**MPLAs**

**Synthetic Monophosphoryl Lipid A - TLR4 ligand**

Catalog # tlr1-mpls

For research use only

Version # 12L04-MM

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**PRODUCT INFORMATION**

**Content:**
- 1 mg Synthetic Monophosphoryl Lipid A (MPLAs)

**Storage:**
- MPLAs is provided as a clear, lipidic film and shipped at room temperature. Store at -20°C. Product is stable 1 year when properly stored.
- Upon resuspension, MPLAs should be aliquoted and stored at -20°C. Resuspended product is stable 6 months when properly stored. Avoid repeated freeze-thaw cycles.

**DESCRIPTION**

Synthetic lipid A from *E. coli* (MPLAs) is a monophosphoryl lipid A with 6 fatty acyl groups. It is structurally very similar to natural MPLA except that natural MPLA contains a mixture of 5, 6, and 7 acyl lipid A. The number of fatty acids is a major determinant of the immunogenicity of endotoxin. The most active form of lipid A contains six fatty acyl groups and is found in pathogenic bacteria such as *E. coli* and *Salmonella* species. MPLA, used extensively as a vaccine adjuvant, has been shown to activate TLR4\textsuperscript{1, 2}. Synthetic *E. coli* lipid A activates TLR4 but does not activate TLR2 even at high concentrations reflecting its high purity.


**CHEMICAL PROPERTIES**

**CAS Number:** 1246298-63-4

**Formula:** C\textsubscript{96}H\textsubscript{184}N\textsubscript{3}O\textsubscript{22}P

**Molecular weight:** 1763.47

**Endotoxin level:** 1 x 10\textsuperscript{6} EU/mg

**Solubility:** 1 mg/ml DMSO

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**METHODS**

**Preparation of stock suspension (1 mg/ml)**

Stimulation of TLR4 can be achieved with 10 ng - 10 µg/ml MPLAs.

- Add 1 ml DMSO and vortex until complete solubilization, then sonicate.

**Note:** The suspension may appear to contain floating fine particles. Difficulties may be encountered for solubilization at higher concentrations.

- Prepare aliquots of stock solution and store at -20°C. Further dilutions can be prepared using water.

**TLR4 activation using MPLAs**

MPLAs can be used to activate TLR4 in HEK-Blue™ TLR4 cells, that were designed to study TLR4 stimulation by monitoring NF-κB activation. Stimulation of HEK-Blue™ TLR4 cells with a TLR4 agonist activates NF-κB which induces the production of SEAP (secreted embryonic alkaline phosphatase). Levels of SEAP can be easily determined using a SEAP detection medium, such as QUANTI-Blue™.

For more information visit: www.invivogen.com/hek-blue-htrlr4

- Add 20 µl of MPLAs at various concentrations (10 ng to 10 µg/ml) in a well of a 96-well plate.
- Add 180 µl of HEK-Blue™ TLR4 cell suspension per well.
- Incubate the plate for 16 - 24 h at 37°C, 5% CO\textsubscript{2}.
- Collect 20 µl of supernatant and add to a well of a 96-well plate containing 180 µl of QUANTI-Blue™.
- Incubate the plate at 37°C for 1 - 3 h.
- Determine SEAP levels using a spectrophotometer at 620 - 655 nm.

**RELATED PRODUCTS**

<table>
<thead>
<tr>
<th>Product</th>
<th>Catalog Code</th>
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<tbody>
<tr>
<td>HEK-Blue™ hTLR4 Cells (human TLR4)</td>
<td>hkb-htrlr4</td>
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<tr>
<td>HEK-Blue™ mTLR4 Cells (mouse TLR4)</td>
<td>hkb-mtlr4</td>
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<tr>
<td>QUANTI-Blue™</td>
<td>rep-qb1</td>
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<td>Other TLR4 agonists</td>
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<tr>
<td>LPS-EB Ultrapure (E. coli 0111:B4)</td>
<td>tlr1-3pelps</td>
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<tr>
<td>LPS-EK Ultrapure (E. coli K12)</td>
<td>tlr1-peklps</td>
</tr>
<tr>
<td>MPLA (monophosphoryl lipid A from <em>S. minnesota</em>)</td>
<td>tlr1-mpla</td>
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</tbody>
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TECHNICAL SUPPORT

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