b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55604

Klebsiella pneumoniae MRSN Diversity Panel

Catalog No. NR-55604

This reagent is the tangible property of the U.S. Government.

Product Description:

The *Klebsiella pneumoniae (K. pneumoniae)* Multidrug-Resistant Organism Repository and Surveillance Network (MRSN) strains that comprise NR-55604 were isolated between 2003 and 2020 as part of a surveillance program in the United States.

Lot: 70052443 **Manufacturing Date: 2021 and 2022**

QC testing was performed, and the results are provided on the Certificate of Analysis for each isolate.

/Sonia Bjorum Brower/
Sonia Bjorum Brower 15 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55504

Klebsiella pneumoniae, Strain MRSN 1912

Catalog No. NR-55504

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 1912 was isolated in 2010 from a human perianal sample in North America as part of a global surveillance program. NR-55504 was deposited as sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55504 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049676 **Manufacturing Date: 19JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (≤ 0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (≤ 0.25 to 0.38 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.064 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (40 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1340 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 1912 (GenBank: JAGYFC010000074.1, JAGYFC010000075.1 and JAGYFC010000076.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 1912 (GenBank: JAGYFC010000074.1, JAGYFC010000075.1 and JAGYFC010000076.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55504

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Heather Couch/
Heather Couch 22 MAR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55505

Klebsiella pneumoniae, Strain MRSN 4111

Catalog No. NR-55505

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 4111 was isolated in 2011 from a human perianal sample in North America as part of a global surveillance program. NR-55505 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55505 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049674 **Manufacturing Date: 19JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (87%)[1]
Antibiotic Susceptibility Profile[2,3]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 4111 (GenBank: JAGYFB010000168.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 4111 (GenBank: JAGYFB010000168.1)[5]

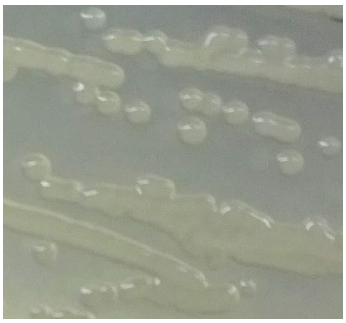
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55505

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Although the result is out of specification, performance of the product should not be affected.
[2]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[3]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 09 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55506

Klebsiella pneumoniae, Strain MRSN 4759

Catalog No. NR-55506

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 4759 was isolated in 2011 from a human urine sample in North America as part of a global surveillance program. NR-55506 was deposited as a multidrug-resistant strain, sensitive to amikacin, cefepime, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam, aztreonam, ceftazidime and ceftriaxone. NR-55506 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049672 **Manufacturing Date: 20JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (2 µg/mL)[3]
Cefepime	Sensitive	Sensitive (2 µg/mL)
Ceftazidime	Resistant	Sensitive (1 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (1 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 4759 (GenBank: JAGYFA010000074.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 4759 (GenBank: JAGYFA010000074.1)[6]

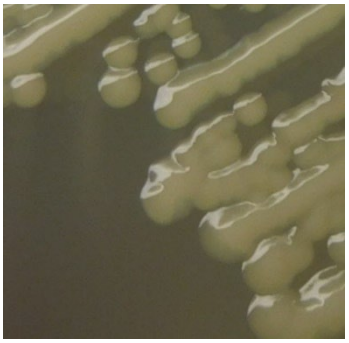
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55506

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 4759 was deposited as resistant to aztreonam, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 4759 was deposited as resistant to ceftazidime, but showed a MIC of 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 18 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55507

Klebsiella pneumoniae, Strain MRSN 4815

Catalog No. NR-55507

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 4815 was isolated in 2011 from a human wound sample in North America as part of a global surveillance program. NR-55507 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, meropenem, piperacillin/tazobactam, tobramycin, intermediately resistant to cefepime and resistant to ampicillin/sulbactam, aztreonam, ceftazidime, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55507 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049670 **Manufacturing Date: 20JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (2 to 4 µg/mL)[3]
Cefepime	Intermediate	Intermediate (3 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftriaxone	Resistant	Resistant (32 µg/mL)
Ciprofloxacin	Resistant	Resistant (6 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.125 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (4 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (160 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 4815 (GenBank: JAGYEZ010000093.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 4815 (GenBank: JAGYEZ010000093.1)[5]

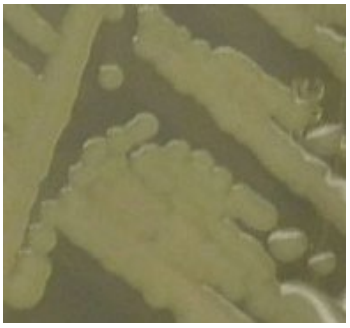
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55507

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 4815 was deposited as resistant to aztreonam, but showed a MIC of 2 µg per mL and 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 15 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55508

Klebsiella pneumoniae, Strain MRSN 5613

Catalog No. NR-55508

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 5613 was isolated in 2011 from a human urine sample in North America as part of a global surveillance program. NR-55508 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, meropenem and tigecycline, intermediately resistant to ciprofloxacin, levofloxacin and piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, gentamicin, tetracycline, trimethoprim/sulfamethoxazole and tobramycin. NR-55508 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049668 **Manufacturing Date: 06JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (32 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (1 µg/mL)[4]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Resistant (4 µg/mL)[5]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Intermediate	Sensitive (1.5 to 2 µg/mL)[6]
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (24 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[5,7]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 5613 (GenBank: JAGYEY010000099.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 5613 (GenBank: JAGYEY010000099.1)[8]

BEI Resources
www.beiresources.org

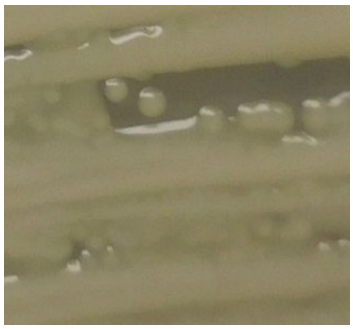
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55508

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 5613 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 5613 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed twice in duplicate.
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]*K. pneumoniae*, strain MRSN 5613 was deposited as intermediately resistant to levofloxacin, but showed a MIC of 1.5 to 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed twice in duplicate.
[7]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 10 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55509

Klebsiella pneumoniae, Strain MRSN 5741

Catalog No. NR-55509

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 5741 was isolated in 2003 from a human respiratory sample in North America as part of a global surveillance program. NR-55509 was deposited as a multidrug-resistant strain, sensitive to amikacin, cefepime, ceftazidime/avibactam, ertapenem, imipenem, meropenem, tetracycline and tigecycline, intermediately resistant to gentamicin and tobramycin and resistant to ampicillin/sulbactam, aztreonam, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, levofloxacin, piperacillin/tazobactam and trimethoprim/sulfamethoxazole. NR-55509 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049666 **Manufacturing Date: 06JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (4 µg/mL)[3]
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (6 µg/mL)
Ceftolozane/tazobactam	Resistant	Inconclusive[4]
Ceftriaxone	Resistant	Resistant (8 to 12 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Intermediate	Intermediate (8 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Sensitive (0.38 µg/mL)[5]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 5741 (GenBank: JAGYEX010000090.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 5741 (GenBank: JAGYEX010000090.1)[6]

BEI Resources
www.beiresources.org

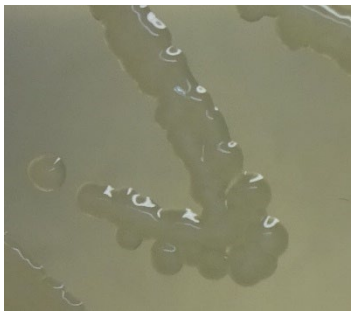
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55509

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 5741 was deposited as resistant to aztreonam, but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 5741 was deposited as resistant to ceftolozane/tazobactam. Antibiotic susceptibility testing performed in quadruplicate determined that for strain MRSN 5741, the ceftolozane/tazobactam MICs are 3 and 4 µg per mL, which are interpreted as sensitive and intermediately resistant, respectively.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 21 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55510

Klebsiella pneumoniae, Strain MRSN 5881

Catalog No. NR-55510

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 5881 was isolated in 2005 from a human wound sample in North America as part of a global surveillance program. NR-55510 was deposited as an extensively drug-resistant strain, sensitive to ceftazidime/avibactam, ertapenem, imipenem, meropenem and tigecycline, intermediately resistant to levofloxacin and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, gentamicin, piperacillin/tazobactam, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55510 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049663 **Manufacturing Date: 20JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Intermediate (4 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 to 32 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 to 0.75 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (16 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 5881 (GenBank: JAGYEW010000112.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 5881 (GenBank: JAGYEW010000112.1)[5]

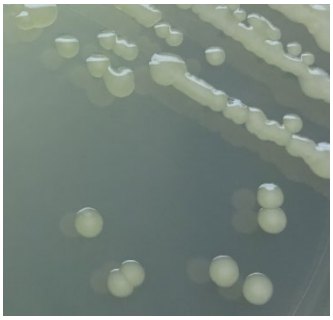
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55510

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 5881 was deposited as resistant to cefepime, but showed a MIC of 4 µg/mL (interpreted as intermediately resistant) for cefepime during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55511

Klebsiella pneumoniae, Strain MRSN 6031

Catalog No. NR-55511

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 6031 was isolated in 2011 from a human wound sample in Europe as part of a global surveillance program. NR-55511 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to aztreonam and ciprofloxacin and resistant to ampicillin/sulbactam, cefepime, ceftazidime, ceftriaxone, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55511 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049661 **Manufacturing Date: 19JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (4 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Resistant (16 µg/mL)[3]
Cefepime	Resistant	Sensitive (2 µg/mL)[4]
Ceftazidime	Resistant	Sensitive (4 µg/mL)[5]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 to 0.75 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Resistant (3 µg/mL)[3]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,6]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 6031 (GenBank: JAGYEV010000085.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 6031 (GenBank: JAGYEV010000085.1)[7]

BEI Resources
www.beiresources.org

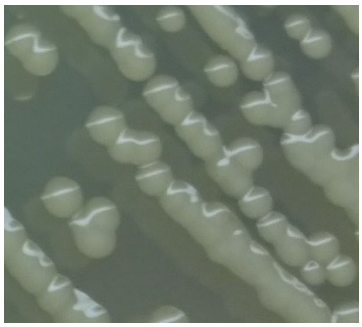
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55511

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]*K. pneumoniae*, strain MRSN 6031 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 6031 was deposited as resistant to ceftazidime, but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55512

Klebsiella pneumoniae, Strain MRSN 6778

Catalog No. NR-55512

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 6778 was isolated in 2011 from a human urine sample in North America as part of a global surveillance program. NR-55512 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, meropenem, tetracycline and tigecycline, intermediately resistant to levofloxacin and piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ceftolozane/tazobactam, ciprofloxacin, gentamicin, tobramycin and trimethoprim/sulfamethoxazole. NR-55512 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049659 **Manufacturing Date: 14JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (0.064 to 0.19 µg/mL)[3]
Cefepime	Resistant	Sensitive (0.25 µg/mL)[4]
Ceftazidime	Resistant	Sensitive (0.19 to 0.38 µg/mL)[5]
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (0.25 µg/mL)[6]
Ceftriaxone	Resistant	Sensitive (0.094 to 0.125 µg/mL)[7]
Ciprofloxacin	Resistant	Resistant (4 to 6 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Sensitive (0.5 µg/mL)[8]
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Intermediate	Sensitive (0.75 to 1 µg/mL)[9]
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (24 to 34 µg/mL)[10]
Tetracycline	Sensitive	Resistant (≥ 256 µg/mL)[11]
Tigecycline	Sensitive	Sensitive (1 µg/mL)[12]
Tobramycin	Resistant	Intermediate (6 µg/mL)[13]
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 6778 (GenBank: JAGYEU010000114.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 6778 (GenBank: JAGYEU010000114.1)[14]

BEI Resources
www.beiresources.org

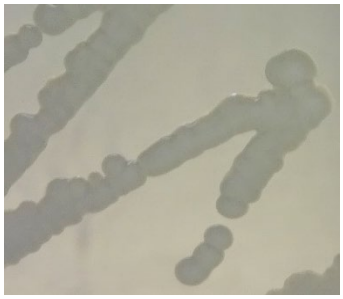
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55512

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to aztreonam, but showed a MIC of 0.064 µg per mL to 0.19 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to cefepime, but showed a MIC of 0.25 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to ceftazidime, but showed a MIC of 0.19 µg per mL to 0.38 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 0.25 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[7]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to ceftriaxone, but showed a MIC of 0.094 µg per mL to 0.125 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[8]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to gentamicin, but showed a MIC of 0.25 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[9]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to levofloxacin, but showed a MIC of 0.75 µg per mL to 1 µg per mL (interpreted as intermediately resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[10]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[11]*K. pneumoniae*, strain MRSN 6778 was deposited as sensitive to tetracycline, but showed a MIC of ≥ 256 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[12]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[13]*K. pneumoniae*, strain MRSN 6778 was deposited as resistant to tobramycin, but showed a MIC of 6 µg per mL (interpreted as intermediately resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[14]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 04 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55513

