LPS-PG

Lipopolysaccharide from *Porphyromonas gingivalis* - TLR2 & TLR4 ligand

Catalog # tlrl-pglps

For research use only

Version # 14F18-MM

PRODUCT INFORMATION

Content

- 1 mg lipopolysaccharide from *Porphyromonas gingivalis* (LPS-PG)
- 1.5 ml endotoxin-free water

Storage

- LPS-PG is provided lyophilized and shipped at room temperature. Store at -20°C.
- Upon resuspension, prepare aliquots of LPS-PG and store 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 6 months at -20°C when properly stored.

Quality control

- The TLR4 activity is controlled using HEK-Blue™ TLR4 cells.
- The presence of other bacterial components (e.g. lipoproteins) is controlled using HEK-Blue™ TLR2 cells.

DESCRIPTION

LPS-PG is a standard preparation of lipopolysaccharide (LPS) from the Gram-negative bacteria *Porphyromonas gingivalis*. LPS is the principal component of Gram negative bacteria that activates the innate immune system. LPS recognition is predominantly mediated by TLR4[1]. LPS-PG is an important virulence factor in the mechanisms of peridontal disease. LPS-PG presents a unique and heterogenous chemical structure, which differs from traditionally recognized enteric bacterium-derived LPS.

The fact that LPS-PG exhibits activity in C3H/HeJ mice, which are deficient for TLR4, led to a common belief that this LPS is a TLR2 ligand[2,3]. However, structural and functional studies of LPS-PG have revealed that it activates cells through TLR4. The TLR2 activity of LPS-PG is ascribed to a contaminant lipoprotein[4]. The TLR response to LPS-PG is dependent on the presence of key accessory molecules: CD14 is required for both TLR2 and TLR4 activation while MD-2 is only necessary for TLR4 activation[5].

1. Poltorak A. *et al.*, 1998. Defective LPS signaling in C3H/HeJ and C57BL/10ScCr mice: mutations in Tlr4 gene. Science, 282:2085-8. **2. Kirikae T. *et al.*, 1999.** Lipopolysaccharides (LPS) of oral black-pigmented bacteria induce tumor necrosis factor production by LPS-refractory C3H/HeJ macrophages in a way different from that of Salmonella LPS. Infect Immun. 67(4):1736-42. **3. Hirschfeld M. et al., 2001.** Signaling by toll-like receptor 2 and 4 agonists results in differential gene expression in murine macrophages. Infect Immun. 69(3):1477-82. **4. Ogawa T. et al., 2007.** Chemical structure and immunobiological activity of Porphyromonas gingivalis lipid A. Front Biosci. 12:3795-812. **5. Darveau RP. *et al.*, 2004.** Porphyromonas gingivalis lipopolysaccharide contains multiple lipid A species that functionally interact with both toll-like receptors 2 and 4. Infect Immun. 72(9):5041-51.

METHODS

Preparation of stock solution (1 mg/ml)

- Add 1 ml of endotoxin-free water (provided) and homogenize.
- Prepare aliquots of stock solution and store at 4°C for 1 month or at -20°C for 6 months. Further dilutions can be prepared using water.

Working concentrations:

- TLR4 activity: 100 ng - 10 µg/ml
- TLR2 activity: 10 ng/ml - 10 µg/ml

TLR2 & TLR4 activation using LPS-PG

Activation of TLR2 and TLR4 by LPS-PG can be monitored using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells, respectively. HEK-Blue™ TLR cells stably express an NF-κB-inducible secreted embryonic alkaline phosphatase (SEAP) and overexpress a TLR gene.

For more information visit: www.invivogen.com/hek-blue-tlr-cells

- Dispense 20 µl of LPS-PG at various concentrations (10 ng - 10 µg/ml) per well of a 96-well plate.
- Prepare a HEK-Blue™ TLR cell suspension (according to the product data sheet) in HEK-Blue™ Detection medium and immediately add 180 µl of the cell suspension to each LPS-PG-containing well.
- Incubate the plate for 6 - 24 h at 37°C, 5% CO_2.
- Determine SEAP levels using a spectrophotometer at 620 - 655 nm.

RELATED PRODUCTS

Product	Catalog Code
HEK-Blue™ hTLR2 Cells (human TLR2)	hkb-htlr2
HEK-Blue™ hTLR4 Cells (human TLR4)	hkb-htlr4
HEK-Blue™ Detection	hb-det2
Other TLR2 agonists	
FSL-1 (synthetic diacylated lipoprotein)	tlrl-fsl
HKLM (heat killed *L. monocytogenes*)	tlrl-hklm
Pam3CSK4 (synthetic triacylated lipoprotein)	tlrl-pms
Other TLR4 agonists	
LPS-B5 Ultrapure (LPS from *E. coli 055:B5*)	tlrl-pb5lps
LPS-EB Ultrapure (LPS from *E. coli 0111:B4*)	tlrl-3pelps
MPLAs (synthetic monophosphoryl lipid A)	tlrl-mpls

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