SUPPORTING INFECTIOUS DISEASE RESEARCH

Escherichia coli, Strain VS81

Catalog No. NR-50496

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

<u>Bacteria Classification</u>: *Enterobacteriaceae, Escherichia* <u>Species</u>: *Escherichia coli* <u>Strain</u>: VS81

Serotype: 0127:H6

- <u>Original Source</u>: *Escherichia coli* (*E. coli*), strain VS81 is a S-ribosylhomocysteinase gene (*luxS*) insertion mutant of the wild type strain E2348/69.¹ Strain E2348/69 was isolated in 1969 during an outbreak of diarrhea in an infant nursery in Taunton, England.²⁻⁴
- <u>Comments</u>: Mutagenesis occurred through the insertion of a tetracycline-resistance gene (*tet*) derived from pB322 into *luxS*.¹ *luxS* encodes a S-ribosylhomocysteinase involved in the interconversion S-ribosylhomocysteine to homocysteine and produces AI-2, an autoinducer involved in quorum sensing, as a byproduct.⁵ AI-2 has been shown to up-regulate two operons in the locus of enterocyte effacement (LEE) pathogenicity islands found in enterohemorrhagic *E. coli* (EHEC) and enteropathogenic *E. coli* (EPEC) strains.^{1,5}

E. coli is a Gram-negative, rod-shaped bacterium commonly found in the gut flora of warm-blooded animals and is the primary facultative anaerobe of the human gastrointestinal tract. There are a number of pathogenic types of *E. coli* associated with diarrhea that are referred to as: enterohemorrhagic *E. coli* (EHEC) [also known as Shiga toxinproducing *E. coli* (STEC) or Verocytotoxin-producing *E. coli* (VTEC)]⁶, enterotoxigenic *E. coli* (ETEC)⁷, enteropathogenic *E. coli* (EPEC)⁸, enteroaggregative *E. coli* (EAEC)⁹, enteroinvasive *E. coli* (EIEC) and diffusely adherent *E. coli* (DAEC).¹⁰

Characteristic features of EPEC strains are induction of attaching and effacing (A/E) lesions on intestinal epithelial cells, lack of enterotoxins and lack of shigella-like invasiveness. The ability to induce A/E lesions is encoded by genes located on a 35-kb pathogenicity island (PAI) called the locus of enterocyte effacement (LEE), which contains the genes encoding *eae* (intimin), a type III secretion system, a number of secreted proteins (ESP), and the translocated intimin receptor (Tir).⁸

EPEC strain E2348/69 (serotype O127:H6) has been used worldwide as a prototype strain to study EPEC biology, genetics, and virulence. The complete genome sequence of strain E2348/69 (GenBank: <u>NC_011601</u>) has enabled

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Tryptic Soy broth supplemented with 10% glycerol.

<u>Note</u>: If homogeneity is required for your intended use, please purify prior to initiating work.

Packaging/Storage:

NR-50496 was packaged aseptically, in screw-capped plastic cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Media:

Tryptic Soy broth or Nutrient broth or equivalent

Tryptic Soy agar or Nutrient agar or Tryptic Soy agar with 5% defibrinated sheep blood or equivalent

Incubation:

Temperature: 37°C

Atmosphere: Aerobic

Propagation:

- 1. Keep vial frozen until ready for use, then thaw.
- 2. Transfer the entire thawed aliquot into a single tube of broth.
- 3. Use several drops of the suspension to inoculate an agar slant and/or plate.
- 4. Incubate the tube, slant and/or plate at 37°C for 1 day.

Citation:

Acknowledgment for publications should read "The following reagent was provided by Dr. Kaper, for distribution by BEI Resources, NIAID, NIH: *Escherichia coli*, Strain VS81, NR-50496."

Biosafety Level: 2

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. <u>Biosafety in Microbiological and Biomedical Laboratories</u>. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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BEI Resources www.beiresources.org Enteropathogen." <u>FEMS Immunol. Med. Microbiol.</u> 66 (2012): 281-298. PubMed: 22775224.

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