Klebsiella pneumoniae, Strain MRSN 7076

Catalog No. NR-55513

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 7076 was isolated in 2003 from a human wound sample in North America as part of a global surveillance program. NR-55513 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ciprofloxacin, ertapenem, imipenem, levofloxacin and meropenem, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, gentamicin, tetracycline, trimethoprim/sulfamethoxazole, tigecycline and tobramycin. NR-55513 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049657 **Manufacturing Date: 19JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Intermediate (8 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (1.5 µg/mL)[4]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 to 48 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 7076 (GenBank: JAGYET010000100.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 7076 (GenBank: JAGYET010000100.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55513

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]*K. pneumoniae*, strain MRSN 7076 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 1.5 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 01 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55514

Klebsiella pneumoniae, Strain MRSN 13726

Catalog No. NR-55514

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 13726 was isolated in 2011 from a human urine sample in Europe as part of a global surveillance program. NR-55514 was deposited as a non-multidrug-resistant (non-MDR) strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane /tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin, tigecycline and trimethoprim/sulfamethoxazole and resistant to tetracycline. NR-55514 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049655 **Manufacturing Date: 14JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 13726 (GenBank: JAGYES010000096.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 13726 (GenBank: JAGYES010000096.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55514

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 14 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55515

Klebsiella pneumoniae, Strain MRSN 13748

Catalog No. NR-55515

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 13748 was isolated in 2011 from a human blood sample in Europe as part of a global surveillance program. NR-55515 was deposited as an extensively drug-resistant strain, sensitive to amikacin and ceftazidime/avibactam, intermediately resistant to ceftazidime and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55515 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049653 **Manufacturing Date: 14JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Intermediate	Resistant (16 µg/mL)[3]
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (16 to 24 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Intermediate (2 to 3 µg/mL)[3]
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Sensitive (0.5 to 0.75 µg/mL)[4]
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Intermediate (2 µg/mL)[3]
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[5]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1490 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 13748 (GenBank: JAGYER010000099.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 13748 (GenBank: JAGYER010000099.1)[6]

BEI Resources
www.beiresources.org

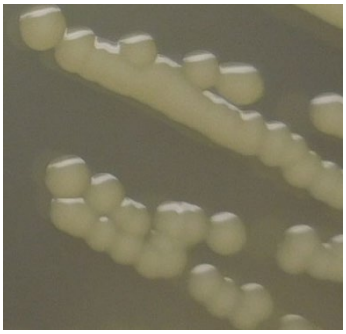
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55515

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]*K. pneumoniae*, strain MRSN 13748 was deposited as resistant to imipenem, but showed a MIC of 0.5 µg per mL and 0.75 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55516

Klebsiella pneumoniae, Strain MRSN 13761

Catalog No. NR-55516

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 13761 was isolated in 2011 from a human wound sample in Europe as part of a global surveillance program. NR-55516 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam and tigecycline, intermediately resistant to aztreonam, ceftazidime and levofloxacin and resistant to ampicillin/sulbactam, cefepime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, meropenem, piperacillin/tazobactam, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55516 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049651 **Manufacturing Date: 19JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (8 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Resistant (24 to 32 µg/mL)[3]
Cefepime	Resistant	Intermediate (4 µg/mL)[4]
Ceftazidime	Intermediate	Resistant (16 µg/mL)[5]
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (16 to 48 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (4 to 6 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (6 to 32 µg/mL)
Levofloxacin	Intermediate	Sensitive (1.5 to 2 µg/mL)[6]
Meropenem	Resistant	Resistant (4 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[5,7]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 13761 (GenBank: JAGYEQ010000100.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 13761 (GenBank: JAGYEQ010000100.1)[8]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55516

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 13761 was deposited as intermediately resistant to aztreonam, but showed a MIC of 24 to 32 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 13761 was deposited as resistant to cefepime, but showed a MIC of 4 µg per mL (interpreted as intermediately resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]*K. pneumoniae*, strain MRSN 13761 was deposited as intermediately resistant to levofloxacin, but showed a MIC of 1.5 to 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[7]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55517

Klebsiella pneumoniae, Strain MRSN 13768

Catalog No. NR-55517

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 13768 was isolated in 2011 from a human blood sample in Europe as part of a global surveillance program. NR-55517 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, gentamicin, tigecycline and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline and tobramycin. NR-55517 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049649 **Manufacturing Date: 06JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (8 to 16 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (4 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (> 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (> 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (> 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Inconclusive[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 13768 (GenBank: JAGYEP010000113.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 13768 (GenBank: JAGYEP010000113.1)[5]

BEI Resources
www.beiresources.org

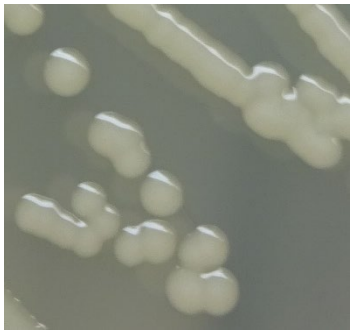
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55517

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 13768 was deposited as being sensitive to tigecycline. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 13768, the tigecycline MICs are 1 µg per mL and 2 µg per mL, which are interpreted as sensitive and resistant, respectively.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 11 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55518

Klebsiella pneumoniae, Strain MRSN 14444

Catalog No. NR-55518

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 14444 was isolated in 2013 from a human urine sample in North America as part of a global surveillance program. NR-55518 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline and tobramycin and resistant to tetracycline and trimethoprim/sulfamethoxazole. NR-55518 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049647 **Manufacturing Date: 12JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 to 0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.094 to 0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.5 to 0.75 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 14444 (GenBank: JAGYEO010000072.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 14444 (GenBank: JAGYEO010000072.1)[5]
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55518

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55519

Klebsiella pneumoniae, Strain MRSN 15219

Catalog No. NR-55519

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 15219 was isolated in 2013 from a human urine sample in North America as part of a global surveillance program. NR-55519 was deposited as a multidrug-resistant strain, sensitive to amikacin, cefepime, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, tigecycline and piperacillin/tazobactam and resistant to aztreonam, ampicillin/sulbactam, ceftazidime, ceftriaxone, gentamicin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55519 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049644 **Manufacturing Date: 12JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (6 µg/mL)[3]
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Sensitive	Sensitive (0.75 to 1.0 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 15219 (GenBank: JAGYEN010000159.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 15219 (GenBank: JAGYEN010000159.1)[5]

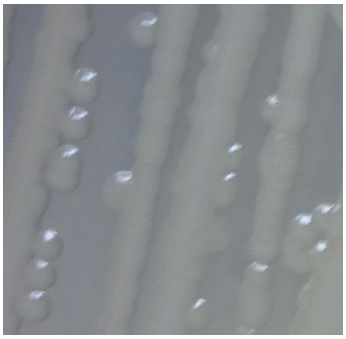
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55519

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 15219 was deposited as resistant to ampicillin/sulbactam, but showed a MIC of 6 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed twice in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 04 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55520

Klebsiella pneumoniae, Strain MRSN 15687

Catalog No. NR-55520

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 15687 was isolated in 2013 from a human urine sample in North America as part of a global surveillance program. NR-55520 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, trimethoprim/sulfamethoxazole, tetracycline and tigecycline, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone and tobramycin. NR-55520 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049643 **Manufacturing Date: 26JAN2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (4 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (32 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.125 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 to 0.5 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (48 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Resistant (> 32 µg/mL)[4]
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 15687 (GenBank: JAGYEM010000080.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 15687 (GenBank: JAGYEM010000080.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55520

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]*K. pneumoniae*, strain MRSN 15687 was deposited as sensitive to trimethoprim/sulfamethoxazole, but showed a MIC of > 32 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed twice in duplicate.
[5]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55521

Klebsiella pneumoniae, Strain MRSN 15882

Catalog No. NR-55521

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 15882 was isolated in 2012 from a human perianal sample in Europe as part of a global surveillance program. NR-55521 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam and tetracycline. NR-55521 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049640 **Manufacturing Date: 02FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (8 µg/mL)[3]
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (4 µg/mL)[4,5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 15882 (GenBank: JAGYEL010000098.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 15882 (GenBank: JAGYEL010000098.1)

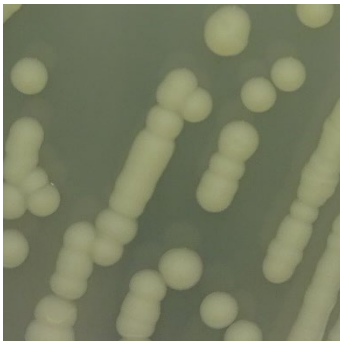
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55521

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 15882 was deposited as resistant to ampicillin/sulbactam, but showed a MIC of 8 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]*K. pneumoniae*, strain MRSN 15882 was deposited as sensitive to tigecycline, but showed a MIC of 4 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 28 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55522

Klebsiella pneumoniae, Strain MRSN 15937

Catalog No. NR-55522

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 15937 was isolated in 2013 from a human wound in North America as part of a global surveillance program. NR-55522 was deposited as a multidrug-resistant strain, resistant to ampicillin/sulbactam, tetracycline and trimethoprim/sulfamethoxazole, and sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline and tobramycin. NR-55522 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70049623 **Manufacturing Date: 09FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (6 to 8 µg/mL)[3]
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 15937 (GenBank: JAGYEK010000107.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 15937 (GenBank: JAGYEK010000107.1)[5]
Purity		
8 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55522

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 09 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55523

Klebsiella pneumoniae, Strain MRSN 16008

Catalog No. NR-55523

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 16008 was isolated in 2013 from a human urine sample in North America as part of a global surveillance program. NR-55523 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline and tobramycin and resistant to trimethoprim/sulfamethoxazole. NR-55523 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050342 **Manufacturing Date: 10FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 16008 (GenBank: JAGYEJ010000098.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 16008 (GenBank: JAGYEJ010000098.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55523

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 28 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55524

Klebsiella pneumoniae, Strain MRSN 16233

Catalog No. NR-55524

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 16233 was isolated in 2013 from a human urine sample in Asia as part of a global surveillance program. NR-55524 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and resistant to piperacillin/tazobactam. NR-55524 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050344 **Manufacturing Date: 10FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Intermediate (1.5 µg/mL)[3]
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Sensitive (2 µg/mL)[4]
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 16233 (GenBank: JAGYEI010000075.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 16233 (GenBank: JAGYEI010000075.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55524

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]*K. pneumoniae*, strain MRSN 16233 was deposited as resistant to piperacillin/tazobactam, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 09 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55525

Klebsiella pneumoniae, Strain MRSN 18411

Catalog No. NR-55525

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 18411 was isolated in 2013 from a human urine sample in North America as part of a global surveillance program. NR-55525 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftriaxone, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and intermediately resistant to ampicillin/sulbactam and tetracycline. NR-55525 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050346 Manufacturing Date: 11FEB2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Intermediate	Intermediate (16 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Intermediate	Intermediate (8 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 18411 (GenBank: JAGYEH010000081.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 18411 (GenBank: JAGYEH010000081.1)[4]

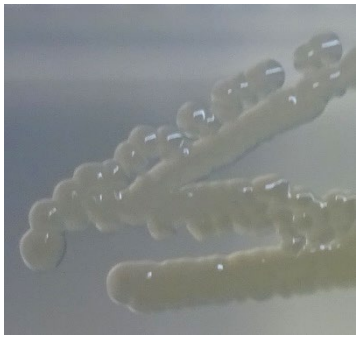
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55525

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55526

Klebsiella pneumoniae, Strain MRSN 19073

Catalog No. NR-55526

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 19073 was isolated in 2013 from a human wound sample in Asia as part of a global surveillance program. NR-55526 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and tigecycline and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, tetracycline, and trimethoprim/sulfamethoxazole. NR-55526 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050348 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Intermediate (8 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.5 to 1 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[4,5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 19073 (GenBank: JAGYEG010000055.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 19073 (GenBank: JAGYEG010000055.1)[6]

BEI Resources
www.beiresources.org

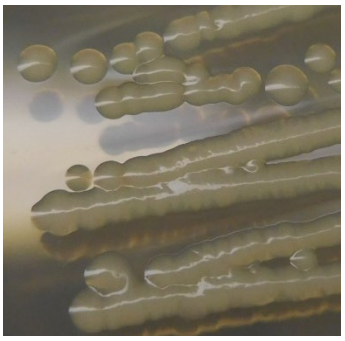
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55526

TEST	SPECIFICATIONS	RESULTS
Purity 8 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 19073 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55527

