Product Information Sheet for NR-28984

Staphylococcus aureus, Strain WKZ-1 (MSSA)

Catalog No. NR-28984

For research use only. Not for use in humans.

Contributor:
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Manufacturer:
BEI Resources

Product Description:
Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*
Species: *Staphylococcus aureus*
Strain: WKZ-1
Original Source: *Staphylococcus aureus (S. aureus)*, strain WKZ-1 was isolated from a blood culture from a male infant with Pierre Robin syndrome who was undergoing treatment for a respiratory infection following intubation.[1,2,3]
Comments: *S. aureus*, strain WKZ-1 is a methicillin-sensitive *S. aureus* (MSSA) strain.[1,2,3] *S. aureus*, strain WKZ-1 was deposited as MLST sequence type (ST) 30 and positive for the genes encoding for the Ser-Asp (SD) dipeptide repeat proteins SdrC, SdrD, and Bbp and for the *Staphylococcus aureus* Pathogenicity Island 2 (SaPI2), which contains the genes encoding for toxic shock syndrome toxin (TSST) and exfoliative toxin A (ETA).[3] Strain WKZ-1 was the first staphylococcal isolate recovered from this patient. During the course of treatment, which included amoxicillin/clavulanic acid, amoxicillin, cefotaxime and flucloxacillin, two additional staphylococcal isolates were recovered: methicillin-resistant *S. aureus* (MRSA) strain WKZ-2 (NR-28985) and *S. epidermidis,* isolate O7.1.[2,3] Based on results from whole genome sequencing and pulsed-field gel electrophoresis, strain WKZ-2 was likely derived from strain WKZ-1 due to the transfer of SCC*mec* from *S. epidermidis*, isolate O7.1.[2,3] The complete genome of *S. aureus*, strain WKZ-1 is available (GenBank: CP059156.1). Note: Methicillin is no longer clinically used; however, the term methicillin-resistant *S. aureus* (MRSA) continues to be used to describe *S. aureus* strains resistant to all penicillins.

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. For the last forty-five years hospital-acquired (HA) MRSA strains have disseminated worldwide. More recently, MRSA strains have been isolated that are not hospital acquired and are referred to as community-associated (CA) MRSA. These CA-MRSA strains differ phenotypically and genotypically from HA-MRSA strains and they are more frequently recovered from skin and soft tissue sources rather than post-operative wounds.[3,4]

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-28984 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 WKZ-1 (MSSA), NR-28984."

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. 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

1. van Schaik, W., Personal Communication.
2. Wielders, C. L., et al. "*In-vivo* transfer of *mecA* DNA to *Staphylococcus aureus* (Corrected)." Lancet 357 (2001): 1674-1675. PubMed: 11425376.
3. Bloemendaal, A. L. A., E. C. Brouwer and A. C. Fluit. "Methicillin Resistance Transfer from *Staphylococcus epidermidis* to Methicillin-Susceptible *Staphylococcus aureus* in a Patient during Antibiotic Therapy." PLoS ONE 5 (2010): e11841. PubMed: 20686601.
4. Deurenberg, R. H. and E. E. Stobberingh. "The Evolution of *Staphylococcus aureus*." Infect. Genet. Evol. 8 (2008): 747-763. PubMed: 18718557.
5. Davis, S. L., et al. "Epidemiology and Outcomes of Community-Associated Methicillin-Resistant *Staphylococcus aureus* Infection." J. Clin. Microbiol. 45 (2007): 1705-1711. PubMed: 17392441.

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