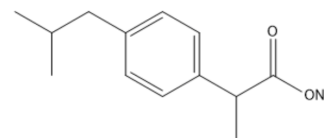


## Ibuprofen sodium

<b>Cat. No.:</b>	HY-78131C
<b>CAS No.:</b>	31121-93-4
<b>Molecular Formula:</b>	C <sub>13</sub> H <sub>17</sub> NaO <sub>2</sub>
<b>Molecular Weight:</b>	228.26
<b>Target:</b>	COX; Apoptosis; Parasite
<b>Pathway:</b>	Immunology/Inflammation; Apoptosis; Anti-infection
<b>Storage:</b>	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 20.83 mg/mL (91.26 mM); ultrasonic and warming and heat to 60°C

Concentration	Solvent	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	4.3810 mL	21.9048 mL	43.8097 mL
	5 mM	0.8762 mL	4.3810 mL	8.7619 mL
	10 mM	0.4381 mL	2.1905 mL	4.3810 mL

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

### BIOLOGICAL ACTIVITY

#### Description

Ibuprofen ((±)-Ibuprofen) sodium is an orally active, selective COX-1 inhibitor with an IC<sub>50</sub> value of 13 μM. Ibuprofen sodium inhibits cell proliferation, angiogenesis, and induces cell apoptosis. Ibuprofen sodium is a nonsteroidal anti-inflammatory agent and a nitric oxide (NO) donor. Ibuprofen sodium can be used in the research of pain, swelling, inflammation, infection, immunology, cancers<sup>[1][2][5][8]</sup>.

#### IC<sub>50</sub> & Target

COX-1 13 μM (IC <sub>50</sub> )	COX-2 370 μM (IC <sub>50</sub> )
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#### In Vitro

Ibuprofen sodium (24 h) inhibits COX-1 and COX-2 activity with IC<sub>50</sub> values of 13 μM and 370 μM<sup>[1]</sup>.  
 Ibuprofen sodium (500 μM, 48 h) inhibits cell proliferation and angiogenesis, and induces apoptosis in AGS cells (Adenocarcinoma gastric cell line)<sup>[2]</sup>.  
 Ibuprofen sodium (500 μM, 48 h) downregulates transcription of Akt, VEGF-A, PCNA, Bcl2, OCT3/4 and CD44 genes, but upregulates RNA levels of wild type P53 and Bax genes in AGS cell<sup>[2]</sup>.  
 Ibuprofen sodium (500 μM, 24 h) restores microtubule reformation, microtubule-dependent intracellular cholesterol transport, and induces extension of microtubules to the cell periphery in both cystic fibrosis (CF) cell models and primary CF nasal epithelial cells<sup>[3]</sup>.  
 Ibuprofen sodium (500 μM, 24 h) enhances UV-induced cell death in MCF-7 cells and MDA-MB-231 cells by a

photosensitization process<sup>[4]</sup>.

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

#### Cell Viability Assay<sup>[2]</sup>

Cell Line:	AGS cells
Concentration:	100-1000 $\mu$ M
Incubation Time:	24 h, 48 h
Result:	Inhibited AGS cell viability with IC <sub>50</sub> values of 630 $\mu$ M (trypan blue staining, 24 h), 456 $\mu$ M (neutral red assay, 24 h), 549 $\mu$ M (trypan blue staining, 48 h) and 408 $\mu$ M (neutral red assay, 48 h).

#### In Vivo

Ibuprofen sodium (fed in animal feedings, 300 mg/kg, 14 days) reduces overall tumor growth and enhances anti-tumor immune characteristics without adverse autoimmune reactions in a model of postpartum breast cancer<sup>[5]</sup>.

Ibuprofen sodium (subcutaneous injection, 60 mg/kg, every second day for 15 days) reduces the risk of neuropathy in a rat model of chronic Oxaliplatin-induced peripheral neuropathy<sup>[6]</sup>.

Ibuprofen sodium (oral administration, 20 mg/kg, every 12 hours, 5 doses total) decreases muscle growth (average muscle fiber cross-sectional area) without affecting regulation of supraspinatus tendon adaptations to exercise<sup>[7]</sup>.

Ibuprofen sodium (oral administration, 35 mg/kg, twice daily) attenuates the Inflammatory response to pseudomonas aeruginosa in a rat model of chronic pulmonary infection<sup>[8]</sup>.

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

Animal Model:	Syngeneic (D2A1) orthotopic Balb/c mouse model of PPBC (postpartum) <sup>[5]</sup>
Dosage:	300 mg/kg, daily for 14 days
Administration:	Fed in animal feedings (added to pulverized standard chow and mixed dry, then mixed with water, made into chow pellets and dried thoroughly)
Result:	Suppressed tumor growth, reduced presence of immature monocytes and increased numbers of T cells. Enhanced Th1 associated cytokines as well as promoted tumor border accumulation of T cells.

Animal Model:	Oxaliplatin-induced peripheral neuropathy <sup>[6]</sup>
Dosage:	60 mg/kg, every second day for 15 days
Administration:	Subcutaneous injection
Result:	Lowered sensory nerve conduction velocity (SNCV).

#### CUSTOMER VALIDATION

- Cell Rep. 2019 Dec 17;29(12):3847-3858.e5.
- EMBO Rep. 2022 Apr 11;e53932.
- Chemosphere. 2019 Jun;225:378-387.
- Int J Mol Sci. 2021 Nov 22;22(22):12597.

- Neuropharmacology. 2022 Jul 11;109191.

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## REFERENCES

- [1]. Noreen Y, et al. Development of a radiochemical cyclooxygenase-1 and -2 in vitro assay for identification of natural products as inhibitors of prostaglandin biosynthesis. *J Nat Prod.* 1998 Jan;61(1):2-7.
- [2]. Hassan Akrami, et al. Inhibitory effect of ibuprofen on tumor survival and angiogenesis in gastric cancer cell. *Tumour Biol.* 2015 May;36(5):3237-43.
- [3]. Sharon M Rymut, et al. Ibuprofen regulation of microtubule dynamics in cystic fibrosis epithelial cells. *Am J Physiol Lung Cell Mol Physiol.* 2016 Aug 1;311(2):L317-27.
- [4]. Emmanuelle Bignon, et al. Ibuprofen and ketoprofen potentiate UVA-induced cell death by a photosensitization process. *Sci Rep.* 2017 Aug 21;7(1):8885.
- [5]. Nathan D Pennock, et al. Ibuprofen supports macrophage differentiation, T cell recruitment, and tumor suppression in a model of postpartum breast cancer. *J Immunother Cancer.* 2018 Oct 1;6(1):98.
- [6]. Thomas Krøigård, et al. Protective effect of ibuprofen in a rat model of chronic oxaliplatin-induced peripheral neuropathy. *Exp Brain Res.* 2019 Oct;237(10):2645-2651.
- [7]. Sarah Ilkhanipour Rooney, et al. Ibuprofen Differentially Affects Supraspinatus Muscle and Tendon Adaptations to Exercise in a Rat Model. *Am J Sports Med.* 2016 Sep;44(9):2237-45.
- [8]. M W Konstan, et al. Ibuprofen attenuates the inflammatory response to *Pseudomonas aeruginosa* in a rat model of chronic pulmonary infection. Implications for antiinflammatory therapy in cystic fibrosis. *Am Rev Respir Dis.* 1990 Jan;141(1):186-92.

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

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