

# Product Datasheet

## TIRAP (TLR2 and TLR4) Inhibitor Peptide Set NBP2-26245

Unit Size: 1 mg

Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.

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**NBP2-26245****TIRAP (TLR2 and TLR4) Inhibitor Peptide Set**

<b>Product Information</b>	
<b>Unit Size</b>	1 mg
<b>Concentration</b>	Concentration is not relevant for this product. Please see the protocols for proper use of this product.
<b>Storage</b>	Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.
<b>Buffer</b>	Form: White solid Solubilize the peptides prior to use by preparing 2.5 mM stock solution in sterile water.

<b>Product Description</b>	
<b>Description</b>	TLR2 / TLR4 Inhibitor Peptide: 1 mg (lyophilized); sequence: DRQIKIWFQNRRMKWKKPGFLRDPWCKYQML (Inhibitor sequence: PGFLRDPWCKYQML); Molecular weight: 4097.92 Da  Antennapedia Control Peptide: 1 mg (lyophilized); sequence: DRQIKIWFQNRRMKWKK; Molecular weight: 2361 Da
<b>Gene ID</b>	114609
<b>Gene Symbol</b>	TIRAP
<b>Species</b>	Human, Mouse
<b>Specificity/Sensitivity</b>	TLR2 and TLR4 Inhibitor Peptide: COBRA TLR2 and TLR4 Inhibitor interferes with interaction between TIRAP/Mal and TIR domain of TLR2 or TLR4.
<b>Preparation Method</b>	Preparation of 2.5 mM peptide stock solutions TLR2 / TLR4 Inhibitor Peptide: A final volume of 100 ul will make a 2.5 mM stock solution. Add 100 ul sterile water to the tube of peptide. Carefully pipet to ensure all of the peptide is dissolved and briefly spin the tube before opening.  Antennapedia Control Peptide: A final volume of 170 ul will make a 2.5 mM stock solution. Add 170 ul sterile water to the tube of peptide. Carefully pipet to ensure all of the peptide is dissolved and briefly spin the tube before opening.  The stock solutions may be diluted further to make working solutions. Dilute according to the needs for your assay. For example, dilute 2.5 mM stock solutions 1:10 in sterile 1X PBS or cell culture media to make 250 uM working solutions. Working solution should be made fresh daily and not be stored.
<b>Inhibitor Family</b>	TLR
<b>Inhibitor Target</b>	TLR2 and TLR4

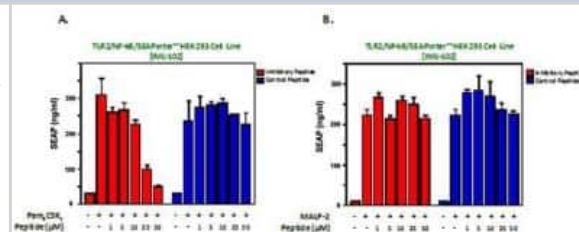
<b>Product Application Details</b>	
<b>Applications</b>	Flow Cytometry, In vitro assay
<b>Recommended Dilutions</b>	Flow Cytometry reported in scientific literature (PMID 27838489), In vitro assay reported in scientific literature (PMID 26908090)

**Application Notes**

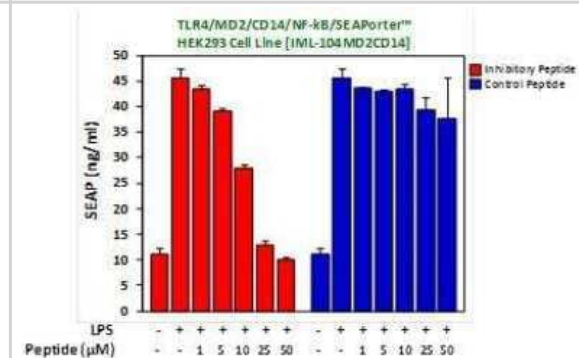
The inhibitor is used in assays to inhibit TLR2 and TLR4 signaling. We recommend an initial titration of the inhibitor from 0-50  $\mu\text{M}$  for in vitro assays along with control of which concentrations should be mirror inhibitor concentrations. Inhibitor and control should be preincubated with cells prior to ligand activation to allow sufficient time for the peptides to enter from the media into the cell. We typically preincubate with inhibitor and control for 1 h prior to TLR2 or TLR4 activation (Figures 1 and 2); however, optimal preincubation times may vary between model systems. The TLR2/NF- $\kappa\text{B}$ /SEAPorter™ cell line and TLR4/MD2/CD14/NF- $\kappa\text{B}$ /SEAPorter™ cell line are a useful positive control model system for studying inhibition of TLR2 and TLR4 activation, respectively (Figures 1 through 3).

