

***Mycobacterium tuberculosis*, Strain NHN1664**

**Catalog No. NR-19016**

**Product Description:** *Mycobacterium tuberculosis* (*M. tuberculosis*), strain NHN1664 was isolated in China. Strain NHN1664 was deposited as a multi-drug resistant (MDR) strain of tuberculosis with resistance to rifampicin, isoniazid, ethambutol and streptomycin.

**Lot<sup>1</sup>: 62886758**

**Manufacturing Date: 01DEC2014**

TEST	SPECIFICATIONS	RESULTS
<b>Phenotypic Analysis<sup>2</sup></b> Cellular morphology Colony morphology <sup>3</sup>  Growth rate Growth at 26°C Growth at 37°C Acid-fast stain Pigmentation in the dark (Scotochromogen) Photoinduction for 1 hour (Photochromogen) Nonchromogen (no pigment) Biochemical tests Niacin production <sup>4</sup> Nitrate reduction Pyrazinamidase	Gram-positive rods Report results  ≥ 7 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment)  Positive Positive Positive	Gram-positive rods Irregular, slight peaked, undulate, rough and cream (Figure 1) 18 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment)  Positive Positive Positive
<b>Antibiotic Susceptibility Profile</b> Sensititre™ System <sup>5,6</sup> Amikacin Cycloserine Ethambutol Ethionamide Isoniazid Kanamycin Moxifloxacin Ofloxacin Para-aminosalicylic acid Rifabutin Rifampin Streptomycin	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	≤ 0.12 µg/mL = 8 µg/mL = 4 µg/mL = 1.2 µg/mL = 2 µg/mL ≤ 0.6 µg/mL = 0.12 µg/mL = 0.5 µg/mL ≤ 0.5 µg/mL = 4 µg/mL = 16 µg/mL = 32 µg/mL
<b>Genotypic Analysis</b> Sequencing of Heat Shock Protein 65 gene (~ 310 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456)	99.7% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) <sup>7</sup>
<b>Purity (post-freeze)<sup>8</sup></b>	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
<b>Viability (post-freeze)<sup>3</sup></b>	Growth	Growth

<sup>1</sup>NR-19016 was produced by inoculation of the deposited material into Middlebrook 7H9 broth with ADC enrichment and grown for 79 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub>. Broth inoculum was added to Middlebrook 7H10 agar with OADC enrichment kolles, which were grown for 25 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> to produce this lot.

<sup>2</sup>Information on Mycobacterium testing is available from Ribón, W. "Biochemical Isolation and Identification of Mycobacteria" [Biochemical Testing](http://www.intechopen.com/books/biochemical-testing/biochemical-isolation-and-identification-of-mycobacteria), (2012) Jose C. Jimenez-Lopez (Ed.), InTech, <http://www.intechopen.com/books/biochemical-testing/biochemical-isolation-and-identification-of-mycobacteria> and Lévy-Frébault, V. V. and F. Portaels. "Proposed Minimal Standards for the Genus *Mycobacterium* and for Description of New Slowly Growing *Mycobacterium* Species." *Int. J. Syst. Bacteriol.* 42 (1992): 315-323. PubMed: 1581193.

<sup>3</sup>18 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment

<sup>4</sup>All mycobacteria produce niacin but only *M. tuberculosis* accumulates it, resulting in a positive test for *M. tuberculosis*.

<sup>5</sup>Sensititre™ System *Mycobacterium tuberculosis* MIC Plate, Thermo Scientific™, catalog number MYCOTB

<sup>6</sup>No interpretations of the Sensititre™ System data for *M. tuberculosis* are currently available.

<sup>7</sup>Also consistent with *M. africanum*, *M. bovis* and *M. microti*

<sup>8</sup>Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment and on Tryptic Soy agar plates.

Figure 1: Colony Morphology



Date: 15 NOV 2016

Signature: 

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