Klebsiella pneumoniae, Strain MRSN 20522

Catalog No. NR-55527

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 20522 was isolated in 2013 from a human respiratory sample in North America as part of a global surveillance program. NR-55527 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, levofloxacin, meropenem, tigecycline and trimethoprim/sulfamethoxazole, intermediately resistant to ciprofloxacin and piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, gentamicin, tetracycline and tobramycin. NR-55527 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050350 **Manufacturing Date: 10FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (4 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (8 to 16 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (1 µg/mL)[3]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Sensitive (1 µg/mL)[4]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[4,5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 20522 (GenBank: JAGYEF010000101.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 20522 (GenBank: JAGYEF010000101.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55527

TEST	SPECIFICATIONS	RESULTS
Purity 8 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 20522 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55528

Klebsiella pneumoniae, Strain MRSN 21304

Catalog No. NR-55528

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 21304 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55528 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftriaxone, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tigecycline, tobramycin and trimethoprim/sulfamethoxazole, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam and tetracycline. NR-55528 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050352 Manufacturing Date: 10FEB2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Inconclusive[3]
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 21304 (GenBank: JAGYEE010000087.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 21304 (GenBank: JAGYEE010000087.1)[5]

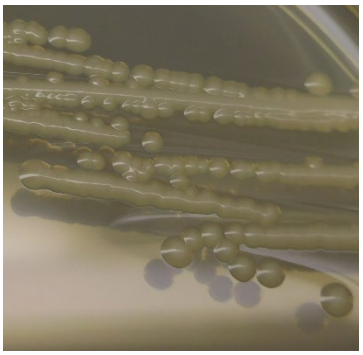
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55528

TEST	SPECIFICATIONS	RESULTS
Purity 8 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 21304 was deposited as being sensitive to piperacillin/tazobactam. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 21304, the piperacillin/tazobactam MICs are 12 µg per mL and 24 µg per mL, which are interpreted as sensitive and resistant, respectively.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55529

Klebsiella pneumoniae, Strain MRSN 21352

Catalog No. NR-55529

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 21352 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55529 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, meropenem, tetracycline and tigecycline, intermediately resistant to ceftazidime, piperacillin/tazobactam and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftriaxone, ciprofloxacin, levofloxacin and trimethoprim/sulfamethoxazole. NR-55529 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050354 **Manufacturing Date: 17FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Intermediate	Resistant (16 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.125 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 µg/mL)
Tetracycline	Sensitive	Sensitive (2 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[5]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 21352 (GenBank: JAGYED020000062.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 21352 (GenBank: JAGYED020000062.1)[6]

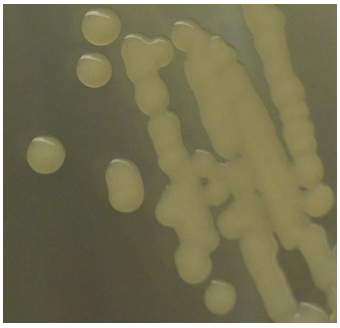
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55529

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 21352 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55530

Klebsiella pneumoniae, Strain MRSN 22232

Catalog No. NR-55530

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 22232 was isolated in 2013 from a human respiratory sample in South America as part of a global surveillance program. NR-55530 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, levofloxacin, meropenem and tigecycline, intermediately resistant to ciprofloxacin and piperacillin/tazobactam, and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, gentamicin, tetracycline, trimethoprim/sulfamethoxazole and tobramycin. NR-55530 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050356 **Manufacturing Date: 17FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (16 to 64 µg/mL)
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (0.38 µg/mL)[3]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (2 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (64 to 96 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 22232 (GenBank: JAGYEC010000097.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 22232 (GenBank: JAGYEC010000097.1)[5]

BEI Resources
www.beiresources.org

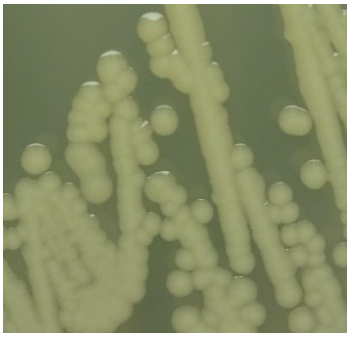
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55530

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 22232 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 0.38 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 21 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55531

Klebsiella pneumoniae, Strain MRSN 22265

Catalog No. NR-55531

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 22265 was isolated in 2012 from a human respiratory sample in South America as part of a global surveillance program. NR-55531 was deposited as a multidrug-resistant strain, sensitive to amikacin, cefepime, ceftazidime/avibactam, ertapenem, imipenem, meropenem, tetracycline and tigecycline, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin, trimethoprim/sulfamethoxazole and tobramycin. NR-55531 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050358 **Manufacturing Date: 18FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (6 to 8 µg/mL)[3]
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1.5 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (0.5 to 0.75 µg/mL)[4]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 µg/mL)
Tetracycline	Sensitive	Sensitive (2 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 22265 (GenBank: JAGYEB010000089.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 22265 (GenBank: JAGYEB010000089.1)

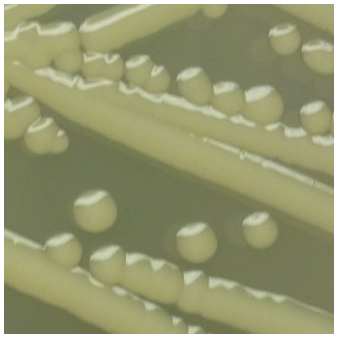
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55531

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 22265 was deposited as resistant to ampicillin/sulbactam but showed a MIC of 6 to 8 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 22265 was deposited as resistant to ceftolozane/tazobactam but showed a MIC of 0.5 to 0.75 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 14 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55532

Klebsiella pneumoniae, Strain MRSN 25107

Catalog No. NR-55532

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 25107 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55532 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftriaxone, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tigecycline, tobramycin and trimethoprim/sulfamethoxazole, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam and tetracycline. NR-55532 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050360 Manufacturing Date: 18FEB2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.023 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (24 to 32 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (40 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 25107 (GenBank: JAGYEA010000115.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 25107 (GenBank: JAGYEA010000115.1)[4]

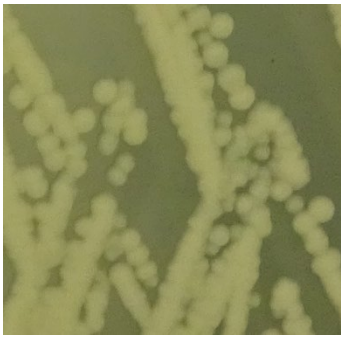
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55532

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 26 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55533

Klebsiella pneumoniae, Strain MRSN 25112

Catalog No. NR-55533

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 25112 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55533 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftriaxone, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tigecycline, tobramycin and tetracycline, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam and trimethoprim/sulfamethoxazole. NR-55533 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050362 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.094 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.016 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Sensitive (3 µg/mL)[3]
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 25112 (GenBank: JAGYDZ010000105.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 25112 (GenBank: JAGYDZ010000105.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55533

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 15219 was deposited as intermediately resistant to piperacillin/tazobactam, but showed a MIC of 3 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed twice in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

/Heather Couch/
Heather Couch 06 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55534

Klebsiella pneumoniae, Strain MRSN 25616

Catalog No. NR-55534

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 25616 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55534 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tigecycline and tobramycin and resistant to ampicillin/sulbactam, piperacillin/tazobactam, tetracycline and trimethoprim/sulfamethoxazole. NR-55534 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050364 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, mucoid, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.38 to 0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 25616 (GenBank: JAGYDY010000083.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 25616 (GenBank: JAGYDY010000083.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55534

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 16 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55535

Klebsiella pneumoniae, Strain MRSN 25947

Catalog No. NR-55535

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 25947 was isolated in 2014 from a human wound sample in North America as part of a global surveillance program. NR-55535 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, tetracycline and trimethoprim/sulfamethoxazole. NR-55535 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050366 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (≤ 0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.047 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 25947 (GenBank: JAHLQW010000040.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 25947 (GenBank: JAHLQW010000040.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55535

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Heather Couch/
Heather Couch 25 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55536

Klebsiella pneumoniae, Strain MRSN 27106

Catalog No. NR-55536

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 27106 was isolated in 2014 from human urine sample in South America as part of a global surveillance program. NR-55536 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, tetracycline and trimethoprim/sulfamethoxazole. NR-55536 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050369 **Manufacturing Date: 16FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (≤ 0.016 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 27106 (GenBank: JAGYDX010000088.1 and JAGYDX010000089.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 27106 (GenBank: JAGYDX010000088.1 and JAGYDX010000089.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55536

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55537

Klebsiella pneumoniae, Strain MRSN 27778

Catalog No. NR-55537

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 27778 was isolated in 2015 from a human sample in North America as part of a global surveillance program. NR-55537 was deposited as a multidrug-resistant strain, sensitive to ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to tetracycline and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin, tobramycin and trimethoprim/sulfamethoxazole. NR-55537 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050371 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (> 256 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Intermediate	Intermediate (8 µg/mL)
Tigecycline	Sensitive	Resistant (≥ 2 µg/mL)[4,5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 27778 (GenBank: JAGYDW010000047.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 27778 (GenBank: JAGYDW010000047.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55537

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 27778 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Heather Couch/
Heather Couch 14 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55538

Klebsiella pneumoniae, Strain MRSN 27989

Catalog No. NR-55538

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 27989 was isolated in 2014 from a human wound sample in North America as part of a global surveillance program. NR-55538 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, meropenem, tigecycline and piperacillin/tazobactam, intermediately resistant to levofloxacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, gentamicin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55538 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050373 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (0.5 to 0.75 µg/mL)[3]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (4 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 256 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 27989 (GenBank: JAGYDV010000076.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 27989 (GenBank: JAGYDV010000076.1)[5]

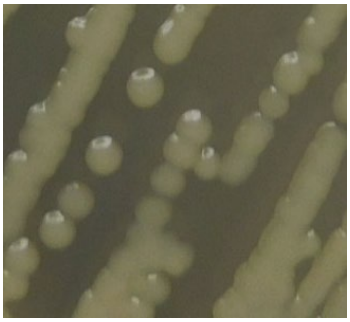
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55538

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 27989 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 0.5 µg per mL and 0.75 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 26 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55539

Klebsiella pneumoniae, Strain MRSN 28183

Catalog No. NR-55539

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 28183 was isolated in 2008 from a human respiratory sample in North America as part of a global surveillance program. NR-55539 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ertapenem, gentamicin, imipenem, meropenem and tigecycline, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, levofloxacin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55539 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050375 **Manufacturing Date: 11FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Sensitive (≤ 1 µg/mL)[3]
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Resistant	Sensitive (0.19 µg/mL)[4]
Ceftriaxone	Resistant	Resistant (8 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (24 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[5,6]
Tobramycin	Resistant	Inconclusive (4 to 6 µg/mL)[7]
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 28183 (GenBank: JAGYDU010000101.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 28183 (GenBank: JAGYDU010000101.1)[8]

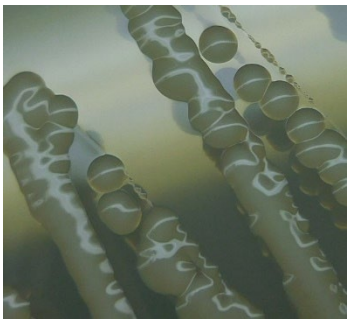
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55539

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 28183 was deposited as resistant to cefepime, but showed a MIC of ≤ 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 28183 was deposited as resistant to ceftolozane/tazobactam, but showed a MIC of 0.19 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[7]*K. pneumoniae*, strain MRSN 28183 was deposited as resistant to tobramycin, but showed a MIC of 4 µg per mL and 6 µg per mL (interpreted as sensitive and intermediate, respectively) for this antibiotic during QC testing. Testing was performed in duplicate.
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55540

Klebsiella pneumoniae, Strain MRSN 28866

Catalog No. NR-55540

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 28866 was isolated in 2015 from a human wound sample in North America as part of a global surveillance program. NR-55540 was deposited as a multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ertapenem, imipenem, meropenem, piperacillin/tazobactam, tigecycline and trimethoprim/sulfamethoxazole, intermediately resistant to tobramycin and resistant to ciprofloxacin, gentamicin, levofloxacin and tetracycline. NR-55540 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050377 **Manufacturing Date: 16FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, low convex, entire, mucoid, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (94%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.023 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.032 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Resistant	Resistant (4 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 28866 (GenBank: JAGYDT010000088.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 28866 (GenBank: JAGYDT010000088.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55540

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55541

Klebsiella pneumoniae, Strain MRSN 28880

Catalog No. NR-55541

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 28880 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55541 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, tetracycline and trimethoprim/sulfamethoxazole. NR-55541 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050379 **Manufacturing Date: 16FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 28880 (GenBank: JAGYDS010000071.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 28880 (GenBank: JAGYDS010000071.1)[4]

