HB220514

UltraNuclease GMP-grade (250 U/μL)

Product Information

Product Name	Catalog No.	Size
UltraNuclease GMP-grade (250 U/μL)	20157ES25	25 KU
	20157ES60	100 KU
	20157ES80	1MU
	20157ES90	5MU

Product Introduction

UltraNuclease, also known as non-restrictive endonuclease and broad-spectrum nuclease, is a nonspecific endonuclease recombinant from Serratia Marcescen and expressed in Escherichia coli (E. coli). It can cleave between any nucleotides in the chain, completely digest nucleic acids into 5'-monophosphate oligonucleotides of 2-5 bases in length, and can degrade various forms of DNA and RNA (double-stranded, single-stranded, linear, circular, native or denatured) DNA and RNA under a broad range of conditions (6 M Urea,0.1 M Guanidine HCl, 0.4% Triton X-100, 0.1% SDS, 1 mM EDTA, 1 mM PMSF), which is widely used to remove nucleic acids from biological products.

The product is expressed and purified in Escherichia coli (E. coli) by genetic engineered, and prepared under the GMP environments. It can reduce viscosity of cell supernatant and cell lysate in scientific research, to increase protein purification efficiency and enhance protein functional research. The product can also reduce host nucleic acid residues to pg-grade, improving the performance and safety of biology products of applications including virus purification, vaccine manufacturing, and protein/polysaccharide pharmaceutical manufacturing. Besides, the product can also be applied to prevent clumping of human peripheral blood mononuclear cells (PBMC) in cell therapy and vaccine development.

The product is provided in the form of a sterilized reagent, eluted in buffer（20 mM Tris-HCl pH 8.0, 2 mM MgCl2, 20 mM NaCl, 50% glycerin）, with the appearance of colorless, transparent liquid.

This product is produced in accordance with GMP process requirements and provided in a liquid form.

Product Properties

Expression Host	Recombinant *E. coli* with UltraNuclease gene
Molecular Weight	26.5 kDa
Isoelectric point	6.85
Purity	≥ 99%（SDS-PAGE）
Storage Buffer	20 mM Tris-HCl pH8.0, 2 mM $MgCl_2$, 20 mM NaCl, 50% glycerin
Unit Definition	The definition of one Activity unit (U) is the amount of enzyme used to change the absorption value of $\triangle A_{260}$ by 1.0 in 30 minutes in a 2.625 mL reaction system at 37℃ with a pH of 8.0 (equivalent to complete digestion of 37 μg salmon sperm DNA into oligonucleotides).

Contents

Contents No.	Name	Catalog No./Specification			
		20157ES25 (25 KU)	20157ES60 (100 KU)	20157ES80 (1 MU)	20157ES90 (5 MU)
20157	UltraNuclease GMP-grade (250 U/μL)	100 μL	400 μL	4 mL	20 mL

Shipping and Storage

The product is shipped with dry ice and can be stored at -15℃ ~ -25℃ for one year. If the product is opened and has been stored at 4℃ for more than a week, we recommend filtering the product to prevent microbial contamination.

Notes

Please wear the necessary PPE, such lab coat and gloves, to ensure your health and safety.

Recommended conditions

Parameter	Optimal Condition	Effective Condition
Mg^{2+} Concentration	1-5 mM	1-10 mM
pH	8-9	6-10
Temperature	37℃	0-42℃
DTT Concentration	0-100 mM	>0 mM
Mercaptoethanol Concentration	0-100 mM	>0 mM
Monovalent Cation Concentration	0-20 mM	0-150 mM
Phosphate Ion Concentration	0-10 mM	0-100 mM

Recommended Reaction Time (37℃, 2 mM Mg2+, pH 8.0)

UltraNuclease Amount (Final Concentration)	Reaction Time
0.25 U/mL	> 10 h
2.5 U/mL	> 4 h
25 U/mL	30 min

Protocol

1. Sample Collection

Adherent cells: remove the 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 min, collect the pellet.

Escherichia coli: collect the bacteria by centrifugation, wash once with PBS, centrifuge at 8,000 rpm for 5 min, and collect the pellet.

2. Sample Treatment

Treat the collected cell pellets with lysis buffer at the ratio of mass (g) to volume (mL) 1: (10-20), or by mechanical or chemical methods on ice or at room temperature (1 g of cell pellet contains about 109 cells).

3. Enzyme Treatment

Add 1-5 mM $MgCl_2$ to the reaction system, and adjust the pH to 8-9.

Add UltraNuclease according to the ratio of 250 Units to digest 1 g of cell pellets, incubate at 37°C for more than 30 minutes. Please

refer to the “Recommended Reaction Time” form above to choose the duration of the treatment.

4. Supernatant Collection

Centrifuge at 12,000 rpm for 30 minutes and collect the supernatant.

Note: If the solution is acidic or alkaline, or contains high concentrations of salt, detergents, or denaturants, please increase the enzyme dosage or extend the treatment time accordingly.