Product Manual

Product Name	UltraNuclease (GMP grade)
Source	Recombinant expression in Escherichia coli
Catalog Number	CSB-DEM077
Physical Form	Liquid
Enzyme activity	250-300U/μL
Storage Conditions	-20±5°C
Storage Buffer	20 mM Tris-HCl pH 8.0，2 mM MgCl2，20 mM NaCl，50% Glycerol
Activity definition	The amount of enzyme required to cause a change of 1.0 in △A260 absorbance value within 30 minutes in a 2.625 mL reaction system at 37℃, pH 8.0, equivalent to complete digestion of 37 μg salmon sperm
Shelf Life	24 months

Product Description

UltraNuclease, also known as non-specific endonuclease or broad-spectrum nucleases, is a type of non-specific endonuclease derived from Serratia marcescens. It can cleave between any nucleotides in the DNA or RNA chain, completely digesting the nucleic acid into 2-5 base length 5'-monophosphate oligonucleotides. It can degrade various forms of DNA and RNA (double-stranded, single-stranded, linear, circular, natural or denatured) under a wide range of conditions. It is widely used for removing nucleic acids from biological products.

This product is genetically engineered and expressed in Escherichia coli (E. coli), with a purity of ≥ 99%. It can be used to reduce the viscosity of cell supernatant and cell lysate in scientific research, improve protein purification efficiency and functional studies, and effectively prevent the clustering of peripheral blood mononuclear cells (PBMC) in cell therapy and vaccine research.

Product Components

Label	Component	Specifications		
1	UltraNuclease (GMP grade)	25KU	125KU	250KU

Operating instructions

Condition Parameters	Optimal Conditions
Mg2+	1-5 mM
pH	8-9

Temperature	37℃
DTT	0-100 mM
2-Hydroxy-1-ethanethiol	0-100 mM
Monovalent Cations	0-20 mM
Phosphate Anions	0-10 mM

Recommended usage and processing time under optimal conditions (37℃, 2 mM Mg2+, pH 8.0)

Final Concentration	Processing Time
0.25 U/mL	> 10 h
2.5 U/mL	> 4 h
25 U/mL	30 min

1. Sample Preparation

- Adherent cells: Remove the culture medium, wash the cells with PBS, and remove the supernatant.
- Suspension cells: Collect the cells by centrifugation, wash the cells with PBS, centrifuge at 6,000 rpm for 10 minutes, and collect the pellet.
- Escherichia coli: Collect the bacterial cells by centrifugation, wash once with PBS, centrifuge at 8,000 rpm for 5 minutes, and collect the pellet.

2. Sample Processing

- Lyse the collected cell pellet in a ratio of 1: (10-20) (mass: volume) using mechanical or chemical methods, either on ice or at room temperature (approximately 1 g of cells corresponds to 10^9 cells).

3. Enzyme Addition

- Add an appropriate amount of MgCl2 to adjust the Mg2+ concentration in the reaction system to 1-5 mM and adjust the pH to 8-9.
- Add UltraNuclease in a ratio of 250 units per 1 g of cell pellet, incubate at 37℃ for at least 30 minutes. Alternatively, the enzyme amount can be adjusted within the recommended usage range in the table, increasing the enzyme amount within a certain range will correspondingly reduce the digestion time.

4. Supernatant Collection

- Centrifuge at 12,000 rpm for 30 minutes to obtain the supernatant of the cell lysate for subsequent experiments.

Precautions

The enzymatic activity of UltraNuclease is influenced by factors such as ion concentration, reaction temperature, and pH. It is recommended to determine the optimal concentration through initial experimentation. If the solution

is a high-salt solution, acidic or alkaline, contains high concentrations of detergents or denaturants, the enzyme amount should be appropriately increased or the incubation time extended.