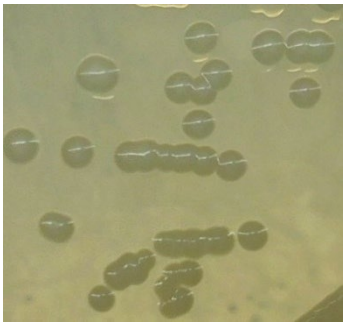
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55541

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 11 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55542

Klebsiella pneumoniae, Strain MRSN 28887

Catalog No. NR-55542

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 28887 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55542 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, tetracycline and trimethoprim/sulfamethoxazole. NR-55542 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050381 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (8 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (≤ 0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.064 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (2 µg/mL)
Tigecycline	Sensitive	Sensitive (1 to 2 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 28887 (GenBank: JAGYDR010000138.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 28887 (GenBank: JAGYDR010000138.1)[4]

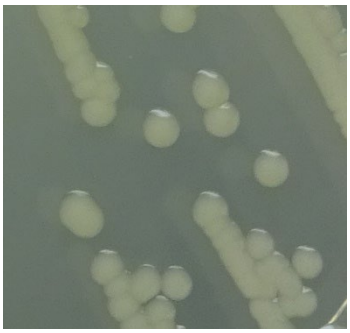
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55542

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 25 APR 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55543

Klebsiella pneumoniae, Strain MRSN 28893

Catalog No. NR-55543

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 28893 was isolated in 2014 from a human urine sample in North America as part of a global surveillance program. NR-55543 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, tetracycline and trimethoprim/sulfamethoxazole. NR-55543 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050646 Manufacturing Date: 02MAR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 28893 (GenBank: JAGYDQ010000065.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 28893 (GenBank: JAGYDQ010000065.1)[4]
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

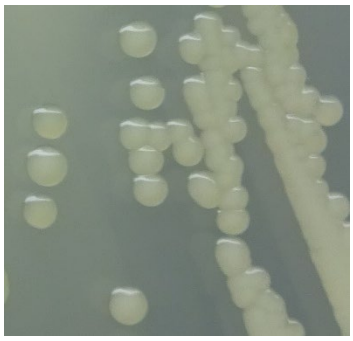
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55543

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55544

Klebsiella pneumoniae, Strain MRSN 365679

Catalog No. NR-55544

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 365679 was isolated in 2016 from a human urine sample in Asia as part of a global surveillance program. NR-55544 was deposited as an extensively drug-resistant strain, sensitive to tigecycline, intermediately resistant to amikacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55544 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050648 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Intermediate	Intermediate (32 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 to 3 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1110 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 365679 (GenBank: JAGYDP010000045.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 365679 (GenBank: JAGYDP010000045.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55544

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]*K. pneumoniae*, strain MRSN 365679 was deposited as sensitive to tigecycline, but showed a MIC of 2 to 3 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55545

Klebsiella pneumoniae, Strain MRSN 366562

Catalog No. NR-55545

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 366562 was isolated in 2015 from a human urine sample in Africa as part of a global surveillance program. NR-55545 was deposited as an extensively drug-resistant strain, sensitive to ceftazidime/avibactam and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55545 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050651 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (48 to 96 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (6 to 8 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 366562 (GenBank: JAGYDO010000055.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 366562 (GenBank: JAGYDO010000055.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55545

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 18 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55546

Klebsiella pneumoniae, Strain MRSN 368001

Catalog No. NR-55546

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 368001 was isolated in 2015 from a human wound sample in Africa as part of a global surveillance program. NR-55546 was deposited as an extensively drug-resistant strain (XDR), sensitive to tetracycline and tigecycline and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, meropenem, gentamicin, imipenem, levofloxacin, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55546 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050653 **Manufacturing Date: 03MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Sensitive (≤ 32 µg/mL)[4]
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 368001 (GenBank: JAGYDN010000074.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 368001 (GenBank: JAGYDN010000074.1)

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55546

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]*K. pneumoniae*, strain MRSN 368001 was deposited as resistant to trimethoprim/sulfamethoxazole, but showed a MIC of ≤ 32 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.

/Heather Couch/
Heather Couch 13 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55547

Klebsiella pneumoniae, Strain MRSN 368320

Catalog No. NR-55547

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 368320 was isolated in 2015 from a human blood sample in Africa as part of a global surveillance program. NR-55547 was deposited as an extensively drug-resistant strain (XDR), sensitive to amikacin and ceftazidime/avibactam, intermediately resistant to imipenem and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55547 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050657 **Manufacturing Date: 03MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Intermediate	Resistant (≥ 32 µg/mL)[3]
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 368320 (GenBank: JAGYDM010000069.1)	99.2% sequence identity to *K. pneumoniae*, strain MRSN 368320 (GenBank: JAGYDM010000069.1)

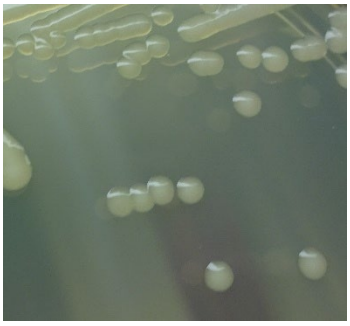
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55547

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 368320 was deposited as intermediately resistant to imipenem, but showed a MIC of ≥ 32 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 12 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55548

Klebsiella pneumoniae, Strain MRSN 371351

Catalog No. NR-55548

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 371351 was isolated in 2003 from a human wound in Europe as part of a global surveillance program. MRSN 371351 was deposited as a multidrug-resistant strain, sensitive to amikacin, cefepime, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline and tigecycline, intermediately resistant to ampicillin/sulbactam, and resistant to aztreonam, ceftazidime, ceftriaxone, gentamicin, tobramycin and trimethoprim/sulfamethoxazole. NR-55548 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050659 **Manufacturing Date: 04MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (93%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Intermediate	Sensitive (8 µg/mL)[3]
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Sensitive	Sensitive (≤1 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 371351 (GenBank: JAGYDL010000087.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 371351 (GenBank: JAGYDL010000087.1)[5]

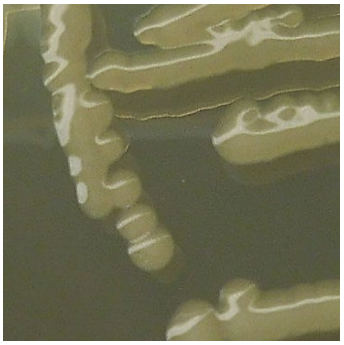
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55548

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 11 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55549

Klebsiella pneumoniae, Strain MRSN 374613

Catalog No. NR-55549

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 374613 was isolated in 2016 from a human urine sample in North America as part of a global surveillance program. NR-55549 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline and tobramycin, intermediately resistant to cefepime and resistant to ampicillin/sulbactam, aztreonam, ceftazidime, ceftriaxone, tetracycline and trimethoprim/sulfamethoxazole. NR-55549 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050664 **Manufacturing Date: 04MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (2 µg/mL)[3]
Cefepime	Intermediate	Sensitive (1 to 1.5 µg/mL)[4]
Ceftazidime	Resistant	Sensitive (≤ 1 µg/mL)[5]
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.75 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.125 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[6,7]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 374613 (GenBank: JAGYDK010000086.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 374613 (GenBank: JAGYDK010000086.1)[8]

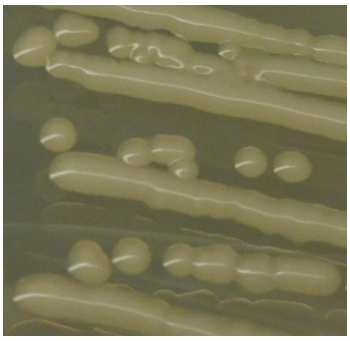
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55549

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 374613 was deposited as resistant to aztreonam, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 374613 was deposited as intermediately resistant to cefepime, but showed a MIC of 1 to 1.5 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 374613 was deposited as resistant to ceftazidime, but showed a MIC of ≤ 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 17 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55550

Klebsiella pneumoniae, Strain MRSN 375436

Catalog No. NR-55550

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 375436 was isolated in 2016 from a human urine sample in North America as part of a global surveillance program. NR-55550 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, tigecycline, tetracycline and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and trimethoprim/sulfamethoxazole. NR-55550 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050666 Manufacturing Date: 04MAR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (24 to 32 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (4 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (48 µg/mL)
Ceftriaxone	Resistant	Resistant (32 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (2 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 375436 (GenBank: JAGYDJ010000110.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 375436 (GenBank: JAGYDJ010000110.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55550

TEST	SPECIFICATIONS	RESULTS
Purity 11 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 26 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55551

Klebsiella pneumoniae, Strain MRSN 380979

Catalog No. NR-55551

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 380979 was isolated in 2016 from a human urine sample in North America as part of a global surveillance program. NR-55551 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55551 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050668 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.047 to 0.064 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 380979 (GenBank: JAGYDI010000099.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 380979 (GenBank: JAGYDI010000099.1)[4]
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55551

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 01 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55552

Klebsiella pneumoniae, Strain MRSN 401050

Catalog No. NR-55552

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 401050 was isolated in 2016 from a human fluid sample in North America as part of a global surveillance program. NR-55552 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ertapenem, gentamicin, imipenem, meropenem, tetracycline, tobramycin and tigecycline, intermediately resistant to levofloxacin, and resistant to ampicillin/sulbactam, ciprofloxacin, piperacillin/tazobactam and trimethoprim/sulfamethoxazole. NR-55552 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050670 Manufacturing Date: 04MAR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.50 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.50 to 1 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Resistant	Intermediate (3 µg/mL)[3]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.125 to 0.19 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Sensitive (0.75 to 1 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 401050 (GenBank: JAGYDH010000094.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 401050 (GenBank: JAGYDH010000094.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55552

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Heather Couch/
Heather Couch 06 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55553

Klebsiella pneumoniae, Strain MRSN 410359

Catalog No. NR-55553

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 410359 was isolated in 2016 from a human urine sample in North America as part of a global surveillance program. NR-55553 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem and meropenem, intermediately resistant to ciprofloxacin, levofloxacin, piperacillin/tazobactam and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55553 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050672 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (2 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[4]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 410359 (GenBank: JAGYDG010000093.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 410359 (GenBank: JAGYDG010000093.1)[5]

BEI Resources
www.beiresources.org

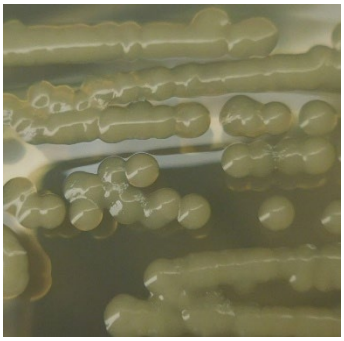
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55553

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 410359 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 15 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55554

Klebsiella pneumoniae, Strain MRSN 414780

Catalog No. NR-55554

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 414780 was isolated in 2016 from a human urine sample in North America as part of a global surveillance program. NR-55554 was deposited as an extensively drug-resistant strain (XDR), sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem and meropenem, intermediately resistant to piperacillin/tazobactam, tigecycline and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin, tetracycline and trimethoprim/sulfamethoxazole. NR-55554 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050674 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (32 µg/mL)
Cefepime	Sensitive	Sensitive (2 µg/mL)
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.0 to 1.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 to 0.75 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (0.5 µg/mL)
Imipenem	Sensitive	Inconclusive[3]
Levofloxacin	Sensitive	Sensitive (0.5 to 0.75 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 to 64 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Intermediate	Inconclusive[4,5]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1450 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 414780 (GenBank: JAGYDF010000080.1 and JAGYDF010000081.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 414780 (GenBank: JAGYDF010000080.1 and JAGYDF010000081.1)[6]

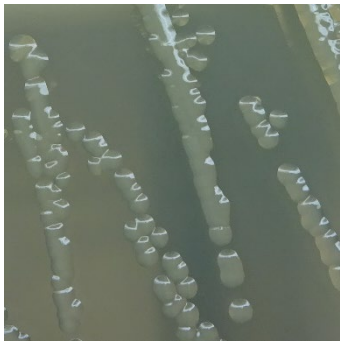
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55554

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 414780 was deposited as being resistant to imipenem. Repeated antibiotic susceptibility testing determined that for strain MRSN 414780, the imipenem MICs are 0.75 µg per mL and 1 µg per mL (interpreted as sensitive), 1.5 µg per mL (interpreted as intermediately resistant) and 2 µg per mL and 3 µg per mL (interpreted as resistant).
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]*K. pneumoniae*, strain MRSN 414780 was deposited as being intermediately resistant to tigecycline. Repeated antibiotic susceptibility testing determined that for strain MRSN 414780, the tigecycline MICs are 0.75 µg per mL and 2 µg per mL, which are interpreted as sensitive and resistant, respectively.
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 01 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55555

