EZassay

Colorimetric RT-LAMP Kit

info@ezassay.com

www.ezassay.com

EZassay Biotechnology Ltd.

Catalog Code: RT-LAM-LYO-RED-1
RT-LAM-LYO-RED-10

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Introduction

The Colorimetric LAMP Kit is an optimized, isothermal amplification system powered by high-activity Bst 2.0 DNA Polymerase. Operating at a constant temperature, this kit enables rapid, highly efficient nucleic acid amplification, making it ideal for molecular diagnostics, field testing, and point-of-care testing (POCT) applications.

Key Features & Advantages:

・Aptamer-Mediated Hot-Start: Utilizes an aptamer-based hot-start mechanism to suppress non-specific amplification at lower temperatures during assay setup, significantly enhancing sensitivity, specificity, and reproducibility.

・All-in-One Lyophilized Format: Key amplification components and colorimetric dyes are pre-mixed and lyophilized. Users only need to add primers, samples, and reaction buffer to initiate the assay.

・Visual Readout: Results can be easily interpreted by the naked eye via color change, eliminating the need for complex instrumentation and streamlining on-site screenings.

・Integrated Quality Control: Includes a built-in positive control for workflow validation and quality assurance, accelerating assay development and experimental setup.

Contents

Component	RT-LAM-LYO-RED-1	RT-LAM-LYO-RED-10
Reaction Tubes*	96T	96T*10
Positive Control	80μL	800μL
Mineral oil	800μL*3	24mL*1

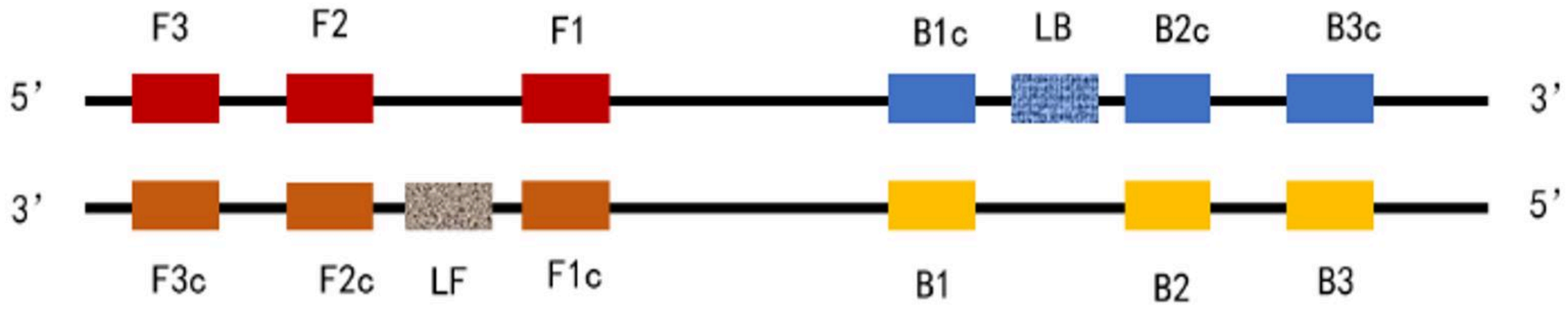
*Contains lyophilized RT-LAMP Enzyme Mix. Brief centrifugation is recommended before use to collect the lyophilized powder at the bottom of the tube.

Storage

1 month at room temperature (RT), 1 year at 4°C, or 2 years at -20°C.

Required materials but not supplied

i. Primers (Recommend LAMP primer online design software: https://lamp.neb.com/#!/)



- F1c: F1 complementary
- FIP: Forward Inner Primer
- LF: Forward loop primer
- B1c: B1 complementary
- BIP: Backward Inner Primer
- BF: Backward loop primer

Typical protocol

1、 Set the incubator or thermal cycler to 65°C. If using a thermal cycler, set the heated lid temperature to 75°C.
2、 Take out the required number of Reaction Tubes based on the number of samples to be tested. For each reaction, assemble the reaction mix according to the table below. Mix thoroughly before proceeding to the next step.

Component	Volume	Working concentration
Reaction Tube	1	-
Primers (10X)*	2.5μL	1.6 μM FIP/BIP, 0.4 μM LF/LB, 0.2 μM F3/B3,
Template DNA**	1μL	>10 copies or more
Nuclease-free water or ddH2O	Up to25μL	-

* Example of Preparing 10X Primers Mix:
i. Primer stock concentrations: Dilute FIP and BIP primers to 80 μM; dilute LF, LB, F3, and B3 primers to 20 μM.
ii. Prepare the Mix:
¢ FIP, BIP, LF, LB primers: 2μL each
¢ F3, B3 primers: 1μL each
¢ Total volume 10μL.
(Note: Primers may be diluted to other concentrations. In such cases, the volume added should be calculated accordingly to meet the final concentration requirements in the reaction system.)
**For positive control group, add 8μl Positive Control that provided in the kit. Template and primers are already mixed as positive control.
Samples to be added should not be dissolved or diluted using Tris-HCl-based buffer systems, as this may interfere with the pH indicator color change, affecting result interpretation.

3、 Incubate at 65°C for 30 to 40 minutes. Then incubate at 85°C for 5 minutes. After cooling to room temperature, remove the reaction tube and observe in a well-lit area (a white background is recommended). Magenta indicates a negative result; orange-yellow indicates a positive result.

