Product Information

- Name: Z-VAD-FMK (also known as Z-VAD(OH)-FMK)
- CAS No. : 161401-82-7
- Molecular Weight: 453.46 g/mol
- Formula: $C_{21}H_{28}FN_3O_7$
- Appearance: White to light yellow solid powder

Biological Activity

- Target and Mechanism: A pan-caspase inhibitor (also an ICE-like protease inhibitor). It inhibits apoptosis by preventing the processing of CPP32 to its active form. It has been shown to have immunosuppressive effects, inhibit T-cell proliferation, and induce oxidative stress via glutathione (GSH) depletion. It can be used in the study of acute pancreatitis.
- In Vitro Applications: Inhibits apoptosis in various cell models (e.g., used at 20-100 μM).
- T cell proliferation: Inhibits anti-CD3/anti-CD28-induced T cell proliferation at 0-100 μM (72 h).
- Apoptosis models: Effectively inhibits caspase activity (e.g., 50-100 μM for 16 h in FasL-induced T cells).
- In Vivo Applications: Used in mouse models (e.g., 3 mg/kg, i.p., every other day) to reduce cigarette smoke-induced inflammation.

- Used in rat models of severe acute pancreatitis (SAP) at 50 μmol/L (0.3 mL), i.p., 30 minutes before modeling, to alleviate lung tissue damage.

Handling and Storage

- Storage: Powder: Store at 4°C (sealed, away from moisture and light).
- In Solvent: Store at -80°C for up to 6 months, or at -20°C for up to 1 month (sealed, away from moisture and light). Avoid repeated freeze-thaw cycles.
- Solubility: Soluble in DMSO at 100 mg/mL (220.53 mM) with ultrasonic assistance. Note: Hygroscopic DMSO can significantly affect solubility; use freshly opened DMSO.

Precautions

- This product is for research use only and must not be used for clinical diagnosis or treatment.
- Z-VAD-FMK is a potent bioactive compound. Always wear appropriate personal protective equipment (gloves, lab coat) and handle it in a fume hood. Follow standard laboratory safety regulations for chemical handling and waste disposal.
- For in vivo formulations, please refer to the product page for detailed preparation methods (e.g., using DMSO, PEG300, Tween-80, and saline).