

## RNase Inhibitor, Human Placenta



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M0307S 032150517051

# M0307S



2,000 units 40,000 U/ml Lot: 0321505

RECOMBINANT Store at -20°C Exp: 5/17

**Description:** RNase Inhibitor, Human Placenta is a recombinant human placental protein which specifically inhibits ribonucleases (RNases) A, B and C (1). It is **not** effective against RNase 1, RNase T1, S1 Nuclease, RNase H or RNase from *Aspergillus*. In addition, no inhibition of polymerase activity is observed when RNase Inhibitor, Human Placenta is used with *Taq* DNA Polymerase, AMV or M-MuLV Reverse Transcriptases, or Phage RNA Polymerases (SP6, T7, or T3).

The 50 kDa protein inhibits RNases by binding noncovalently in a 1:1 ratio with an association constant greater than  $10^{14}$  (2).

**Source:** An *E. coli* strain that carries the Ribonuclease Inhibitor gene from human placenta.

Supplied in: 50 mM KCl, 20 mM HEPES-KOH (pH 7.6), 8 mM DTT and 50% glycerol.

### Applications:

- RT-PCR
- cDNA synthesis
- *In vitro* transcription/translation
- Enzymatic RNA labeling reaction
- Other applications where the integrity of RNA is important

**Unit Definition:** One unit is defined as the amount of RNase Inhibitor, Human Placenta required to inhibit the activity of 5 ng of RNase A by 50%. Activity is measured by the inhibition of hydrolysis of cytidine 2', 3'-cyclic monophosphate by RNase A.

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### Quality Control Assays

**Endonuclease Activity:** Incubation of a 10  $\mu$ l reaction containing 40 units of RNase Inhibitor, Human Placenta with 300 ng supercoiled plasmid for 4 hours at 37°C produced < 10% nicked molecules as determined by gel electrophoresis.

**RNase Assay:** Incubation of a 10  $\mu$ l reaction containing 40 units of RNase Inhibitor, Human Placenta with 40 ng of RNA transcript for 4 hours at 37°C resulted in no detectable degradation of RNA as determined by gel electrophoresis.

**Latent RNase Assay:** Heating the RNase Inhibitor, Human Placenta for 20 minutes at 65°C, followed by incubation of a 10  $\mu$ l reaction containing 40 units of RNase Inhibitor with 40 ng of RNA transcript for 4 hours at 37°C resulted in no detectable degradation of RNA as determined by gel electrophoresis.

**Exonuclease Assay:** Incubation of a 50  $\mu$ l reaction containing 200 units of RNase Inhibitor, Human Placenta with 1  $\mu$ g of a mixture of single and double stranded [ $^3$ H] *E. coli* DNA ( $10^6$  cpm/ $\mu$ g) for 4 hours at 37°C released < 0.5% of the total radioactivity.

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**Notes On Use:** Since ribonucleases typically retain activity under denaturing conditions, care must be taken to avoid denaturing RNase Inhibitor molecules which have complexed with a ribonuclease. To prevent the release of active ribonuclease, temperatures greater than 50°C and high concentrations of urea or other denaturing agents should be avoided.

The recommended concentration of RNase Inhibitor in a reaction is 1 unit/ $\mu$ l. During assembly of a reaction, RNase Inhibitor should be added before other components that are possible sources of RNase contamination (i.e. enzymes, plasmid from a mini prep.)

### References:

1. Blackburn, P. and Moore, S. (1982) *Pancreatic Ribonucleases*, In: *The Enzymes*, Vol XV, Part B Academic Press, N.Y.
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CERTIFICATE OF ANALYSIS

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