

# Mycobacterium tuberculosis, Strain KT-0023

Catalog No. NR-43808

## Product Description:

*Mycobacterium tuberculosis* (*M. tuberculosis*), strain KT-0023 was isolated from a human in South Korea. Strain KT-0023 was deposited as a multidrug-resistant (XDR) Beijing genotype strain, with resistance to isoniazid, moxifloxacin, ofloxacin, pyrazinamide, rifampin and streptomycin. NR-43808 was produced by inoculation of the deposited material into Middlebrook 7H9 broth with ADC enrichment. Broth inoculum was added to Middlebrook 7H10 agar with OADC enrichment kolles, which were grown for 22 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> to produce this lot.

Lot: 70021306

Manufacturing Date: 17JAN2019

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TEST	SPECIFICATIONS	RESULTS
<b>Phenotypic Analysis<sup>1</sup></b> Cellular morphology 20 days at 37°C in an aerobic atmosphere with 5% CO <sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment Colony morphology  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>2</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 22 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>3,4</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	4 µg/mL > 256 µg/mL <sup>5,6</sup> > 32 µg/mL <sup>7</sup> > 40 µg/mL <sup>7</sup> > 4 µg/mL 10 µg/mL > 8 µg/mL <sup>5,8</sup> 16 µg/mL > 64 µg/mL <sup>7</sup> > 16 µg/mL <sup>7</sup> > 16 µg/mL 4 µg/mL <sup>5,7,9</sup>
<b>Genotypic Analysis</b> Sequencing of Heat Shock Protein 65 gene (~ 1620 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> , strain KT-0023 (GenBank: JLSB01000003.1)	100% sequence identity to <i>M. tuberculosis</i> , strain KT-0023 (GenBank: JLSB01000003.1) <sup>10</sup>

TEST	SPECIFICATIONS	RESULTS
<b>Purity (post-freeze)</b> Middlebrook 7H10 agar with OADC enrichment 47 days at 37°C in an aerobic atmosphere with 5% CO <sub>2</sub> Tryptic Soy agar 22 days at 37°C in an aerobic atmosphere with 5% CO <sub>2</sub>	Growth consistent with expected colony morphology  Report results	Growth consistent with expected colony morphology  Growth consistent with expected colony morphology
<b>Viability (post-freeze)</b> 20 days at 37°C in an aerobic atmosphere with 5% CO <sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment	Growth	Growth

<sup>1</sup>Information on *Mycobacterium* testing is available from Ribón, W. "Biochemical Isolation and Identification of Mycobacteria." Biochemical Testing. (2012) Jose C. Jimenez-Lopez (Ed.), InTech, ([Biochemical Isolation and Identification of Mycobacteria](#)), and Lévy-Frébault, V. V. and F. Portals. "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>2</sup>All mycobacteria produce niacin but only *M. tuberculosis* accumulates it, resulting in a positive test for *M. tuberculosis*.

<sup>3</sup>Sensititre™ System *Mycobacterium tuberculosis* MIC Plate, Thermo Scientific™, Catalog Number MYCOTB

<sup>4</sup>Minimum Inhibitory Concentration (MIC); No Clinical & Laboratory Standards Institute (CLSI) interpretations of the Sensititre™ System data for *M. tuberculosis* are currently available.

<sup>5</sup>Two MICs were observed for cycloserine (256 µg/mL and > 256 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

<sup>6</sup>Variability in the MIC result by the Sensititre™ method has been demonstrated [Lee, J., et al. "Sensititre MYCOTB MIC Plate for Testing *Mycobacterium tuberculosis* Susceptibility to First- and Second-Line Drugs." Antimicrob. Agents Chemother. 58 (2014): 11-18. PubMed: 24100497.], with the results for a single antibiotic typically within one doubling dilution.

<sup>7</sup>For ethambutol, ethionamide, para-aminosalicylic acid, rifabutin and streptomycin, the endpoint for these drugs is determined by the well with approximately 80% inhibition of growth compared to the positive control well with no drug.

<sup>8</sup>Two MICs were observed for moxifloxacin (8 µg/mL and > 8 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

<sup>9</sup>Two MICs were observed for streptomycin (2 µg/mL and 4 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

<sup>10</sup>Also consistent with *M. africanum*, *M. bovis*, *M. canettii*, *M. caprae* and *M. microti*

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