Parthenolide
Caspase-1 and inflammasome inhibitor
Catalog # inh-ptd
For research use only
Version # 15A23-MM

METHOD
Preparation of 10 mg/ml (40.4 mM) stock solution
- Weigh 10 mg of parthenolide.
- Add 1 ml of DMSO to 10 mg parthenolide. Mix by vortexing.
- Prepare further dilutions by adding the appropriate amount of endotoxin-free water.

Inflammasome inhibition assay:
The following protocol describes the monitoring of inflammasome inhibition by parthenolide in the human monocytic THP1-Null cell line by measuring the inhibition of IL-1β production. The cells are grown in suspension to a density of 1.0 x 10⁶ cells/ml in RPMI 1640 medium supplemented with 10% heat inactivated fetal bovine serum.

1. Prime cells by adding 1 mg/ml LPS for 3 hours at 37 °C in 5% CO₂.
2. Wash cells gently with PBS and add fresh culture medium.
3. Stimulate cells by adding IL-1β inducers, such as ATP (5 mM) or MSU crystals (100-200 mg/ml), in the presence or absence of parthenolide (0.5-50 μg/ml).
4. Incubate from 6 hours to overnight at 37°C in 5% CO₂.
5. Determine caspase-1 inhibition by detecting mature IL-1β in the supernatant of THP-1 cells by Western blot; or by ELISA, using a kit such as LumiKine™ hIL-1β; or with InvivoGen’s HEK-Blue™ IL-1β cells, which are specifically engineered to detect bioactive IL-1β.

PROTOCOLS (For reference only)
Cell Culture Assay
Cells: Wild-type bone marrow-derived macrophages
Working concentration: 10 μM (2.5 μg/ml)
Pre-incubation: 15 minutes
Method: In vitro caspase-1 activation by SDS-PAGE, followed by immunoblotting with anti-human caspase-1 p30 antibody.

Animal Study
Animal model: Athymic nude mice
Dose: 25 mg/kg
Administration: Intraperitoneal injection

RELATED PRODUCTS

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<td>Adenosine 5′-triphosphate</td>
<td>thr-apt</td>
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<tr>
<td>HEK-Blue™ IL-1β cells</td>
<td>IL-1β reporter cells</td>
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<td>Isoliquiritigenin</td>
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<td>MSU Crystals</td>
<td>Monosodium urate crystal</td>
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<td>Human monocytes</td>
<td>thr-null</td>
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<tr>
<td>Z-VAD-FMK</td>
<td>NLRP3 &amp; caspase-1 inhibitor</td>
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PRODUCT INFORMATION
Contents:
- 50 mg Parthenolide

Storage and stability:
- Parthenolide is provided lyophilized and shipped at room temperature. Store at -20 °C. Lyophilized is stable for 2 years.
- Upon resuspension, prepare aliquots of parthenolide and store at -20 °C. Resuspended parthenolide is stable for 6 months when properly stored.

Quality control:
- Purity >95% (liquid chromatography).
- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) is confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.
- The inhibitory activity of the product is validated using the inflammasome inhibition assay.

DESCRIPTION
Parthenolide, a sesquiterpene lactone derived from feverfew, is a known inhibitor of NF-κB activation. It is also a direct inhibitor of caspase-1 and consequently of multiple inflammasomes, including the NLRP3 and NLRP1 inflammasomes. Parthenolide has been found to block caspase-1 activation by alkylation of the p20 subunit. Further, parthenolide directly inhibits the NLRP3 inflammasome by interfering with NLRP3 ATPase activity.


CHEMICAL PROPERTIES
Solubility: 50 mg/ml (202 mM) in DMSO or ethanol
CAS number: 20554-84-1
Formula: C15H12O4
Molecular weight: 248
Structure:

TECHNICAL SUPPORT
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