

Certificate of Analysis for NR-49092

Mycobacterium avium, Strain DJO-44271

Catalog No. NR-49092

Product Description: Isolation information for *Mycobacterium avium (M. avium)*, strain DJO-44271 is not known.

Lot¹: 63066972 Manufacturing Date: 30OCT2013

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis ^{2,3}		
Cellular morphology	Gram-positive rod	Gram-positive rod
Colony morphology ⁴	Report results	Punctiform and white (Figure 1)
Motility (wet mount)	Report results	Non-motile
Growth on Brain Heart Infusion agar	Report results	Growth
Growth rate	≥ 7 days	> 10 days
Growth at 26°C	Report results	Positive
Growth at 37°C	Positive	Positive
Growth at 45°C	Report results	Positive
Growth at 55°C	Report results	Negative
Acid-fast stain	Positive (red colonies)	Positive (red colonies)
Pigmentation in the dark (Scotochromogen)	Negative (no pigment)	Negative (no pigment)
Photoinduction for 1 hour (Photochromogen)	Negative (no pigment)	Negative (no pigment)
Nonchromogen (no pigment)	Positive (no pigment)	Positive (no pigment)
Biochemical tests ⁵		
Nitrate reduction	Negative	Positive ⁶
Pyrazinamidase	Report results	Positive
Urease	Negative	Positive ⁶
Catalase	Positive	Positive
Semiquantitive catalase	Report results	Negative
Heat-stable catalase	Report results	Positive
Iron uptake	Negative	Negative
Tween 80 hydrolysis	Negative	Negative
Growth in the presence of 5% sodium chloride	Negative	Positive ⁶
Growth in the presence of thiophene-2-carboxylic acid	Positive	Positive
hydrazide (TCH)		
Genotypic Analysis ⁷		
Whole Genome Sequencing (~ 5.0 megabase pairs)	Report results	Consistent with M. avium
Purity (post-freeze) ^{8,9}	Consistent with expected colony morphology	Consistent with expected colony morphology
Viability (post-freeze) ⁴	Growth	Growth

NR-49092 was produced by inoculation of the deposited material in Middlebrook 7H9 broth with ADC enrichment for 29 days at 37°C in an aerobic atmosphere with 5% CO₂. Broth inoculum was added to Middlebrook 7H10 agar with OADC enrichment kolles, which were grown for 13 days at 37°C in an aerobic atmosphere with 5% CO₂ to produce this lot.

BEI Resources

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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, Available from: http://www.intechopen.com/books/biochemical-testing/biochemical-isolation-and-identification-of-mycobacteria, Lévy-Frébault, V. V. and F. Portaels. "Proposed Minimal Standards for the Genus *Mycobacterium* and for Description of New Slowly Growing *Mycobacterium* Species." <u>Int. J. Syst. Bacteriol.</u> 42 (1992): 315-323. PubMed: 1581193, and Magee, J. G. and A.C. Ward. "Family III. *Mycoacteriaceae* Chester 1897, 63^{AL**} <u>Bergey's* Manual of Systematic Bacteriology, Volume 5.</u> (2012) Goodfellow, M., et al. (Ed.), Springer.

³Phenotypic test rule out other slow-growing *Mycobacterium* species. (Magee, J. G. and A.C. Ward. "Family III. *Mycoacteriaceae* Chester 1897, 63^{AL}" <u>Berqey's[®] Manual of Systematic Bacteriology, Volume 5.</u> (2012) Goodfellow, M., et al. (Ed.), Springer.)

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

⁵Negative tests are observed for > 7 days.

⁶Specifications for these tests were obtained from 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, which

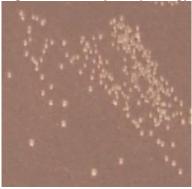


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indicates that most strains of M. avium are negative for this test; however up to 15% of strains may be positive.

⁹Middlebrook 7H10 agar with OADC enrichment contains malachite green, which may inhibit growth of contaminating microorganisms.





Date: 12 NOV 2015

Signature:

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⁷Illumina® MiSeq® sequence was analyzed with CLC Genomics Workbench Version 7.0.2.

⁸Purity of this lot was assessed for 13 days at 37°C in an aerobic atmosphere with 5% CO₂ on Middlebrook 7H10 agar with OADC enrichment.