Klebsiella pneumoniae, Strain MRSN 430405

Catalog No. NR-55555

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 430405 was isolated in 2013 from a human blood sample in the Middle East as part of a global surveillance program. NR-55555 was deposited as an extensively drug-resistant strain, sensitive to ceftazidime/avibactam and tigecycline, intermediately resistant to gentamicin and tetracycline and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55555 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050676 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (2 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (64 to 96 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (> 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Intermediate	Intermediate (8 µg/mL)
Imipenem	Resistant	Resistant (> 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Intermediate	Intermediate (8 µg/mL)
Tigecycline	Sensitive	Resistant (1.5 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 430405 (GenBank: JAGYDE010000058.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 430405 (GenBank: JAGYDE010000058.1)[5]

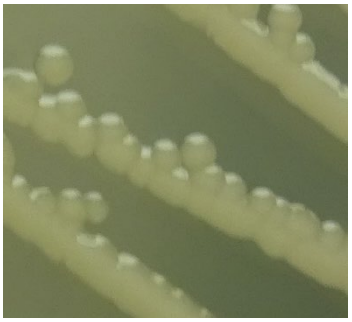
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55555

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 26 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55556

Klebsiella pneumoniae, Strain MRSN 430414

Catalog No. NR-55556

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 430414 was isolated in 2013 from a human blood sample in the Middle East as part of a global surveillance program. NR-55556 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam and imipenem, intermediately resistant to tigecycline and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline and trimethoprim/sulfamethoxazole. NR-55556 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050678 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1 to 1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (24 to 48 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Resistant (3 µg/mL)[3]
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Intermediate	Resistant (2 to 3 µg/mL)[4,5]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 430414 (GenBank: JAGYDD010000079.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 430414 (GenBank: JAGYDD010000079.1)[6]

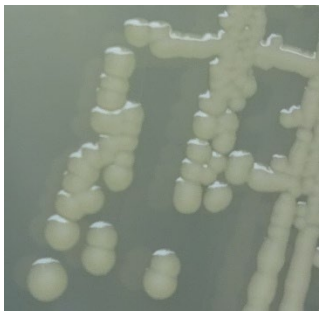
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55556

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 430414 was deposited as sensitive to imipenem, but showed a MIC of 3 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]*K. pneumoniae*, strain MRSN 430414 was deposited as intermediately resistant to tigecycline, but showed a MIC of 2 to 3 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 15 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55557

Klebsiella pneumoniae, Strain MRSN 450199

Catalog No. NR-55557

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 450199 was isolated in 2017 from a human urine sample in North America as part of a global surveillance program. NR-55557 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam and tetracycline. NR-55557 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050680 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.094 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.094 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.016 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 450199 (GenBank: JAGYDC010000116.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 450199 (GenBank: JAGYDC010000116.1)[4]

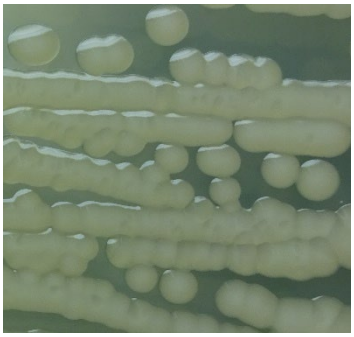
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55557

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55558

Klebsiella pneumoniae, Strain MRSN 468268

Catalog No. NR-55558

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 468268 was isolated in 2017 from a human urine sample in North America as part of a global surveillance program. NR-55558 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline and tobramycin, intermediately resistant to ampicillin/sulbactam and resistant to aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline and trimethoprim/sulfamethoxazole. NR-55558 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050682 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Intermediate	Intermediate (16 µg/mL)
Aztreonam	Resistant	Sensitive (2 µg/mL)[3]
Cefepime	Resistant	Sensitive (2 µg/mL)[4]
Ceftazidime	Resistant	Sensitive (4 µg/mL)[5]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.38 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[6,7]
Tobramycin	Sensitive	Sensitive (2 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 468268 (GenBank: JAGYDB010000076.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 468268 (GenBank: JAGYDB010000076.1)[8]

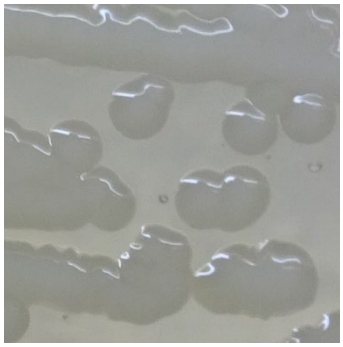
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55558

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 468268 was deposited as resistant to aztreonam, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 468268 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 468268 was deposited as resistant to ceftazidime, but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 31 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55559

Klebsiella pneumoniae, Strain MRSN 479404

Catalog No. NR-55559

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 479404 was isolated in 2017 from a human wound sample in Asia as part of a global surveillance program. NR-55559 was deposited as an extensively drug-resistant strain, sensitive to amikacin, gentamicin and tigecycline and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55559 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050684 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 479404 (GenBank: JAGYDA010000110.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 479404 (GenBank: JAGYDA010000110.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55559

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 26 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55560

Klebsiella pneumoniae, Strain MRSN 499958

Catalog No. NR-55560

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 499958 was isolated in 2017 from a human urine sample in North America as part of a global surveillance program. NR-55560 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to aztreonam and resistant to ampicillin/sulbactam, cefepime, ceftazidime, ceftriaxone, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55560 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050686 **Manufacturing Date: 01MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Resistant (16 µg/mL)[3]
Cefepime	Resistant	Sensitive (2 µg/mL)[4]
Ceftazidime	Resistant	Intermediate (8 µg/mL)[3]
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (1 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[5]
Tobramycin	Resistant	Intermediate (8 µg/mL)[3]
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 499958 (GenBank: JAGYCZ010000079.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 499958 (GenBank: JAGYCZ010000079.1)[6]

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55560

TEST	SPECIFICATIONS	RESULTS
Purity 10 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]*K. pneumoniae*, strain MRSN 499958 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 08 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55561

Klebsiella pneumoniae, Strain MRSN 511348

Catalog No. NR-55561

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 511348 was isolated in 2014 from a human sample in the Middle East as part of a global surveillance program. NR-55561 was deposited as an extensively drug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, levofloxacin, tetracycline and tigecycline, intermediately resistant to ciprofloxacin and imipenem and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ertapenem, gentamicin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55561 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050688 **Manufacturing Date: 02MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (4 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 256 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Inconclusive[3]
Ceftazidime	Resistant	Inconclusive[4]
Ceftazidime/avibactam	Sensitive	Sensitive (4 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (192 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 256 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (1.5 µg/mL)
Ertapenem	Resistant	Resistant (1.5 to 2 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Intermediate	Intermediate (1.5 to 2 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Resistant	Sensitive (0.75 to 1 µg/mL)[5]
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[6]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (160 to ≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 511348 (GenBank: JAGYCY010000118.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 511348 (GenBank: JAGYCY010000118.1)[7]

BEI Resources
www.beiresources.org

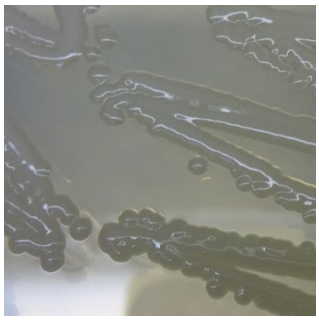
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55561

TEST	SPECIFICATIONS	RESULTS
Purity 10 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*Klebsiella pneumoniae*, strain MRSN 511348 was deposited as being resistant to cefepime. Repeated antibiotic susceptibility testing determined that for strain MRSN 511348, the cefepime MICs are 2 µg per mL and ≥ 64 µg per mL, which are interpreted as sensitive and resistant, respectively.
[4]*Klebsiella pneumoniae*, strain MRSN 511348 was deposited as being resistant to ceftazidime. Repeated antibiotic susceptibility testing determined that for strain MRSN 511348, the ceftazidime MICs are 4 µg per mL and ≥ 64 µg per mL, which are interpreted as sensitive and resistant, respectively.
[5]*K. pneumoniae*, strain MRSN 511348 was deposited as resistant to meropenem, but showed a MIC of 0.75 to 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 11 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55562

Klebsiella pneumoniae, Strain MRSN 513382

Catalog No. NR-55562

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 513382 was isolated in 2014 from a human sample in the Middle East as part of a global surveillance program. NR-55562 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55562 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70050690 **Manufacturing Date: 25FEB2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (94%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.094 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (1 µg/mL)
Tigecycline	Sensitive	Sensitive (0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 513382 (GenBank: JAGYCX010000073.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 513382 (GenBank: JAGYCX010000073.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55562

TEST	SPECIFICATIONS	RESULTS
Purity 11 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

/Heather Couch/
Heather Couch 19 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55563

Klebsiella pneumoniae, Strain MRSN 515247

Catalog No. NR-55563

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 515247 was isolated in 2016 from a human sample in the Middle East as part of a global surveillance program. NR-55563 was deposited as an extensively drug-resistant strain, sensitive to gentamicin and trimethoprim/sulfamethoxazole and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline and tobramycin. NR-55563 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051096 Manufacturing Date: 23MAR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (8 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 515247 (GenBank: JAGYCW010000124.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 515247 (GenBank: JAGYCW010000124.1)[4]
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

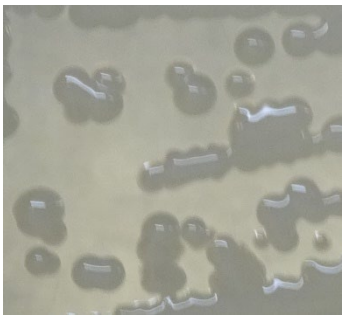
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55563

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 06 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55564

Klebsiella pneumoniae, Strain MRSN 515432

Catalog No. NR-55564

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 515432 was isolated in 2014 from an unknown human sample in the Middle East as part of a global surveillance program. NR-55564 was deposited as a multidrug-resistant strain (MDR), sensitive to amikacin, ceftazidime/avibactam, ertapenem, imipenem, meropenem, tetracycline and tigecycline and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55564 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051098 Manufacturing Date: 23MAR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Intermediate (8 µg/mL)[3]
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (3 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (48 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (8 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (2 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 515432 (GenBank: JAGYCV010000163.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 515432 (GenBank: JAGYCV010000163.1)[5]

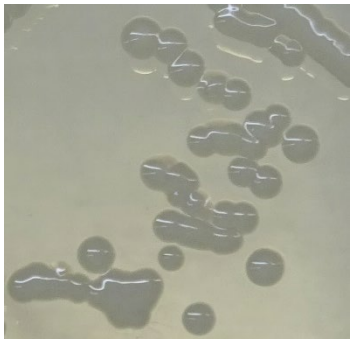
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55564

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 18 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55565

Klebsiella pneumoniae, Strain MRSN 516635

Catalog No. NR-55565

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 516635 was isolated in 2016 from an unknown human sample in the Middle East as part of a global surveillance program. NR-55565 was deposited as a multidrug-resistant strain (MDR), sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline and trimethoprim/sulfamethoxazole. NR-55565 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051100 **Manufacturing Date: 30MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Inconclusive[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.38 to 0.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1430 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 516635 (GenBank: JAGYCU010000101.1)	99.2% sequence identity to *K. pneumoniae*, strain MRSN 516635 (GenBank: JAGYCU010000101.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55565

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®
[3]*K. pneumoniae*, strain MRSN 516635 was deposited as being resistant to cefepime. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 516635, the cefepime MICs are 2 µg per mL and 4 µg per mL, which are interpreted as sensitive and intermediately resistant, respectively.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 11 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55566

Klebsiella pneumoniae, Strain MRSN 517281

Catalog No. NR-55566

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 517281 was isolated in 2016 from a human sample in the Middle East as part of a global surveillance program. NR-55566 was deposited as an extensively drug-resistant strain, sensitive to amikacin, intermediately resistant to gentamicin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55566 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051102 **Manufacturing Date: 30MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Intermediate	Intermediate (8 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1430 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 517281 (GenBank: JAGYCT010000093.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 517281 (GenBank: JAGYCT010000093.1)[4]

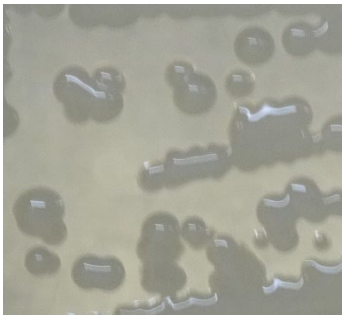
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55566

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 15 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55567

Klebsiella pneumoniae, Strain MRSN 518712

Catalog No. NR-55567

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 518712 was isolated in 2016 from a human sample in the Middle East as part of a global surveillance program. NR-55567 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline and tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone and trimethoprim/sulfamethoxazole. NR-55567 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051104 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Resistant (16 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.25 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 518712 (GenBank: JAGYCS010000120.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 518712 (GenBank: JAGYCS010000120.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55567

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 518712 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 16 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55568

Klebsiella pneumoniae, Strain MRSN 526410

Catalog No. NR-55568

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 526410 was isolated in 2017 from a human urine sample in Europe as part of a global surveillance program. NR-55568 was deposited as a multidrug-resistant strain, sensitive to amikacin and ceftazidime/avibactam, intermediately resistant to imipenem and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55568 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051106 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (8 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Intermediate	Intermediate (2 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (4 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 526410 (GenBank: JAGYCR010000086.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 526410 (GenBank: JAGYCR010000086.1)

BEI Resources
www.beiresources.org

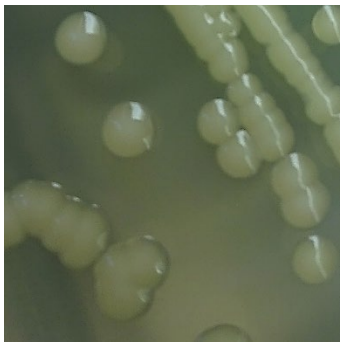
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55568

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 09 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55569

Klebsiella pneumoniae, Strain MRSN 539414

Catalog No. NR-55569

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 539414 was isolated in 2017 from a human blood sample in North America as part of a global surveillance program. NR-55569 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to aztreonam and ceftazidime and resistant to ampicillin/sulbactam, cefepime, ceftriaxone, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55569 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051108 **Manufacturing Date: 24MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (4 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Resistant (48 µg/mL)[3]
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Intermediate	Intermediate (8 to 12 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.064 to 0.094 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 539414 (GenBank: JAGYCQ010000070.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 539414 (GenBank: JAGYCQ010000070.1)[5]

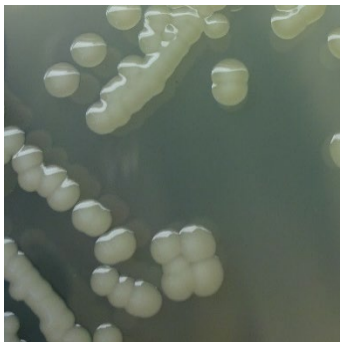
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55569

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 539414 was deposited as intermediate to aztreonam, but showed a MIC of 48 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 13 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55570

Klebsiella pneumoniae, Strain MRSN 546733

Catalog No. NR-55570

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 546733 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55570 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to ciprofloxacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55570 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051110 **Manufacturing Date: 24MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Intermediate (8 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (1.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 546733 (GenBank: JAGYCP010000085.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 546733 (GenBank: JAGYCP010000085.1)[6]

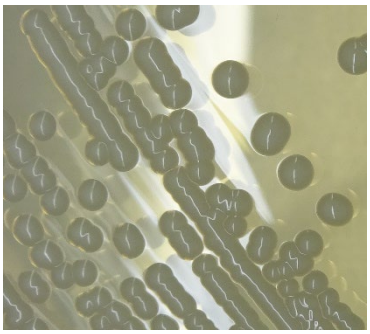
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55570

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 546733 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55571

Klebsiella pneumoniae, Strain MRSN 560539

Catalog No. NR-55571

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 560539 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55571 was deposited as an extensively drug-resistant strain (XDR), sensitive to amikacin, ceftazidime/avibactam, and tigecycline, intermediate to ceftazidime and tobramycin, resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, and trimethoprim/sulfamethoxazole. NR-55571 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051112 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Intermediate	Resistant (24 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (24 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (4 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (4.0 µg/mL)[5,6]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 560539 (GenBank: JAGYCO010000175.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 560539 (GenBank: JAGYCO010000175.1)

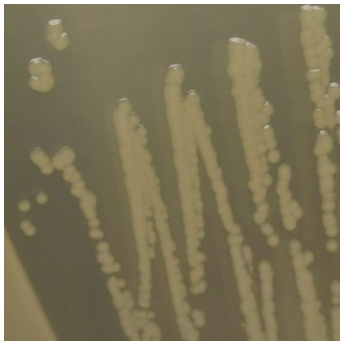
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55571

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 560539 was deposited as resistant to cefepime but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 560539 was deposited as intermediate to ceftazidime but showed a MIC of 24 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 560539 was deposited as immediate to tigecycline but showed a MIC of 4 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 02 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55572

Klebsiella pneumoniae, Strain MRSN 562722

Catalog No. NR-55572

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 562722 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55572 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55572 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051114 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 to 0.047 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 562722 (GenBank: JAGYCN010000106.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 562722 (GenBank: JAGYCN010000106.1)[4]

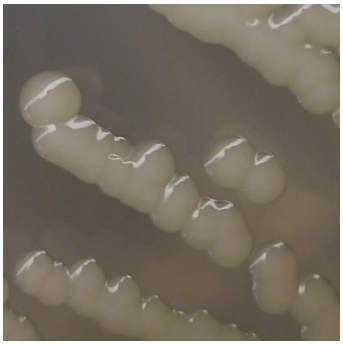
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55572

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 26 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55573

Klebsiella pneumoniae, Strain MRSN 564304

Catalog No. NR-55573

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 564304 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55573 was deposited as a multi-drug resistance (MDR) strain sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediate to aztreonam and ceftazidime and resistant to ampicillin/sulbactam, cefepime, ceftriaxone, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55573 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was passaged once in Tryptic Soy broth for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051116 **Manufacturing Date: 30MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Intermediate (8 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Intermediate	Sensitive (4 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 to 0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.75 to1 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[5]
Tobramycin	Resistant	Intermediate (6 µg/mL)[6]
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 564304 (GenBank: JAGYCM010000081.1)	99.2% sequence identity to *K. pneumoniae*, strain MRSN 564304 (GenBank: JAGYCM010000081.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55573

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 564304 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]*K. pneumoniae*, strain MRSN 564304 was deposited as resistant to tobramycin, but showed a MIC of 6 µg per mL (interpreted as intermediate) for this antibiotic during QC testing. Testing was performed in duplicate.

/Sonia Bjorum Brower/
Sonia Bjorum Brower 02 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55574

Klebsiella pneumoniae, Strain MRSN 572640

Catalog No. NR-55574

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 572640 was isolated in 2018 from a human blood sample in North America as part of a global surveillance program. NR-55574 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftriaxone, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam, tetracycline and tigecycline. NR-55574 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051118 **Manufacturing Date: 18MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.75 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.19 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.125 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 572640 (GenBank: JAGYCL010000070.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 572640 (GenBank: JAGYCL010000070.1)[4]

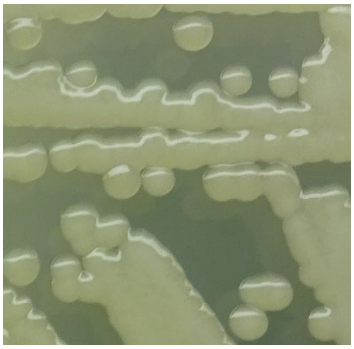
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55574

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55575

Klebsiella pneumoniae, Strain MRSN 581745

Catalog No. NR-55575

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 581745 was isolated in 2018 from a human urine sample in Asia as part of a global surveillance program. NR-55575 was deposited as an extensively drug-resistant strain (XDR), sensitive to amikacin and gentamicin, intermediately resistant to levofloxacin and meropenem, and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55575 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051120 **Manufacturing Date: 18MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (> 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (> 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (> 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (> 32 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Intermediate	Resistant (> 32 µg/mL)[3]
Piperacillin/tazobactam	Resistant	Resistant ≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 581745 (GenBank: JAGYCK010000159.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 581745 (GenBank: JAGYCK010000159.1)[5]

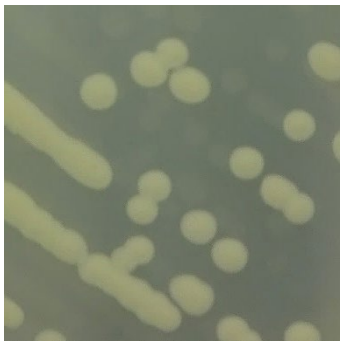
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55575

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 581745 was deposited as intermediately resistant to meropenem, but showed a MIC of >32 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Heather Couch/
Heather Couch 31 MAY 2022
Program Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55576

Klebsiella pneumoniae, Strain MRSN 582610

Catalog No. NR-55576

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 582610 was isolated in 2017 from a human respiratory sample in Asia as part of a global surveillance program. NR-55576 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem and tigecycline, intermediately resistant to ceftazidime, ceftolozane/tazobactam, piperacillin/tazobactam and tobramycin, and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftriaxone, tetracycline and trimethoprim/sulfamethoxazole. NR-55576 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051122 **Manufacturing Date: 18MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Intermediate (4 µg/mL)[3]
Ceftazidime	Intermediate	Resistant (12 to 16 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.38 to 0.50 µg/mL)
Ceftolozane/tazobactam	Intermediate	Sensitive (0.75 µg/mL)[5]
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.094 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (32 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (2 µg/mL)[6]
Tobramycin	Intermediate	Intermediate (6 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 582610 (GenBank: JAGYCJ010000113.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 582610 (GenBank: JAGYCJ010000113.1)[7]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55576

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 582610 was deposited as resistant to cefepime, but showed a MIC of 4 µg per mL (interpreted as intermediate) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[5]*K. pneumoniae*, strain MRSN 582610 was deposited as intermediately resistant to ceftolozane/tazobactam, but showed a MIC of 0.75 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 13 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55577

Klebsiella pneumoniae, Strain MRSN 583114

Catalog No. NR-55577

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 583114 was isolated in 2018 from a human perianal sample in Europe as part of a global surveillance program. NR-55577 was deposited as a multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, cefepime, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tigecycline and tobramycin and resistant to aztreonam, ceftazidime, ceftriaxone, tetracycline and trimethoprim/sulfamethoxazole. NR-55577 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051124 **Manufacturing Date: 16MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 to 8 µg/mL)
Aztreonam	Resistant	Sensitive (2 µg/mL)[3]
Cefepime	Sensitive	Sensitive (2 µg/mL)
Ceftazidime	Resistant	Sensitive (2 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.38 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 583114 (GenBank: JAGYCI010000086.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 583114 (GenBank: JAGYCI010000086.1)[6]

BEI Resources
www.beiresources.org

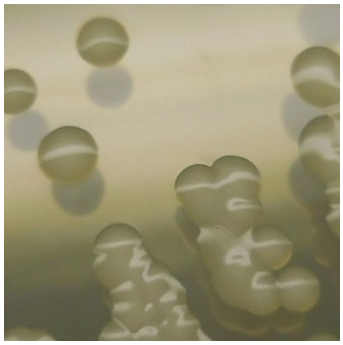
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55577

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 583114 was deposited as resistant to aztreonam, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 583114 was deposited as resistant to ceftazidime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 29 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55578

Klebsiella pneumoniae, Strain MRSN 583141

Catalog No. NR-55578

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 583141 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55578 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to ciprofloxacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55578 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051126 **Manufacturing Date: 18MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Sensitive (4 µg/mL)[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Resistant (3 µg/mL)[5]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Inconclusive[6,7]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 583141 (GenBank: JAGYCH010000084.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 583141 (GenBank: JAGYCH010000084.1)[8]

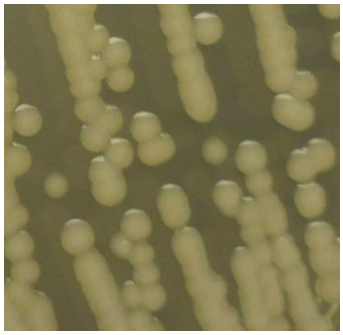
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55578

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 583141 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 583141 was deposited as resistant to ceftazidime, but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]*K. pneumoniae*, strain MRSN 583141 was deposited as being sensitive to tigecycline. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 583141, the tigecycline MICs are 1 µg per mL and 2 µg per mL, which are interpreted as sensitive and resistant, respectively.
[8]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 31 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55579

Klebsiella pneumoniae, Strain MRSN 591344

Catalog No. NR-55579

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 591344 was isolated in 2018 from a human wound sample in North America as part of a global surveillance program. NR-55579 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam, piperacillin/tazobactam, tetracycline and tigecycline. NR-55579 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051128 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (2 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (1.5 to 2 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.19 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (0.5 to 1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Resistant	Resistant (≥ 8 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 591344 (GenBank: JAGYCG010000089.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 591344 (GenBank: JAGYCG010000089.1)[4]

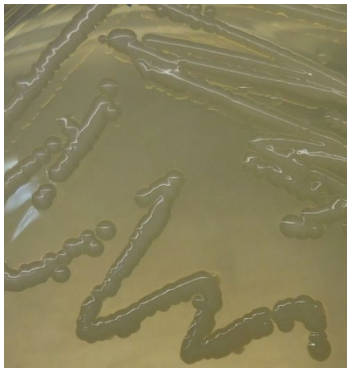
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55579

