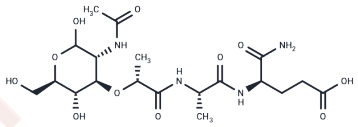
Data Sheet (Cat.No.T16159)

TargetMol

Muramyl dipeptide

Chemical Properties



CAS No. : 53678-77-6

Formula: C19H32N4O11

Molecular Weight: 492.48

Storage: Store at low temperature,Keep away from moisture
Pure form: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Muramyl dipeptide (MDP) is a synthetic immunoreactive peptide, consisting of N-acetyl muramic acid attached to a short amino acid chain of L-Ala-D-isoGln. It indirectly decreases osteoclast differentiation by reducing the RANKL/OPG ratio and directly increases osteoblast differentiation by up-regulating Runx2 gene expression through MAPK pathways, thereby inducing bone formation via Runx2.
Targets(IC50)	NOD-like Receptor (NLR),NOD,p38 MAPK
In vitro	Muramyl dipeptide increases the protein expression of Runx2 in a dose-dependent manner (0.1-10 μg/mL; 24 hours)[1]. It also enhances the mRNA levels of Runx2 in a dose-dependent manner (0.1-10 μg/mL; 6 hours)[2]. Muramyl dipeptide indirectly attenuates osteoclast differentiation by reducing the RANKL/OPG ratio[2].
In vivo	Muramyl dipeptide can be used for animal modeling to establish sepsis models. Muramyl dipeptide (1.25 mg/kg; intraperitoneal injection; twice) alleviates osteoporosis-induced bone loss[2].

Solubility Information

Solubility	DMSO: 50 mg/mL (101.53 mM),Sonication is recommended. H2O: 20 mg/mL (40.61 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5 mg/mL (10.15 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.0305 mL	10.1527 mL	20.3054 mL
5 mM	0.4061 mL	2.0305 mL	4.0611 mL
10 mM	0.2031 mL	1.0153 mL	2.0305 mL
50 mM	0.0406 mL	0.2031 mL	0.4061 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

V Kaushal, et al. Neuronal NLRP1 inflammasome activation of Caspase-1 coordinately regulates inflammatory interleukin-1-beta production and axonal degeneration-associated Caspase-6 activation. Cell Death Differ. 2015 Oct;22(10):1676-86.
Park OJ, et al. Muramyl Dipeptide, a Shared Structural Motif of Peptidoglycans, Is a Novel Inducer of Bone Formation through Induction of RunxJ Bone Miner Res. 2017 Jul;32(7):1455-1468.