

Certificate of Analysis for NR-48740

Mycobacterium tuberculosis, Strain 11225-0

Catalog No. NR-48740

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Product Description: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain 11225-0 was isolated in October 2012 from a subculture of a strain originally isolated from a patient with pulmonary tuberculosis in the Republic of South Africa. *M. tuberculosis*, strain 11225-0 was deposited as a multidrug-resistant (MDR) strain with resistance to amikacin, capreomycin, ethambutol, ethionamide, isoniazid, kanamycin, pyrazinamide, rifampin and streptomycin.

Lot¹: 63950956 Manufacturing Date: 05JAN2016

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis ² 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	Gram-positive rods Report results ≥ 7 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment)	Gram-positive rods Irregular, raised, entire, rough and cream (Figure 1) 22 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment)
Nitrate reduction	Positive	Positive
Pyrazinamidase	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	> 16 µg/mL 32 µg/mL 8 µg/mL ⁷ Inconclusive ^{7,8} > 4 µg/mL > 40 µg/mL 0.25 µg/mL 1 µg/mL > 64 µg/mL ⁷ 4 µg/mL ⁷ > 16 µg/mL > 32 µg/mL ⁷
Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (440 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456)	100% sequence identity to M. tuberculosis type strain (GenBank: AL123456)9
Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ¹⁰ Tryptic Soy agar ¹⁰	Growth consistent with expected colony morphology Report results	Growth consistent with expected colony morphology No growth
Viability (post-freeze) ³	Growth	Growth

¹NR-48740 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.

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²Information on Mycobacterium testing is available from Ribón, W. "Biochemical Isolation and Identification of Mycobacteria." <u>Biochemical Testing.</u> (2012) Jose C. Jimenez-Lopez (Ed.), InTech, <a href="http://www.intechopen.com/books/biochemical-testing/biochemical-isolation-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-of-decomposition-and-identification-and-identification-of-decomposition-of-decomposition-and-identification-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-decomposition-of-



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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.

322 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.

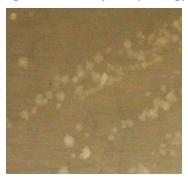
⁷For streptomycin, ethionamide, para-aminosalicylic acid, rifabutin and ethambutol, the endpoint for these drugs is determined by the well with approximately 80% inhibition of growth compared to the positive control well with no drug.

⁸Three MIC were observed for ethionamide (5 µg/mL, 10 µg/mL and 20 µg/mL) under the same test conditions resulting in an inconclusive MIC determination for this antibiotic.

⁹Also consistent with M. africanum, M. bovis, M. canettii, M. caprae and M. microti

¹⁰Purity of this lot was assessed for 22 days at 37°C in an aerobic atmosphere with 5% CO₂.





Date: 30 AUG 2017 Signature:

BEI Resources Authentication

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