

# Nigericin

## NLRP3 Inflammasome inducer

Catalog # tlr-nig,tlrl-nig-5

For research use only

Version # 14K05-MM

### PRODUCT INFORMATION

#### Content:

Nigericin is provided as a sodium salt and is available in two quantities:

- 10 mg : tlr-nig
- 50 mg : tlr-nig-5

#### Storage and stability:

- Nigericin is shipped at room temperature. Store at -20 °C. Upon resuspension, nigericin should be stored at 4 °C for short term storage or -20 °C for long storage.

- Resuspended product is stable for 1 month at 4 °C and for 1 year at -20°C when properly stored.

#### Quality control:

- The biological activity of nigericin is confirmed using the inflammasome induction assay based on THP1-Null cells and HEK-Blue™ IL-1β cells.

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

### DESCRIPTION

Nigericin is a microbial toxin derived from *Streptomyces hygroscopicus*. Nigericin acts as a potassium ionophore. The release of IL-1β in response to nigericin has been demonstrated to be NALP3-dependent<sup>1</sup>. Similar to ATP, nigericin induces a net decrease in intracellular levels of potassium which is crucial for the activation of caspase-1<sup>2</sup>. Nigericin requires signaling through pannexin-1 to induce caspase-1 maturation and IL-1β processing and release<sup>3</sup>.

**1. Mariathasan S. et al., 2006.** Cryopyrin activates the inflammasome and ATP. *Nature* 440:228-32. **2. Perregaux D. & Gabel CA., 1994.** Interleukin-1β maturation and release in response to ATP and nigericin. *J Biol. Chem.* 269:15195-15203. **3. Pelegrin P, & Surprenant A., 2007.** Pannexin-1 couples to maitotoxin- and nigericin-induced interleukin-1β release through a dye uptake-independent pathway. *J Biol Chem.* 282(4):2386-94.

### CHEMICAL PROPERTIES

**CAS Number:** 28643-80-3

**Synonym:** Antibiotic K178, Polyetherin A

**Molecular weight:** 746.94

**Formula:** C<sub>40</sub>H<sub>67</sub>NaO<sub>11</sub>

**Purity:** ≥98.0%

**Appearance:** White powder

**Solubility:** Ethanol 5 mg/ml

### METHODS

#### Solubilization of Nigericin

- Prepare a 5 mg/ml (6.7 mM) nigericin stock solution in 100% ethanol.

- Prepare further dilutions by adding the appropriate amount of endotoxin-free water.

#### Detection of NLRP3 inflammasome induction

Secretion of IL-1β is an indicator of the NLRP3 inflammasome induction. The activation and release of IL-1β requires two distinct signals: the first signal leads to the transcriptional upregulation and synthesis of pro-IL-1β; the second signal leads to IL-1β maturation and secretion through the activation of NLRP3 inflammasome.

The synthesis of pro-IL-1β can be induced by priming human monocytic THP-1 cells for 3 h with PMA (phorbol 12-myristate 13-acetate; 300 ng/ml) or LPS (lipopolysaccharide, 1 μg/ml). Subsequent stimulation with 1 μM nigericin leads to the formation of NLRP3 inflammasome resulting in IL-1β maturation and secretion. Secreted IL-1β can be detected by Western blot or ELISA. Alternatively, InvivoGen recommends the use of HEK-Blue™ IL-1β cells, a reporter cell line that specifically detects bioactive IL-1β. These cells express an NF-κB and AP-1-inducible SEAP (secreted alkaline phosphatase) reporter gene. The presence of IL-1β leads to NF-κB and AP-1 activation and the subsequent secretion of SEAP. Levels of SEAP can be easily determined with HEK-Blue™ Detection or QUANTI-Blue™, detection media that turn purple/blue in the presence of alkaline phosphatase. HEK-Blue™ Detection is designed for high-throughput detection of SEAP, while QUANTI-Blue™ is more sensitive and designed for the detection and quantification of SEAP.

### RELATED PRODUCTS

Product	Catalog Code
HEK-Blue™ IL-1β Cells	hkb-il1b
LPS-EB (LPS from <i>E.coli</i> K12)	tlrl-eklps
<b>Other inflammasome inducers:</b>	
Alum crystals	tlrl-alk
CPD crystals	tlrl-cppd
Hemozoin	tlrl-hz
MSU crystals	tlrl-msu
Poly(dA:dT)	tlrl-pat

#### TECHNICAL SUPPORT

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