

N-Glycolyl-MDP

N-glycolylated muramyl dipeptide; NOD2 ligand

Catalog # tlr1-gmdp

<http://www.invivogen.com/n-glycolyl-mdp>

For research use only

Version # 17E30-MM

PRODUCT INFORMATION

Content:

- 5 mg N-glycolyl-MDP
- 1.5 ml sterile endotoxin-free water

Storage and stability:

- N-glycolyl-MDP is shipped at room temperature. Upon receipt, store at -20°C.
- Upon resuspension, prepare aliquots of N-glycolyl-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

N-glycolyl-MDP has been reported to display a stronger NOD2-mediated activity than N-acetyl-MDP and thus to be a more potent vaccine adjuvant than N-acetyl-MDP¹. MDP (MurNAc-L-Ala-D-IsoGln, also known as muramyl dipeptide), is the minimal bioactive peptidoglycan motif common to all bacteria and 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^{2,3}. This recognition is highly stereospecific of the L-D isomer, excluding any reaction to the D-D or L-L analogs^{3,4}. NOD2 mutants associated with susceptibility to Crohn's disease have been found to be deficient in their recognition of MDP^{2,3}. The potent adjuvant activity of MDP may also be linked to an activation of the CIAS1/NALP3/Cryopyrin inflammasome⁵. The cell wall of mycobacteria is known to be extremely immunogenic. This potent activity is attributed to their MDP which is N-glycolylated in contrast to the MDP of most bacteria which is N-acetylated.

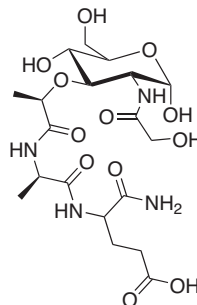
1. **Coulombe F., et al., 2009.** Increased NOD2-mediated recognition of N-glycolyl muramyl dipeptide. *J Exp Med.* 206(8):1709-16. 2. **Girardin SE, et al., 2003.** Nod2 is a general sensor of peptidoglycan through muramyl dipeptide (MDP) detection. *J Biol Chem.* 278(11):8869-72. 3. **Inohara N, et al., 2003.** Host recognition of bacterial muramyl dipeptide mediated through NOD2. Implications for Crohn's disease. *J Biol Chem.* 278(8):5509-12. 4. **Traub S, et al., 2004.** Structural requirements of synthetic muropeptides to synergize with lipopolysaccharide in cytokine induction. *J Biol Chem.* 279(10):8694-700. 5. **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

Formula: C₁₉H₃₂N₄O₁₂

Molecular weight: 508.48

Structure:



METHODS

Preparation of stock solution (5 mg/ml)

- Add 1 ml endotoxin-free water (provided) and vortex until completely dissolved.
- Prepare aliquots of N-glycolyl-MDP and store at -20°C.

NOD2 activation using N-glycolyl-MDP

N-glycolyl-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 N-glycolyl-MDP at 100 ng-10 μg/ml per well of a 96-well plate.
- Prepare a cell suspension as described on the technical data sheet in HEK-Blue™ Detection medium and immediately add 180 μl of the cell suspension 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™ hNOD2 cells	hkb-hnod2
HEK-Blue™ mNOD2 cells	hkb-mnod2
MDP	tlr1-mdp

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