Ixazomib citrate

Cat. No.: HY-10452
CAS No.: 1239908-20-3
Molecular Formula: C_{20}H_{23}BCl_2N_2O_9
Molecular Weight: 517.12
Target: Proteasome; Autophagy
Pathway: Metabolic Enzyme/Protease; Autophagy
Storage: Powder
-20°C 3 years
4°C 2 years
In solvent
-80°C 6 months
-20°C 1 month

**SOLVENT & SOLUBILITY**

**In Vitro**

- DMSO: ≥ 100 mg/mL (193.38 mM)
  - "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>1.9338 mL</td>
<td>9.6689 mL</td>
<td>19.3379 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.3868 mL</td>
<td>1.9338 mL</td>
<td>3.8676 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.1934 mL</td>
<td>0.9669 mL</td>
<td>1.9338 mL</td>
</tr>
</tbody>
</table>

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: ≥ 2.5 mg/mL (4.83 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.83 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**

Ixazomib citrate (MLN9708) is a reversible inhibitor of the chymotrypsin-like proteolytic β5 site of the 20S proteasome with an IC_{50} of 3.4 nM and a K_{i} of 0.93 nM.

**IC_{50} & Target**

IC_{50}: 3.4 nM (20S proteasome β5), 31 nM (20S proteasome β1), 3500 nM (20S proteasome β2)^{[3]}

**In Vitro**

Ixazomib citrate (MLN9708; 0.20-3.20 µM) inhibits the cell growth of both cell lines effectively in a time- and dose-dependent
manner. Ixazomib induces cell cycle arrest in MG-63 and Saos-2 cells. Ixazomib induces apoptosis mainly through the
caspases pathway and requires the activation of both caspase8 and caspase9. Ixazomib treatment increases the levels of
pro-apoptotic proteins and down regulates the anti-apoptotic proteins that control MOMP. Ixazomib treatment induces the
release of Cytc, Smac, OMI from mitochondria and decreases the protein levels of XIAP. Ixazomib inhibits the invasion ability
of MG-63 and Saos-2 cells and decreases both the expression and secretion levels of MMP2/9. Ixazomib citrate (MLN9708; 12 nM) shows inhibitory activity against C-L and T-L proteasome activities. Treatment of H929 and MM.1S MM cells with
Ixazomib triggers a marked increase in proteolytic cleavage of poly(ADP) ribose polymerase (PARP), a signature event during
apoptosis. Ixazomib induces cleavage of caspase-3, an upstream activator of PARP. Ixazomib induces elf2-α kinase activity and protein levels of Bip and CHOP/GADD153. Ixazomib blocks BMSCs-induced MM cell proliferation, inhibits in vitro
capillary tubule formation, and target NF-κB.

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

<table>
<thead>
<tr>
<th>In Vivo</th>
</tr>
</thead>
</table>
| Ixazomib citrate (MLN9708; 11 mg/kg) significantly inhibits MM tumor growth and prolongs survival in the human
plasmacytoma MM.1S xenograft mouse model. The blood chemistry profiles of Ixazomib-treated mice show normal levels of
creatinine, hemoglobin, and bilirubin. Ixazomib dramatically increases the number of cleaved-caspase-3 positive cells of the
xenograft model. MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

**PROTOCOL**

**Cell Assay** [1]

Cell viability is assessed using the MTT assay. Cells are trypsinized and seeded in 96-well plate at 5000 cells per well. Cells
are treated with Ixazomib or DMSO in basal medium at the indicated doses and times. Cell viability is determined relative to
control cells treated with vehicle alone.

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

**Animal Administration** [2]

Ixazomib is dissolved in 5% 2-hydroxypropyl-β- cyclodextrin at 2 mg/mL concentration. The human plasmacytoma
xenograft tumor model is used in the assay. CB-17 SCID mice (n=21) are subcutaneously inoculated with 5.0×10^6 MM.1S cells
in 100 µL serum-free RPMI-1640 medium, and randomized to treatment groups when tumors reach 250-300 mm^3. Mice are
treated with vehicle, bortezomib (1 mg/kg; i.v) or Ixazomib (11 mg/kg; i.v) twice weekly for 3 weeks. Animals are euthanized
when their tumors reach 2 cm^3.

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

**REFERENCES**

the Invasion Ability of Osteosarcoma Cells in Vitro. Cell Physiol Biochem. 2017 Jan 27;41(2)


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

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