**Images**

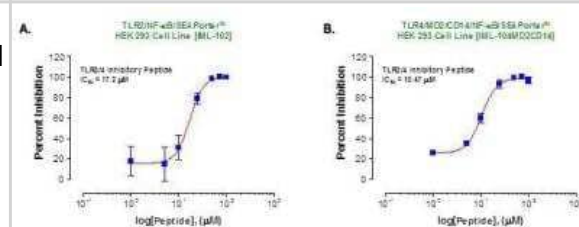
TIRAP (TLR2 and TLR4) Inhibitor Peptide [NBP2-26245] - TLR2 acts through formation of heterodimer complexes with TLR1 or TLR6. HEK 293 endogenously expresses TLR1 and TLR6, so that the TLR2 reporter cell line can respond to both Pam3CSK4 (TLR2/TLR1 specific ligand) and MALP-2 (TLR2/TLR6 specific ligand). The TLR2 / TLR4 inhibitor specifically inhibits TLR2/TLR1 receptor complex activity in a dose-response manner but exhibited no or little effect on TLR2/TLR6 receptor complex activity.



TIRAP (TLR2 and TLR4) Inhibitor Peptide [NBP2-26245] - The TLR4 reporter cell line responds to LPS. The TLR2 / TLR4 inhibitor specifically inhibits TLR4 activation upon LPS stimulation in a dose-response manner.



TIRAP (TLR2 and TLR4) Inhibitor Peptide [NBP2-26245] - TLR2 / 4 Inhibitor suppressed the Pam3CSK4-induced TLR2/TLR1 activity [A] and the LPS-induced TLR4 activity [B] in a dose-response manner, of which IC50 values were measured as 17.2  $\mu\text{M}$  and 10.47  $\mu\text{M}$ , respectively.



## Publications

Lu HT, Lu JW, Lee CH et al. Attenuative Effects of Platelet-Rich Plasma on 30 kDa Fibronectin Fragment-Induced MMP-13 Expression Associated with TLR2 Signaling in Osteoarthritic Chondrocytes and Synovial Fibroblasts *Journal of Clinical Medicine* 2021-09-29 [PMID: 34640514]

Wang N, Guo W, Liu T et al. Toll-like receptors (TLR2 and TLR4) antagonist mitigates the onset of cerebral small vessel disease through PI3K/Akt/GSK3 $\beta$  pathway in stroke-prone renovascular hypertensive rats *Biotechnology & genetic engineering reviews* 2023-03-06 [PMID: 36877597]

Jing X, Min C, Qi Yun L et al. Toll-like receptor 2/4 inhibitors can reduce preterm birth in mice *J Int Med Res* 2020-10-01 [PMID: 33100071]

Yamaguchi M, Hirose Y, Takemura M, et al Streptococcus pneumoniae Evades Host Cell Phagocytosis and Limits Host Mortality Through Its Cell Wall Anchoring Protein PfbA. *Front Cell Infect Microbiol.* 2019-08-20 [PMID: 31482074] (Bacteria)

### Details:

Mice were infected with *S. pneumoniae*.

Martinez-Mendez D, Rivera-Toledo E, Ortega E et al. Monocyte-lymphocyte fusion induced by the HIV-1 envelope generates functional heterokaryons with an activated monocyte-like phenotype. *Exp. Cell Res.* 2017-03-01 [PMID: 28132881]

Cheng Y, Xiong J, Chen Q et al. Hypoxia/reoxygenation-induced HMGB1 translocation and release promotes islet proinflammatory cytokine production and early islet graft failure through TLRs signaling. *Biochim. Biophys. Acta.* 2016-11-10 [PMID: 27838489] (FLOW, Mouse)

Pahwa R, Nallasamy P, Jialal I. Toll-like receptors 2 and 4 mediate Hyperglycemia induced Macrovascular Aortic Endothelial Cell Inflammation and Perturbation of the Endothelial Glycocalyx. *J Diabetes Complications.* 2016-01-22 [PMID: 26908090] (In vitro, Human)

Couture LA, Piao W, Ru LW et al. Targeting Toll-like receptor (TLR) signaling by Toll/interleukin-1 receptor (TIR) domain-containing adapter protein/MyD88 adapter-like (TIRAP/Mal)-derived decoy peptides. *J Biol Chem.* 2012-07-13 [PMID: 22648407]





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### **Products Related to NBP2-26245**

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NBP2-22871	Recombinant Human TIRAP (TLR2 and TLR4) His Protein
210-TA-005	TNF-alpha [Unconjugated]
NBP2-08583	TIRAP (TLR2 and TLR4) Overexpression Lysate
M6000B-1	IL-6 [HRP]

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### **Limitations**

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