# Bromfenac sodium

**Cat. No.:** HY-B1888A

**CAS No.:** 91714-93-1

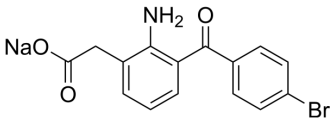
**Molecular Formula:** $C_{15}H_{11}BrNNaO_3$

**Molecular Weight:** 356.15

**Target:** COX

**Pathway:** Immunology/Inflammation

**Storage:** 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)




## 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 can be used in ocular inflammation research[1].

**$IC_{50}$ & Target**

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

**In Vitro**

Bromfenac (0-80 μg/mL; 24 h) can inhibit transforming growth factor-β2-induced epithelial-mesenchymal transition in HLEC-B3 in a concentration-dependent manner[2].
Bromfenac (80 μg/Ml; 48 h) inhibits transforming growth factor-β2-induced epithelial-mesenchymal transition in human anterior capsules[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

| | |
|---|---|
| Cell Line: | transforming growth factor-β2-treated human anterior capsules. |
| Concentration: | 80 μg/mL |
| Incubation Time: | 48 hours |
| Result: | Suppressed transforming growth factor-β2-induced epithelial-mesenchymal transition in primary lens epithelial cells (LECs). |

Cell Migration Assay [2]

| | |
|---|---|
| Cell Line: | HLEC-B3 cells |
| Concentration: | 0, 20, 40, 60, and 80 μg/mL |
| Incubation Time: | 24 hours |
| Result: | Suppressed transforming growth factor-β2-induced cell migration in HLEC-B3 cells, and exhibited inhibition of the over-expression of epithelial-mesenchymal transition markers. |

**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% (18 h pretreatment time) in rats[3].
Bromfenac (0.032-3.16%; 100 μL; rubbed onto the paws) produces dose-related anti-inflammatory activity in rats[3].
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[3].
Bromfenac (0.0032-0.1%; 50 μL; 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[3].
Bromfenac (0.32%; 50 μL; rubbed onto the abdomen) produces significant blockade of abdominal constriction to ACh challenge in mice[3].
Bromfenac (eyedrop instillation; 1 μL (0.09%) per eye; twice-daily; 4 w) partially reduces corneal staining, and becomes so more slowly by the 4-week time point[4].
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%.<br>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]. Tetsuo Kida, et al. Pharmacokinetics and efficacy of topically applied nonsteroidal anti-inflammatory drugs in retinochoroidal tissues in rabbits. PLoS One. 2014 May 5;9(5):e96481.

[2]. Xiaobo Zhang, et al. Drug-eluting intraocular lens with sustained bromfenac release for conquering posterior capsular opacification. Bioact Mater. 2021 Jul 23;9:343-357.

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

[4]. Kaevalin Lekhanont, et al. Effects of topical anti-inflammatory agents in a botulinum toxin B-induced mouse model of keratoconjunctivitis sicca. J Ocul Pharmacol Ther. 2007 Feb;23(1):27-34.

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

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