

Muramyl dipeptide (MDP)

Minimal bioactive peptidoglycan motif; L-D isomer; NOD2 ligand

Catalog # tlr1-mdp

For research use only

Version # 16A22-MM

PRODUCT INFORMATION

Content:

- 5 mg Muramyl dipeptide (MDP)

Note: MDP is sterile filtered prior to lyophilization.

- 1.5 ml endotoxin-free water

Storage:

- MDP is provided as a white lyophilized powder and shipped at room temperature. Store at -20 °C.

- Upon resuspension, prepare aliquots of MDP and store at -20 °C.

- Resuspended product is stable for 6 months at -20 °C when properly stored. Avoid repeated freeze-thaw cycles.

Quality control:

- The NOD2 biological activity has been validated using HEK-Blue™ NOD2 cells.

- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.

DESCRIPTION

Muramyl dipeptide (MDP) is the minimal bioactive peptidoglycan motif common to all bacteria, the essential structure required for adjuvant activity in vaccines. MDP has been shown to be recognized by NOD2, but not TLR2, nor TLR2/1 or TLR2/6 associations^{1,2}. This recognition is highly stereospecific of the L-D isomer, excluding any reaction to the D-D or L-L analogs². NOD2 mutants associated with susceptibility to Crohn's disease have been found to be deficient in their recognition of MDP^{1,2}. The potent adjuvant activity of MDP may also be linked to an activation of the CIAS1/NALP3/Cryopyrin inflammasome³.

1. Girardin SE, *et al.*, 2003. Nod2 is a general sensor of peptidoglycan through muramyl dipeptide (MDP) detection. *J Biol Chem.* 278(11):8869-72. 2. Inohara N, *et al.*, 2003. Host recognition of bacterial muramyl dipeptide mediated through NOD2. Implications for Crohn's disease. *J Biol Chem.* 278(8):5509-12. 3. Martinon F, *et al.*, 2004. Identification of bacterial muramyl dipeptide as activator of the NALP3/cryopyrin inflammasome. *Curr Biol.* 14(21):1929-34.

CHEMICAL PROPERTIES

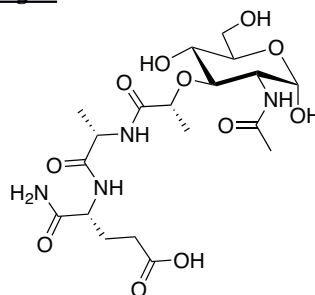
CAS number: 53678-77-6

Synonym: N-Acetylmuramyl-L-Alanyl-D-Isoglutamine

Formula: C₁₉H₃₂N₄O₁₁

Molecular weight: 492.5

Structure:



METHODS

Preparation of stock solution (10 mg/ml)

Stimulation of NOD2 can be achieved with 10 ng - 10 µg/ml of MDP.

- Add 500 µl endotoxin-free water (provided) to the vial containing 5 mg of MDP and vortex to solubilize.

NOD2 activation using MDP

MDP can be used to activate NOD2 in cells expressing this receptor, such as HEK-Blue™ NOD2 cells. These cells express the human or mouse NOD2 gene and an NF-κB inducible SEAP reporter gene. Levels of SEAP can be easily determined using HEK-Blue™ Detection, a cell culture medium that allows the detection of SEAP as it is secreted by the cells.

For more information visit: www.invivogen.com/hek-blue-nod2

- Add 20 µl of MDP at various concentrations (10 ng-10 µg/ml) per well of a 96-well plate.

- Prepare a cell suspension (~280,000 cells per ml) in HEK-Blue™ Detection medium and immediately add 180 µl of the cell suspension (~50,000 cells) to each MDP-containing well.

- Incubate the plate for 6-24 h at 37 °C, 5% CO₂.

- Determine SEAP levels using a spectrophotometer at 620-655 nm.

RELATED PRODUCTS

Product	Catalog Code
HEK-Blue™ Detection	hb-det2
HEK-Blue™ hNOD2 Cells (human NOD2 gene)	hkb-hnod2
HEK-Blue™ mNOD2 Cells (mouse NOD2 gene)	hkb-mnod2
MDP Control (L-L isomer)	tlr1-mdpcl

TECHNICAL SUPPORT

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