Product Information Sheet for NR-46174

Staphylococcus aureus, Strain CA-224

Catalog No. NR-46174

For research use only. Not for human use.

Contributor:
Centers for Disease Control and Prevention, Atlanta, Georgia, USA

Manufacturer:
BEI Resources

Product Description:
Bacteria Classification: *Staphylococcaceae, Staphylococcus*
Species: *Staphylococcus aureus*
Strain: CA-224
NARSA Catalog Number: NRS645
Original Source: *Staphylococcus aureus* (*S. aureus*), strain CA-224 was isolated in 2005 from the blood of an 82-year-old male with a surgical incision infection and/or a bloodstream infection (BSI) in California, USA.[1]
Comments: *S. aureus*, strain CA-224 is a clinically-associated methicillin-resistant *S. aureus* (MRSA) strain. Strain CA-224 was deposited as positive for *mec* (subtype IV); negative for PVL and *tst*.[1] *S. aureus,* strain CA-224 is an isolate of the Iberian clonal lineage. Iberian isolates typically have the same MLST profile (ST247), SCC*mec* (subtype I) and *spa* repeats (YHFGFMBQBLO), negative for the PVL and arginine catabolic mobile element (ACME) genes, and are resistant to β-lactams and other commonly used antimicrobials.[2-4] The Iberian clone (also referred to as PFGE A and EMRSA5) is a contemporary successor of the Archaic MRSA clone (ST 250).[3,4] Both cluster closely with USA300 and USA500 which all originated from the clonal complex (CC) 8 lineage.[4] Note: Methicillin is no longer clinically used; however, the term methicillin-resistant *Staphylococcus 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.[5,6]

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-46174 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 provided by the Network on Antimicrobial Resistance in *Staphylococcus aureus* (NARSA) for distribution by BEI Resources, NIAID, NIH: *Staphylococcus aureus*, Strain CA-224, NR-46174."

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:

1. NARSA, NRS645
2. McDougal, L. K., et al. "Pulsed-Field Gel Electrophoresis Typing of Oxacillin-Resistant *Staphylococcus aureus* Isolates from the United States: Establishing a National Database." J. Clin. Microbiol. 41 (2003): 5113-5120. PubMed: 14605147.
3. Chambers, H. F. and F. R. Deleo. "Waves of Resistance: *Staphylococcus aureus* in the Antibiotic Era." Nat. Rev. Microbiol. 7 (2009): 629-641. PubMed: 19680247.
4. Li, M., et al. "Evolution of Virulence in Epidemic Community-Associated Methicillin-Resistant *Staphylococcus aureus*." Proc. Natl. Acad. Sci. USA 106 (2009): 5883-5888. PubMed: 19293374.
5. Deurenberg, R. H. and E. E. Stobberingh. "The Evolution of *Staphylococcus aureus*." Infect. Genet. Evol. 8 (2008): 747-763. PubMed: 18718557.
6. 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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