Clostridioides difficile, Isolate 20110869

Catalog No. NR-49292

For research use only. Not for use in humans.

Contributor:

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Peptostreptococcaceae*[1]; *Clostridioides*[2,3]
Species: *Clostridioides difficile*
Isolate: 20110869
Original Source: *Clostridioides difficile* (*C. difficile*), isolate 20110869 was obtained from the stool of a young adult male patient with a community-associated (CA) *C. difficile* infection in Tennessee, USA, in 2011.[4] (Previously referred to as *Clostridium difficile*, this genus has been reclassified and the genus designation on the vial label refers to the old nomenclature.)[3]
Comments: *C. difficile,* isolate 20110869 is part of the Emerging Infections Program - *Clostridium difficile* Surveillance Project at the Centers for Disease Control and Prevention.[4,5] Isolates were selected to represent the diversity of strain types and geographical locations circulating in the U.S. during 2010-2011. Isolate 20110869 was deposited as PCR ribotype 001_072, North American pulsed-field gel electrophoresis type 2 (NAP2), containing *tcdA*, *tcdB* and *tcdC* of the PaLoc operon. This isolate is reported to be negative for the *C. difficile* binary toxin (CDT).[4]

C. difficile is a Gram-positive, spore-forming, obligate anaerobe that commonly inhabits the intestinal tract of various mammalian species, reptiles and birds, and may also be found in the environment. *C. difficile* infection is the leading cause of gastroenteritis-associated death and has become the most common cause of hospital-associated (HA) infections in the USA.[5] Epidemic strains of *C. difficile* associated with severe disease are generally positive for CDT, contain an 18 base pair deletion in *tcdC*, are resistant to fluoroquinolones, have PCR ribotype 027 and pulse-field gel electrophoresis type NAP1, restriction endonuclease analysis (REA) type B1 and toxinotype III (CDT^+, $TcdA^+$ and $TcdB^+$).[6] *C. difficile* produces a cytotoxin (TcdB) and an enterotoxin (TcdA) whose genes are part of the PaLoc operon. The operon also contains the *tcdC* gene which is a negative regulator of the *tcdA* and *tcdB* genes. The CDT is comprised of two parts encoded by *cdtA* (enzymatic component) and *cdtB* (binding component).[6] The production of these toxins in the gut ultimately leads to pseudomembranous colitis (PMC) and *C. difficile* associated diarrhea (CDAD), which often occur as a complication of antibiotic therapy in elderly hospitalized patients.[7]

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Modified Reinforced Clostridial broth supplemented with 10% glycerol.

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

Packaging/Storage:

NR-49292 was packaged aseptically in 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:
Modified Reinforced Clostridial medium or equivalent
Tryptic Soy agar with 5% defibrinated sheep blood or equivalent
Incubation:
Temperature: 37°C
Atmosphere: Anaerobic
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 to 3 days.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Clostridioides difficile*, Isolate 20110869, NR-49292."

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 (BMBL). 6th ed. Washington, DC: U.S. Government Printing Office, 2020.

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References:

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3. Lawson, P. A., et al. "Reclassification of *Clostridium difficile* as *Clostridioides difficile* (Hall and O'Toole 1935) Prévot 1938." Anaerobe 40 (2016): 95-99. PubMed: 27370902.
4. Limbago, B., Personal Communication.
5. Lessa, F. C., et al. "Burden of *Clostridium difficile* Infection in the United States." N. Engl. Med. 372 (2015): 2369-2370. PubMed: 26061850.
6. Persson, S., M. Torpdahl and K. E. P. Olsen. "New Multiplex PCR Method for the Detection of *Clostridium difficile* Toxin A (*tcdA*) and Toxin B (*tcdB*) and the Binary Toxin (*cdtA*/*cdtB*) Genes applied to a Danish Strain Collection." Clin. Microbiol. Infect. 14 (2008): 1057-1064. PubMed: 19040478.
7. Kelly, C. P. and J. T. LaMont. "*Clostridium difficile* - More Difficult than Ever." N. Engl. J. Med. 359 (2008): 1932-1940. PubMed: 18971494.

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