

Highly Purified *E.coli* LPS

Product	Cat. #	Price/100ug
<i>E.coli</i>	7030	\$95

Form/dry weight: lyophilized/100 µg
Reconstitution: highly pure dH₂O, endotoxin-free

INTRODUCTION

Endotoxins are complex lipopolysaccharides (LPS) and are the major cell wall components in all Gram-negative bacteria. LPS has two regions: polysaccharide and lipid A. Lipid A is a glucosamine-based phospholipid that is responsible for the endotoxic properties of LPS because it stimulates the production of inflammatory mediators and can potentially lead to sepsis. *E.coli* LPS is a strong agonist for macrophage secretion of TNF- α and stimulates E-Selectin on HUVEC.

BIOCHEMICAL ANALYSIS

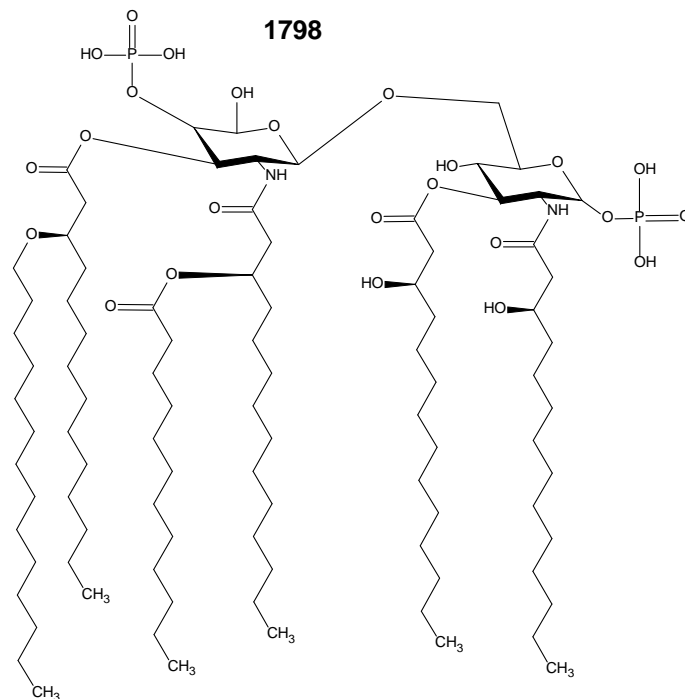
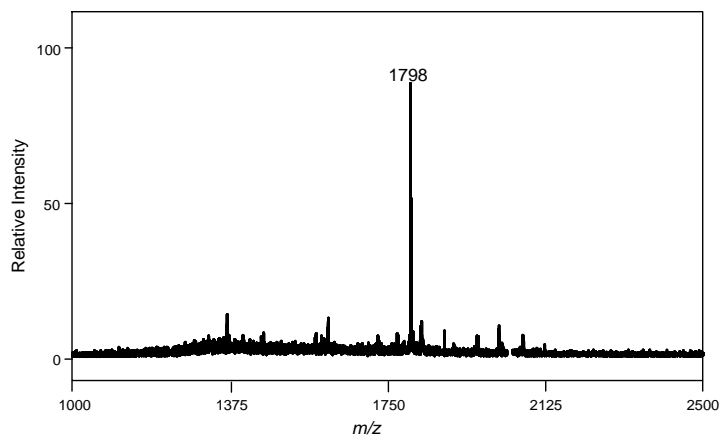
Purity

