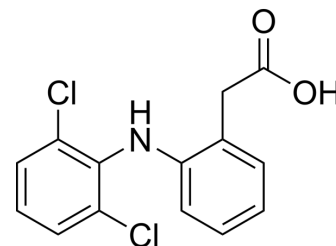


Diclofenac

Cat. No.:	HY-15036		
CAS No.:	15307-86-5		
Molecular Formula:	C ₁₄ H ₁₁ Cl ₂ NO ₂		
Molecular Weight:	296.15		
Target:	COX; Apoptosis		
Pathway:	Immunology/Inflammation; Apoptosis		
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 : 125 mg/mL (422.08 mM; Need ultrasonic)			
		Solvent Concentration	Mass	
			1 mg	5 mg
	Preparing Stock Solutions		10 mg	
	1 mM	3.3767 mL	16.8833 mL	33.7667 mL
	5 mM	0.6753 mL	3.3767 mL	6.7533 mL
	10 mM	0.3377 mL	1.6883 mL	3.3767 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: ≥ 2.08 mg/mL (7.02 mM); Clear solution 2. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.08 mg/mL (7.02 mM); Clear solution			

BIOLOGICAL ACTIVITY

Description	Diclofenac is a potent and nonselective anti-inflammatory agent, acts as a COX inhibitor, with IC ₅₀ s of 4 and 1.3 nM for human COX-1 and COX-2 in CHO cells ^[1] , and 5.1 and 0.84 μM for ovine COX-1 and COX-2, respectively ^[2] . Diclofenac induces apoptosis of neural stem cells (NSCs) via the activation of the caspase cascade ^[3] .			
IC ₅₀ & Target	Human COX-2 1.3 nM (IC ₅₀ , in CHO cells)	Human COX-1 4 nM (IC ₅₀ , in CHO cells)	Ovine COX-2 0.84 μM (IC ₅₀)	Ovine COX-1 5.1 μM (IC ₅₀)
In Vitro	Diclofenac effectively blocks COX-1 mediated prostanoid production from U937 cell microsomes, with an IC ₅₀ of 7±3 nM ^[1] . Diclofenac (1-60 μM; 1 day) induces neural stem cells (NSCs) death in a concentration-dependent manner ^[3] . Diclofenac (10-60 μM; 6 hours) increases the expression of cleaved (activated) caspase-3 ^[3] .			

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

Cell Viability Assay^[3]

Cell Line:	Neural stem cells (NSCs)
Concentration:	1, 3, 10, 30, 60 μ M
Incubation Time:	1 day
Result:	Induction of cell death was concentration-dependent and the effect was not saturated at a concentration of up to 60 μ M.

Western Blot Analysis^[3]

Cell Line:	Neural stem cells (NSCs)
Concentration:	10, 30 or 60 μ M
Incubation Time:	6 hours
Result:	The activation of caspase-3 was increased in a concentration-dependent manner.

In Vivo

Diclofenac (3 mg/kg, b.i.d., for 5 days) significantly increases faecal ⁵¹Cr excretion in rats, and such effect is also observed in squirrel monkeys after administrated of 1 mg/kg twice daily for 4 days^[1].

Diclofenac (10 mg/kg; administered via oral route just prior to induction of inflammation) shows in vivo anti-inflammatory activity in Wistar rats^[1].

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

Animal Model:	Male Sprague-Dawley rats (150±200 g) ^[1]
Dosage:	3 mg/kg
Administration:	Oral administration, b.i.d., for 5 days
Result:	Resulted in a significant increase in faecal ⁵¹ Cr excretion.
Animal Model:	Wistar rats (150-175 g) bearing Formalin-induced rat foot paw edema model ^[2]
Dosage:	10 mg/kg
Administration:	Administered via oral route just prior to induction of inflammation
Result:	Showed in vivo anti-inflammatory activity (% edema inhibition=29.2, 1 h; 22.2, 3 h; 20, 6 h).

CUSTOMER VALIDATION

- J Hazard Mater. 2015 May 30;289:18-27.
- Chemosphere. 2019 Jun;225:378-387.
- Int J Mol Sci. 2022, 23(20), 12066.
- Chem-Biol Interact. 2021, 109425.
- J Phys Chem Solids. 2017 October;109:117-123.

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REFERENCES

- [1]. Riendeau D, et al. Biochemical and pharmacological profile of a tetrasubstituted furanone as a highly selective COX-2 inhibitor. Br J Pharmacol. 1997 May;121(1):105-17.
- [2]. Labib MB, et al. Design, synthesis of novel isoindoline hybrids as COX-2 inhibitors: Anti-inflammatory, analgesic activities and docking study. Bioorg Chem. 2018 Oct;80:70-80.
- [3]. Chiho Kudo, et al. Diclofenac Inhibits Proliferation and Differentiation of Neural Stem Cells. Biochem Pharmacol. 2003 Jul 15;66(2):289-95.
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Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA