LEADGENE
LEADGENE BIOMEDICAL, INC.

Product Information & Manual

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RNase R

Cat no. LDG0027RG

Product Overview

Package Component

Specification	Item	Quantity
500 U	RNase R (20 U/μL)	1 vial (25 μL)
	10X Reaction buffer	1 vial (500 μL)

Description

Ribonuclease R (RNase R), derived from E. coli, is a magnesium-dependent exoribonuclease operating in a 3'→5' direction. Its primary function is to degrade linear RNAs while sparing lariat or circular RNA structures. Most cellular RNAs undergo complete digestion by RNase R, with exceptions such as tRNAs, 5S RNA, and intron lariats.

RNase R effectively breaks down linear and Y-structured RNAs but does not affect lariats or circular RNAs. This property makes it useful for selectively enriching circular RNAs, which can be employed in protein production or intronic cDNA library construction.

Source

Escherichia coli

Unit Definition

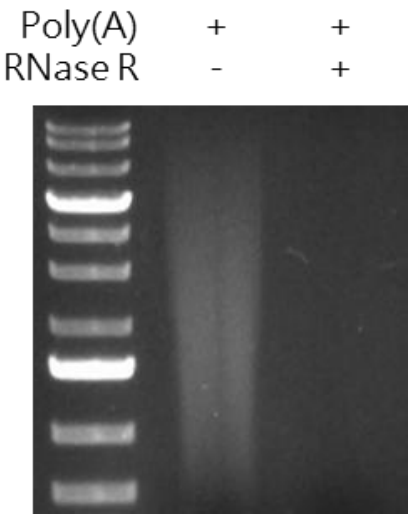
One unit of RNase R converts 1 μg of poly(A) into acid-soluble nucleotides in 10 minutes at 37 °C under standard assay conditions.

Storage Buffer

The enzyme is supplied in a 50% glycerol solution containing 10 mM Tris, 300 mM NaCl, 1 mM DTT, 0.1% Triton X-100, 0.1 mM EDTA, pH 7.6.

Procedure

1. Add 1-20 μg of RNA, 2 μL of 10X Reaction Buffer, 1 μL of RNase R (20 units), and an appropriate volume of RNase-free water to a final 20 μL total reaction volume.
2. Incubate the reaction mixture at 37°C for 10 min.
3. Stop the reaction by adding EDTA to a final concentration of 25 mM.
4. Analyze the extent of sample digestion using electrophoresis.



Gel electrophoresis of poly(A) digested with RNase R. The standard assay was performed by incubating 1 unit of RNase R and 1 μg of poly(A) under the above conditions.

Storage and Stability

This product is stable at -20°C for 12 months under sterile conditions. Avoid repeated free-thaw cycles.

Important Notes

1. RNase R activity is optimal in the presence of low magnesium concentrations, ranging from 0.1 to 1.0 mM. However, its effectiveness can be hindered by even low levels of EDTA in RNA

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substrate solutions. To mitigate this negative effect, additional $MgCl_2$ can be added, up to a final concentration of 1 mM, to counteract the presence of EDTA in the substrate.

2. The enzyme exhibits its optimal performance at a temperature of 37°C.

Disclaimer

For Research Use or Further Manufacturing Only.

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