	<i>E.coli</i> LPS
DNA content	1%
Protein content	1.5%

Mass Spectrometry

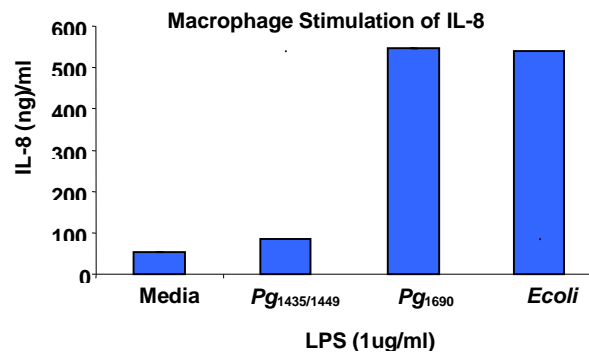
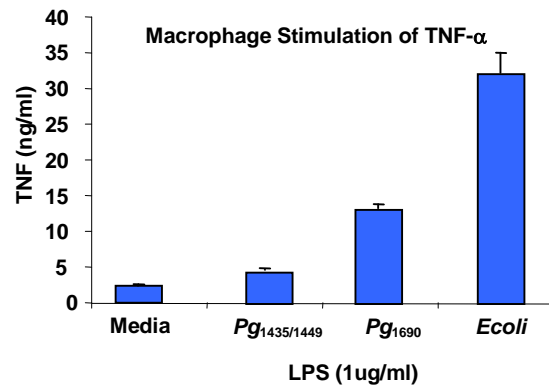
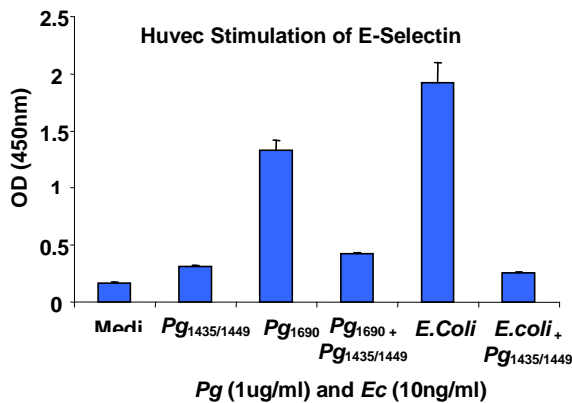
The deduced structure of the Lipid A moiety of *E.coli* was analyzed by matrix assisted laser desorption ionization time of flight (MALDI-TOF). *E.coli* contains a negative mass ion of 1798, which represents the canonical disphosphorylated, hexa-acylated structure.

MALDI-TOF analysis of purified *E.coli* LPS



BIOLOGIC ACTIVITY

The biologic response of the purified LPS was tested for E-Selectin expression on HUVEC cells (Astarte HUVEC/E-Selectin Kit #2016). These cells normally produce E-selectin in response to *E.coli* LPS. Purified *Pg*₁₆₉₀ LPS is a potent agonist for E-selectin expression while *Pg*_{1435/1449} is a weak agonist. In addition, *Pg*_{1435/1449} is able to antagonize *Pg*₁₆₉₀ stimulation of E-Selectin at 1:1 and *E.coli* LPS at 100:1. With respect to myeloid cells, *Pg*₁₆₉₀ is a more potent agonist of TNF- α and IL-8 expression by macrophages cells compared to *Pg*_{1435/1449}.



REFERENCES

1. Bainbridge, B.W., Coats, S.R., Darveau, R.P. *Porphyromonas gingivalis* lipopolysaccharide Displays Functionally Diverse Interactions With the Innate Host Defense System. *Ann Periodontology*, 2002,7, (1):29-37
2. Somerville JE Jr, Cassiano L, Bainbridge B, Cunningham MD, Darveau RP. A novel *Escherichia coli* lipid A mutant that produces an anti-inflammatory lipopolysaccharide. *J Clin Invest* 1996;97:359-365.
3. Darveau RP, Cunningham MD, Bailey T, et al. Ability of bacteria associated with chronic inflammatory disease to stimulate E-selectin expression and promote neutrophil adhesion. *Infect Immun* 1995;63:1311-1317.
4. Reife, RA, et al. *Porphyromonas gingivalis* lipopolysaccharide lipid A heterogeneity: differential activities of tetra- and penta-acylated lipid A structures on E-selectin expression and TLR4 recognition. *Cellular Microbiology* (2006)8 (5), 857–868.
5. Coats, S.R., Reife, R.A., Bainbridge, B.W., Pham, T.T.T., Darveau, R.P. *P. gingivalis* LPS antagonizes *E. coli* LPS at TLR 4 in human endothelial cells. *Infect Immun* 71(12):6799-6807 (2003).