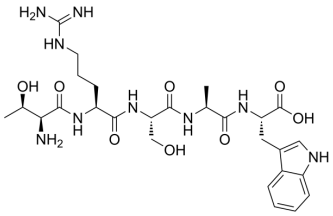
Osteostatin

Cat. No.:	HY-P4684
CAS No.:	138949-73-2
Molecular Formula:	$C_{27}H_{41}N_9O_8$
Molecular Weight:	619.67
Sequence:	Thr-Arg-Ser-Ala-Trp
Sequence Shortening:	TRSAW
Target:	PTHR
Pathway:	GPCR/G Protein
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Osteostatin, a fragment of parathyroid hormone-related protein (PTHrP) 107-111, promotes bone repair in animal models of bone defects and prevents bone erosion in inflammatory arthritis, inhibits collagen-induced arthritis and inhibits osteoclastic bone resorption directly. Osteostatin can be used for inflammation and immunology research[1][2][3][4].

In Vitro

Osteostatin (100, 250 and 500 nM, 7-9 days) decreases the differentiation of osteoclasts in a concentration-dependent manner[2].
Osteostatin (100, 250 and 500 nM, 7 days) decreases the mRNA levels of cathepsin K, osteoclast associated Ig-like receptor (OSCAR) and NFATc1[2].
Osteostatin (100, 250 and 500 nM, 2 days) inhibits the nuclear translocation of the master transcription factor NFATc1 in osteoclast differentiation [2].
Osteostatin (0.1-100 nM, 2 days) significantly increased cell growth in MC3T3-E1 cells[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Differentiation Assay[2]

Cell Line:	PBMCs are cultured with M-CSF and RANKL
Concentration:	100, 250 and 500 nM
Incubation Time:	7-9 days
Result:	Decreased the differentiation of osteoclasts in a concentration-dependent manner, but it does not modify the resorptive ability of mature osteoclasts.

RT-PCR[2]

Cell Line:	PBMCs are cultured with M-CSF and RANKL
Concentration:	100, 250 and 500 nM
Incubation Time:	7 days
Result:	Decreased the mRNA levels of cathepsin K, osteoclast associated Ig-like receptor (OSCAR) and NFATc1.

Immunofluorescence[2]	
Cell Line:	PBMCs are cultured with M-CSF and RANKL
Concentration:	100, 250 and 500 nM
Incubation Time:	2 days
Result:	Inhibited the nuclear translocation of the master transcription factor in osteoclast differentiation NFATc1.
Cell Proliferation Assay[3]	
Cell Line:	MC3T3-E1 cells
Concentration:	0-100 nM
Incubation Time:	2 days
Result:	Significantly increased cell growth of MC3T3-E1 cells

In Vivo

Osteostatin (80 or 120 μg/kg,; after the onset of disease s.c. every day for 13 days) decreases the severity of arthritis as well as cartilage and bone degradation[4].

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

Animal Model:	Collagen-induced arthritis in male DBA/1 mice[4]
Dosage:	80 or 120 μg/kg
Administration:	After the onset of disease s.c. every day for 13 days
Result:	Reduced serum IgG2a levels as well as T cell activation, with the downregulation of RORγ t+CD4+ T cells and upregulation of FoxP3+CD8+ T cells in lymph nodes. Decreased the levels of key cytokines, such as interleukin (IL)-1β, IL-2, IL-6, IL-17, and tumor necrosis factor-α in mice paws, whereas enhanced IL-10.

REFERENCES

[1]. Fenton AJ, et.al. A potent inhibitor of osteoclastic bone resorption within a highly conserved pentapeptide region of parathyroid hormone-related protein; PTHrP[107-111]. Endocrinology. 1991 Dec;129(6):3424-6.

[2]. Ibáñez L, et.al. Osteostatin Inhibits M-CSF+RANKL-Induced Human Osteoclast Differentiation by Modulating NFATc1. Int J Mol Sci. 2022 Aug 1;23(15):8551.

[3]. Lozano D, et.al. Osteostatin-loaded bioceramics stimulate osteoblastic growth and differentiation. Acta Biomater. 2010 Mar;6(3):797-803.

[4]. Nácher-Juan J, et.al. Osteostatin Inhibits Collagen-Induced Arthritis by Regulation of Immune Activation, Pro-Inflammatory Cytokines, and Osteoclastogenesis. Int J Mol Sci. 2019 Aug 7;20(16):3845.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA