

***Escherichia coli*, Strain H10407**

Catalog No. NR-4

(Derived from ATCC® 35401™)

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Enterobacteriaceae, Escherichia*

Agent: *Escherichia coli (E. coli)*

Strain: H10407

Serotype: O78:H11

Original Source:¹ Human feces

Comment: *Escherichia coli*, strain H10407 was deposited at ATCC® in the early 1980s by Samuel B. Formal, Department of Bacterial Diseases, Walter Reed Army Institute of Research, Washington, DC.

E. coli is a gram-negative, rod-shaped bacterium which occurs singly or in pairs. It is a major facultative inhabitant of the large intestine.

The enterotoxigenic *E. coli* (ETEC) strain H10407 was isolated from a patient with diarrhea in Bangladesh.¹ It produces at least two types of virulence factors: 1) colonization factor antigen I (CFA/I), which is responsible for adhesion of bacterial cells to intestinal epithelial cells, and 2) heat-labile (LT) and heat-stable (ST) enterotoxins which cause diarrhea.¹ *E. coli* H10407 carries three plasmid species: 1) pCS1 (CFA/I⁺ST⁺; 95,000 bp), 2) pJY11 (LT⁺ST⁺; 65,000 bp), and 3) pTRA1 (65,000 bp), a self-transmissible plasmid which mobilizes pCS1 and pJY11.¹ The gene for another heat-stable enterotoxin (EAST1) has been found in *E. coli* H10407, sequenced (GenBank: AB042004), and reported to have enterotoxin activity.^{2,3}

The presence of pCS1 and pJY11 in NR-4 has been confirmed by PCR amplification from extracted nucleic acid of the marker sequences *esth* and *estp* from pCS1 and *elt* from pJY11. In addition, NR-4 carries the chromosomal marker sequence *astA*.

Material Provided:

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

Packaging/Storage:

NR-4 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 equivalent

Tryptic Soy agar 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 Tryptic Soy broth.
3. Use several drops of the suspension to inoculate a Tryptic Soy agar slant and/or plate.
4. Incubate the slant and/or plate at 37°C for 24 hours.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Escherichia coli*, Strain H10407, NR-4."

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. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmb15/index.htm.

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References:

1. Yamamoto, T. and T. Yokota. "Plasmids of Enterotoxigenic *Escherichia coli* H10407: Evidence for Two Heat-Stable Enterotoxin Genes and a Conjugal Transfer System." *J. Bacteriol.* 153 (1983): 1352–1360. PubMed: 6298182.
2. Yamamoto, T. and P. Echeverria. "Detection of the Enteroaggregative *Escherichia coli* Heat-stable Enterotoxin 1 Gene Sequences in Enterotoxigenic *E. coli* Strains Pathogenic for Humans." *Infect. Immun.* 64 (1996): 1441–1445. PubMed: 8606115. GenBank: AB042004.
3. McVeigh, A., et al. "IS1414, an *Escherichia coli* Insertion Sequence with a Heat-Stable Enterotoxin Gene Embedded in a Transposase-Like Gene." *Infect. Immun.* 68 (2000): 5710–5715. PubMed: 10992475.

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