

# M-Tri<sub>LYS</sub>

## Synthetic muramyl tripeptide - NOD2 ligand

Catalog # tlrl-ntl

For research use only

Version # 12E23-MM

## PRODUCT INFORMATION

### Content:

- 1 mg M-Tri<sub>LYS</sub> provided lyophilized
- 2 ml sterile endotoxin-free water

### Storage :

- M-Tri<sub>LYS</sub> is shipped at room temperature. Store lyophilized product at -20°C. Lyophilized product is stable 6 months when properly stored.
- Upon resuspension, prepare aliquots of M-Tri<sub>LYS</sub> and store at -20°C. Resuspended product is stable 3 months when properly stored. Avoid repeated freeze-thaw cycles.

## DESCRIPTION

M-Tri<sub>LYS</sub> (MurNAc-Ala-D-isoGln-Lys) is a muropeptide released by *Lactobacillus salivarius* after digestion of its peptidoglycan (PGN), a major surface component of Gram-positive bacteria. It has been demonstrated that chemically synthesized M-Tri<sub>LYS</sub> is sensed by NOD2 and subsequently induces the activation of NF-κB<sup>1</sup>. NOD2 is an intracellular pathogen sensor and a key regulator of microbiota in the intestine<sup>2,3</sup>.

Studies have shown that M-Tri<sub>LYS</sub> can induce the production of the anti-inflammatory cytokine IL-10 and protect mice from colitis<sup>1</sup>. These findings suggest that the beneficial properties of the probiotic *L. salivarius* are mediated by NOD2.

**1. Macho Fernandez E. et al., 2011.** Anti-inflammatory capacity of selected lactobacilli in experimental colitis is driven by NOD2-mediated recognition of a specific peptidoglycan-derived muropeptide, *Gut*, 60: 1050 - 1059. **2. Bansal K. & Balaji K., 2011.** Intracellular pathogen sensor NOD2 programs macrophages to trigger Notch1 activation. *J Biol Chem*. 286(7): 5823-5835. **3. Biswas A. et al., 2012.** Nod2: a key regulator linking microbiota to intestinal mucosal immunity. *J Mol Med (Berl)*. 90(1): 15-24.

## CHEMICAL PROPERTIES

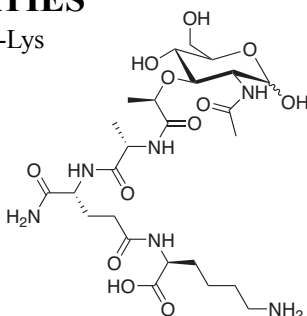
**Synonym:** MurNAc-Ala-D-isoGln-Lys

**Formula:** C<sub>25</sub>H<sub>44</sub>N<sub>6</sub>O<sub>12</sub>

**Molecular weight:** 620.65

**Solubility:** 1 mg/ml in water

**Endotoxin level:** <0.001 EU/μg



## METHODS

### Preparation of stock solution (1 mg/ml)

Stimulation of NOD2 can be achieved with 100 ng - 10 μg/ml M-Tri<sub>LYS</sub>.

- Add 1 ml endotoxin-free water (provided) and vortex until complete solubilization.

### An example of NOD2 stimulation using M-Tri<sub>LYS</sub>

M-Tri<sub>LYS</sub> can be used to stimulate NOD2 in HEK-Blue™ NOD2 cells. HEK-Blue™ NOD2 cells stably express an NF-κB-inducible secreted embryonic alkaline phosphatase (SEAP) and overexpress the NOD2 gene. For more information visit: [www.invivogen.com/hek-blue-nod2](http://www.invivogen.com/hek-blue-nod2)

1. Add a range of concentrations of M-Tri<sub>LYS</sub> (suggested dose-response range 10 ng - 10 μg/ml) to HEK-Blue™ NOD2 cells (prepare a cell suspension according to data sheet).
2. Incubate cells and M-Tri<sub>LYS</sub> for 6 - 24 h at 37°C, 5% CO<sub>2</sub>.
3. Determine NOD2 stimulation with M-Tri<sub>LYS</sub> by assessing cytokine expression using an ELISA, or SEAP expression using a SEAP detection medium, such as QUANTI-Blue™ or HEK-Blue™ Detection.

## RELATED PRODUCTS

Product	Catalog Code
HEK-Blue™ hNOD2 cells	hkb-hnod2
HEK-Blue™ mNOD2 cells	hkb-mnod2
HEK-Blue™ Detection (SEAP detection medium)	hb-det2
QUANTI-Blue™ (SEAP detection medium)	rep-qb1
pUNO-hNOD2a (human gene)	puno-hnod2a
pUNO-mNOD2a (mouse gene)	puno-mnod2a
<b>Other NOD2 ligands:</b>	
M-Tri <sub>LYS</sub> -D-ASN (synthetic muramyl tetrapeptide)	tlrl-mtn
Murabutide (synthetic muramyldipeptide derivative)	tlrl-mbt
N-Glycolyl-MDP (N-glycolylated muramyldipeptide)	tlrl-gmdp

### TECHNICAL SUPPORT

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