Product Information Sheet for NR-52265

Geobacillus stearothermophilus, Strain NCA 1518

Catalog No. NR-52265
(Derived from ATCC® 7953™)

For research use only. Not for human use.

Contributor:
ATCC®

Manufacturer:
BEI Resources

Product Description:
Bacteria Classification: *Bacillaceae*, *Geobacillus*
Species: *Geobacillus stearothermophilus* (formerly *Bacillus stearothermophilus*)[1]
Strain: NCA 1518 (also referred to as CIP 52.81 and NRS-T17)
Original Source: *Geobacillus stearothermophilus (G. stearothermophilus)*, strain NCA 1518 was isolated from under-processed canned food at the National Canners Association, Washington, D.C., USA.[2]
Comments: *G. stearothermophilus*, strain NCA 1518 was deposited to ATCC® in 1941 by Dr. C. P. Hegarty of Georgetown University Medical School. This strain has been used as a bioindicator for testing the efficiency of sterilizers.[3,4,5] The complete genome of *G. stearothermophilus*, strain NCA 1518 has been sequenced (GenBank: JALS00000000).

G. stearothermophilus is a non-motile, Gram-positive, spore-forming, aerobic obligate thermophile. Like other *Geobacillus* species, *G. stearothermophilus* is widely distributed in nature and has been isolated from geothermal areas, hot springs, deep sea hydrothermal vents, as well as artificial environments, such as hot water pipes, heat exchanges and waste treatment plants.[6] It is a common food contaminant, particularly in dairy products.[7] It is of interest of the biotechnology industry due to its ability to degrade diverse materials, its numerous biosynthetic pathways and its production of thermostable enzymes.[8]

Material Provided:
Each vial contains approximately 0.5 mL of bacterial culture in Nutrient broth supplemented with 10% glycerol.

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

Packaging/Storage:
NR-52265 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:
Nutrient broth or Tryptic Soy broth or equivalent
Nutrient agar or Tryptic Soy agar or equivalent
Incubation:
Temperature: 55°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 55°C for 1 day.

Citation:
Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Geobacillus stearothermophilus,* Strain NCA 1518, NR-52265."

Biosafety Level: 1
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/bmbl5/index.htm.

Disclaimers:
You are authorized to use this product for research use only. It is not intended for human use.

Use of this product is subject to the terms and conditions of the BEI Resources Material Transfer Agreement (MTA). The MTA is available on our Web site at www.beiresources.org.

While BEI Resources uses reasonable efforts to include accurate and up-to-date information on this product sheet, neither ATCC® nor the U.S. Government makes any warranties or representations as to its accuracy. Citations from scientific literature and patents are provided for informational purposes only. Neither ATCC® nor the U.S. Government warrants that such information has been confirmed to be accurate.

This product is sent with the condition that you are responsible for its safe storage, handling, use and disposal. ATCC® and the U.S. Government are not liable for any damages or injuries arising from receipt and/or use of this product. While reasonable effort is made to ensure authenticity and reliability of materials on deposit, the U.S. Government, ATCC®, their suppliers and contributors to BEI Resources are not liable for damages arising from the misidentification or misrepresentation of products.

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Use Restrictions:

This material is distributed for internal research, non-commercial purposes only. This material, its product or its derivatives may not be distributed to third parties. Except as performed under a U.S. Government contract, individuals contemplating commercial use of the material, its products or its derivatives must contact the contributor to determine if a license is required. U.S. Government contractors may need a license before first commercial sale. This material may be subject to third party patent rights.

References:

1. Nazina, T. N., et al. "Taxonomic Study of Aerobic Thermophilic Bacilli: Descriptions of *Geobacillus subterraneus* gen. nov., sp. nov. and *Geobacillus uzenensis* sp. nov. from Petroleum Reservoirs and Transfer of *Bacillus stearothermophilus*, *Bacillus thermocatenulatus*, *Bacillus thermoleovorans*, *Bacillus kaustophilus*, *Bacillus thermoglucosidasius* and *Bacillus thermodenitrificans* to *Geobacillus* as the New Combinations *G. stearothermophilus*, *G. thermocatenulatus*, *G. thermoleovorans*, *G. kaustophilus*, *G. thermoglucosidasius* and *G. thermodenitrificans*." Int. J. Syst. Evol. Microbiol. 51 (2001): 433-446. PubMed: 11321089.
2. Donk, P. J. "A Highly Resistant Thermophilic Organism." J. Bacteriol. 5 (1920): 373-374. PubMed: 16558885.
3. Sasaki, K., et al. "Effect of Calcium in Assay Medium on D Value of *Bacillus stearothermophilus* ATCC 7953 Spores." Appl. Environ. Microbiol. 66 (2000): 5509-5513. PubMed: 11097939.
4. Beaman, T. C., H. S. Pankratz and P. Gerhardt. "Heat Shock Affects Permeability and Resistance of *Bacillus sterothermophilus* Spores." Appl. Environ. Microbiol. 54 (1988): 2515-2520. PubMed: 3202631.
5. Humbert, R. D., A. DeGuzman and M. L. Fields. "Studies on Variants of *Bacillus stearothermophilus* Strain NCA 1518." Appl. Microbiol. 23 (1972): 693-698. PubMed: 4553138.
6. McMullan, G., et al. "Habitat, Applications and Genomics of the Aerobic, Thermophilic Genus *Geobacillus*." Biochem. Soc. Trans. 32 (2004): 214-217. PubMed: 15046574.
7. Burgess, S. A., et al. "Insights into the *Geobacillus Stearothermophilus* Species Based on Phylogenomic Principles." BMC Microbiol. 17 (2017): 140. PubMed: 28651524.
8. Bezuidt, O. K., et al. "The *Geobacillus* Pan-Genome: Implications for the Evolution of the Genus." Front. Microbiol. 7 (2016): 723. PubMed: 27252683.

Support Provided by NIAID

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898