LTA-SA

Lipoteichoic acid from *Staphylococcus aureus* - TLR2 ligand

Catalog # tlrl-slta

For research use only

Version # 11J21-MM

PRODUCT INFORMATION

Content:

- 5 mg *S. aureus* lipoteichoic acid (LTA-SA)

Storage :

- LTA-SA is shipped at room temperature and should be stored at -20˚C.
- Upon resuspension, store LTA-SA at 4˚C for short term storage or at -20˚C for long storage. Avoid repeated freeze-thaw cycles. Product is stable 1 month at 4˚C and 6 months at -20˚C when properly stored.

Quality Control:

Endotoxin level: 10 EU/mg

DESCRIPTION

Lipoteichoic acids (LTAs) are found in the cell walls of most Gram positive bacteria and are linked to the cytoplasmic membrane. Controversial results have been reported regarding the involvement of TLRs in LTA-induced immunostimulatory activity. LTAs from *Staphylococcus aureus* and *Bacillus subtilis* were shown to induce activation of NF-κB in a TLR2-dependent manner[1]. Conversely, TLR4-deficient macrophages were shown to be hyporesponsive to *S. aureus* and *Streptococcus sanguis* LTA[2]. According to these results, TLR2 is the major receptor for LTAs with an additional involvement of TLR4 depending on the bacterial species and the methods used to extract the LTAs. It was recently reported that LPS-binding protein (LBP) and CD14 are involved in TLR2-mediated LTA stimulation[3].

1. Schwandner R. *et al.* 1999. Peptidoglycan- and lipoteichoic acid-induced cell activation is mediated by toll-like receptor 2. J Biol Chem, 274(25): 17406-9. **2. Takeuchi O. *et al* 1999.** Differential roles of TLR2 and TLR4 in recognition of gram-negative and gram-positive bacterial cell wall components. Immunity . 11(4): 443-51. **3. Schröder N. et al. 2003.** Lipotechoic acid (LTA) of S. pneumoniae and S. aureus activates immune cells via toll-like receptor (TLR)-2, LPS binding protein (LBP) and CD14 while TLR-4 and MD-2 are not involved. J Biol Chem. 275(25):22041-7. **4. Schindler U. & Baichwal VR., 1994.** Three NF-kB binding sites in the human E-selectin gene required for maximal tumor necrosis factor alpha-induced expression. Mol Cell Biol, 14(9):5820-5831.

METHODS

Preparation of stock solution (2.5 mg/ml)

Stimulation of TLR2 can be achieved with 100 ng - 1 µg/ml LTA-SA.

- Add 2 ml of sterile water and vortex to homogenize.

Note: The solution may appear slightly cloudy.

TLR2 stimulation with LTA-SA

- Transfect your cell line with an NF-κB reporter plasmid, i.e. a plasmid carrying a reporter gene such as GFP, SEAP or luciferase, under the control of the NF-κB-inducible ELAM-1 promoter[4].

Note: InvivoGen provides pNiFty, a family of NF-κB-inducible reporter plasmids that can be transfected transiently (pNiFty) or stably (pNiFty2). pNiFty plasmids are available either with the SEAP or luciferase reporter genes (see Related Products).

If your cell line does not naturally express TLR2, cotransfect with a TLR2 expressing plasmid, such as pUNO1-hTLR2 or pDUO-hCD14/TLR2 plasmids.

Note: Alternatively, evaluate TLR2 activation using reporter cells, such as InvivoGen's HEK-Blue™ hTLR2 cells which express the human TLR2 and SEAP reporter genes. NF-κB production in these cells can be easily quantified using a SEAP detection medium, such as QUANTI-Blue™ or HEK-Blue™ Detection.

- Twenty-four to forty-eight hours after transfection, stimulate cells with 100 ng - 1 µg/ml LTA-SA for 6 to 24 hours.
- Determine TLR2 stimulation with LTA-SA by assessing reporter gene expression using the appropriate detection system.

RELATED PRODUCTS

Product	Catalog Code
HEK-Blue™ hTLR2 cells	hkb-htlr2
pNiFty2-Luc (Zeo^R)	pnifty2-luc
pNiFty2-SEAP (Zeo^R)	pnifty2-seap
pUNO1-hTLR2 (human genes)	puno1-htlr2
pDUO-hCD14/TLR2 (human genes)	pduo-hcd14tlr2

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