

Mycobacterium abscessus, Strain MA 1948

Catalog No. NR-44263

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Product Description:

Mycobacterium abscessus (*M. abscessus*), strain MA 1948 was isolated between 2009 and 2013 from human sputum in the United States. NR-44263 was produced by inoculation of BEI Resources seed lot 62009735 into Middlebrook 7H9 broth with ADC enrichment, which was used to inoculate a Middlebrook 7H10 agar with OADC enrichment plate, and both were grown for 7 days at 37°C in an aerobic atmosphere with 5% CO₂. A loopful of colonies from the Middlebrook 7H10 agar with OADC enrichment plate was suspended in the Middlebrook 7H9 broth with ADC enrichment broth growth and the growth mixture was added to a Middlebrook 7H10 agar with OADC enrichment kolles, which was grown for 7 days at 37°C in an aerobic atmosphere with 5% CO₂ to produce this lot.

Lot: 70062245

Manufacturing Date: 28AUG2023

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TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis¹ Cellular Morphology 7 days at 37°C in an aerobic atmosphere with 5% CO ₂ on Middlebrook 7H10 agar with OADC enrichment Colony morphology 7 days at 37°C in an aerobic atmosphere with 5% CO ₂ on Middlebrook 7H10 agar with OADC enrichment Motility (wet mount) Growth rate Growth at 45°C Growth at 55°C Acid-fast stain Pigmentation in the dark (Scotochromogen) Photoinduction for 1 hour (Photochromogen) Nonchromogen (no pigment) VITEK® MS (MALDI-TOF) Biochemical tests ² Catalase Catalase (semiquantitative) Catalase (68°C) Iron uptake Nitrate reduction Tween 80 Urease Growth in the presence of 5% sodium chloride Growth in the presence of thiophene-2-carboxylic acid hydrazide (TCH)	Report results Report results Report results ≤ 7 days Negative Negative Positive (red colonies) Negative (no pigment) Negative Positive <i>M. abscessus</i> Positive Positive Positive Negative Negative Report results Positive Positive Positive	Gram-positive rods Irregular, flat, undulate, rough and cream (Figure 1) Non-motile 7 days Negative Negative Positive (red colonies) Negative (no pigment) Negative Positive <i>M. abscessus</i> (99.9%) Positive Positive Positive Negative Positive³ Negative Positive Positive Positive
Genotypic Analysis Sequencing of 16S ribosomal RNA gene (~ 1390 base pairs) Sequencing of Heat Shock Protein 65 gene (~ 440 base pairs)	≥ 99% sequence identity to <i>M. abscessus</i> , strain MA 1948 (GenBank: JAOH01000002.1) ≥ 99% sequence identity to <i>M. abscessus</i> , strain MA 1948 (GenBank: JAOH01000002.1)	99.8% sequence identity to <i>M. abscessus</i> , strain MA 1948 (GenBank: JAOH01000002.1) ⁴ 99.8% sequence identity to <i>M. abscessus</i> , strain MA 1948 (GenBank: JAOH01000002.1)

TEST	SPECIFICATIONS	RESULTS
Digital DNA-DNA hybridization (dDDH) ⁵	≥ 70% for species identification	<i>M. abscessus</i> (100%) ⁶ <i>M. abscessus</i> subsp. <i>bolletii</i> (77.2%) <i>M. abscessus</i> subsp. <i>abscessus</i> (77.2%) <i>M. abscessus</i> subsp. <i>massiliense</i> (75.4%)
Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ⁷ 7 days at 37°C in an aerobic atmosphere with 5% CO ₂ Tryptic Soy agar 7 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 7 days at 37°C in an aerobic atmosphere with 5% CO ₂ on Middlebrook 7H10 agar with OADC enrichment	Growth	Growth

¹Information on *Mycobacterium* testing is available from Ribón, W. "Biochemical Isolation and Identification of Mycobacteria, Biochemical Testing." *Biochemical Testing*. (2012) Jose C. Jimenez-Lopez (Ed.), InTech, Available from: [Biochemical Isolation and Identification of Mycobacteria](#) and Magee, J. G. and A. C. Ward. "Family III. *Mycobacteriaceae* Chester 1897, 63^{AL}." *Bergey's® Manual of Systematic Bacteriology*, Second Edition, Volume Five. (2012) Goodfellow, M., et al. (Ed.), Springer.

²Negative tests are observed for > 7 days.

³The specification for this test was established using the test result from BEI Resources seed lot 62009735. Species-level identification and characterization of *Mycobacterium* spp. through biochemical testing has been shown to produce inconsistent or nonreproducible results. The use of whole genome sequencing and digital DNA-DNA hybridization (dDDH) provides quantitative species-level identification that is accurate, precise, and reproducible. BEI Resources will be discontinuing the use of biochemical testing to identify *Mycobacterium* spp. in favor of WGS/dDDH. For more information, refer to Forbes, B. A., et al. "Practical Guidance for Clinical Microbiology Laboratories: Mycobacteria." *Clin. Microbiol. Rev.* 31 (2018): e00038-17. PubMed: 29386234.

⁴Also consistent with *M. abscessus* subsp. *abscessus*, *M. abscessus* subsp. *bolletii*, *M. abscessus* subsp. *massiliense* and *M. chelonae*

⁵Relatedness between bacterial strains has traditionally been determined using DDH. For additional information refer to Auch, A.F., et al. "Digital DNADNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

⁶The whole genome of *M. abscessus*, strain MA 1948 (contig total length approximately 5.13 megabase pairs) was sequenced using the Illumina® NextSeq® system.

⁷M7H10 agar with OADC enrichment contains malachite green, which may inhibit growth of contaminating microorganisms.

Figure 1: Colony Morphology



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