# RNase Inhibitor

**Cat.No.:HYJ220**

## Product Description

RNase inhibitors are recombinant mouse RNase inhibitors expressed and purified in Escherichia coli. They bind to RNase A, B, or C in a 1:1 ratio through non-covalent bonding, inhibiting the activity of these three enzymes and protecting RNA from degradation. However, they are ineffective against RNase 1, RNase T1, S1 nuclease, RNase H, and Aspergillus ribonucleases.RNase inhibitors have been tested in RT-PCR, RT-qPCR, and IVT-mRNA assays and are compatible with various commercial reverse transcriptases and various DNA and RNA polymerases.Compared to human RNase inhibitors, mouse RNase inhibitors lack two cysteines, which are highly sensitive to oxidation, resulting in higher resistance to oxidation and stability at low concentrations of DTT (less than 1 mM). This feature makes them suitable for reactions where high concentrations of DTT cannot be added, such as real-time RT-PCR.

## Components

| Components | 10KU | 40KU | 400KU | 4000KU |
|---|---|---|---|---|
| RNase Inhibitor (40U/μL) | 0.25 mL | 1 mL | 10 mL | 100 mL |

## Storage

Store at -25 to -15°C. Valid for 2 years (avoid repeated freezing and thawing).

## Storage buffer

50 mM KCl, 20 mM HEPES-KOH (pH 7.6@ 25°C), 8 mM DTT and 50% glycerol.

## Activity Definition

One activity unit (U) is defined as the amount of enzyme required to inhibit 50% of the activity of 5 ng of RNase A.

## Quality Control

1. **Exonuclease activity:** When 40 U of this product was reacted with 1 μg of λ-Hind III digested DNA at 37°C for 16 hours, the electrophoretic band of the DNA remained unchanged.

2. **Endonuclease activity:** When 40 U of this product was reacted with 1 μg of λDNA at 37°C for 16 hours, the electrophoretic band of the DNA remained unchanged.
3. **Nickase activity:** When 40 U of this product was reacted with 1 μg of pBR322 at 37°C for 16 hours, the electrophoretic band of the DNA remained unchanged.
4. **RNase activity:** When 40 U of this product was reacted with 1.6 μg of MS2 RNA at 37°C for 4 hours, the electrophoretic band remained unchanged.
5. **Residual E. coli DNA:** Residual nucleic acid in 40 U of this product was detected by TaqMan qPCR specific for E. coli 16s rDNA, and the E. coli genomic residue was ≤ 0.1 pg/40 U.
6. **Endotoxin:** LAL-Test, Chinese Pharmacopoeia 2020 Edition, Part IV, Gel Limit Test, General Rules(1143), bacterial endotoxin content ≤ 10 EU/mg.

## Applications

This product can be widely used in any experiment where RNase interference may occur to prevent RNA degradation, such as:

1. First-strand cDNA synthesis, RT-PCR, RT-qPCR, etc.;
2. Protecting RNA from degradation during in vitro transcription/translation (such as in vitro viral replication systems);
3. Inhibiting RNase activity during RNA isolation and purification.

## Notes

1. Vigorous shaking or stirring will inactivate the enzyme;
2. The inhibitor is active between 25°C and 55°C and inactivated at temperatures ≥65°C;
3. It does not inhibit RNase H, RNase 1, or RNase T1;
4. RNase inhibition occurs over a broad pH range (active from pH 5-9), with maximum activity at pH 7-8.