Product Data Sheet

Chemical Properties

Product Name: Ibuprofen
Cas No.: 15687-27-1
M.Wt: 206.28
Formula: C13H18O2

Chemical Name: 2-[4-(2-methylpropyl)phenyl]propanoic acid
Canonical SMILES: CC(C)CC1=CC=C(C=C1)C(C)C(=O)O
Solubility: ≥10.3mg/mL in DMSO
Storage: Store at -20°C

General tips: For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shopping Condition: Evaluation sample solution: ship with blue ice
All other available size: ship with RT, or blue ice upon request

Biological Activity

Targets: Neuroscience
Pathways: COX

Description:
Ibuprofen is an inhibitor of cyclooxygenase 1 and cyclooxygenase 2 with IC50 values of 12 and 80 μM, respectively [1].
Cyclooxygenase (COX) is an enzyme that is responsible for the formation of prostaglandins, prostacyclin and thromboxane.
In HCT-116 p53wt or HCT-116 p53-/- colon carcinoma cell lines, S- and R-ibuprofen induced apoptosis and blocked cell cycle is in part dependent on p53. The anti-proliferative effects were
significantly higher in the p53wt cell line than in the p53-deficient cells [2]. In nude mice model bearing HCT-116 p53wt and p53-/x xenografts, R-ibuprofen significantly inhibited the growth of p53wt expressing xenografts and only a small inhibition of p53-/x xenografts [2]. In hypercholesterolemic animals, ibuprofen reduced the levels of total cholesterol, VLDL, LDL, triglycerides and atherogenic index. Also, ibuprofen inhibited COX enzymes and inhibited the generation of free radicals during prostaglandins synthesis, which reduced the levels of lipid peroxidation, superoxide dismutase [3]. In rats, ibuprofen (60 mg/kg) improved mechanical hyperalgesia through reducing central hyperexcitability [4].

Reference:

Protocol

Cell experiment:

- **Cell lines**: p53 wild-type or p53-deficient human colon cancer HCT-116 cell lines
- **Preparation method**: The solubility of this compound in DMSO is > 10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
- **Reacting conditions**
- **Applications**: In a colony forming assay, S-ibuprofen and R-ibuprofen exhibited significantly higher anti-proliferative effects in the p53wt cell line than in the p53-deficient HCT-116 cells. In HCT-116 p53wt cells, 800-1000 μM S-ibuprofen and R-ibuprofen reduced cells in the S and G2/M phases and significantly increased the number of cells in the G0/G1-phase. 800-1000 μM S- and R-ibuprofen also significantly increased apoptosis.

Animal experiment [3]:
<table>
<thead>
<tr>
<th>Animal models</th>
<th>Athymic nude mice xenografted with implanted subcutaneously with HCT-116 p53wt and p53-/- colon cancer cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage form</td>
<td>five days a week intraperitoneally with 15 mg/kg/day, suspended in PBS (pH 7), 5 weeks</td>
</tr>
<tr>
<td>Applications</td>
<td>Compared with the tumour volumes of untreated mice, R-ibuprofen significantly reduced the growth of p53wt expressing xenografts. S-ibuprofen also reduced the growth of p53wt expressing xenografts. But only a small and non-significant inhibition of HCT-116 p53-/- tumour growth after S- or R-ibuprofen treatment.</td>
</tr>
<tr>
<td>Other notes</td>
<td>Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.</td>
</tr>
</tbody>
</table>

**Reference:**

**Caution**

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.