Example of result

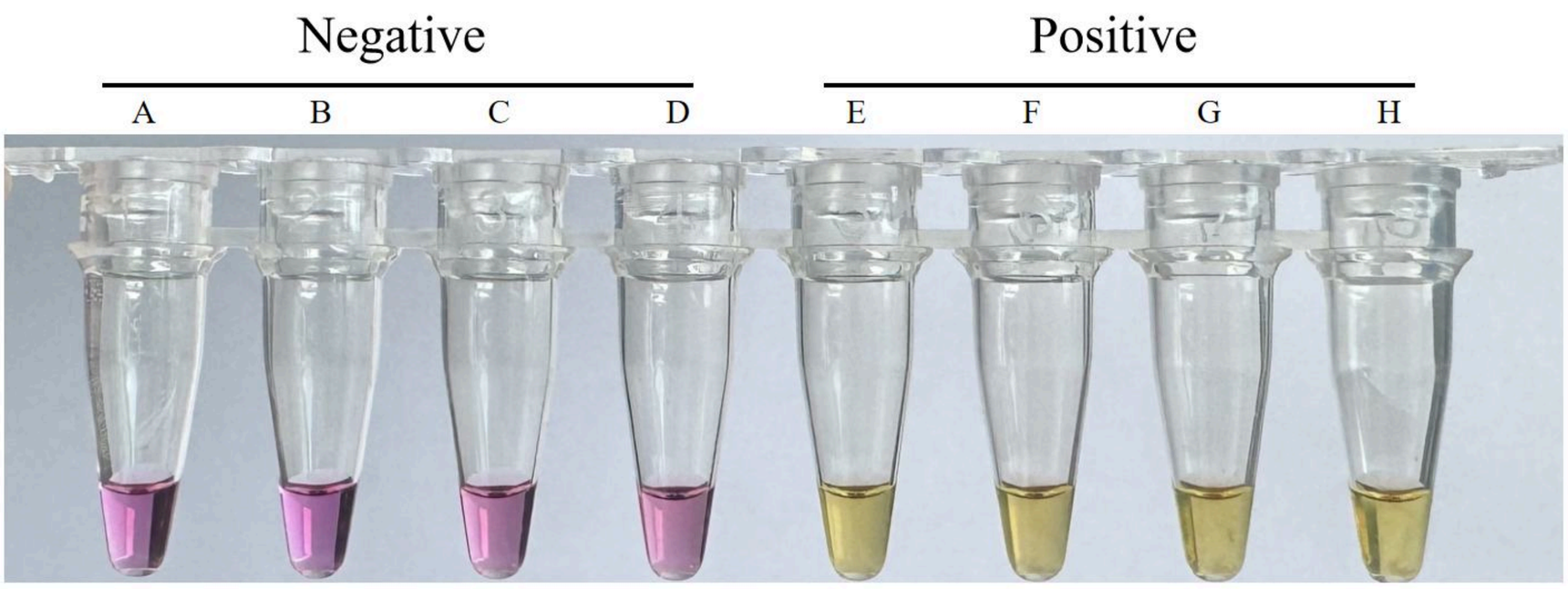


Figure 1. A: ddH2O; B~D: negative samples; E~H: 5 copies to 5000 copies DNA templates were added per reaction.

Notes

- It is recommended to implement physical separation between pre-amplification and post-amplification areas. Independent workspaces, equipment, and consumables should be used for sample preparation, reaction setup, and amplification procedures to minimize the risk of amplicon contamination.
- Running a negative control is strongly recommended to ensure amplification specificity.
- The temperature control device can be a heat block, water bath, or PCR instrument. For some brands of PCR instruments, the heated lid automatically warms up to 105 °C after startup. It is recommended to run several cycles to reduce the heated lid temperature to 75 °C.
- To prevent evaporation of the reaction mixture, add 20 µL of mineral oil to the surface of the final reaction mixture when using a water bath or heat block. When using a PCR instrument, mineral oil is not required; however, the heated lid temperature must be set to 75 °C.
- As this reagent uses a pH indicator method, avoid long-term air exposure. It may absorb carbon dioxide, acidify, and lighten in color, hindering result interpretation.

How to choose the LAMP products

Product name	Catalog number		Brief introduction
	For DNA sample	For RNA sample	
LAMP kit	LAM-LYO-1	RT-LAM-LYO-1	These Kits aim to simplify LAMP assay design with robust reaction and high tolerance of inhibitors. It can be combined with fluorescent probes or dyes, lateral flow and agarose gel detections to observe results.
LAMP Kit (UDG enzyme based contamination control)	LAM-LYO-UDG-1	RT-LAM-LYO-UDG-1	These kits contain uracil DNA glycosylase that helps to prevent carryover contamination and and aerosol contamination in LAMP amplification.
Colorimetric LAMP kit	LAM-LQ-RED-1	RT-LAM-LYO-RED-1	There is acidic indicator. The result can be visually interpreted by color changes (magenta to orange-yellow).
LAMP Fluorescent Kit	LAM-LYO-EGR-1	RT-LAM-LYO-EGR-1	These kits include fluorescent dye Eva Green. The result can be analyzed with fluorescence reader.
LAMP Fluorescent Kit (UDG enzyme based contamination control)	LAM-LYO-EGR-UDG-1	RT-LAM-LYO-EGR-UDG-1	These kits contain uracil DNA glycosylase that helps to prevent carryover contamination and and aerosol contamination in LAMP amplification.
One-Step LAMP-CRISPR DNA Fluorescence Detection Kit	LAM-CAS-01	RT-LAM-CAS-01	The sensitivity and specificity of LAMP are greatly improved by CRISPR/Cas12. The result can be analyzed with fluorescence reader or lateral flow test strip.
RNase H2 Probe-Based LAMP Isothermal Amplification Kit	LAM-PB-1	RT-LAM-PB-1	The sensitivity and specificity of LAMP are greatly improved by RNaseH2 enzyme. It can be used for SNP detection.