

***Staphylococcus aureus*, Strain AIS2006032**

Catalog No. NR-46416

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*

Species: *Staphylococcus aureus*

Strain: AIS2006032 (also referred to as VRSA6)

NARSA Catalog Number: VRS6

Original Source: *Staphylococcus aureus* (*S. aureus*), strain AIS2006032 was isolated in 2005 in Michigan, USA, from infected non-healing plantar ulcers of a 48-year-old male who had a history of long term vancomycin therapy.^{1,2}

Comments: *S. aureus*, strain AIS2006032 is a vancomycin-resistant *S. aureus* (VRSA) strain.^{1,2} *S. aureus*, strain AIS2006032 was deposited as positive for *vanA*; negative for *vanB*, *vanC1*, *vanC2*, *vanD*, *vanE*, PVL and arginine catabolic mobile element (ACME); pulsed-field type USA100; *spa* repeats TJMGMK; Ridom *spa* type t062.¹⁻⁵ Originally, the SCC*mec* locus was classified as non-typable, but later analysis, based on the arrangement of the *mec* locus, determined it to be *mec* cassette type II. However, the other two genes used to type the SCC*mec* locus, *ccrA* and *ccrB*, are lacking.⁵ *S. aureus*, strain AIS2006032 is a USA100 isolate. USA100 isolates have the same MLST profile (ST 5), SCC*mec* (subtype II) and are usually resistant to erythromycin and spectinomycin as well as being multiresistant to other commonly used therapeutic agents. USA100 is the most prevalent U.S. health care-associated pulsed-field type and is endemic in many U.S. hospitals.⁴ The complete genome sequence of *S. aureus*, strain AIS2006032 is available (GenBank: AHBP00000000).

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 septicemia and endocarditis. *S. aureus* infections are difficult to treat due to resistance to numerous antibiotics. The development and dissemination of methicillin-resistant *S. aureus* (MRSA) strains has proven to be particularly difficult to contain and treat.⁶ Vancomycin has been the preferred antibiotic of choice for the treatment of MRSA infections, however, there have now been MRSA strains isolated that are also resistant to vancomycin.^{6,7} It is believed that this resistance results

from either mutations that ultimately lead to a reduction of vancomycin at its site of action or from the acquisition of the vancomycin resistance gene, *vanA*, from *Enterococcus faecalis*.⁶⁻⁸ The *vanA* gene is carried by the Tn1546 transposon that resides on a plasmid in all VRSA strains.⁷ For VRSA strains carrying both *mecA* and *vanA*, β -lactams and glycopeptides seem to have a synergistic effect against these strains, both *in vitro* and in an animal model.^{8,9} Combination therapy, therefore, may be a more effective treatment option for VRSA infections than monotherapy with either antibiotic.^{8,9}

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Brain Heart Infusion broth supplemented with 6 μ g/mL vancomycin and 10% glycerol.

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

Packaging/Storage:

NR-46416 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:

Note: For stability purposes, it is recommended that the strain is subcultured in the presence of vancomycin.

Media:

Brain Heart Infusion broth or Tryptic Soy broth or equivalent
Brain Heart Infusion 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 18 to 24 hours.

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 AIS2006032, NR-46416."

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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