Highly Purified *Pseudomonas aeruginosa* LPS

Product	Cat. #
P. aeruginosa (PAK strain)	7020

Form/dry weight: lyophilized/100 µg
Reconstitution: highly pure dH_20, endotoxin-free

INTRODUCTION

Pseudomonas aeruginosa (*PSa*) is a gram negative bacteria responsible for chronic lung infections in patients with cystic fibrosis. Like all gram negative bacteria, *PSa*, generates lipopolysaccharide (LPS), a cell wall component, which is a key modulator of the host's innate defense response to bacterial infection. *PSa*, when purifed by phenol, produces heterogeneous species of lipid A, the active portion of the LPS molecule. This fraction of *PSa* LPS lipid A contains mostly molecular negative mass ions of 1447 and 1616, representing penta-acylated and hexa-acylated lipid A, respectively. This specific fraction is a weak agonist for the following inflammatory mediators: E-Selectin expression by HUVEC and IL-8 expression by macrophages.

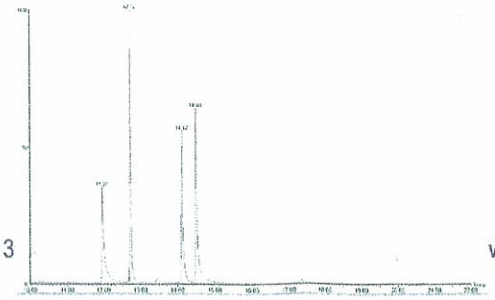
BIOCHEMICAL ANALYSIS

Purity

	PSa
DNA content	1%
Protein content	0.43%

Gas chromatographic/mass spectroscopy (GC/MS) of LPS fatty acids.

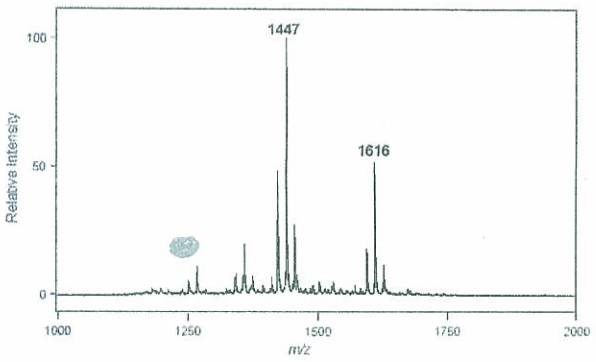
PSa LPS samples were analyzed by their trimethylsilyl ethers after transmethylation with N,O,-bis(trimethylsilyl) trifluoroacetimide (BSTFA) containing 1% trimethylchlorosilane (TMCS). The fatty acids are accounted for and no other fatty acids nor phospholipid, glycolipid, or lipoprotein were detected.



