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RNase inhibitor, Human Placenta

Product Number: RI039

Shipping and Storage

Stored at -20ºC, valid for two years.

Components

Component	RI039
RNase inhibitor, Human Placenta	2KU,10KU,50KU,500KU

Description

RNase Inhibitor, Human Placenta,I.e. Ribonuclease Prohibitor, Human Placenta is a recombinant expression of human placental RNase inhibitor in Escherichia coli, which can bind to RNase A, RNase B, RNase C, and human placental RNase in a non competitive 1:1 ratio and inhibit their activity, thereby protecting RNA from degradation by these enzymes.

RNase inhibitor and Human Placenta have extremely strong inhibitory abilities against RNase A, RNase B, RNase C, and human placental ribonuclease, with Ki values as low as about 4×10^{-14}M. The affinity constant between antibodies and antigens is usually only 10^{-6}-10^{-9}M. And the binding between RNase inhibitor and these RNases is very rapid, almost forming complexes with these RNases at the moment of addition to inhibit their enzymatic activity.

RNase inhibitor and Human Placenta cannot inhibit RNase I T1、T2、H、U1、U2、CL3、RNase from Aspergillus、S1 Nuclease、Taq DNA polymerase,M-MLV reverse transcriptase Enzyme activity of SP6, T7, T3 RNA polymerase.

RNase Inhibitor,Human Placenta maintains its RNAse inhibitory activity within the pH range of 5-8, with the highest inhibitory activity observed at pH 7-8. RNase inhibitor requires at least 1mM DTT in the solution to maintain its activity.

This product has His tag on the N-terminus, and if necessary, RNase inhibitor in the solution will be added after the reaction is complete, Human Placenta can be detected by corresponding His antibodies or removed by magnetic beads or nickel columns adsorption.

This product belongs to the same category as Thermo's RiboLock RNase Inhibitor and Promega's RNasin Ribonuclease Inhibitor, both of which are recombinant human placental ribonuclease inhibitors with similar inhibitory effects on RNase (refer to Figure 1 and Figure 2).

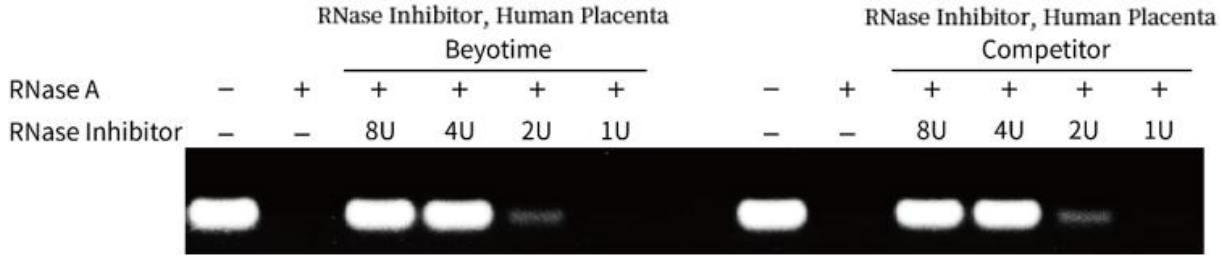

Figure 1. RNase inhibitor, Comparison of the inhibitory effects of Human Placenta and competitor RNase inhibitor on RNase A enzyme activity. Incubate 5μg of yeast RNA with 0 or 2ng RNase A and 8, 4, 2, 1, or 0U RNase inhibitor in a 100μl reaction system (50mM MOPS, 5mM $MgCl_2$, pH 6.5) at 37ºC for 15 minutes. After reaction, take 20μl of reaction solution and use 1% agarose gel for electrophoretic analysis. As shown in the figure, this product has a similar inhibitory effect on RNAse activity compared to Competitor's product. The experimental results obtained under different experimental conditions may vary slightly during actual operation, and the effects shown in the figure are for reference only.

