

## HIGHLY PURIFIED BACTERIAL LIPOPOLYSACCHARIDES AND RELATED PRODUCTS

Bacterial lipopolysaccharides (LPS) have long been recognized as the active component of gram negative bacterial endotoxins.<sup>1</sup> These unique macromolecules have been extensively studied by investigators in many disciplines in efforts to elucidate and define relevant pathophysiological parameters of endotoxin shock, a profound life-threatening consequence of bacterial sepsis.<sup>2</sup> Lipopolysaccharides have generated intense interest as being among the most potent natural products capable of pluripotential immunostimulation manifested by the activation of host cells (e.g. B lymphocytes, macrophages) to functional differentiation.<sup>3</sup> Host cell activation by lipopolysaccharides produces a spectrum of hormone-active lymphokines and monokines, including interferons ( $\alpha$ ,  $\beta$ ,  $\gamma$ ), interleukins 1 and 6, tumor necrosis factor, platelet activating factor and procoagulant tissue factor.<sup>4</sup> The documented capacity of lipopolysaccharides or their active lipid A component to initiate a variety of biochemical pathways (protein kinase C,<sup>5</sup> cAMP dependent protein kinase,<sup>6</sup> phosphatidyl inositol turnover,<sup>7</sup> arachidonate metabolism,<sup>8</sup> protein myristylation<sup>9</sup> and activation of G-proteins<sup>10</sup>) provides investigators with powerful molecular tools by which to study cellular activation mechanisms.

Smooth strain lipopolysaccharides from *E. coli* and *S. typhimurium* are isolated by a modification of the phenol extraction method of Westphal and Jann.<sup>11</sup> Smooth strain lipopolysaccharides are dispersible in aqueous solvents at concentrations of up to 5.0 mg/ml. Rough strain lipopolysaccharides from *E. coli* and *S. minnesota* are isolated by a modification of the phenol-chloroform-petroleum ether extraction method of Galanos, *et al.*<sup>12</sup> and are dispersible at a concentration of 1 mg/ml in 0.5% triethylamine. LPS preparations from List Biological Laboratories, Inc., have minimal nucleic acid and protein and are chemically characterized with respect to their phosphate and/or KDO (2-keto-3-deoxyoctonate) contents. Ultrapure LPS has been re-extracted by the method of Manthey and Vogel to eliminate residual protein contamination which may interfere with toll-like receptor studies.<sup>13</sup>

Our highest grade of lipopolysaccharide, Highly Purified Toxin, HPT™, is prepared by proprietary chromatographic methods that effectively remove traces of protein and nucleic acid while maintaining a consistently high concentration of endotoxin units. This LPS is useful for its high potency and freedom from measurable contaminating proteins. LPS Product No. 433 is prepared from the *E. coli* type that was used for the National Reference Endotoxin and for the Second International Standard for Endotoxin.<sup>14,15</sup>

List Biological Laboratories, Inc. also prepares lipid A (primarily monophosphoryl), a nontoxic fragment from *S. minnesota* R595 LPS, by a modification of the method of Morrison and Leive<sup>16</sup> and contains less than 0.2% KDO.

Each of the listed products is supplied as lyophilized powder. A detailed chemical analysis documenting purity accompanies each lot. **These products are intended for research purposes only and are not for use in humans. For further information, please contact List Biological Laboratories, Inc.**

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## Ordering Information

Product No.	Lipopolysaccharides and Related Compounds	Size
<a href="#">201</a>	LPS from <i>Escherichia coli</i> O111:B4	5 mg
<a href="#">203</a>	LPS from <i>Escherichia coli</i> O55:B5	5 mg
<a href="#">225</a>	LPS from <i>Salmonella typhimurium</i>	5 mg
<a href="#">301</a>	LPS from <i>Escherichia coli</i> J5 (Rc)	5 mg
<a href="#">302</a>	LPS from <i>Escherichia coli</i> K12, D31m4 (Re)	5 mg
<a href="#">304</a>	LPS from <i>Salmonella minnesota</i> R595 (Re)	5 mg
<a href="#">314</a>	LPS from <i>Escherichia coli</i> K12, LCD25	1 mg
<a href="#">400</a>	HPT™ LPS, highly purified from <i>Bordetella pertussis</i> 165	1 mg
<a href="#">401</a>	Lipid A (primarily monophosphoryl) from <i>Salmonella minnesota</i> R595	1 mg
<a href="#">421</a>	ULTRA PURE LPS from <i>Escherichia coli</i> O111:B4	1 mg
<a href="#">423</a>	ULTRA PURE LPS from <i>Escherichia coli</i> O55:B5	1 mg
<a href="#">433</a>	HPT™ LPS, highly purified from <i>Escherichia coli</i> O113	1 mg
<a href="#">434</a>	ULTRA PURE LPS from <i>Salmonella minnesota</i> R595 (Re)	1 mg

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