Bromfenac sodium

Cat. No.: HY-B1888A

CAS No.: 91714-93-1

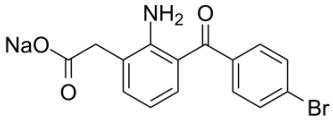
Molecular Formula: $C_{15}H_{11}BrNNaO_3$

Molecular Weight: 356.15

Target: COX

Pathway: Immunology/Inflammation

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



SOLVENT & SOLUBILITY

In Vitro

DMSO : 11.36 mg/mL (31.90 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.8078 mL	14.0390 mL	28.0781 mL
	5 mM	0.5616 mL	2.8078 mL	5.6156 mL
	10 mM	0.2808 mL	1.4039 mL	2.8078 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: ≥ 1.14 mg/mL (3.20 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.14 mg/mL (3.20 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Bromfenac sodium is a potent and orally active inhibitor of COX, with IC_{50}s of 5.56 and 7.45 nM for COX-1 and COX-2, respectively. Bromfenac sodium is a brominated non-steroidal anti-inflammatory/analgesic drug (NSAID), and it is commonly used for the research of postoperative inflammation and pain following cataract surgery, and pseudophakic cystoid macular edema (CME)[1][2].

IC_{50} & Target

COX-1	COX-2
5.56 nM (IC_{50})	7.45 nM (IC_{50})

In Vitro

Bromfenac (90 μg/mL; 48 h) inhibits TGF-b1-induced extracellular matrix (ECM) synthesis and myofibroblast activation in HConFs and HPFs[3].

Bromfenac (30-90 μg/mL; 48 h) decreases the protein and mRNA expression levels of FN, COL3, a-SMA, and survivin in a

dose-dependent manner in HConFs and HPFs[3].
Bromfenac (30-90 μg/mL; 48 h) declines the phosphorylated protein levels of AKT, ERK1/2, and GSK-3b-S9 with dosage in HPFs and HConFs[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Bromfenac (0.0032-3.16%; 100 or 200 μL; rubbed onto the backs) produces significant anti-inflammatory activity at concentrations as low as 0.1% (4 h pretreatment time) or 0.32% (18h pretreatment time) in rats[2].
Bromfenac (0.032-3.16%; 100 μL; rubbed onto the paws) produces dose-related anti-inflammatory activity in rats[2].
Bromfenac (0.032-1.0%; 50 μL) is 26 times more potent than indomethacin in blocking the erythema when applied directly onto the skin area exposed to UV light in guinea pigs[2].
Bromfenac (0.0032-0.1%; 50μL; rubbed onto the uninjected paw for 4 h per day and 5 days per week) produces a dose and time dependent reduction in the paw volume of both hind limbs in rats[2].
Bromfenac (0.32%; 50μL; rubbed onto the abdomen) produces significant blockade of abdominal constriction to ACh challenge in mice[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Sprague-Dawley rats (150-250 g) are injected carrageenan[2]
Dosage:	0.0032, 0.01, 0.032, 0.1, 0.32, 1.0, 3.16% (100 or 200 μL)
Administration:	Rubbed onto the backs before 1-72 h of injected carrageenan
Result:	Produced significant anti-inflammatory activity when applied 1, 2, and 4 h prior to carrageenan challenge at 0.32%. Applied 1 or 4 h prior to carrageenan challenge was active, but not when applied 24 h (or longer) prior to challenge at 0.2%.

REFERENCES

[1]. Schechter BA, et, al. Use of topical bromfenac for treating ocular pain and inflammation beyond cataract surgery: a review of published studies. Clin Ophthalmol. 2019 Aug 1; 13:1439-1460.

[2]. Nolan JC, et, al. The topical anti-inflammatory and analgesic properties of bromfenac in rodents. Agents Actions. 1988 Aug; 25(1-2): 77-85.

[3]. Chen K, et, al. Bromfenac Inhibits TGF-β1-Induced Fibrotic Effects in Human Pterygium and Conjunctival Fibroblasts. Invest Ophthalmol Vis Sci. 2019 Mar 1; 60(4): 1156-1164.

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