

Ricin Toxin A Subunit, from *Ricinus communis*

Catalog No. NR-2619

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Contributor and Manufacturer:

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Product Description:

Ricin toxin is a glycoprotein that can be isolated from the seeds of the castor bean plant *Ricinus communis* (*R. communis*).¹ Structurally, ricin toxin consists of two polypeptide subunits, A and B, that are linked by a disulfide bond. The A subunit of ricin toxin catalytically inactivates the eukaryotic 28S ribosomal RNA subunit resulting in the inhibition of protein synthesis and death of the cell.² The ricin toxin B subunit is a galactose-specific lectin that mediates the binding and delivery of the toxin to target cells.^{3,4} The sequence of the *R. communis* gene for the ricin toxin precursor protein has been reported (GenBank: X03179).⁵ The predicted protein sequence of NR-2619 is shown below in Table 1.

NR-2619 was purified from NR-720 ricin holotoxin by ion-exchange chromatography.

Material Provided:

Each vial of NR-2619 contains approximately 0.1 mg of recombinant ricin toxin A subunit suspended in 20 mM phosphate buffer (pH 7.2). The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Packaging/Storage:

NR-2619 was packaged aseptically in plastic cryovials. The product is provided frozen on dry ice and should be stored at -20°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided.

Functional Activity:

NR-2619 reacts specifically with monoclonal antibody to ricin A subunit (BEI Resources NR-843) as determined by Western blot analysis. NR-2619 is not active in an *in vitro* cytotoxicity assay using Vero cells at concentrations lower than approximately 300 nM (10 µg/mL). **NR-2619 was tested for toxicity using an animal lethality assay. All animals treated with NR-2619 survived, indicating that the protein is not toxic.**

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Ricin Toxin A Subunit, from *Ricinus communis*, NR-2619."

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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 4. Olsnes, S., E. Saltvedt, and A. Pihl. "Isolation and Comparison of Galactose-binding Lectins from *Abrus precatorius* and *Ricinus communis*." J. Biol. Chem. 249 (1974): 803-810. PubMed: 4811904.
 5. Halling, K. C., et al. "Genomic Cloning and Characterization of a Ricin Gene from *Ricinus communis*." Nucleic Acids Res. 13 (1985): 8019-8033. PubMed: 2999712. GenBank: X03179.

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Table 1 – Predicted Protein Sequence ¹					
1	IFPKQYPIIN	FTTAGATVQS	YTNFIRAVRG	RLTTGADVRH	EIPVLPNRVG
51	LPINQRFILV	ELSNHAELSV	TLALDVTNAY	VVGYRAGNSA	YFFHPDNQED
101	AEAITHLFTD	VQNRYTFAFG	GNYDRLEQLA	GNLRENIELG	NGPLEEAISA
151	LYYYSTGGTQ	LPTLARSFII	CIQMISEAAR	FQYIEGEMRT	RIRYNRRSAP
201	DPSVITLENS	WGRNSTAIQE	SNQGAFASPI	QLQRRNGSKF	SVYDVSILIP
251	IIALMVYRCA	PPPSSQFSLI	I		

¹The predicted protein sequence is based on GenBank X03179. The A subunit is encoded by nucleotides 396 to 1208 of this sequence.