

# Murabutide

Synthetic derivative of muramyl dipeptide - NOD2 ligand

Catalog # tlr1-mbt

For research use only

Version # 07CJ15-MT

## PRODUCT INFORMATION

### Content:

- 5 mg Murabutide
- 2 ml sterile endotoxin-free water

### Storage :

- Murabutide is provided as a sterile white lyophilized powder and shipped at room temperature. Store at -20°C.
- Upon resuspension, aliquote murabutide and store at -20°C.
- Product is stable 6 months at -20°C when properly stored. Avoid repeated freeze-thaw cycles.

## DESCRIPTION

Murabutide is a safe synthetic immunomodulator derived from muramyl dipeptide (MDP), the smallest bioactive unit of bacterial peptidoglycan. In contrast to MDP, murabutide is devoid of pyrogenic activity<sup>1</sup> and lacks somnogenic activity<sup>2</sup>. Murabutide has the capacity to synergize with selected therapeutic cytokines to drive the release of Th1 cytokines<sup>3</sup>. Murabutide has been found to suppress human immunodeficiency virus type-1 (HIV-1) replication, in macrophages, through a regulated expression of cellular factors needed at different steps in the virus replication cycle<sup>3</sup> Murabutide does not transduce the signal through TLR2 nor TLR4<sup>4</sup>. It appears to be recognized by the intracellular receptor NOD2. Murabutide induced the activation of NF-κB in HEK293 cells expressing NOD2 but no NF-κB was detectable in TLR-expressing HEK293 cells.

1. Chedid LA. *et al.*, 1982. Biological activity of a new synthetic muramyl peptide adjuvant devoid of pyrogenicity. *Infect Immun.* 35(2):417-24.

2. Krueger JM. *et al.*, 1984. Muramyl peptides. Variation of somnogenic activity with structure. *J Exp Med.* 159(1):68-76.

3. Darcissac EC. *et al.*, 2000. The synthetic immunomodulator murabutide controls human immunodeficiency virus type 1 replication at multiple levels in macrophages and dendritic cells. *J Virol.* 74(17):7794-802.

4. Vidal VF. *et al.*, 2001. Macrophage stimulation with Murabutide, an HIV-suppressive muramyl peptide derivative, selectively activates extracellular signal-regulated kinases 1 and 2, C/EBPbeta and STAT1: role of CD14 and Toll-like receptors 2 and 4. *Eur J Immunol.* 31(7):1962-71.

5. Schindler U. & Baichwal VR., 1994. Three NF-κB binding sites in the human E-selectin gene required for maximal tumor necrosis factor alpha-induced expression. *Mol Cell Biol.* 14(9):5820-5831.

## METHODS

### Preparation of sterile stock solution (10 mg/ml)

Stimulation of NOD2 can be achieved with 10 ng to 1 μg/ml Murabutide.

- Add 500 μl sterile endotoxin-free water (provided) and vortex until complete solubilization.

### Murabutide stimulation

- Transfect your cell line with an NF-κB reporter plasmid, such as a pNiFty plasmid, i.e. a plasmid carrying a reporter gene (SEAP, luciferase), under the control of an NF-κB-inducible ELAM-1 (E-selectin) promoter<sup>5</sup>.
- If your cell line does not naturally express NOD2, cotransfect with a NOD2 expressing plasmid (see below).
- Twenty-four to forty-eight hours after transfection, stimulate cells with 10 ng to 1 μg/ml Murabutide for 6 to 24 hours.
- Determine Murabutide stimulation on NOD2 by assessing reporter gene expression using the appropriate detection system.

## RELATED PRODUCTS

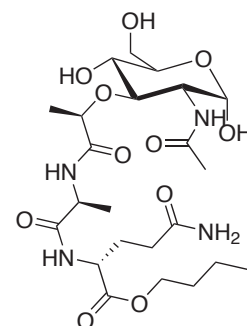
Product	Catalog Code
pUNO-hNOD2a	puno-hnod2a
pUNO-mNOD2a	puno-mnod2a
pNiFty-Luc (Amp <sup>R</sup> )	pnifty-luc
pNiFty-SEAP (Amp <sup>R</sup> )	pnifty-seap
pNiFty2-Luc (Zeo <sup>R</sup> )	pnifty2-luc
pNiFty2-SEAP (Zeo <sup>R</sup> )	pnifty2-seap
SEAP Detection Kit	rep-sap

**Synonym:** N-Acetyl-muramyl-L-Alanyl-D-Glutamin-n-butyl-ester

**Formula:** C<sub>23</sub>H<sub>40</sub>N<sub>4</sub>O<sub>11</sub>

**Molecular weight:** 548.58

**Endotoxin level:** <0.125 EU/ml



### TECHNICAL SUPPORT

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