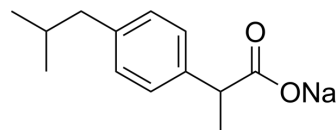


Ibuprofen sodium

| | |
|--------------------|--|
| Cat. No.: | HY-78131C |
| CAS No.: | 31121-93-4 |
| Molecular Formula: | C ₁₃ H ₁₇ NaO ₂ |
| Molecular Weight: | 228.26 |
| Target: | COX; Apoptosis; Parasite |
| Pathway: | Immunology/Inflammation; Apoptosis; Anti-infection |
| Storage: | 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

H₂O : ≥ 100 mg/mL (438.10 mM)
 DMSO : 20.83 mg/mL (91.26 mM; ultrasonic and warming and heat to 60°C)
 * "≥" means soluble, but saturation unknown.

| Preparing Stock Solutions | Solvent Concentration | Mass | 1 mg | 5 mg | 10 mg |
|---------------------------|-----------------------|------|-----------|------------|------------|
| | | | | | |
| | 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 IC₅₀ 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^{[1][2][5][8]}.

IC₅₀ & Target

| | |
|------------------------------------|-------------------------------------|
| COX-1 13 μM (IC ₅₀) | COX-2 370 μM (IC ₅₀) |
|------------------------------------|-------------------------------------|

In Vitro

Ibuprofen sodium (24 h) inhibits COX-1 and COX-2 activity with IC₅₀ values of 13 μM and 370 μM^[1].
 Ibuprofen sodium (500 μM, 48 h) inhibits cell proliferation and angiogenesis, and induces apoptosis in AGS cells (Adenocarcinoma gastric cell line)^[2].
 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^[2].
 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^[3].

Ibuprofen sodium (500 μ M, 24 h) enhances UV-induced cell death in MCF-7 cells and MDA-MB-231 cells by a photosensitization process^[4].

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

Cell Viability Assay^[2]

| | |
|------------------|---|
| Cell Line: | AGS cells |
| Concentration: | 100-1000 μ M |
| Incubation Time: | 24 h, 48 h |
| Result: | Inhibited AGS cell viability with IC ₅₀ values of 630 μ M (trypan blue staining, 24 h), 456 μ M (neutral red assay, 24 h), 549 μ M (trypan blue staining, 48 h) and 408 μ 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^[5].

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^[6].

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^[7].

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

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) ^[5] |
| 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 ^[6] |
| 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.
- Chemosphere. 2019 Jun;225:378-387.
- Phytomedicine. 1 September 2022, 154427.

- EMBO Rep. 2022 Apr 11;e53932.
- Cells. 2022, 11(12), 1870.

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- [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.
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- [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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