Product Information Sheet for NR-55582

Klebsiella pneumoniae, Strain MRSN 613682

Catalog No. NR-55582

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For research use only. Not for use in humans.

Contributor:

Multidrug-Resistant Organism Repository and Surveillance Network (MRSN), Bacterial Disease Branch, Walter Reed Army Institute of Research, Silver Spring, Maryland, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Enterobacteriaceae*, *Klebsiella*
Species: *Klebsiella pneumoniae*
Strain: MRSN 613682
Original Source: *Klebsiella pneumoniae (K. pneumoniae)*, strain MRSN 613682 was isolated in 2018 from an environmental sample in Africa as part of a global surveillance program.[1]
Comments: *K. pneumoniae*, strain MRSN 613682 was deposited as part of the MRSN *Klebsiella pneumoniae* Diversity Panel available from BEI Resources as NR-55604. NR-55582 was deposited as multi-locus sequence type (MLST) ST 15, K-locus type (KL) 112, O-locus type (OL) O1v1, VIR score 1 and yersiniabactin gene allele *(ybt) ybt* 9; ICEKp3. In addition, strain MRSN 613682 has an 87% truncation of the OmpK35 protein, which can cause a reduction in susceptibility to beta-lactamases. MRSN 613682 was deposited as an extensively drug-resistant strain, sensitive to tigecycline and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. Strain MRSN 613682 is reported to have eight aminoglycoside transferase genes [*aac*(6')-Ib-cr5, *aac*(3)-IId, *aac*(3)-IIe, *aad*A1, *aad*A2, *aph*(3')-Ia, *aph*(3")-Ib and *aph*(6)-Id; conferring resistance to various aminoglycosides], one 16S rRNA methyltransferase gene (*rmt*B1; conferring resistance to aminoglycoside antibiotics), six beta-lactamase genes ($bla_{CTX-M-15}$, bla_{DHA-1}, bla_{NDM-1}, bla_{OXA-1}, bla_{SHV-28} and bla_{TEM-1}; conferring resistance to beta-lactams), one chloramphenicol acetyltransferase gene (*cat*A2; conferring resistance to chloramphenicol), two chloramphenicol exporter genes (*cml*A5 and *flo*R2; conferring resistance to chloramphenicol), one fosfomycin resistance gene (*fosA*_gen; conferring resistance to fosfomycin), one macrolide phosphotransferase gene [*mph*(A); conferring resistance to macrolides], one quinolone resistance gene (*qnr*B4; conferring resistance to quinolones), one rifampin ADP-ribosyltransferase gene (*arr*-3; conferring resistance to rifampin), two sulfonamide resistance genes (*sul*1 and *sul*2; conferring resistance to sulfonamides), two tetracycline resistance genes [*tet(*A) and *tet(*G); conferring resistance to tetracycline] and two dihydrofolate reductase genes (*dfr*A12 and *dfr*A14; conferring resistance to trimethoprim).[1] The complete genome of *K. pneumoniae*, strain MRSN 613682 has been sequenced (GenBank: JAGYCD000000000).

K. pneumoniae is a Gram-negative enterobacterium that is a major cause of nosocomial infections of the urinary and respiratory tracts. Due to the extensive spread of antibiotic-resistant strains, especially of extended-spectrum β-lactamase (ESBL)-producing strains, there has been renewed interest in *Klebsiella* infections.[2,3,4]

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-55582 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:
Nutrient broth or Tryptic Soy broth or equivalent
Nutrient 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: *Klebsiella pneumoniae*, Strain MRSN 613682, NR-55582. This strain is part of the *Klebsiella pneumoniae* Diversity Panel provided by the Multidrug-Resistant Organism Repository and Surveillance Network (MRSN) at the Walter Reed Army Institute of Research (WRAIR)."

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. McGann, P., Personal Communication.
2. Lascols, C., et al. "Increasing Prevalence and Dissemination of NDM-1 Metallo-β-Lactamase in India: Data from the SMART Study (2009)." J. Antimicrob. Chemother. 66 (2011): 1992-1997. PubMed: 21676902.
3. Ramirez, M. S., et al. "Multidrug-Resistant (MDR) *Klebsiella pneumoniae* Clinical Isolates: A Zone of High Heterogeneity (HHZ) as a Tool for Epidemiological Studies." Clin. Microbiol. Infect. 18 (2012): E254-E258. PubMed: 22551038.
4. Podschun, R. and U. Ullmann. "*Klebsiella* spp. as Nosocomial Pathogens: Epidemiology, Taxonomy, Typing Methods, and Pathogenicity Factors." Clin. Microbiol. Rev. 11 (1998): 589-603. PubMed: 9767057.

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