

MDP Control

L-L isomer; Negative control for muramyl dipeptide (MDP)

Catalog code: tlrl-mdpcl

<https://www.invivogen.com/mdp-control>

For research use only

Version 23H01-MM

PRODUCT INFORMATION

Contents

- 5 mg Muramyl dipeptide (MDP) Control, L-L isomer
- 1.5 ml endotoxin-free water

Storage and stability

- MDP Control is shipped at room temperature. Upon receipt, store at -20°C.
- Upon resuspension, prepare aliquots of MDP Control 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 absence of NOD2 activity has been confirmed using HEK-Blue™ NOD2 cells.
- The absence of NOD1 activity has been confirmed using HEK-Blue™ NOD1 cells.
- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.

DESCRIPTION

MDP Control, the negative control for muramyl dipeptide (MDP), is an L-L isomer that does not activate NOD2. MDP is the minimal bioactive peptidoglycan motif present in almost all bacteria. MDP was first identified as an active component in Freund's complete adjuvant¹. It is recognized by the cytosolic receptor NOD2^{2,3}.

This recognition of MDP is stereospecific to the L-D isomer. The core structure required for recognition of NOD2 is MurNAc attached to L-Ala and D-isoGln. Replacement of L-Ala for D-Ala (or D-isoGln for L-isoGln) eliminates the ability of muramyl dipeptide to stimulate NOD2³. MDP Control contains L-Ala and L-isoGln, and hence does not activate NOD2.

1. Ogawa C. et al., 2011. Muramyl dipeptide and its derivatives: peptide adjuvant in immunological disorders and cancer therapy. *Curr Bioact Compd.* 7(3):180-97. **2. Girardin S.E. 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.

PRODUCT PROPERTIES

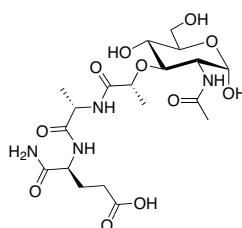
Synonym: N-Acetylmuramyl-L-Alanyl-L-Isoglutamine

Formula: C₁₉H₃₂N₄O₁₁

Molecular weight: 492.5 g/mol

Solubility: 10 mg/ml in water

Chemical structure:



METHODS

Preparation of stock solution (10 mg/ml)

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

NOD2 activation

MDP Control can be used as a negative control to study the stimulatory effect of MDP on NOD2 in [HEK-Blue™ NOD2 cells](#). These cells express the human or murine 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 the reporter protein is secreted by the cells. For more information, visit: <https://www.invivogen.com/hek-blue-nod>.

Below is a protocol for determining NOD2 stimulation MDP.

Note: Use MDP Control at the same concentration as MDP.

1. Dispense 20 µl of MDP or MDP Control at various concentrations (10 ng-10 µg/ml) per well of a 96-well plate.
2. Prepare a cell suspension ~280,000 cells per ml in [HEK-Blue™ Detection](#).
3. Add 180 µl of the cell suspension (~50,000 cells) to each MDP-containing well.
4. Incubate the plate for 6-24 h at 37°C, 5% CO₂.
5. Determine SEAP levels using a spectrophotometer at 620-655 nm.

RELATED PRODUCTS

Product	Description	Cat. Code
HEK-Blue™ Detection	SEAP Detection reagent	hb-det2
HEK-Blue™ hNOD2 Cells	Human NOD2 reporter cells	hkb-hnod2
HEK-Blue™ mNOD2 Cells	Murine NOD2 reporter cells	hkb-mnod2
MDP	L-D isomer	tlrl-mdp

TECHNICAL SUPPORT

InvivoGen USA (Toll-Free): 888-457-5873

InvivoGen USA (International): +1 (858) 457-5873

InvivoGen Europe: +33 (0) 5-62-71-69-39

InvivoGen Asia: +852 3622-3480

E-mail: info@invivogen.com