SANTA CRUZ BIOTECHNOLOGY, INC.

Shigatoxin 2 (11E10): sc-52727

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Hemolytic uremic syndrome (HUS) is the number one cause of acute renal failure in children worldwide. HUS is characterized by microangiopathic hemolytic anemia, a low platelet count and diarrhea. Shigatoxins (Stxs) produced by *Shigella dysenteriae* type 1 and enterohemorrhagic *Escherichia coli* are the most common cause of HUS. Shigatoxin 2 (Stx2) is a secreted protein from *Escherichia coli* that enters the host bloodstream, attaches to renal endothelium, and initiates an inflammatory reaction leading to acute renal failure and disseminated intravascular coagulation. The fibrin mesh destroys red blood cells and captures thrombocytes, leading to a decrease of both on full blood count. Stx2 causes cells to release the chemokines IL-8, MDC and RANTES, and the presence of LPS further stimulates this release. These secretions all activate platelet function and promote renal thrombosis.

REFERENCES

1. Perera, L., et al. 1988. Isolation and characterization of monoclonal antibodies to Shiga-like toxin II of enterohemorrhagic *Escherichia coli* and use of the monoclonal antibodies in a colony enzyme-linked immunosorbent assay. J. Clin. Microbiol. 26: 2127-2131.
2. Ludwig, K., et al. 2001. Antibody response to Shiga toxins Stx2 and Stx1 in children with enteropathic hemolytic-uremic syndrome. J. Clin. Microbiol. 39: 2272-2279.
3. Lee, J.E., et al. 2002. Cytokine expression in the renal tubular epithelial cells stimulated by Shiga toxin 2 of *Escherichia coli* O157:H7. Ren. Fail. 24: 567-575.
4. Ludwig, K., et al. 2002. Shiga toxin-producing *Escherichia coli* infection and antibodies against Stx2 and Stx1 in household contacts of children with enteropathic hemolytic-uremic syndrome. J. Clin. Microbiol. 40: 1773-1782.
5. Guessous, F., et al. 2005. Shiga toxin 2 and lipopolysaccharide induce cells to release chemokines and factors that stimulate platelet function. Infect. Immun. 73: 8306-8316.
6. Guessous, F., et al. 2005. Shiga toxin 2 and lipopolysaccharide cause monocytic THP-1 cells to release factors which activate platelet function. Thromb. Haemost. 94: 1019-1027.
7. Armstrong, G.D., et al. 2006. Human serum amyloid P component prot toxin 2 *in vivo:* therapeutic implications for hemolytic-uremic syndrome. J. Infect. Dis. 193: 1120-1124.
8. Creydt, V.P., et al. 2006. Cytotoxic effect of tubular epithelial cells. Microbes Infect. 8: 410-419.

SOURCE

Shigatoxin 2 (11E10) is a mouse monoclonal antibody raised against Shigatoxin 2 of *E. coli* origin.

PRODUCT

Each vial contains 100 µg IgG_1 in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Shigatoxin 2 (11E10) is recommended for detection of Shigatoxin 2 of *E. coli* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000).

Molecular Weight of Shigatoxin 2 catalytic A subunit: 27-32 kDa.

Molecular Weight of Shigatoxin 2 multimeric B subunits: 8 kDa.

Molecular Weight of holotoxin: 70 kDa.

SELECT PRODUCT CITATIONS

1. Kim, S.H., et al. 2011. Mouse model for hemolytic uremic syndrome induced by outer membrane vesicles of *Escherichia coli* O157:H7. FEMS Immunol. Med. Microbiol. 63: 427-434.
2. Fu, Q., et al. 2017. H-NS mutation-mediated CRISPR-Cas activation inhibits phage release and toxin production of *Escherichia coli* Stx2 phage lysogen. Front. Microbiol. 8: 652.
3. Teng, L., et al. 2019. Genomic comparison reveals natural occurrence of clinically relevant multidrug-resistant extended-spectrum-β-lactamase-producing *Escherichia coli* strains. Appl. Environ. Microbiol. 85: e03030-18.
4. Hsu, B.B., et al. 2020. Stable neutralization of a virulence factor in bacteria using temperate phage in the mammalian gut. mSystems 5: e00013-e00020.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.