18}N_4O_3$

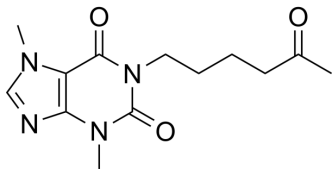
Molecular Weight: 278.31

Target: Phosphodiesterase (PDE); Autophagy; HIV

Pathway: Metabolic Enzyme/Protease; Autophagy; 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

H_2O : 93.3 mg/mL (335.24 mM; Need ultrasonic and warming)

DMSO : ≥ 2.8 mg/mL (10.06 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.5931 mL	17.9656 mL	35.9312 mL
5 mM	0.7186 mL	3.5931 mL	7.1862 mL
10 mM	0.3593 mL	1.7966 mL	3.5931 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 110 mg/mL (395.24 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Pentoxifylline (BL-191), a haemorheological agent, is an orally active non-selective phosphodiesterase (PDE) inhibitor, with immune modulation, anti-inflammatory, hemorheological, anti-fibrinolytic and anti-proliferation effects. Pentoxifylline can be used for the research of peripheral vascular disease, cerebrovascular disease and a number of other conditions involving a defective regional microcirculation[1][2][3].

IC_{50} & Target

PDE[1]

In Vitro

Pentoxifylline (0.1-50 mM; 24-48 hours) inhibits cell proliferation in a dose-dependent manner[3].

Pentoxifylline (0.5 mM; 12-36 hours) increases apoptosis and decreases autophagy levels in MDA-MB-231 cells[3].

Pentoxifylline (0.5 mM; 12-36 hours) induces autophagy in MDA-MB-231 cells[3].

Pentoxifylline (0.5 mM; 24-48 hours) blocks cell cycle at the G0/G1 phase[3].
Pentoxifylline results in high LC3-II/LC3-ratio[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Proliferation Assay[3]

Cell Line:	MDA-MB-231 cells
Concentration:	0.1 mM, 1 mM, 5 mM , 10 mM, 50 mM
Incubation Time:	24 hours, 48 hours
Result:	Inhibited cell proliferation in a dose-dependent manner.

Apoptosis Analysis[3]

Cell Line:	MDA-MB-231 cells
Concentration:	0.5 mM
Incubation Time:	12 hours, 24 hours, 36 hours
Result:	Induced apoptosis.

Cell Autophagy Assay[3]

Cell Line:	MDA-MB-231 cells
Concentration:	0.5 mM
Incubation Time:	24 hours, 48 hours
Result:	Induced approximately 20-28% of cell autophagy.

Cell Cycle Analysis[3]

Cell Line:	MDA-MB-231 cells
Concentration:	0.5 mM
Incubation Time:	24 hours, 48 hours
Result:	Induced G0/G1 phase arrest.

Western Blot Analysis[3]

Cell Line:	MDA-MB-231 cells
Concentration:	0.5 mM
Incubation Time:	24 hours, 48 hours
Result:	Induced high LC3-II/LC3-ratio.

In Vivo

Pentoxifylline (200 mg/kg; i.p.) has a protective effect on rats with transient global ischemia and reduces cognitive impairment[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Adult male Wistar rats 12-13-weeks-old (250-300 g)[4]

Dosage:	200 mg/kg
Administration:	Intraperitoneal injection, at 1hr before and 3 hr after ischemia
Result:	Significantly improved the spatial memory and effects were significant different from those of sham-operated and vehicle groups.

CUSTOMER VALIDATION

- Mol Cancer. 2022 Apr 27;21(1):106.
- Eur J Pharmacol. 2023 Feb 21;175607.
- J Integr Agric. 2023 Feb 24.
- Oncol Rep. 2021 Jan 22.
- J Cancer Res Clin Oncol. 2023 Mar 31.

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REFERENCES

[1]. Iffat Hassan, et al. Pentoxifylline and its applications in dermatology. Indian Dermatol Online J. 2014 Oct-Dec; 5(4): 510–516.

[2]. A Ward, et al. Pentoxifylline. A review of its pharmacodynamic and pharmacokinetic properties, and its therapeutic efficacy. Drugs. 1987 Jul;34(1):50-97.

[3]. Yessica Cristina Castellanos-Esparza, et al. Synergistic promoting effects of pentoxifylline and simvastatin on the apoptosis of triple-negative MDA-MB-231 breast cancer cells. Int J Oncol. 2018 Apr;52(4):1246-1254.

[4]. Shabnam Movassaghi, et al. Effect of Pentoxifylline on Ischemia- induced Brain Damage and Spatial Memory Impairment in Rat. Iran J Basic Med Sci. 2012 Sep-Oct; 15(5): 1083-1090.

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