Certificate of Analysis for NR-48562

Klebsiella pneumoniae, Strain UCI 42

Catalog No. NR-48562

Product Description: *Klebsiella pneumoniae* (*K. pneumoniae*), strain UCI 42 was isolated in 2013 from the sputum of an ICU human patient in Irvine, California, USA. *K. pneumoniae*, strain UCI 42 was deposited as a carbapenem-resistant strain and is part of a Carbapenem Resistant Enterobacteriaceae (CRE) Sequencing Project at the Broad Institute. Strain UCI 42 was also deposited as resistant to ampicillin, intermediately susceptible to nitrofurantoin and susceptible to cephems, carbapenems, gentamicin, tigecycline, ciprofloxacin, levofloxacin, and trimethoprim/sulfamethoxazole.

Lot[1]: 70006299 **Manufacturing Date: 08JUN2017**

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-negative rods	Gram-negative rods
Colony morphology[2]	Report results	Circular, convex, entire, smooth, mucoid and cream (Figure 1)
Motility (wet mount)	Report results	Non-motile
VITEK® 2 Compact (GN card)	≥ 90% probability of being *K. pneumoniae*	*K. pneumonia* (99% probability)[3]
Antibiotic Susceptibility Profile		
VITEK® (AST-GN69)[4]		
ESBL[5,6]	Report results	Negative
Ampicillin	Resistant	Resistant (= 16 µg/mL)[7]
Amoxicillin/clavulanic Acid	Report results	Sensitive (≤ 2 µg/mL)
Ampicillin/sulbactam	Sensitive	Sensitive (= 4 µg/mL)
Piperacillin/tazobactam	Report results	Sensitive (≤ 4 µg/mL)
Cefazolin	Sensitive	Sensitive (≤ 4 µg/mL)
Ceftazidime	Sensitive	Sensitive (≤ 1 µg/mL)
Ceftriaxone	Sensitive	Sensitive (≤ 1 µg/mL)
Cefepime	Sensitive	Sensitive (≤ 1 µg/mL)
Ertapenem	Sensitive	Sensitive (≤ 0.5 µg/mL)
Imipenem	Sensitive	Sensitive (≤ 0.25 µg/mL)
Gentamicin	Sensitive	Sensitive (≤ 1 µg/mL)
Tobramycin	Report results	Sensitive (≤ 1 µg/mL)
Ciprofloxacin	Sensitive	Sensitive (≤ 0.25 µg/mL)
Levofloxacin	Sensitive	Sensitive (≤ 0.12 µg/mL)
Nitrofurantoin	Intermediate	Intermediate (= 64 µg/mL)
Trimethoprim/sulfamethoxazole	Sensitive	Sensitive (≤ 20 µg/mL)
Genotypic Analysis		
Sequencing of 16S ribosomal RNA gene (~ 790 base pairs)	≥ 99% sequence identity to *K. pneumoniae*, strain UCI 42 (GenBank: JCLZ01000015.1)	99.4% sequence identity to *K. pneumoniae*, strain UCI 42 (GenBank: JCLZ01000015.1)
Purity (post-freeze)[8]	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability (post-freeze)[2]	Growth	Growth

[1]NR-48562 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.
[2]1 day at 37°C in an aerobic atmosphere on Tryptic Soy agar
[3]Percent probabilities above 90% indicate a close match to the typical biochemical pattern for the given organism, with a percent probability of 99% being a perfect match between the test reaction pattern and the unique biochemical pattern of the given organism or organism group. For additional information, please refer to O'Hara, C. M. and J. M. Miller. "Evaluation of the VITEK 2 ID-GNB Assay for Identification of Members of the Family

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Enterobacteriaceae and Other Nonenteric Gram-Negative Bacilli and Comparison with the VITEK GNI+ Card." J. Clin. Microbiol. 41 (2003): 2096-2101. PubMed: 12734254.

[4]Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S22 (2012)

[5]The VITEK® 2 ESBL Test is a confirmatory test for Extended-Spectrum Beta-Lactamases (ESBLs) inhibited by clavulanic acid and utilizes cefepime, cefotaxime and ceftazidime, with and without clavulanic acid, to determine a positive or negative result.

[6]A negative ESBL test does not rule out the presence of an ESBL as there are many types of ESBL that may not be covered with this card. Furthermore, the ESBL phenotype may be masked by an AmpC β-lactamase. For more information, refer to Gniadkowski, M. "Evolution and Epidemiology of Extended-Spectrum β-Lactamases (ESBLs) and ESBL-Producing Microorganisms." Clin. Microbiol. Infect. 7 (2001): 597-608. PubMed: 11737084.

[7]An ampicillin MIC of 16 µl/mL is considered to be an intermediate susceptibility. However, the MIC of the cephems and carbapenems tested are interpreted as sensitive, suggesting that strain UCI 42 has an antibiotic wild-type phenotype, therefore produces penicillinase. The bioMérieux Advanced Expert System™ (AES) interpretation software that was used in conjunction with the VITEK® AST card suggests changing the ampicillin interpretation to resistant based on these results. The phenotype correction to resistant is consistent with information provided by the depositor. For more information, please refer to Sanders, C. C. et al. "Potential Impact of the VITEK 2 System and the Advanced Expert System on the Clinical Laboratory of a University-Based Hospital." J. Clin. Microbiol. 39 (2001): 2379-2385. PubMed: 11427542.

[8]Purity of this lot was assessed for 7 days at 37°C in an aerobic atmosphere with 5% CO_2 on Tryptic Soy agar.

Figure 1: Colony Morphology

Date: 11 OCT 2017 **Signature:**

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