Ac-YVAD-cmk
Caspase-1 inhibitor
Catalog code: inh-yvad
https://www.invivogen.com/ac-yvad-cmk
For research use only
Version 2010-MM

PRODUCT INFORMATION
Contents
• 5 mg Ac-YVAD-cmk
Storage and stability
- Ac-YVAD-cmk is shipped at room temperature. Upon receipt, store at -20°C.
- Upon resuspension, prepare aliquots of Ac-YVAD-cmk and store at -20°C. Resuspended Ac-YVAD-cmk is stable for 6 months when properly stored.
Quality control
- Purity ≥97% (UHPLC)
- The inhibitory activity has been validated using in-house cellular assays.
- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and HEK Blue™ TLR4 cells.

DESCRIPTION
Ac-YVAD-cmk is a potent and irreversible inhibitor of the inflammatory caspase-1. Caspase-1, also known as IL-1 converting enzyme (ICE), is a cysteine protease that cleaves the precursors of the IL-1β and IL-18 pro-inflammatory cytokines, as well as the gasedermin D (GSDMD) pore-forming protein. Ac-YVAD-cmk is a tetrapeptide sequence based on the target sequence of caspase-1 in pro-IL-1β (YVHD)1,3. This drug was described as blocking inflammatory cell death in experimental models. Additional reports showed that Ac-YVAD-cmk effectively blocks inflammasome activation, and that it displays anti-inflammatory, anti-apoptotic, and anti-pyroptotic effects.

5. Zhang F., 2016. Additional reports showed that Ac-YVAD-cmk effectively blocks inflammasome activation, and that it displays anti-inflammatory, anti-apoptotic, and anti-pyroptotic effects.

CHEMICAL PROPERTIES
Solubility: 50 mg/ml (92.4 mM) in DMSO
Synonym: Ac-Tyr-Val-Ala-Asp-chloromethyl ketone
CAS number: 178603-78-6
Formula: C24H33ClN4O8
Molecular weight: 541 g/mol
Structure:

METHODS
Preparation of 10 mg/ml (18.5 mM) stock solution
- Add 500 µl of DMSO to 5 mg Ac-YVAD-cmk. Mix by vortexing.
- Prepare further dilutions with endotoxin-free water.

Working concentration: 0.1-30 µg/ml for cell culture assays

In vitro inhibition of caspase-1:
The following protocol describes the monitoring of caspase-1 inhibition in human THP1-Null2 cells by assessing the inhibition of IL-1β production.
1. Pre-incubate THP1-Null2 cells (3x10^5 cells/well) with Ac-YVAD-cmk (0.1-30 µg/ml) in a 96-well plate for 1 hour at 37°C in 5% CO2.
2. Prime cells by adding 1 µg/ml LPS-EK for 3 hours at 37 °C in 5% CO2.
3. Gently remove medium and add 180 µl of fresh test medium.
4. Stimulate cells by adding IL-1β inducers, such as MSU crystals (100-200 mg/ml) in the presence or absence of Ac-YVAD-cmk.
5. Incubate from 6 hours to overnight at 37 °C in 5% CO2.
6. Determine caspase-1 inhibition by detecting mature IL-1β with InvivoGen’s HEK-Blue™ IL-1β reporter cells, which are specifically engineered to detect bioactive IL-1β.

PROTOCOLS
For reference only; as described in the indicated publications.

Cell Culture Assay
Cells: Bone marrow cells
Working concentration: 50 µM (27 µg/ml)
Incubation time: 30 minutes
Method: Detection of pyroptosis by measuring released lactate dehydrogenase activity

Animal Study
Animal model: BALB/c mice
Dose: 8 mg/kg
Administration: Intraperitoneal injection

RELATED PRODUCTS

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