Certificate of Analysis for NR-611

Bacillus thuringiensis, Strain HD522

Catalog No. NR-611
(Derived from ATCC® 35646™)

Product Description: *Bacillus thuringiensis* (*B. thuringiensis*) is a Gram-positive bacterium commonly found in soil. *B. thuringiensis*, strain HD522 was isolated from a raw sewage pond of Kibbutz Hulda, Israel in 1977. NR-611 was deposited to ATCC® by the USDA as *B. thuringiensis*, strain HD522 and is known to produce insecticidal toxins.

Lot[1]: 3967018 **Manufacturing Date: 30DEC2004**

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-positive	Gram-positive
Colony morphology[2]	Report results	Circular, flat, opaque, glistening
Sporulation	Positive	Positive
Motility	Motile	Motile
Anaerobic	Positive	Positive
β-Hemolytic	Report results	Positive
Biochemical Analyses:		
Nitrate reduction	Positive	Positive
Arginine dihydrolase	Positive	Positive
Trehalose metabolism	Positive	Positive
Salicin metabolism	Report results	Negative
Glycogen metabolism	Report results	Positive
Glycerol metabolism	Report results	Positive
Analytical profile index (API® 50 CHB)	Consistent with *B. cereus* group	Consistent with *B. cereus* group[3,4]
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 680 bp)	Consistent with *B. thuringiensis*	Consistent with *B. thuringiensis*[5]
Viability (post-vialing)[6]	Growth	Growth

[1]NR-611 was produced by propagation of ATCC® 35646™ (Lot: 3237270) in Tryptic Soy Broth (BD 211825) for 24 hours at 30°C.
[2]24 hours at 30°C on Tryptic Soy Agar (BD 236950)
[3]*B. cereus* group species (*B. cereus, B. thuringiensis, B. mycoides*, and *B. anthracis*)
[4]For the *B. cereus* group, API® 50 CHB may not be sufficiently discriminative [Valero, M., et al. "Characterization of *Bacillus cereus* Isolates from Fresh Vegetables and Refrigerated Minimally Processed Foods by Biochemical and Physiological Tests." Food Microbiology 19 (2002): 491-499].
[5]Also consistent with *B. cereus* group species which cannot be classified based on 16S sequence [Spencer, R. C. "*Bacillus anthracis*." J. Clin. Pathol. 56 (2003): 182-187. PubMed: 12610093] and other *Bacilli*.
[6]24 hours at 30°C in Tryptic Soy Broth (BD 236950)

Date: 23 FEB 2009 **Signature:** Signature on File

Title: Technical Manager, BEI Authentication or designee

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