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SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55221

Staphylococcus aureus, Strain AJUL7

Catalog No. NR-55221

Product Description:

Staphylococcus aureus (S. aureus), strain AJUL7 is deposited as a florfenicol-, linezolid-, lincomycin- and retapamulin-resistant strain derived from *S. aureus*, strain SH1000 through introduction of plasmid pSK5487M containing the gene *cfr* (encoding chloramphenicol-florfenicol resistance protein) and a chloramphenicol resistance gene *(cat)* for selection. NR-55221 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 per 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 agar containing 25 µg per mL chloramphenicol kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70052536 **Manufacturing Date: 06MAY2022**

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TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-positive cocci	Gram-positive cocci
Colony morphology	Report results	Circular, low convex, entire, smooth and yellow (Figure 1)
Motility (wet mount)	Report results	Non-motile
Hemolysis	Report results	β-hemolytic
Catalase	Positive	Positive
VITEK® MS (MALDI-TOF)	*S. aureus*	*S. aureus* (99.9%)
Antibiotic Susceptibility Profile[1]		
Etest® antibiotic test strips		
1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar		
Linezolid	Resistant	Resistant (8 µg per mL)
Genotypic Analysis		
Digital DNA-DNA hybridization (dDDH)[2]	≥ 70% for species identification	*S. aureus* (99.5%)[3]
Next-Generation Sequencing (NGS) analysis for antimicrobial resistance genes[4]		
Florfenicol	Resistant	Resistant
Linezolid	Resistant	Resistant
Lincomycin	Resistant	Resistant
Retapamulin	Resistant	Inconclusive[5]
Purity (post-freeze)	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood		
Viability (post-freeze)	Growth	Growth

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

[2]Relatedness 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.

[3]The whole genome of *S. aureus*, strain AJUL7 (contig total length approximately 2.66 megabase pairs) was sequenced using the Illumina® MiSeq® system.

[4]*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.

[5]*S. aureus*, strain AJUL7 was deposited as resistant to retapamulin. 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.

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Figure 1: Colony Morphology

/Sonia Bjorum Brower/
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Technical Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

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