AcuGenix™ DNase I

Cat.:E204

V01

Product Description

AcuGenix™ DNase I (Deoxyribonuclease I, abbreviated as DNase I) is a deoxyribonuclease I produced through recombinant expression in a Pichia pastoris strain. This enzyme efficiently digests single-stranded or double-stranded DNA fragments. The activity of DNase I is highly dependent on Ca^{2+} levels and can be activated by Mg^{2+} or Mn^{2+}. In the presence of Mg^{2+}, DNase I cleaves DNA fragments at random sites; in the presence of Mn^{2+} , DNase I cleaves double-stranded DNA at approximately the same sites, forming DNA fragments with blunt ends or sticky ends protruding by 1–2 nucleotides. DNase I exhibits optimal endonuclease activity at a working pH range of 7–8 and can be used to remove single-stranded or double-stranded DNA fragments from various RNA samples.

Size

2 U/μL

Components

1. 2 U/μL DNase I
2. 10×DNase I Reaction Buffer (optional)

Unit Definition

At 37°C, the amount of enzyme required to completely degrade 1 μg of plasmid DNA in 10 minutes is defined as one unit of activity (U).

Storage buffer

10 mM Tris, 2 mM $CaCl_2$, 50% glycerol, pH 7.6.

Storage

Store at -20±5°C. Vortex before use. Avoid freeze-thaw cycles.

Quality control

1. Solution is clear and transparent, with no visible foreign matter.
2. Protein purity ≥95%.
3. No RNase activity.

Recommended amount (for removing DNA from RNA samples; for reference only)

Use RNase-free centrifuge tubes or PCR tubes, and prepare the reaction mixture using the following volumes:

Components	Volume per Reaction
10×DNase Ⅰ Reaction Buffer	1μL
2 U/μL DNase Ⅰ	1μL
RNA	——
RNase-free ddH_2O	Up to 10μL

*After mixing, incubate at 37°C for about 30 minutes.

Application

1. Used in RNA extraction experiments to prepare DNA-free RNA samples.
2. Used in in vitro transcription to linearize plasmid templates.
3. Used to degrade residual genomic DNA prior to RT-PCR experiments.
4. Used in footprinting assays to analyze interactions between DNA and proteins.
5. Used to prepare DNA libraries containing random fragments.
6. Used in conjunction with DNA Polymerase I for DNA labeling via the gap-shift method.
7. Used to partially cleave genomic DNA as a positive control in TUNEL assays for apoptosis detection.

Notes

1. When using, gently mix the reaction mixture by pipetting up and down; avoid vigorous shaking.
2. Adding EDTA to a final concentration of 5 mM and incubating at 65°C for 10 minutes will inactivate DNase I.
3. Keep the enzyme on ice throughout use. It is recommended to aliquot and store the enzyme to avoid repeated freeze-thaw cycles.
4. The optimal amount of DNase I may be adjusted according to specific experimental requirements.
5. This product is intended for research use only.

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