



Product Information

Escherichia coli heat-stable enterotoxin STa

Product Number **E 5763**
Storage Temperature -0 °C

Product Description

Molecular Weight: 1,972 Da
Synonyms: STI, ST1, Stmouse

Escherichia coli is a common intestinal pathogen responsible for endemic diarrhea. Although *E. coli* is not a common cause of diarrhea in developed countries, occasional outbreaks have occurred in Europe and the United States.¹

E. coli is a normal part of intestinal flora. Benign strains of *E. coli* colonize the large intestine and a lower portion of the small intestine. Pathogenic strains of *E. coli* invade areas of the small intestine that are normally unsuitable for *E. coli* attachment and produce toxins resulting in symptoms similar to those of cholera such as severe diarrhea. Enterotoxigenic *E. coli* (ETEC) pathogenicity is due in part to the ability to invade the upper portion of the small intestine and the ability to produce toxins. Both the ability to colonize the epithelial surface of the upper small intestine (pili or fibrils) and toxin production are plasmid-encoded.^{1,2,3}

ETEC strains produce heat-labile enterotoxins (LT) and/or heat-stable enterotoxins (STs). STs are classified as STa (also called STI, ST1, or ST mouse) and STb (also called STII, ST2, or STpig).^{1,2,3} The heat-labile toxins (LT) are inactivated after 30 minutes at 60 °C. The heat-stable toxins (STs) are not inactivated after 30 minutes at 100 °C.³ Testing isolates for toxin production with bioassays or immunoassays can identify ETEC strains.^{2,4,5,6}

It is believed that STa may mimic naturally occurring peptide hormones and bind to intestinal receptors involved in the body's regulation of fluid levels resulting in the stimulation of intestinal fluid secretion and severe diarrhea.⁷

This product is subgroup ST1A and a proprietary strain of *E. coli* used to produce this product was isolated from a human source.⁸

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in acidified water (pH 2-3) or acidic aqueous buffers (1 µg/10 µl). For dilute solutions it is recommended that 0.1 to 1% BSA be added to prevent container adsorption.

Storage/Stability

Alkaline solutions are unstable. Acidic solutions can be stored frozen as single-use aliquots

References

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4. Dreyfus, L. A., et al., Chemical properties of heat-stable enterotoxins produced by enterotoxigenic *Escherichia coli* of different host origins. *Infect. Immun.*, **42(2)**, 539-548 (1983).
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6. Aimoto, S., et al., Amino-acid sequence of a heat-stable enterotoxin produced by human enterotoxigenic *Escherichia coli*. *Eur. J. Biochem.*, **129(2)**, 2572-63 (1982).

7. Greenberg, R. N., et al., Comparison of effects of uroguanylin, guanylin, and *Escherichia coli* heat-stable enterotoxin STa in mouse intestine and kidney: evidence that uroguanylin is an intestinal natriuretic hormone. *J. Investig. Med.*, **45(5)**, 276-282 (1997).
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