Yersinia pestis, Strain KIM Derivative 22 (D22)

Catalog No. NR-4684

For research use only. Not for human use.

Contributor:
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Product Description:
Bacteria Classification: Enterobacteriaceae, Yersinia
Species: Yersinia pestis
Biotype/Biovar: Medievalis
Strain: KIM derivative 22 (D22)
Source: Derivative 22 of the highly virulent KIM strain, which was originally isolated from a Kurdistan Iran man (KIM)

Comments: Yersinia pestis, strain KIM(D22) is an avirulent derivative of the KIM strain. The complete genome of Y. pestis, strain KIM has been sequenced (GenBank: AE009952).1

Yersinia pestis (Y. pestis) is the etiologic agent of bubonic, septiemic and pneumonic plague. Three biovars have been associated with the three historically recognized pandemics of Y. pestis: Antiqua, Medievalis, and Orientalis. Rodents are the main reservoir and the organism is transmitted to humans through the bite of an infected flea. Humans and other animals can also serve as hosts.2

Y. pestis is an aerobic, non-spore-forming, Gram-negative, rod-shaped bacterium. Virulence-associated genes are located on the chromosome and on three plasmids found in typical Y. pestis strains: 1) pMT1 (pFra; ~ 100 kb), which encodes a murine toxin and capsular protein with anti-phagocytic activities, 2) pCD1 (pYY; ~ 70 kb), which encodes a type III secretion system and is essential for virulence and 3) pPCP1 (pPla; ~ 9.5 kb), which encodes a protease that facilitates the initial dissemination of the bacteria to the lymph nodes.3 Virulence factors on the chromosome are located in an unstable locus, pgm.4

Y. pestis, strain KIM(D22) contains the pMT1 plasmid as well as the unstable chromosomal pgm locus, but lacks the pCD1 and pPCP1 plasmids that are essential for virulence.5 The complete sequence of the chromosome (4,600,755 bp; GenBank: AE009952),1 pMT1 (100,984 bp; GenBank: AF074611), pCD1 (70,504 bp; GenBank: AF074612), and pPCP1 (9,610 bp; GenBank: AF053945) from Y. pestis, strain KIM have been determined.6

The presence of the pMT1 plasmid in NR-4684 has been confirmed by PCR amplification of a plasmid-specific sequence from extracted DNA.

Material Provided:
Each vial contains approximately 0.5 mL of bacterial culture in 0.5X Tryptic Soy Broth supplemented with 10% glycerol.

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

Packaging/Storage:
NR-4684 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen and should be stored at -80°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:
Media:
Tryptic Soy Broth or Brain Heart Infusion Broth
Tryptic Soy Agar or Sheep Blood Agar

Incubation:
Temperature:7 28°C or 37°C
Atmosphere: Aerobic

Propagation:
1. Keep vial frozen until ready for use; thaw slowly.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tubes and plate at 28°C or 37°C for 24 to 48 hours.

Citation:
Acknowledgment for publications should read “The following reagent was obtained through the NIH Biodefense and Emerging Infectious Research Resources Repository, NIAID, NIH: Yersinia pestis, Strain KIM Derivative 22 (D22), NR-4684.”

Biosafety Level: 2

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References:
5. Robert R. Brubaker, personal communication.