

***Mycobacterium tuberculosis*, Strain KT-0038**

Catalog No. NR-43823

Product Description:

Mycobacterium tuberculosis (*M. tuberculosis*), strain KT-0038 was isolated from a human in South Korea. Strain KT-0038 was deposited as an extensively drug-resistant (XDR) Beijing genotype strain with resistance to isoniazid, capreomycin, kanamycin, moxifloxacin, pyrazinamide and rifampin. NR-43823 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 21 days at 37°C in an aerobic atmosphere with 5% CO₂ to produce this lot.

Lot: 70023006

Manufacturing Date: 06MAY2019

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis¹ Cellular morphology ² 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) Nonchromogen (no pigment) Biochemical tests Niacin production ³ Nitrate reduction	Gram-positive rods Report results ≥ 7 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive (no pigment) Positive Positive	Gram-positive rods Irregular, peaked, undulate, rough and cream (Figure 1) 21 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive (no pigment) Positive Positive
Antibiotic Susceptibility Profile Sensititre™ System ^{4,5} 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	0.5 µg/mL ^{6,7} 4 µg/mL 4 µg/mL ⁸ 1.2 µg/mL ^{7,8,9} > 4 µg/mL 40 µg/mL 0.12 µg/mL 2 µg/mL ≤ 0.5 µg/mL ⁸ 0.25 µg/mL ^{7,8,10} 2 µg/mL ^{7,11} ≤ 0.25 µg/mL ⁸
Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (~ 1620 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456.3)	100% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456.3) ¹²
Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment 36 days at 37°C in an aerobic atmosphere with 5% CO ₂ Tryptic Soy agar 21 days at 37°C in an aerobic atmosphere with 5% CO ₂	Growth consistent with expected colony morphology Report results	Growth consistent with expected colony morphology Growth consistent with expected colony morphology
Viability (post-freeze)²	Growth	Growth

¹Information on *Mycobacterium* testing is available from Ribón, W. "Biochemical Isolation and Identification of Mycobacteria." Biochemical Testing. (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.

²21 days at 37°C in an aerobic atmosphere with 5% CO₂ on Middlebrook 7H10 agar with OADC enrichment

³All mycobacteria produce niacin but only *M. tuberculosis* accumulates it, resulting in a positive test for *M. tuberculosis*.

⁴Sensititre™ System *Mycobacterium tuberculosis* MIC Plate, Thermo Scientific™, catalog number MYCOTB

⁵Minimum Inhibitory Concentration (MIC); No Clinical & Laboratory Standards Institute (CLSI) interpretations of the Sensititre™ System data for *M. tuberculosis* are currently available.

⁶Two MICs were observed for amikacin (0.25 µg/mL and 0.5 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

⁷Variability 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.

⁸For 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.

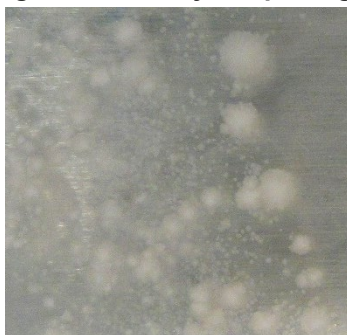
⁹Two MICs were observed for ethionamide (0.6 µg/mL and 1.2 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹⁰Two MICs were observed for rifabutin (≤ 0.12 µg/mL and 0.25 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹¹Two MICs were observed for rifampin (1 µg/mL and 2 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹²Also consistent with *M. africanum*, *M. bovis*, *M. canettii*, *M. caprae* and *M. microti*

Figure 1: Colony Morphology



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