

Mung Bean Nuclease

Cat. Nos. M8202K and M8205K

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1. Introduction

Mung Bean Nuclease (EC 3.1.30.x) is a single-strand-specific nuclease purified from sprouts of mung bean, *Vigna radiata*. The enzyme degrades single-stranded DNA or RNA to nucleoside-5'-monophosphates, but does not digest double-stranded DNA, double-stranded RNA, or DNA/RNA hybrids.¹⁻³ Mung Bean Nuclease is preferable to S1 nuclease for most applications because it has lower intrinsic activity on duplex DNA.⁴ The extremely low exonuclease activity of Mung Bean Nuclease is demonstrated in high-resolution transcript mapping experiments with end-labeled single-stranded DNA probes.^{3,5}

2. Applications

- High resolution mapping of termini and exon structure of RNA transcripts ("Berk-Sharp" or "S1-mapping" experiments).^{3,5-8}
- Restriction site modification or removal by digestion of protruding single-stranded ends.³
- Unidirectional deletion of DNA sequences (in combination with Exonuclease III) to facilitate subcloning in kilobase-sequencing strategies (i.e., an alternative to "Bal 31" deletions).⁹
- Removal of hairpin structures during cDNA synthesis.¹⁰

3. Product Specifications

Storage: Store only at -20°C in a freezer without a defrost cycle.

Storage Buffer: Mung Bean Nuclease is supplied in a 50% glycerol solution containing 10 mM Tris-HCl (pH 7.5), 50 mM NaCl, 0.1 mM zinc acetate, and 0.01% Triton[®] X-100.

Unit Definition: One unit converts 1 μg of heat-denatured calf thymus DNA into an acid-soluble form in 1 minute at 37°C .¹¹

Activity Assay: The activity assay is performed in a reaction containing 30 mM sodium acetate (pH 4.6), 50 mM NaCl, 1 mM zinc acetate, 500 $\mu\text{g}/\text{ml}$ heat-denatured DNA, and 0.01% Triton X-100.

10X Mung Bean Reaction Buffer: 300 mM sodium acetate (pH 4.6), 500 mM NaCl, 10 mM zinc acetate, and 0.1% Triton X-100.

Contaminating Activity Assays: Mung Bean Nuclease is free of detectable acid phosphatase and alkaline phosphatase activities. Double-stranded exo- and endonuclease activity is less than 0.05% of the enzyme's activity on single-stranded DNA.

4. Related Products

The following products are also available:

- Exonuclease I
- Exonuclease III
- Plasmid-Safe™ ATP-Dependent DNase
- RNase-Free DNase I
- T4 Polynucleotide Kinase
- EZ-Tn5™ Transposon Insertion Kits

5. References

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