

Product Data Sheet

Product Name: Ac-DEVD-CHO

Cat. No.: GC32695

Chemical Properties

Cas. No. 169332-60-9

SMILES N-Acetyl-Asp-Glu-Val-Asp-al

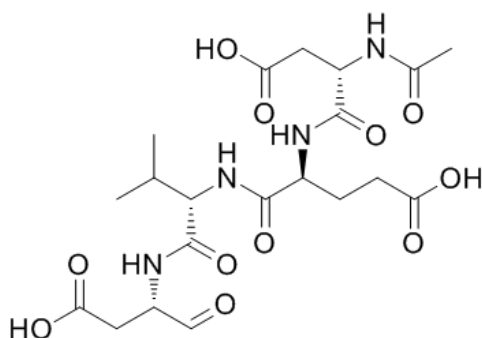
Formula $C_{20}H_{30}N_4O_{11}$ M.Wt 502.47

Solubility Water : ≥ 50 mg/mL (99.51 mM) 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.

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

Structure



Protocol

Cell experiment [1]:

Cell lines OCLs

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

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Preparation method OCLs were incubated with RANKL and treated with 0.5 mmol/L SIN with or without the specific caspase-3 inhibitor Ac-DEVD-CHO (10μM) for 24 h.

Reaction Conditions 10μM; 24 h

Applications Ac-DEVD-CHO partially blocked the effect of SIN-induced apoptosis and reduced the number of apoptotic nuclei.

Animal experiment [2]:

Animal models C3H and ICR mice

Preparation method Starting at 8 days of age, 40 C3H and 40 ICR pups received an i.p. injection of 2 mg/kg body weight of Ac-DEVD-CHO or saline every other day. Ten C3H and ICR mice per group were randomly selected and killed at 13 days of age, and the remaining 10 C3H and ICR mice in each group were killed at 17 days.

Dosage form 2mg/kg; i.p.

Applications Ac-DEVD-CHO transiently delays inherited retinal degeneration in C3H mice carrying the rd gene.

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References:

- [1] He L, Li X, Zeng X, et al. Sinomenine induces apoptosis in RAW 264.7 cell-derived osteoclasts in vitro via caspase-3 activation[J]. Acta Pharmacologica Sinica, 2014, 35(2): 203-210.
- [2] Yoshizawa K, Kiuchi K, Nambu H, et al. Caspase-3 inhibitor transiently delays inherited retinal degeneration in C3H mice carrying the rd gene[J]. Graefes's archive for clinical and experimental ophthalmology, 2002, 240: 214-219.

Background

Ac-DEVD-CHO is a Caspase-3 inhibitor with an IC_{50} value of $0.016\mu M$ ^[1]. Ac-DEVD-CHO also has inhibitory activity against other caspase family members, but is more selective for caspase-3, with a K_i value of $0.23nM$ ^[2]. Ac-DEVD-CHO inhibits the apoptosis process by inhibiting the activity of caspases, and can be used to study the apoptosis process and related diseases, such as retinal degeneration^[3].

In vitro, Ac-DEVD-CHO ($10\mu M$) treated osteoclasts (OCLs) for 24 h, partially blocking sinomenine-induced apoptosis and reducing the number of apoptotic nuclei ^[4]. Ac-DEVD-CHO ($100\mu M$) treated vascular smooth muscle cells for 48 hours, significantly reducing the expression level of caspase-3 and inhibiting artesunate-induced apoptosis ^[5].

In vivo, Ac-DEVD-CHO (2mg/kg) treated mice with hereditary retinitis through intraperitoneal injection, effectively inhibiting photoreceptor cell apoptosis and temporarily delaying retinal degeneration^[6]. Ac-DEVD-CHO (4mg/kg) was injected subcutaneously into mice with acute kidney injury and significantly reduced serum BUN, TNF- α , IL-6, IL-10 concentrations and renal cell apoptosis rate ^[7].

References:

- [1] Firoozpour L, Gao L, Moghimi S, et al. Efficient synthesis, biological evaluation, and docking study of isatin based derivatives as caspase inhibitors[J]. Journal of enzyme inhibition and medicinal chemistry, 2020, 35(1): 1674-1684.
- [2] Garcia-Calvo M, Peterson E P, Leiting B, et al. Inhibition of human caspases by peptide-based and macromolecular inhibitors[J]. Journal of Biological Chemistry, 1998, 273(49): 32608-32613.

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- [3] Yao K, Wang K, Xu W, et al. Caspase-3 and its inhibitor Ac-DEVD-CHO in rat lens epithelial cell apoptosis induced by hydrogen in vitro[J]. Chinese medical journal, 2003, 116(07): 1034-1038.
- [4] He L, Li X, Zeng X, et al. Sinomenine induces apoptosis in RAW 264.7 cell-derived osteoclasts in vitro via caspase-3 activation[J]. Acta Pharmacologica Sinica, 2014, 35(2): 203-210.
- [5] Zhang J, Wang L, Chen H, et al. Effect of Caspase Inhibitor Ac-DEVD-CHO on Apoptosis of Vascular Smooth Muscle Cells Induced by Artesunate[J]. AIMS Bioengineering, 2014, 1(1): 13-24.
- [6] Yoshizawa K, Kiuchi K, Nambu H, et al. Caspase-3 inhibitor transiently delays inherited retinal degeneration in C3H mice carrying the rd gene[J]. Graefes's archive for clinical and experimental ophthalmology, 2002, 240: 214-219.
- [7] Liu L X, Hu Z J, Li Y, et al. The effect of caspase-3 inhibitor on the concentrations of serum inflammatory cytokines in sepsis related acute kidney injury induced by peritoneal cavity infection in mice[J]. Zhongguo wei Zhong Bing ji jiu yi xue, 2010, 22(12): 736-739.

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