3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Heat-Labile Enterotoxin, B subunit from *Escherichia coli*, recombinant expressed in *Pichia pastoris*

Catalog Number **E8656**
Storage Temperature 2–8 °C

Synonym: LTB

Product Description
Enterotoxigenic *Escherichia coli* causes diarrhea through its heat-labile enterotoxin (LT). The LT is a periplasmic protein composed of one A subunit (LTA, 27 kDa) and five non-covalently associated B subunits (LTB, 11.6 kDa each) forming a ring-like pentamer.[1,2]

LTB has high affinity towards the toxin receptor monosialoganglioside G_{M1}, a glycosphingolipid found ubiquitously on the surface of mammalian cells. Ganglioside G_{M1} facilitates the delivery of the A subunit to the cytosol of the target cell resulting in persistent synthesis of cAMP and subsequently diarrhea.[3] This characteristic makes LTB a good label for microglial cells (due to the enrichment of ganglioside GM_1 on their cell surface). In addition, studies made mostly with animal models demonstrated that recombinant LTB could stimulate strong serum and mucosal immune responses against LT. Other studies have indicated that LTB could be used as a potent mucosal adjuvant.[1,4]

The product is lyophilized from a solution containing 0.05 M Tris buffer, pH 7.5, 0.2 M NaCl, 3 mM NaN_3, and 1 mM sodium EDTA.

Purity: >90% (SDS-PAGE)

Binding saturation: 50% is achieved with ≤0.12 µg/mL of LTB

The activity is measured by ELISA using ganglioside G_{M1}-coated plates (Catalog Number G7641). LTB at different concentrations is incubated in the ganglioside G_{M1} coated wells, followed by anti-Cholera Toxin antibody (Catalog Number C3062), and peroxidase-labeled goat anti-rabbit IgG (Catalog Number A0545) as the secondary antibody.
Note: The use of anti-Cholera Toxin for LTB detection is possible due to similar antigenic determinants.

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
Reconstitute with ultrapure water. Swirl the bottle gently during reconstitution to facilitate dissolution. Avoid vigorous pipetting that may lead to foaming. The solution can be filtered through a 0.2 µm filter.

Storage/Stability
Store the lyophilized powder and reconstituted solutions at 2–8 °C.

References
1. Rezaee, M.A., et al., Expression of *Escherichia coli* heat-labile enterotoxin B subunit (LTB) in *Saccharomyces cerevisiae*. *J. Microbiol.*, **43**, 354-60 (2005).
2. Hedges, P.A., and Hardy, S.J., Formation of disulfide bonded dimer of mutated heat-labile enterotoxin *in vivo*. *FEBS Letters*, **381**, 53-56 (1996).
3. de Haan, L., et. al., Role of G_{M1} binding in the mucosal immunogenicity and adjuvant activity of the *Escherichia coli* heat-labile enterotoxin and its B subunit. *Immunology*, **94**, 424-430 (1998).
4. Freytag, L.C., and Clements, J.D., Mucosal adjuvants. *Vaccine*, **23**, 1804-1813 (2005).

KAA,EB,MAM 03/08-1