

***Mycobacterium tuberculosis*, Strain KT-0032**
Catalog No. NR-43817
Product Description:

Mycobacterium tuberculosis (*M. tuberculosis*), strain KT-0032 was isolated in 2009 from a human in South Korea. Strain KT-0032 was deposited as an extensively drug-resistant (XDR) Beijing genotype strain with resistance to isoniazid, moxifloxacin, ofloxacin, pyrazinamide, rifampin and streptomycin.

Lot: 70021325¹
Manufacturing Date: 27FEB2019

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis² Cellular morphology Colony morphology ³ 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 ⁴ Nitrate reduction	Gram-positive rods Report results ≥ 7 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive Positive	Gram-positive rods Irregular, low convex, undulate, rough and cream (Figure 1) 21 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive Positive
Antibiotic Susceptibility Profile Sensititre™ System ^{5,6} 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 Report results	0.5 µg/mL 64 µg/mL ^{7,8} 4 µg/mL ⁹ 20 µg/mL ^{8,9,10} 1 µg/mL ^{8,11} 1.2 µg/mL 4 µg/mL 16 µg/mL 1 µg/mL ⁹ 8 µg/mL ^{8,9,12} > 16 µg/mL > 32 µg/mL ⁹
Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (1620 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> , strain KT-0032 (GenBank: JLN0100004.1)	100% sequence identity to <i>M. tuberculosis</i> , strain KT-0032 (GenBank: JLN01000023.1) ¹³
Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ¹⁴ Tryptic Soy agar ¹⁵	Growth consistent with expected colony morphology Report results	Growth consistent with expected colony morphology Growth consistent with expected colony morphology
Viability (post-freeze)³	Growth	Growth

¹NR-43817 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% CO₂ to produce this lot.

²Information 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.

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

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

⁵Sensititre™ System *Mycobacterium tuberculosis* MIC Plate, Thermo Scientific™, catalog number MYCOTB

⁶Minimum Inhibitory Concentration (MIC); No Clinical & Laboratory Standards Institute (CLSI) interpretations of the Sensititre™ System data for *M. tuberculosis* are currently available.

⁷Two MICs were observed for cycloserine (32 µg/mL and 64 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

⁸Variability 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.

⁹For 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.

¹⁰Two MICs were observed for ethionamide (10 µg/mL and 20 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹¹Two MICs were observed for isoniazid (0.5 µg/mL and 1 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹²Two MICs were observed for rifabutin (4 µg/mL and 8 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.

¹³Also consistent with *M. africanum*, *M. bovis*, *M. canettii*, *M. caprae* and *M. microti*

¹⁴Purity of this lot was assessed for 70 days at 37°C in an aerobic atmosphere with 5% CO₂.

¹⁵Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO₂.

Figure 1: Colony Morphology



/Heather Couch/

Heather Couch

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