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 07 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55580

Klebsiella pneumoniae, Strain MRSN 599975

Catalog No. NR-55580

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 599975 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55580 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to ciprofloxacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55580 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051130 **Manufacturing Date: 23MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Sensitive (2 µg/mL)[3]
Ceftazidime	Resistant	Inconclusive[4]
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Intermediate	Resistant (4 µg/mL)[5]
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[6]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 599975 (GenBank: JAGYCF010000102.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 599975 (GenBank: JAGYCF010000102.1)[7]

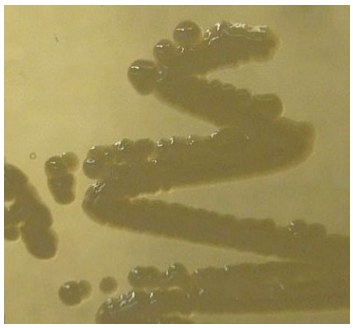
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55580

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 599975 was deposited as resistant to cefepime, but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 599975 was deposited as being resistant to ceftazidime. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 599975, the ceftazidime MICs are 8 µg per mL and 16 µg per mL, which are interpreted as intermediately resistant and resistant, respectively.
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[7]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 31 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55581

Klebsiella pneumoniae, Strain MRSN 607210

Catalog No. NR-55581

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 607210 was isolated in 2018 from a human urine sample in North America as part of a global surveillance program. NR-55581 was deposited as a multidrug-resistant strain (MDR), sensitive to ceftazidime/avibactam, ertapenem, imipenem, meropenem, tetracycline, tigecycline and trimethoprim/sulfamethoxazole, intermediately resistant to piperacillin/tazobactam and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, gentamicin, levofloxacin and tobramycin. NR-55581 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051132 **Manufacturing Date: 30MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (95%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 256 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (12 to 48 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 256 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Intermediate (64 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 607210 (GenBank: JAGYCE010000063.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 607210 (GenBank: JAGYCE010000063.1)[4]

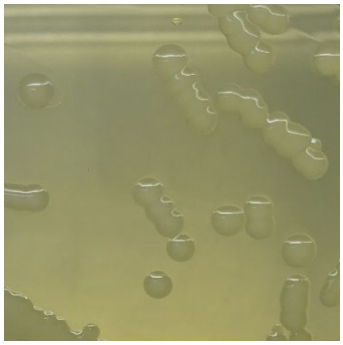
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55581

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 21 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55582

Klebsiella pneumoniae, Strain MRSN 613682

Catalog No. NR-55582

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 613682 was isolated in 2018 from an environmental sample in Africa as part of a global surveillance program. NR-55582 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. NR-55582 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was passaged once in Tryptic Soy broth for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed in Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051134 **Manufacturing Date: 30MAR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (96%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 613682 (GenBank: JAGYCD010000073.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 613682 (GenBank: JAGYCD010000073.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55582

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 14 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55583

Klebsiella pneumoniae, Strain MRSN 614201

Catalog No. NR-55583

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 614201 was isolated in 2018 from an environmental sample in Africa as part of a global surveillance program. NR-55583 was deposited as a multidrug-resistant (MDR) strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole and resistant to ampicillin/sulbactam, aztreonam, ceftazidime, ceftriaxone and cefepime. NR-55583 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051603 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (4 µg/mL)[3]
Aztreonam	Resistant	Sensitive (2 µg/mL)[4]
Cefepime	Resistant	Sensitive (≤ 1 µg/mL)[5]
Ceftazidime	Resistant	Sensitive (4 µg/mL)[6]
Ceftazidime/avibactam	Sensitive	Sensitive (0.094 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Resistant	Resistant (16 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.016 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[7]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 614201 (GenBank: JAGYCC010000052.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 614201 (GenBank: JAGYCC010000052.1)

BEI Resources
www.beiresources.org

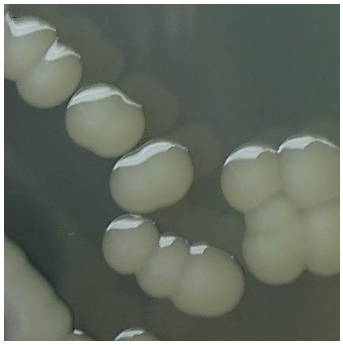
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55583

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 614201 was deposited as resistant to ampicillin/sulbactam but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 614201 was deposited as resistant to aztreonam but showed a MIC of 2 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]*K. pneumoniae*, strain MRSN 614201 was deposited as resistant to cefepime but showed a MIC of ≤ 1 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[6]*K. pneumoniae*, strain MRSN 614201 was deposited as resistant to ceftazidime but showed a MIC of 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[7]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 23 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55584

Klebsiella pneumoniae, Strain MRSN 669448

Catalog No. NR-55584

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 669448 was isolated in 2017 from a blood sample in Europe as part of a global surveillance program. NR-55584 was deposited as an extensively drug-resistant (XDR) strain, sensitive to amikacin and ceftazidime/avibactam, intermediately resistant to tetracycline and tigecycline, and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55584 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051605 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (48 to 64 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Intermediate	Intermediate (6 µg/mL)
Tigecycline	Intermediate	Resistant (4 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 669448 (GenBank: JAGYCB010000094.1)	99.8% sequence identity to *K. pneumoniae*, strain MRSN 669448 (GenBank: JAGYCB010000094.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55584

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]*K. pneumoniae*, strain MRSN 669448 was deposited as intermediately resistant to tigecycline but showed a MIC of 4 µg per mL (interpreted as resistant) for this antibiotic during QC testing. Testing was performed in duplicate.

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55585

Klebsiella pneumoniae, Strain MRSN 669510

Catalog No. NR-55585

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 669510 was isolated in 2018 from a human respiratory sample in Europe as part of a global surveillance program. NR-55585 was deposited as a multidrug-resistant (MDR) strain, sensitive to amikacin, ciprofloxacin, gentamicin, levofloxacin, tigecycline and tetracycline, intermediately resistant to aztreonam, ertapenem and tobramycin, and resistant to ampicillin/sulbactam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, imipenem, meropenem, piperacillin/tazobactam and trimethoprim/sulfamethoxazole. NR-55585 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051607 **Manufacturing Date: 07APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Intermediate	Intermediate (8 to 12 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.064 to 0.094 µg/mL)
Ertapenem	Intermediate	Sensitive (0.19 to 0.25 µg/mL)[3]
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (4 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 669510 (GenBank: JAGYCA010000117.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 669510 (GenBank: JAGYCA010000117.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55585

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 669510 was deposited as intermediately resistant to ertapenem, but showed a MIC of 0.19 to 0.25 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

/Sonia Bjorum Brower/
Sonia Bjorum Brower 14 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55586

Klebsiella pneumoniae, Strain MRSN 672476

Catalog No. NR-55586

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 672476 was isolated in 2019 from a human urine sample in North America as part of a global surveillance program. NR-55586 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin, and trimethoprim/sulfamethoxazole. NR-55586 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051609 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.047 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 672476 (GenBank: JAGYBZ010000073.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 672476 (GenBank: JAGYBZ010000073.1)
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55586

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55587

Klebsiella pneumoniae, Strain MRSN 676980

Catalog No. NR-55587

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 676980 was isolated in 2019 from a human urine sample in North America as part of a global surveillance program. NR-55587 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55587 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051611 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Intermediate (2 µg/mL)[3]
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[4]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1480 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 676980 (GenBank: JAGYBY010000074.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 676980 (GenBank: JAGYBY010000074.1)[5]
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

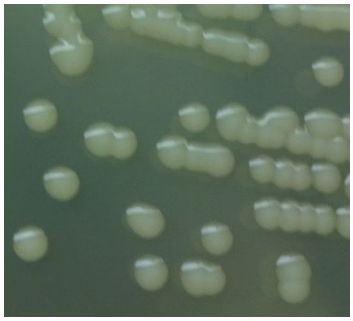
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55587

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55588

Klebsiella pneumoniae, Strain MRSN 680172

Catalog No. NR-55588

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (*K. pneumoniae*), strain MRSN 680172 was isolated in 2019 from a urine sample in North America as part of a global surveillance program. MRSN 680172 was deposited as a non-multidrug-resistant strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ertapenem, gentamicin, imipenem, meropenem, piperacillin/tazobactam, tetracycline, tigecycline and tobramycin, intermediately resistant to ciprofloxacin and levofloxacin and resistant to trimethoprim/sulfamethoxazole. NR-55588 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted

Lot: 70051613 **Manufacturing Date: 08APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (8 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (1.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Sensitive (0.75 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 680172 (GenBank: JAGYBX010000083.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 680172 (GenBank: JAGYBX010000083.1)[4]

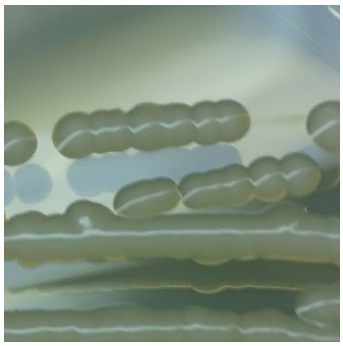
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55588

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55589

Klebsiella pneumoniae, Strain MRSN 681054

Catalog No. NR-55589

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 681054 was isolated in 2015 from a urine sample in Asia as part of a global surveillance program. NR-55589 was deposited as an extensively drug-resistant (XDR) strain, sensitive to amikacin and tigecycline, intermediately resistant to tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline and trimethoprim/sulfamethoxazole. NR-55589 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051615 Manufacturing Date: 08APR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (≥ 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Resistant	Resistant (16 to 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 681054 (GenBank: JAGYBW010000061.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 681054 (GenBank: JAGYBW010000061.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55589

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55590

Klebsiella pneumoniae, Strain MRSN 699478

Catalog No. NR-55590

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 699478 was isolated in 2019 from a human urine sample in North America as part of a global surveillance program. NR-55590 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55590 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051617 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.023 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 699478 (GenBank: JAGYBV010000073.1)	99.9% sequence identity to *K. pneumoniae*, strain MRSN 699478 (GenBank: JAGYBV010000073.1)[4]

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55590

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55591

Klebsiella pneumoniae, Strain MRSN 699654

Catalog No. NR-55591

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 699654 was isolated in 2019 from a human urine sample in North America as part of a global surveillance program. NR-55591 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin, tetracycline, tigecycline and trimethoprim/sulfamethoxazole. NR-55591 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051620 **Manufacturing Date: 14APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 to 8 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 to 0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 699654 (GenBank: JAGYBU010000091.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 699654 (GenBank: JAGYBU010000091.1)[4]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55591

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 01 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55592

Klebsiella pneumoniae, Strain MRSN 702261

Catalog No. NR-55592

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 702261 was isolated in 2019 from a human wound sample in Africa as part of a global surveillance program. NR-55592 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to ceftazidime and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftriaxone, tetracycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55592 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051622 Manufacturing Date: 14APR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Intermediate (4 µg/mL)[3]
Ceftazidime	Intermediate	Intermediate (6 to 8 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.094 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (16 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Inconclusive[4,5]
Tobramycin	Resistant	Intermediate (8 µg/mL)[6]
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 702261 (GenBank: JAGYBT010000080.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 702261 (GenBank: JAGYBT010000080.1)[7]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55592

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 702261 was deposited as resistant to cefepime, but showed a MIC of 4 µg per mL (interpreted as intermediately resistant) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]*K. pneumoniae*, strain MRSN 702261 was deposited as being sensitive to tigecycline. Antibiotic susceptibility testing performed in duplicate determined that for strain MRSN 702261, the tigecycline MICs are 1 µg per mL and 2 µg per mL, which are interpreted as sensitive and resistant, respectively.
[6]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[7]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 11 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55593

Klebsiella pneumoniae, Strain MRSN 702325

Catalog No. NR-55593

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 702325 was isolated in 2019 from a human wound sample in Africa as part of a global surveillance program. NR-55593 was deposited as a multidrug-resistant strain, sensitive to amikacin, aztreonam, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, tobramycin, tigecycline and trimethoprim/sulfamethoxazole, intermediately resistant to piperacillin/tazobactam and resistant to ampicillin/sulbactam and tetracycline. NR-55593 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculum was added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed under propagation conditions unless otherwise noted.

