

Staphylococcus aureus, Strain SR3777

Catalog No. NR-50509

For research use only. Not for human use.

Contributor:

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*

Species: *Staphylococcus aureus*

Strain: SR3777

Original Source: *Staphylococcus aureus* (*S. aureus*), strain SR3777 was isolated in 2011 from human blood in Missouri, USA.¹

Comments: *S. aureus*, strain SR3777 was deposited as resistant to oxacillin, ceftriaxone, clindamycin, erythromycin and levofloxacin; sensitive to ceftaroline, tetracycline, linezolid, trimethoprim/sulfamethoxazole, daptomycin and rifampin; positive for *mec* (subtype II); negative for PVL; MLST sequencing type (ST) 5; pulsed-field gel electrophoresis (PFGE) type USA100.¹ *S. aureus*, strain SR3777 was deposited as a heterogeneous vancomycin-intermediate *S. aureus* (hVISA) strain, in which subpopulations of cells of this strain are resistant to vancomycin (MIC ≥ 16 μ g/mL).¹⁻³ This intermediate phenotype was identified using population analysis profiling with area under the curve (PAP-AUC) method.^{2,3}

S. aureus is a Gram-positive, cluster-forming coccus that normally inhabits human nasal passages, skin and mucus membranes. It is also a human pathogen and causes a variety of pus-forming infections as well as food-poisoning and toxic shock syndrome. In 1961, two years after the introduction of methicillin, a penicillinase-resistant penicillin, *S. aureus* developed methicillin-resistance due to acquisition of the *mecA* gene. Subsequently, MRSA infections have become widespread in both hospital and community settings.⁴ Vancomycin has been the preferred antibiotic of choice for the treatment of MRSA infections.⁵ However, there have now been MRSA strains isolated that also have reduced susceptibility or resistance to vancomycin.^{6,7} It is believed that this decreased sensitivity primarily arises through mutations affecting the production of peptidoglycans, resulting in a thickened cell wall and a reduction of vancomycin at its site of action.⁸ While much rarer, resistance can also occur through the acquisition of the vancomycin resistance gene, *vanA*, from *Enterococcus faecalis*.^{6,8,9}

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Tryptic Soy broth supplemented with 10% glycerol.

Note: If homogeneity is required for your intended use, please purify prior to initiating work.

Packaging/Storage:

NR-50509 was packaged aseptically in cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Media:

Brain Heart Infusion broth or Tryptic Soy broth or equivalent
Brain Heart Infusion agar or Tryptic Soy agar or Tryptic Soy agar with 5% defibrinated sheep blood or equivalent

Incubation:

Temperature: 37°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use, then thaw.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tube, slant and/or plate at 37°C for 1 day.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Staphylococcus aureus*, Strain SR3777, NR-50509."

Biosafety Level: 2

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

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6. Hiramatsu, K., et al. "Methicillin-Resistant *Staphylococcus aureus* Clinical Strain with Reduced Vancomycin Susceptibility." J. Antimicrob. Chemother. 40 (1997): 135-136. Pubmed: 9249217.
7. Hanaki, H., et al. "Activated Cell-Wall Synthesis is Associated with Vancomycin Resistance in Methicillin-Resistant *Staphylococcus aureus* Clinical Strains Mu3 and Mu50." J. Antimicrob. Chemother. 42 (1998): 199-209. Pubmed: 9738837.
8. Howden, B. P., et al. "Reduced Vancomycin Susceptibility in *Staphylococcus aureus*, Including Vancomycin-Intermediate and Heterogeneous Vancomycin-Intermediate Strains: Resistance Mechanisms, Laboratory Detection, and Clinical Implications." Clin. Microbiol. Rev. 23 (2010): 99-139. PubMed: 20065327.
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