

Staphylococcus aureus, Strain AJUL13

Catalog No. NR-55227

Product Description:

Staphylococcus aureus (*S. aureus*), strain AJUL13 is deposited as a florfenicol-, linezolid- and tedizolid-resistant strain derived from *S. aureus*, strain SH1000 through introduction of plasmid pSK5487M containing the gene *optrA* (encoding phenicol and oxazolidinone resistance protein) and a chloramphenicol resistance gene (*cat*) for selection. NR-55227 was produced by resuspension of a lyophilized vial of deposited material in Tryptic Soy broth. Broth inoculum was added to Tryptic Soy broth containing 25 µg/mL chloramphenicol and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth containing 25 µg/mL chloramphenicol, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed using Tryptic Soy broth or agar containing 25 µg/mL chloramphenicol under propagation conditions unless otherwise noted.

Lot: 70052847

Manufacturing Date: 18MAY2022

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TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) Hemolysis Catalase VITEK® MS (MALDI-TOF)	Gram-positive cocci Report results Report results Report results Positive <i>S. aureus</i>	Gram-positive cocci Circular, convex, entire, smooth and yellow (Figure 1) Non-motile β-hemolytic Positive <i>S. aureus</i> (99.9%)
Antibiotic Susceptibility Profile¹ Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Linezolid	Resistant	Sensitive (2 to 3 µg/mL) ²
Genotypic Analysis Digital DNA-DNA hybridization (dDDH) ³ Next-Generation Sequencing (NGS) analysis for antimicrobial resistance genes ⁵ Florfenicol Linezolid Tedizolid	≥ 70% for species identification Resistant Resistant Resistant	<i>S. aureus</i> (99.5%) ⁴ Resistant Inconclusive ⁶ Inconclusive ⁷
Purity (post-freeze) 8 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability (post-freeze)	Growth	Growth

¹Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: Clinical & Laboratory Standards Institute (CLSI) M100-S28 (2018)

²*S. aureus*, strain AJUL13 was deposited as resistant to linezolid. Repeated testing showed MICs of 2 µg/mL and 3 µg/mL (interpreted as sensitive) for this antibiotic during QC testing.

³Relatedness between bacterial strains has traditionally been determined using DDH. For additional information refer to Auch, A.F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

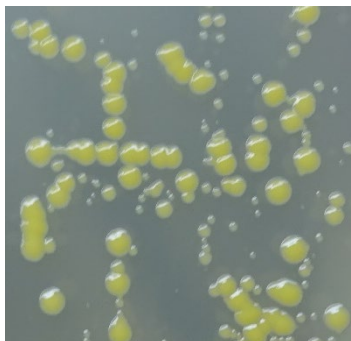
⁴The whole genome of *S. aureus*, strain AJUL13 (contig total length approximately 2.66 megabase pairs) was sequenced using the Illumina® MiSeq® system.

⁵*In silico* analysis of NGS data for antimicrobial resistance genes was performed using the Bacterial and Viral Bioinformatics Resource Center (BV-BRC), ResFinder and Pathogenwatch genome analysis tools.

⁶*S. aureus*, strain AJUL13 was deposited as resistant to linezolid. *In silico* analysis determined the predicted phenotype of this antibiotic as resistant (ResFinder) and sensitive (Pathogenwatch). No data for this antibiotic is available in the BV-BRC.

⁷*S. aureus*, strain AJUL13 was deposited as resistant to tedizolid. No antibiotic resistance data for this antibiotic for *S. aureus* is currently available. *In silico* analysis using the BV-BRC, ResFinder and Pathogenwatch genome analysis tools resulted in no data.

Figure 1: Colony Morphology



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