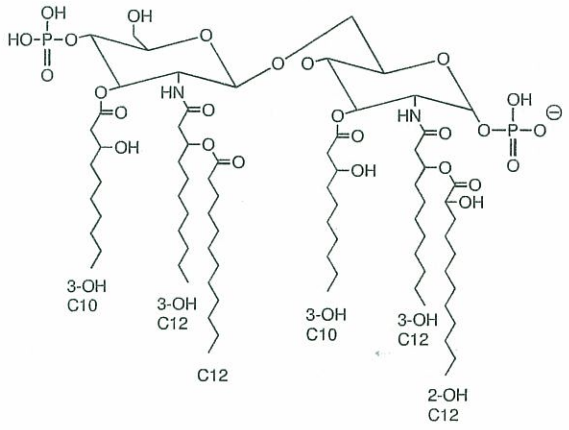
Astarte
Biologics, LLC

Mass Spectrometry

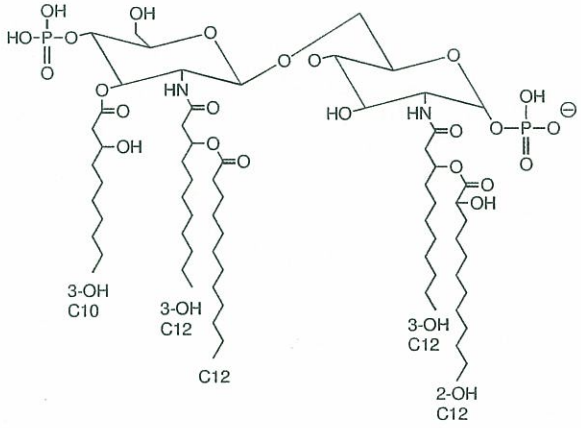
The deduced structure of the Lipid A moiety of *PSa* was analyzed by matrix assisted laser desorption ionization time of flight (MALDI-TOF). This fraction of *PSa* LPS lipid A contains mostly molecular negative mass ions of 1447 and 1616, representing penta-acylated and hexa-acylated lipid A, respectively



m/z 1616



m/z 1447

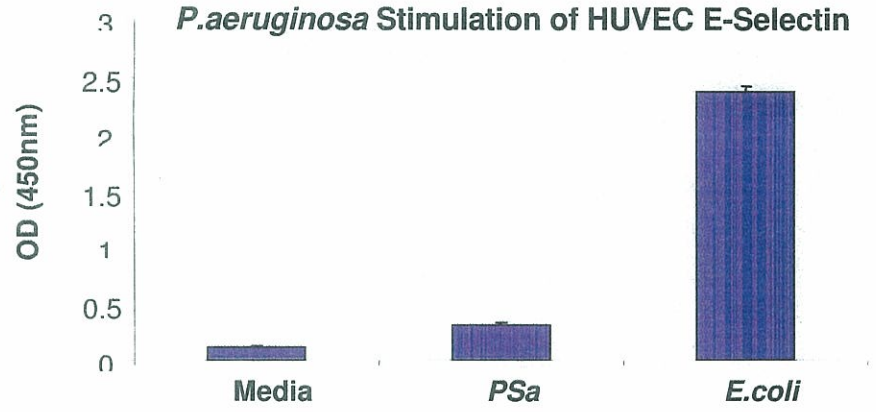


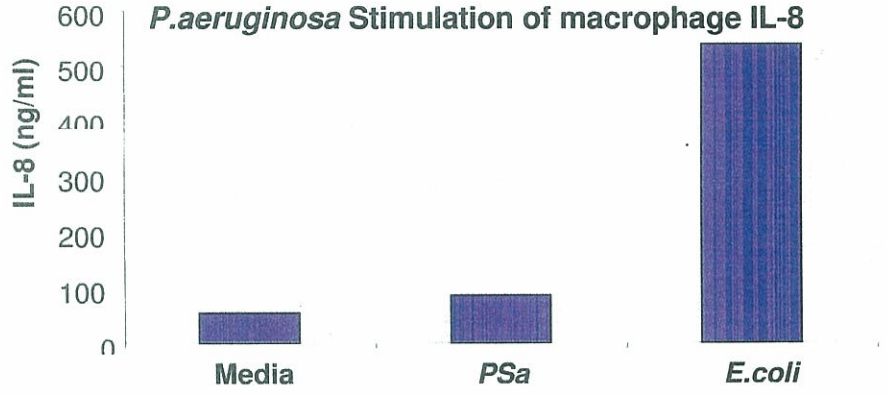
T-866.513.1894 F-440.508.2919 info@astartebio.com http://www.astartebio.com

Astarte
Biologics, LLC

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* or its purified LPS. The purified *PSa* LPS (1.0 µg/ml) only weakly stimulated E-selectin expression compared to *E.coli* (10ng/ml). The purified *PSa* LPS (1.0 µg/ml) also only weakly stimulated macrophages to secrete IL-8, compared to *E.coli* (1.0 µg/ml).





T-866.513.1894 F-440.508.2919 info@astartebio.com http://www.astartebio.com

Astarte
Biologics, LLC

REFERENCES

1. Ernst RK, Yi EC, Guo L, Kheng BL, Burns JL, Hackett M, and Miller SI. Specific Lipopolysaccharide Found in Cystic Fibrosis Airway *Pseudomonas aeruginosa*. Science 1999:286:1561-1565.

2. 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.

T-866.513.1894 F-440.508.2919 info@astartebio.com http://www.astartebio.com