

Yersinia pestis LcrV Protein, Recombinant from Escherichia coli

Catalog No. NR-32875

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Contributor and Manufacturer:

BEI Resources

Product Description:

Yersinia pestis (*Y. pestis*), the causative agent of the plague, secretes massive amounts of LcrV (low-calcium-response V or V antigen) during infection. Mutations that abrogate the expression of LcrV render *Y. pestis* avirulent.¹ LcrV is a multifunctional protein that is central to the activity of the type III secretion apparatus of *Y. pestis*. It has no known catalytic function, and its biological activity is dependent on interactions with other proteins.² Injection of LcrV into animals stimulates humoral responses that offer protection against plague infection.¹ The amino acid sequence for LcrV from *Y. pestis* has been reported by 2 groups in the NCBI protein database (AAC62574 and AAC69799).^{3,4} The crystal structure for LcrV from *Y. pestis* has been solved at 2.17 Å resolution (PDB: 1R6F).²

Recombinant LcrV protein (*Y. pestis*, strain KIM5) was expressed in *Escherichia coli* BL21(DE3) cells as described.¹ The N-terminal deca-histidine tagged protein was purified using nickel affinity chromatography. Cleavage with Factor Xa resulted in a protein with one extra histidine at the amino terminus. The protein preparation was treated with Triton X-114 to reduce endotoxin contamination. NR-32875 has the same amino acid sequence as NR-3832 and was expressed and purified using similar methodology.

Material Provided:

Each vial contains approximately 1 mg of recombinant LcrV protein in PBS, pH 7.4. The concentration is shown on the Certificate of Analysis for each lot.

Packaging/Storage:

NR-32875 was packaged in cryovials. The product is provided on dry ice and should be stored at -20°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Yersinia pestis* LcrV Protein, Recombinant from *Escherichia coli*, NR-32875."

Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

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- Derewenda, U., et al. "The Structure of *Yersinia pestis* V-Antigen, an Essential Virulence Factor and Mediator of Immunity Against Plague." *Structure* 12 (2004): 301–306. PubMed: 14962390.
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4. Perry, R. D., et al. "DNA Sequencing and Analysis of the Low-Ca²⁺-Response Plasmid pCD1 of *Yersinia pestis* KIM5." *Infect. Immun.* 66 (1998): 4611–4623. PubMed: 9746557. GenPept: AAC69799.
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Table 1 – Predicted Protein Sequence

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|-----|------------|------------|------------|------------|------------|
| 1 | HMIRAYEQNP | QHFIEDLEKV | RVEQLTGHGS | SVLEELVQLV | KDKNIDISIK |
| 51 | YDPRKDSEVF | ANRVITDDIE | LLKKILAYFL | PEDAILKGGH | YDNQLQNGIK |
| 101 | RVKEFLESSP | NTQWELRAFM | AVMHFSLTAD | RIDDDILKVI | VDSMNHGDA |
| 151 | RSKLREELAE | LTAELKIYSV | IQAEINKHLS | SSGTINIHDK | SINLMDKNLY |
| 201 | GYTDEEIFKA | SAEYKILEKM | PQTTIQVDGS | EKKIVSIKDF | LGSENKRTGA |
| 251 | LGNLKNSYSY | NKDNNELSHF | ATTCSDKSRP | LNDLVSQKTT | QLSDITSRFN |
| 301 | SAIEALNRFI | QKYDSVMQRL | LDDTSGK | | |

Residual histidine– Residue 1
LcrV – Residues 2-327