Micrococcal Nuclease

Cat.No. LN101

Storage: at -20°C for two years

Concentration: 2,000,000 gel units/ml

Description

Micrococcal Nuclease is obtained by expression of a recombinant micrococcal nuclease gene in *Escherichia coli*, Molecular weight is 16.8 kDa. It is a non-specific exo or endonuclease that consumes double-stranded, single-stranded, circularized, and linear nucleic acids, and has a better digestion of single strands, and it tend to digest ATs or the AUs region of the DNA or RNA, producing a single nucleotide and a dinucleotide with 3' phosphoric acid.

Highlights

- High activity
- High protein purity, SDS-PAGE purity >95%
- Good stability

Scope of application

ChIP, Nucleic acid degradation in protein preparation, Chromatin structure analysis, In vitro translation, Fast RNA sequencing, etc.

Contents

Component	LN101-01	LN101-02
Micrococcal Nuclease	100,000 gel units	2×100,000 gel units
10×Micrococcal Nuclease Buffer	1.2 ml	2×1.2 ml
10×Stop Solution	1.2 ml	2×1.2 ml

Activity definition

1 gel units refers to the amount of enzyme required to digest 1 μg of λDNA in a 50 μl reaction system at 37°C for 15 minutes to cause a low molecular weight DNA fragment (100-400 bp) to disappear on a 1.2% agarose gel.

1 Kunitz Unit refers to the amount of enzyme required to release 1.0 A_{260} units of acid-soluble oligonucleotides in 30 minutes at 37°C in a 500 μl reaction system using 500 μg of ultrasonically disrupted salmon sperm genomic DNA as a substrate.

Note: 10,000 Gel Unit is about equivalent 1,000 Kunitz Unit.

Enzyme Storage Buffer

10 mM Tris-HCl pH 7.5, 50 mM NaCl, 1 mM EDTA, 50% Glycerol

10×Micrococcal Nuclease Buffer

500 mM Tris-HCl pH 7.9, 50 mM $CaCl_2$,1 mg/ml BSA

Reaction system

Recommended digestion system

1. ChIP assay for digestive cell chromatin

Component	Volume
Cell	2×10^7
10×Micrococcal Nuclease Buffer	50 μl
Micrococcal Nuclease	2-5 μl
Nuclease-free Water	Variable
Total Volume	500 μl

It is necessary to optimize the gradient according to the type and quantity of cells. It is generally recommended to digest 4×10^7 cells with 5 μl Micrococcal Nuclease, incubate for 10-15 minutes at 37°C, mix upside down for about 5 times every 2-3 minutes, add 10×Stop Solution to its final concentration of 1×. Incubate for 2 minutes at room temperature (22°C- 25°C) to inactivate the enzyme.

2. Ordinary DNA digestion

Component	Volume	Volume
DNA	< 1 μg	1-2 μg
10×Micrococcal Nuclease Buffer	2 μl	5 μl
Micrococcal Nuclease	0.5 μl	1 μl
Nuclease-free Water	Variable	Variable
Total Volume	20 μl	50 μl

Select the appropriate amount of enzyme according to the mass of the DNA sample, incubate for 5-10 minutes at 37°C, add 10×Stop Solution to its final concentration of 1×, incubate for 2 minutes at room temperature (22°C-25°C) to inactivate the enzyme.

Precautions

- Micrococcal Nuclease has an activity range of pH 7.0-10.0 and a salt ion concentration of less than 100 mM.
- The activity of Micrococcal Nuclease is dependent on the presence of Ca^{2+}, and the addition of EGTA or EDTA can inactivate the enzyme.
- This product can be used as an alternative to sonication for chromatin immunoprecipitation, cutting DNA between chromatin nucleosomes.

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