

HKSA

Heat Killed *Staphylococcus aureus*; TLR2 ligand

Catalog code: tlr1-hksa

<https://www.invivogen.com/hksa>

For research use only

Version 19K29-MM

PRODUCT INFORMATION

Contents

- 10^{10} freeze-dried cells of Heat Killed *Staphylococcus aureus* (HKSA)
- 1.5 ml of sterile endotoxin-free water

Storage and stability

- HKSA is shipped at room temperature. Upon receipt, store at 4°C.
- Upon resuspension, prepare aliquots of HKSA and store at 4°C or at -20°C. Resuspended product is stable for 1 month at 4°C and for 6 months at -20°C when properly stored.

Quality Control:

- TLR2 activity has been validated using HEK-Blue™ TLR2 cells.
- The absence of TLR4 activity has been confirmed using HEK-Blue™ TLR4 cells.
- Lack of viability has been confirmed by microbiological testing.

DESCRIPTION

HKSA is a lyophilized heat-killed preparation of *Staphylococcus aureus* (*S. aureus*). This extracellular Gram-positive bacterium is a major source of mortality in medical facilities. It causes a wide range of infections from skin infection to life-threatening diseases. HKSA is recognized by TLR2 and induces the production of tumor necrosis factor alpha (TNF- α) and interleukin-6 (IL-6) in macrophages through a MyD88-dependent signaling pathway^{1,2}. Notably, HKSA is not recognized by TLR4¹.

It has been demonstrated that HKSA induces tolerance to a secondary HKSA stimulation but causes priming to lipopolysaccharide (LPS), the Gram-negative bacterial cell wall component³. This study suggests a differential regulation of cytokines and chemokines in Gram-positive- and Gram-negative-induced inflammatory events³.

1. Takeuchi O. *et al.*, 2000. Cutting edge: TLR2-deficient and MyD88-deficient mice are highly susceptible to *Staphylococcus aureus* infection. *J. Immunol.* 165:5392-5396. 2. Lembo A. *et al.*, 2003. Differential contribution of Toll-like receptors 4 and 2 to the cytokine response to *Salmonella enterica* serovar Typhimurium and *Staphylococcus aureus* in mice. *Infect Immun.* 71(10):6058-62. 3. Peck OM. *et al.*, 2004. Differential regulation of cytokine and chemokine production in lipopolysaccharide-induced tolerance and priming. *Cytokine.* 26(5):202-8.

METHODS

Preparation of stock solution (10^{10} HKSA/ml)

Stimulation of TLR2 can be achieved with 10^6 - 10^8 HKSA/ml.

1. Add 1 ml of sterile endotoxin-free water (provided) to rehydrate the pellet.
2. Vortex 10 seconds to homogenize.

Note: Resuspended HKSA results in a milky solution.

HKSA-induced TLR2 activation

HKSA can be used to stimulate TLR2 in HEK-Blue™ TLR2 cells. These cells stably express the TLR2 gene and an NF- κ B-inducible secreted embryonic alkaline phosphatase (SEAP). For more information visit: <https://www.invivogen.com/hek-blue-tnfr2>.

1. Add 20 μ l of HKSA at 10^6 - 10^8 cells/ml (final concentration) in a well of a 96-well plate.
2. Add 180 μ l of cell suspension (prepare cell suspension according to data sheet) per well.
3. Incubate the plate for 6-24 h at 37°C, 5% CO₂.
4. Determine TLR2 stimulation with HKSA by assessing SEAP expression using a SEAP detection medium, such as HEK-Blue™ Detection.

RELATED PRODUCTS

Product	Description	Cat.Code
HEK-Blue™ hTLR2 cells	Human TLR2 reporter cells	hkb-htlr2
HEK-Blue™ mTLR2 cells	Murine TLR2 reporter cells	hkb-mtlr2
HEK-Blue™ Detection	SEAP detection reagent	hb-det2
Other TLR2 ligands:		
HKEB	Heat-killed <i>E. coli</i> O111:B4	tlr1-hkeb2
HKLM	Heat-killed <i>L. monocytogenes</i>	tlr1-hklm
HKPG	Heat-killed <i>P. gingivalis</i>	tlr1-hkpg

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