

***Staphylococcus aureus*, Strain 1002434**

Catalog No. NR-46423

For research use only. Not for use in humans.

Contributor:

Network on Antimicrobial Resistance in *Staphylococcus aureus* (NARSA), NIAID, NIH, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*

Species: *Staphylococcus aureus*

Strain: 1002434

NARSA Catalog Number: VRS12

Original Source: *Staphylococcus aureus* (*S. aureus*), strain 1002434 was isolated in 2010 from a vaginal swab sample of an 83-year-old female in Delaware, USA.¹

Comments: *S. aureus*, strain 1002434 is a vancomycin-resistant *S. aureus* (VRSA) strain.^{1,2,3} *S. aureus*, strain 1002434 was deposited as negative for PVL and arginine catabolic mobile element (ACME); *spa* repeats TMDMGMK; Ridom *spa* type t045.^{1,2,3,4,5} The pulsed-field type is a novel unnamed type that is related to USA100 and USA800 and is in the *S. aureus* Clonal Complex (CC) 5 lineage.¹

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 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*.^{6,7,8}

Material Provided:

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

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

Packaging/Storage:

NR-46423 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, with 6µg/mL vancomycin

Brain Heart Infusion agar or Tryptic Soy agar or Tryptic Soy agar with 5% defibrinated sheep blood or equivalent, with 6µg/mL vancomycin

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 through BEI Resources, NIAID, NIH: *Staphylococcus aureus*, Strain 1002434, NR-46423."

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/bmbli5/index.htm.

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References:

1. NARSA, VRS12.
2. Centers for Disease Control (CDC). "Public Health Dispatch: Vancomycin-Resistant *Staphylococcus aureus*-Pennsylvania, 2002." MMWR. Morb. Mortal. Wkly. Rep. 51(2002): 902. Pubmed: 12418544.
3. Sievert, D. M., et al. "Vancomycin-Resistant *Staphylococcus aureus* in the United States, 2002-2006." Clin. Infect. Dis. 46 (2008): 668-674. PubMed: 18257700.
4. 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.
5. Kos, V. N., et al. "Comparative Genomics of Vancomycin-Resistant *Staphylococcus aureus* Strains and Their Positions within the Clade Most Commonly Associated with Methicillin-Resistant *S. aureus* Hospital-Acquired Infection in the United States." MBio. 3 (2012): e00112-1. PubMed: 22617140.
6. 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.
7. Courvalin P. "Vancomycin-Resistance in Gram-Positive Cocci." Clin. Infect. Dis. 42 (2006): S25-34. PubMed: 16323116.
8. Severin, A., et al. "High Level Oxacillin and Vancomycin Resistance and Altered Cell Wall Composition in *Staphylococcus aureus* Carrying the *Staphylococcal mecA* and the *Enterococcal vanA* Gene Complex." J. Biol. Chem. 30 (2004): 3398-3407. PubMed: 14613936.

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