Lot: 70051624 **Manufacturing Date: 14APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, low convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Sensitive (6 µg/mL)[3]
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Intermediate	Sensitive (1.5 µg/mL)[4]
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[5]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 702325 (GenBank: JAGYBS010000047.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 702325 (GenBank: JAGYBS010000047.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55593

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 702325 was deposited as resistant to ampicillin/sulbactam, but showed a MIC of 6 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]*K. pneumoniae*, strain MRSN 702325 was deposited as intermediately resistant to piperacillin/tazobactam, but showed a MIC of 1.5 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[5]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[6]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 30 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55594

Klebsiella pneumoniae, Strain MRSN 728987

Catalog No. NR-55594

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 728987 was isolated in 2018 from a human wound sample in Asia as part of a global surveillance program. NR-55594 was deposited as a multidrug-resistant strain, sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tigecycline, intermediately resistant to tobramycin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, tetracycline and trimethoprim/sulfamethoxazole. NR-55594 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051626 **Manufacturing Date: 01APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® MS (MALDI-TOF)	*K. pneumoniae*	*K. pneumoniae* (99.9%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (16 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Intermediate (8 µg/mL)[3]
Ceftazidime/avibactam	Sensitive	Sensitive (0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.38 to 0.5 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.38 to 0.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (1 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Intermediate	Intermediate (8 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 728987 (GenBank: JAGYBR010000097.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 728987 (GenBank: JAGYBR010000097.1)[5]

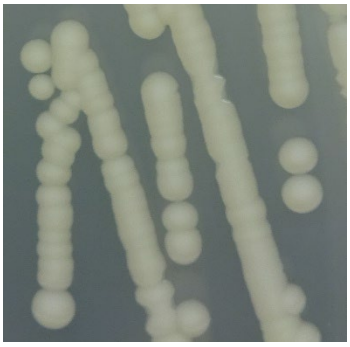
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55594

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 12 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55595

Klebsiella pneumoniae, Strain MRSN 730567

Catalog No. NR-55595

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 730567 was isolated in 2019 from a human blood sample in North America as part of a global surveillance program. NR-55595 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55595 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051628 Manufacturing Date: 01APR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.064 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.5 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1.0 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 730567 (GenBank: JAGYBQ010000085.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 730567 (GenBank: JAGYBQ010000085.1)
Purity		
7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55595

TEST	SPECIFICATIONS	RESULTS
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55596

Klebsiella pneumoniae, Strain MRSN 731029

Catalog No. NR-55596

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 731029 was isolated in 2019 from a human sample in Asia as part of a global surveillance program. NR-55596 was deposited as a multidrug-resistant strain (MDR) sensitive to amikacin, ceftazidime/avibactam, ceftolozane/tazobactam, ertapenem, imipenem, meropenem, piperacillin/tazobactam, tigecycline, tobramycin, and trimethoprim/sulfamethoxazole, intermediately resistant to ciprofloxacin and levofloxacin and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, gentamicin, and tetracycline. NR-55596 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051630 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Sensitive (≤ 1 µg/mL)[3]
Cefepime	Resistant	Sensitive (≤ 1 µg/mL)[3]
Ceftazidime	Resistant	Sensitive (≤ 1 µg/mL)[3]
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Resistant	Resistant (32 to 64 µg/mL)
Ciprofloxacin	Intermediate	Intermediate (1.5 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Imipenem	Sensitive	Sensitive (0.19 to 0.25 µg/mL)
Levofloxacin	Intermediate	Intermediate (4 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (8 µg/mL)
Tetracycline	Resistant	Resistant (≥ 16 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[4,5]
Tobramycin	Sensitive	Sensitive (2 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 731029 (GenBank: JAGYBP010000103.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 731029 (GenBank: JAGYBP010000103.1)

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55596

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 731029 was deposited as resistant to aztreonam, cefepime, and ceftazidime but showed a MIC of ≤ 1 µg per mL (interpreted as sensitive) for these antibiotics during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 27 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55597

Klebsiella pneumoniae, Strain MRSN 736213

Catalog No. NR-55597

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 736213 was isolated in 2019 from a human urine sample in North America as part of a global surveillance program. NR-55597 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55597 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051632 **Manufacturing Date: 01APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 to 0.25 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.032 to 0.047 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 736213 (GenBank: JAGYBO010000109.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 736213 (GenBank: JAGYBO010000109.1)

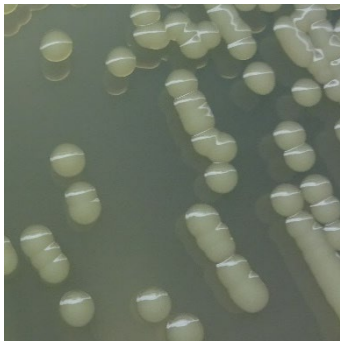
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55597

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 24 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55598

Klebsiella pneumoniae, Strain MRSN 740795

Catalog No. NR-55598

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 740795 was isolated in 2019 from a human respiratory sample in Europe as part of a global surveillance program. NR-55598 was deposited as a multidrug-resistant strain, sensitive to amikacin, gentamicin, ceftazidime/avibactam, trimethoprim/sulfamethoxazole, tetracycline and tigecycline and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftriaxone, ceftolozane/tazobactam, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tobramycin. NR-55598 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051634 Manufacturing Date: 01APR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (8 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (12 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 740795 (GenBank: JAGYBN010000093.1)	99.3% sequence identity to *K. pneumoniae*, strain MRSN 740795 (GenBank: JAGYBN010000093.1)[5]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55598

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 15 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55599

Klebsiella pneumoniae, Strain MRSN 742743

Catalog No. NR-55599

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 742743 was isolated in 2019 from a human blood sample in North America as part of a global surveillance program. NR-55599 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55599 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051636 **Manufacturing Date: 01APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (≤ 2 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.064 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.016 to 0.023 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 742743 (GenBank: JAGYBM010000090.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 742743 (GenBank: JAGYBM010000090.1)

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55599

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology

/Sonia Bjorum Brower/
Sonia Bjorum Brower 28 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

b|e|i RESOURCES

SUPPORTING INFECTIOUS DISEASE RESEARCH

Certificate of Analysis for NR-55600

Klebsiella pneumoniae, Strain MRSN 750877

Catalog No. NR-55600

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 750877 was isolated in 2020 from a human urine sample in North America as part of a global surveillance program. NR-55600 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin and trimethoprim/sulfamethoxazole. NR-55600 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051638 **Manufacturing Date: 01APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (89%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.19 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.094 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (1 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 750877 (GenBank: JAGYBL010000154.1)	99.7% sequence identity to *K. pneumoniae*, strain MRSN 750877 (GenBank: JAGYBL010000154.1)[4]

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55600

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[4]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 12 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55601

Klebsiella pneumoniae, Strain MRSN 750999

Catalog No. NR-55601

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 750999 was isolated in 2020 from a human urine sample in North America as part of a global surveillance program. NR-55601 was deposited as a susceptible strain, sensitive to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tetracycline, tigecycline, tobramycin, and trimethoprim/sulfamethoxazole. NR-55601 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051640 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (98%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (4 µg/mL)
Aztreonam	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftolozane/tazobactam	Sensitive	Sensitive (0.125 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (0.047 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Sensitive	Sensitive (0.25 to 0.38 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Meropenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Piperacillin/tazobactam	Sensitive	Sensitive (≤ 4 µg/mL)
Tetracycline	Sensitive	Sensitive (≤ 1 µg/mL)
Tigecycline	Sensitive	Sensitive (≤ 0.5 µg/mL)[3]
Tobramycin	Sensitive	Sensitive (≤ 1 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 750999 (GenBank: JAGYBK010000105.1)	99.6% sequence identity to *K. pneumoniae*, strain MRSN 750999 (GenBank: JAGYBK010000105.1)

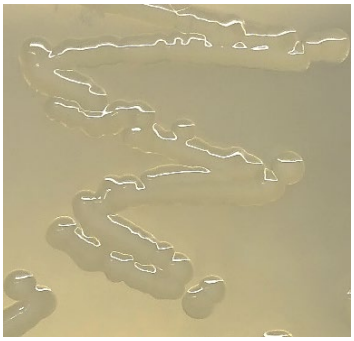
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55601

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 20 JUN 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55602

Klebsiella pneumoniae, Strain MRSN 752729

Catalog No. NR-55602

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 752729 was isolated in 2019 from a human perianal sample in Europe as part of a global surveillance program. NR-55602 was deposited as an extensively drug-resistant strain, sensitive to amikacin, gentamicin, tetracycline and tigecycline and resistant to ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftazidime/avibactam, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55602 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was added to Tryptic Soy broth, which was grown for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051642 Manufacturing Date: 06APR2022

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Sensitive	Sensitive (16 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Resistant	Resistant (> 256 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (> 256 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (> 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (> 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Sensitive	Sensitive (4 µg/mL)
Tigecycline	Sensitive	Resistant (2 µg/mL)[3,4]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1470 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 752729 (GenBank: JAGYBJ010000100.1)	99.5% sequence identity to *K. pneumoniae*, strain MRSN 752729 (GenBank: JAGYBJ010000100.1)[5]

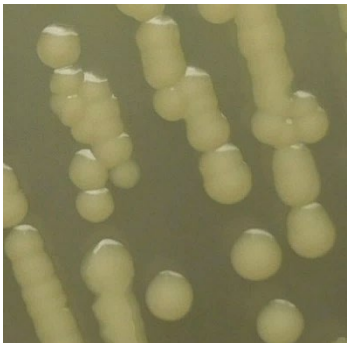
BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55602

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]Also consistent with other *Klebsiella* species

Figure 1: Colony Morphology



/Sonia Bjorum Brower/
Sonia Bjorum Brower 12 AUG 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55603

Klebsiella pneumoniae, Strain MRSN 761403

Catalog No. NR-55603

This reagent is the tangible property of the U.S. Government.

Product Description:

Klebsiella pneumoniae (K. pneumoniae), strain MRSN 761403 was isolated in 2020 from a blood sample in North America as part of a global surveillance program. NR-55603 was deposited as an extensively drug-resistant strain, sensitive to ceftazidime/avibactam, gentamicin and tigecycline, intermediately resistant to tetracycline and resistant to amikacin, ampicillin/sulbactam, aztreonam, cefepime, ceftazidime, ceftolozane/tazobactam, ceftriaxone, ciprofloxacin, ertapenem, imipenem, levofloxacin, meropenem, piperacillin/tazobactam, tobramycin and trimethoprim/sulfamethoxazole. NR-55603 was produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. The material from the initial growth was passaged once in Tryptic Soy broth for 1 day at 37°C in an aerobic atmosphere to produce this lot. Quality control testing was completed on Tryptic Soy agar under propagation conditions unless otherwise noted.

Lot: 70051644 **Manufacturing Date: 06APR2022**

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology	Report results	Circular, convex, entire, smooth, mucoid and cream
Motility (wet mount)	Report results	Non-motile
VITEK® 2 (GN card)	*K. pneumoniae* (≥ 89%)	*K. pneumoniae* (99%)
Antibiotic Susceptibility Profile[1,2]		
Amikacin	Resistant	Resistant (≥ 64 µg/mL)
Ampicillin/sulbactam	Resistant	Resistant (≥ 32 µg/mL)
Aztreonam	Resistant	Resistant (≥ 64 µg/mL)
Cefepime	Resistant	Resistant (16 µg/mL)
Ceftazidime	Resistant	Resistant (≥ 64 µg/mL)
Ceftazidime/avibactam	Sensitive	Sensitive (1 to 1.5 µg/mL)
Ceftolozane/tazobactam	Resistant	Resistant (16 µg/mL)
Ceftriaxone	Resistant	Resistant (≥ 64 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 32 µg/mL)
Ertapenem	Resistant	Resistant (≥ 8 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Imipenem	Resistant	Resistant (≥ 32 µg/mL)
Levofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Meropenem	Resistant	Resistant (≥ 16 µg/mL)
Piperacillin/tazobactam	Resistant	Resistant (≥ 128 µg/mL)
Tetracycline	Intermediate	Sensitive (3 to 4 µg/mL)[3]
Tigecycline	Sensitive	Resistant (1.5 to 2 µg/mL)[4,5]
Tobramycin	Resistant	Resistant (≥ 16 µg/mL)
Trimethoprim/sulfamethoxazole	Resistant	Resistant (≥ 320 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 1460 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain MRSN 761403 (GenBank: JAGYBI010000093.1)	99.4% sequence identity to *K. pneumoniae*, strain MRSN 761403 (GenBank: JAGYBI010000093.1)[6]

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

Certificate of Analysis for NR-55603

TEST	SPECIFICATIONS	RESULTS
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO_2 on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

[1]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S28 (2018)
[2]Antibiotic susceptibility was tested using a combination of bioMérieux VITEK®2 GN74 and ETEST®.
[3]*K. pneumoniae*, strain MRSN 761403 was deposited as intermediately resistant to tetracycline, but showed a MIC of 3 to 4 µg per mL (interpreted as sensitive) for this antibiotic during QC testing. Testing was performed in duplicate.
[4]MIC Interpretation Guideline: EUCAST Version 8.0 (2018)
[5]The susceptibility result for this antibiotic is within one doubling dilution of specification, which is considered an equivalent result.
[6]Also consistent with other *Klebsiella* species

/Sonia Bjorum Brower/
Sonia Bjorum Brower 18 JUL 2022
Lead Technical Writer or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

Support Provided by NIAID

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898