Ribonuclease Inhibitor
from human placenta

Product Number  R 4380
Storage Temperature  2-8 °C

Product Description
Molecular Weight: 50 kDa

This product is a solution in 50% glycerol, 45 mM potassium phosphate, pH 6.4, 1 mM sodium EDTA, and 5 mM dithiothreitol.

The turnover of messenger RNA in mammalian tissue is thought to be regulated by the equilibrium that exists between ribonuclease inhibitor and neutral ribonuclease in tissue. More than 95% of neutral ribonuclease activity is in a latent form complexed with ribonuclease inhibitor. Ribonuclease inhibitor from human placenta is a protein which is a noncompetitive inhibitor of neutral ribonuclease (RNase). The inhibition of ribonuclease A occurs by the formation of a tight, noncovalent 1:1 complex having a dissociation constant, $K_i$, of $3 \times 10^{-10}$ M. While Ribonuclease inhibitor inhibits Rnase A, Rnase B, and Rnase C, it does not inhibit Rnase H, S1 Nuclease, SP6, T7, or T3 RNA polymerase, AMV or M-MLV-reverse transcriptase, RNase 1, RNase T1, or Taq polymerase.

Ribonuclease inhibitor is a sulfhydryl protein containing 8 free sulfhydryl groups and 11 disulfide bridges per molecule. Because of the cysteine amino acid residues present, DTT must be present in order to maintain the activity of the protein. The critical concentration for loss of inhibition activity for ribonuclease inhibitor is approximately 1 mM dithiothreitol (DTT). Ribonuclease inhibitor can be inactivated with 1 mM p-hydroxymercuribenzoate or N-ethylmaleimide which causes the dissociation of the inhibitor from Rnase A.

The pH activity range is pH 5-9, with the highest activity observed at pH 7-8. Denaturing conditions (urea, temperatures >50 °C) should be avoided, as they may cause release of active ribonuclease from the complex.

Ribonuclease inhibitor can be utilized for the in vitro inhibition of ribonucleases in procedures such as cDNA synthesis from mRNA, ribonuclease protection assay, in vitro transcription/translation reactions, and RT-PCR.

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

References

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