

***Mycobacterium tuberculosis*, Strain 99-2048**

Catalog No. NR-30906

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Product Description: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain 99-2048 was isolated between 1995 and 2000 from human sputum from an HIV-negative patient infected with pulmonary tuberculosis in North America.

Lot¹: 70004574

Manufacturing Date: 02JUN2017

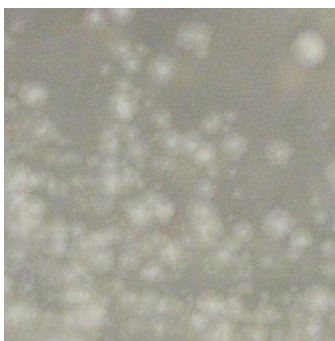
| TEST | SPECIFICATIONS | RESULTS |
|---|--|---|
| Phenotypic Analysis² Cellular morphology Colony morphology ³ Growth rate Growth at 26°C Growth at 37°C Acid-fast stain Pigmentation in the dark (Scotochromogen) Photoinduction for 1 hour (Photochromogen) Nonchromogen (no pigment) Biochemical tests Niacin 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, slight peaked, 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 | 0.25 µg/mL 16 µg/mL ⁷ 1 µg/mL ⁸ 0.6 µg/mL ⁸ ≤ 0.03 µg/mL 2.5 µg/mL 0.25 µg/mL 1 µg/mL 1 µg/mL ⁸ ≤ 0.12 µg/mL ⁸ ≤ 0.12 µg/mL ⁸ 0.5 µg/mL ⁸ |
| Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (~ 420 base pairs) | ≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) | 100% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) ⁹ |
| Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ¹⁰ Tryptic Soy agar ¹¹ | 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-30906 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.

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 (8 µg/mL and 16 µg/mL) under identical test conditions. The highest MIC is being reported as the test result. 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.
- ⁸For streptomycin, ethionamide, para-aminosalicylic acid, rifabutin and ethambutol, 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.
- ⁹Also consistent with *M. africanum*, *M. bovis*, *M. canettii*, *M. caprae* and *M. microti*
- ¹⁰Purity of this lot was assessed for 35 days at 37°C in an aerobic atmosphere with 5% CO₂.
- ¹¹Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO₂.

Figure 1: Colony Morphology



/Heather Couch/

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20 JUN 2018

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