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RiboShield® RNase Inhibitor

Product description

RiboShield® RNase Inhibitor is a recombinant protein that blocks the activity of a wide range of ribonucleases to reliably protect your RNA from RNase digestion. The inhibitor is designed for use in RNA-sensitive applications such as RT-qPCR, cDNA synthesis and RNA-seq, where the presence of even small amounts of RNase can be highly detrimental to RNA quality and experimental outcome.

RiboShield® RNase Inhibitor has a molecular weight of 50 kDa and is purified from High Five insect cells expressing a modified human placental gene. The inhibitor binds noncovalently to RNases at a 1:1 ratio, and has a Ki value of approximately 10–14 M when binding to RNase A1. Moreover, the very rapid kinetics of association to RNases guarantees immediate protection of your RNA.

Some cysteine residues present in human placental protein have been implicated in the oxidation sensitivity of the protein[2]. RiboShield® RNase inhibitor does not contain these residues, resulting in a molecule more resistant to oxidative stress.

Quality control

PCR Biosystems operates under an ISO 13485 certified Quality Management System. Our products are extensively tested and undergo a comprehensive, multi-step quality control process according to ISO 13485 standards, to ensure optimum performance, consistency and traceability.

Pack size	RiboShield® RNase inhibitor (40 U/µL)
2500 units	1 x 62.5 µL
10000 units	4 x 62.5 µL

Shipping and storage

On arrival the kit should be stored between -30 °C and -20 °C. If stored correctly, the kit will retain full activity until the indicated expiry date. Avoid exposure of the stock solution to frequent temperature changes and limit handling at room temperature to the necessary minimum.

Technical support

Scan or click the QR codes for helpful cDNA synthesis tips and answers to frequently asked technical questions. For further technical support, please email technical@pcrbio.com with the following information:

- Amplicon size
- Reaction setup
- Cycling conditions
- Screen grabs of amplification traces and melting profile

TIPS & TRICKS

FAQS

Important considerations

The high thermostability of RiboShield® ensures activity up to 65 °C for 30 minutes. The inhibitor can block the activity of a wide range of ribonucleases, including eukaryotic RNases of the neutral type (e.g. RNases A, B and C). It does not inhibit RNases T1, T2, U1, U2, CL3, RNase I and H. The inhibitor is free from ribonucleases and phophatases, and is inactivated by heating at 75 °C for 15 minutes.

Instructions for use

We recommend adding 40 units of RiboShield® RNase inhibitor to a 20 µL reaction (1 µL per reaction to work with a final concentration of 2 U/µL). Titration may be required in case of templates derived from RNase-rich sources.

For RT-qPCR reactions, our kits already contain enough RiboShield® RNase inhibitor to protect the RNA template in most of the cases. However, for templates derived from RNase-rich sources we recommend supplementing the reaction with additional 0.4 U/µL RNase inhibitor (i.e. adding extra 0.2 µL RiboShield RNase inhibitor to a 20 µL reaction).

RiboShield® RNase inhibitor can be used to prevent RNA degradation after extraction (to prolong RNA viability during storage). In this case, we recommend using RiboShield® RNase inhibitor as a 100x solution (i.e., the concentration of RNase inhibitor in the storage buffer should be 0.4 U/µL). Once again, higher amounts may be required in case of templates derived from RNase-rich sources.

RiboShield® RNase inhibitor can also be used to block RNA degradation during RNA extraction in all those methods which do not include a protein denaturation step, given the proteic nature of the inhibitor itself. Also in these cases, the final concentration should be ≥0.4 U/µL.

References

[1] Lee FS, Shapiro R, Vallee BL. *Tight-binding inhibition of angiogenin and ribonuclease A by placental ribonucleasenhibitor.* Biochemistry. 1989; 28:225–230.

[2] Kim BM, Schultz LW, Raines RT. *Variants of ribonuclease inhibitor that resist oxidation.* Protein Science. 1999; 8(2):430-434.