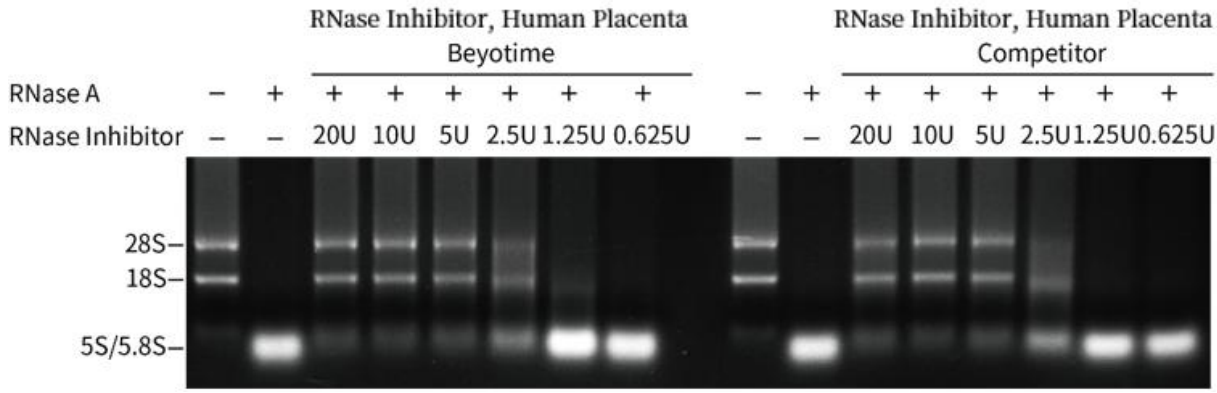

Figure 2. Comparison of the inhibitory effects of RNase inhibitor, Human Placenta, and competitor RNase inhibitor on RNase A enzyme activity. Incubate 2μg of Hela cell total RNA with 0 or 0.5ng RNase A and 20, 10, 5, 2.5, 1.25, 0.625 or 0U RNase inhibitor in a 20μl reaction system (50mM MOPS, 5mM $MgCl_2$, pH 6.5) at 37ºC for 15 minutes. Immediately after reaction, all samples were electrophoretically analyzed with 1% agarose gel. As shown in the figure, this product has a similar inhibitory effect on RNAse activity compared to Competitor's product. The experimental results obtained under different experimental conditions may vary slightly during actual operation, and the results shown in the figure are for reference only.

Source

Expressed by Escherichia coli, the source of the expressed gene is the gene encoding the enzyme in human placenta.

Application

Used for protecting RNA from degradation during processes such as cDNA synthesis, in vitro transcription, in vitro translation, and separation and purification of mRNA protein complexes; It can also be used for the identification of specific RNase activity, etc.

Unit definition

The amount of enzyme that can inhibit 50% of the activity of 5ng RNase A is defined as one activity unit.

Activity detection conditions:

100mM Tris-HCl (pH7.5), 1.2mM EDTA, 0.1mg/ml BSA, 100ng/ml RNase A, 0.1mg/ml E.coli [3H]-RNA, 50mg/ml yeast RNA, 8mM DTT。

Purity

Does not contain DNA endonucleases and exonucleases, and does not contain RNAses.

Storage buffer

20mM HEPES-KOH (pH7.5), 50 mM KCl, 5 mM DTT, 50% (v/v) glycerol。

Inactivation or inhibition

Heating at 75ºC for 10 minutes can result in complete deactivation. Heating at 70ºC for 10 minutes will still result in trace amounts of residual activity. Reagents such as SDS and urea that cause protein denaturation, as well as oxidants such as p-chloromercuribenzoate and potassium dichromate, can inhibit the binding of RNase inhibitor to RNAse.

Note

1. It is advisable to store it in an ice box or on an ice bath during use, and immediately store it at -20ºC after use.
2. Adding DTT to the enzyme storage solution can ensure the stability of RNase inhibitor during long-term storage.
3. This product is only for scientific research by professionals and should not be used for clinical diagnosis or treatment, food or

medicine, or stored in ordinary residential areas.

4. For your safety and health, please wear lab coats and disposable gloves when operating.

Protocol

For common reaction systems such as cDNA synthesis, in vitro transcription, and in vitro translation, the recommended dosage of RNase inhibitor is 1-2U/μl to protect the RNA from degradation by RNase.