Praelolide

Cat. No.: HY-N10659

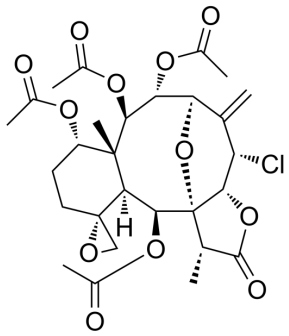
Molecular Formula: $C_{28}H_{35}ClO_{12}$

Molecular Weight: 599.02

Target: Keap1-Nrf2; NF-κB

Pathway: NF-κB

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Praelolide is a potent Nrf2 activator. Praelolide suppresses osteoclastogenesis and reactive oxygen species (ROS) production. Praelolide disrupts Keap1-Nrf2 protein-protein interactions by noncovalent binding to Keap1. Praelolide has the potential for the research of osteoclastogenic bone disease[1].

In Vitro

Praelolide (compound 21) (10 μM) shows anti-osteoclastogenesis activities with the inhibitory ratio of 100% in bone marrow monocytes/macrophages (BMMs)[1].
Praelolide (1, 1.25, 5, 10 μM; 1-5 days) inhibits RANKL-induced osteoclast formation with no cytotoxicity, and inhibits bone resorption of osteoclasts and actin ring formation in BMMs[1].
Praelolide (5, 10 μM) inhibits RANKL-induced mRNA levels of NFATc1, cathepsin K, MMP-9 and TRAP in BMMs[1].
Praelolide (5, 10 μM; 6 h) increases the protein expression of Nrf2, HO-1 and NQO1, enhances the stability of Nrf2 protein[1].
Praelolide (10 μM; 0-60 min) inhibits RANKL-induced NF-κB and MAPK signaling pathways and inhibits RANKL-induced phosphorylation of ERK, p38 MAPK, IKBα, and p65 NF-kB in pre-osteoclasts[1].
Praelolide (0, 20, 50, 100 μM; 24 h) interferes the interaction between Keap1 and Nrf2 by binding to Keap1 protein in RAW264.7 cells[1].

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

Cell Viability Assay[1]

Cell Line:	Bone marrow monocytes/macrophages (BMMs)
Concentration:	1, 2.5, 5, 10, 20, 30, 40, 50 μM
Incubation Time:	1-5 days
Result:	Suppressed RANKL-induced TRAP positive osteoclasts formation in a time dependent manner, shows no effect on cell viability.

RT-PCR[1]

Cell Line:	Bone marrow monocytes/macrophages (BMMs)
Concentration:	5, 10 μM
Incubation Time:	1-5 days
Result:	Inhibited RANKL-induced mRNA levels of NFATc1, cathepsin K, MMP-9 and TRAP.

Western Blot Analysis[1]

Cell Line:	Bone marrow monocytes/macrophages (BMMs), RAW264.7 cells
Concentration:	5, 10 μM
Incubation Time:	6 h
Result:	Promoted the protein expression of Nrf2 in the nucleus and HO-1 and NQO1 in the cytoplasm, ncreased the Nrf2 stability by reducing ubiquitin degradation of Nrf2.

In Vivo

Praelolide (2, 5, 10 μM; co-treated for 6 days) rescues the bone loss of prednisone-induced zebrafish[1].

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

Animal Model:	Zebrafish larvae at the age of 3 dpf (day-post-fertilization)[1]
Dosage:	2, 5, 10 μM
Administration:	Co-treated for 6 days
Result:	Remarkably increased the amount of bone mineralization in prednisolone-treated zebrafish larvae especially at the concentration of 5 μM which even excelled 10 μM praelolide-treated group.

REFERENCES

[1]. Qi X, et al. Briarane-type diterpenoids, the inhibitors of osteoclast formation by interrupting Keap1-Nrf2 interaction and activating Nrf2 pathway. Eur J Med Chem. 2022 Nov 24;246:114948.

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