Febuxostat

Cat. No.: HY-14268

CAS No.: 144060-53-7

Molecular Formula: $C_{16}H_{16}N_2O_3S$

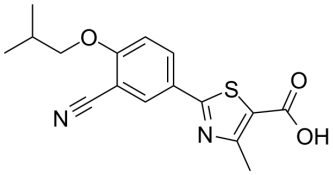
Molecular Weight: 316.37

Target: Xanthine Oxidase

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	1 year
	-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (158.04 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.1609 mL	15.8043 mL	31.6086 mL
	5 mM	0.6322 mL	3.1609 mL	6.3217 mL
	10 mM	0.3161 mL	1.5804 mL	3.1609 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.90 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Febuxostat (TEI 6720) is a potent, selective and non-purine xanthine oxidase (XO) inhibitor with a K_i value of 0.6 nM. Febuxostat has the potential for the research of hyperuricemia and gout[1][2][3].

IC_{50} & Target

Ki: 0.6 nM (Xanthine oxidase)[1]

In Vitro

Febuxostat displays potent mixed-type inhibition of the activity of purified bovine milk xanthine oxidase, with K_i and K_i' values of 0.6 nM and 3.1 nM respectively, indicating inhibition of both the oxidized and reduced forms of xanthine oxidase[1].

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

In Vivo

Febuxostat (5-6 mg/kg; i.e.; daily for 4 weeks) (fed a high-fructose diet (60% fructose) for 8 wk) significantly reduces lomerular pressure, renal vasoconstriction, and afferent arteriolar area relative to fructose+P rats, and shows no significant effects in rats on a normal diet when febuxostat treatment alone[2].

Febuxostat (3-4 mg/kg; p.o.; daily for 4 weeks) with oxonic acid (750 mg/kg; oral gavage; daily for 4 weeks) preventes renal injury in 5/6 Nx (5/6 nephrectomy) rats with and without coexisting hyperuricemia[3].

Febuxostat (2.5 mg/kg; p.o.; daily for 12 weeks) inhibits plaque formation in ApoE−/− mice and reduces the levels of ROS in the aortic wall of atherosclerotic mice[4].

Febuxostat (15.6 mg/kg; p.o.; once daily for 21 successive days) shows antidepressant effect by significantly reduces the immobility time in the FST in mouse[5].

Febuxostat (10 mg/kg; p.o.; daily for 21 days) administration with doxorubicin caused a significant decrease in nephrotoxicity markers and inflammatory mediators, restoration of normal values of oxidative stress biomarkers and hampering the expression of renal caspase-3[6].

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

CUSTOMER VALIDATION

- Br J Cancer. 2023 Jan 30.
- Front Pharmacol. 22 June 2022.
- J Biol Chem. 2019 Dec 27;294(52):20084-20096.
- Universität Regensburg. 2023 Jul 19.
- University of Rijeka. Derartment of biotechnology

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REFERENCES

[1]. Nomura J, et al. Xanthine oxidase inhibition by febuxostat attenuates experimental atherosclerosis in mice. Sci Rep. 2014 Apr 1;4:4554.

[2]. Karve AV, et al. Evaluation of effect of allopurinol and febuxostat in behavioral model of depression in mice. Indian J Pharmacol. 2013 May-Jun;45(3):244-7.

[3]. Khames A, et al. Ameliorative effects of sildenafil and/or febuxostat on doxorubicin-induced nephrotoxicity in rats. Eur J Pharmacol. 2017 Jun 15;805:118-124.

[4]. Takano Y, et al. Selectivity of febuxostat, a novel non-purine inhibitor of xanthine oxidase/xanthine dehydrogenase. Life Sci, 2005, 76(16), 1835-1847.

[5]. Sanchez-Lozada LG, et al. Effects of febuxostat on metabolic and renal alterations in rats with fructose-induced metabolic syndrome. Am J Physiol Renal Physiol, 2008, 294(4), F710-F718.

[6]. Sanchez-Lozada LG, et al. Effect of febuxostat on the progression of renal disease in 5/6 nephrectomy rats with and without hyperuricemia. Nephron Physiol, 2008, 108(4), p69-p78.

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