

Technical Information

FisoTherm™ Dyes

Overview

FisoTherm™ Dyes are series of fluorescent and colorimetric dyes to measure DNA amplification as it occurs during Loop-Mediated Isothermal Amplification (LAMP) or real-time PCR. The fluorescent variants of this series displays weak background fluorescence that increases dramatically upon reacting to dsDNA. Real-time PCR and LAMP are used in diverse applications such as gene analysis, detection and genotyping of microbial agents, clinical diagnosis, food safety, cancer phenotyping, etc. In real-time PCR, amplification of the target sequence results in an increase of fluorescence that is directly proportional to the amount of dsDNA present at each PCR cycle. Thus, newly synthesized dsDNA sequence might be quantified with a fluorescent reporter during the PCR amplification. LAMP utilizes 4-6 primers recognizing 6-8 distinct regions of target DNA for a highly specific yet sensitive amplification, and it runs in isothermal condition resulting in shorter reaction time. FisoTherm™ C Blue is a colorimetric dye that specifically designed to monitor LAMP reaction. The dye changes its color from red to purple upon reacting to pyrophosphate that liberated during amplification. BioActs offers FisoTherm™ series as fluorescent and colorimetric probes for monitoring of real-time PCR and LAMP in various fields such as clinical, environment, biological, etc.

Table 1. Types of FisoTherm™ Dyes

Cat. No.	Product name	Usage	Color/Filter	Storage
TFML0001	FisoTherm™ C Blue	LAMP	red to purple	-20 °C
TFML0002	FisoTherm™ F Deep Red	real-time LAMP	Cy5	-20 °C
TFML0003	FisoTherm™ F Green	real-time PCR, LAMP	FITC	-20 °C

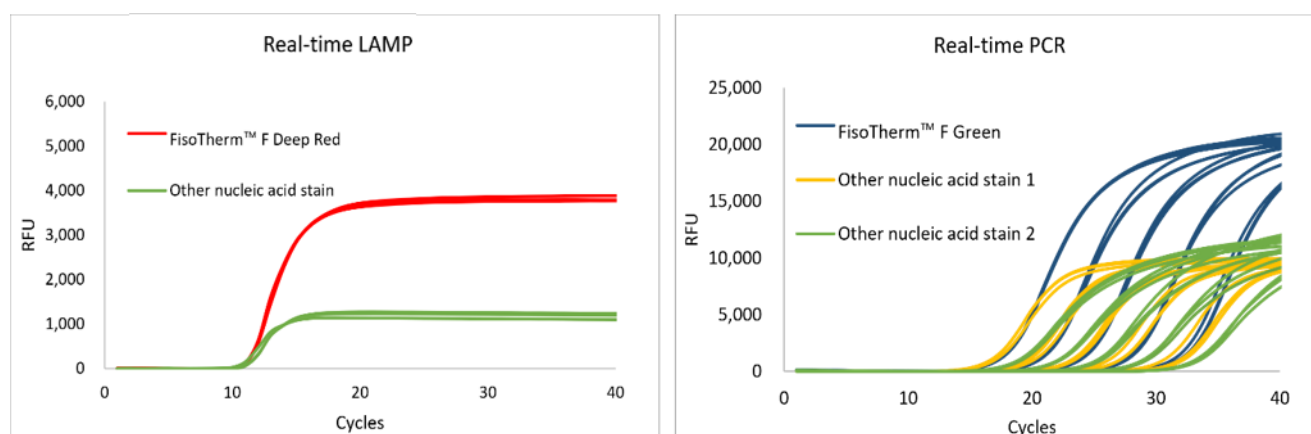


Figure 1. (left) LAMP monitoring using FisoTherm™ F Deep Red

(right) real-time monitoring using FisoTherm™ F Green

FisoTherm™ F dyes displays stronger fluorescent intensity comparing to other fluorescent PCR dyes.

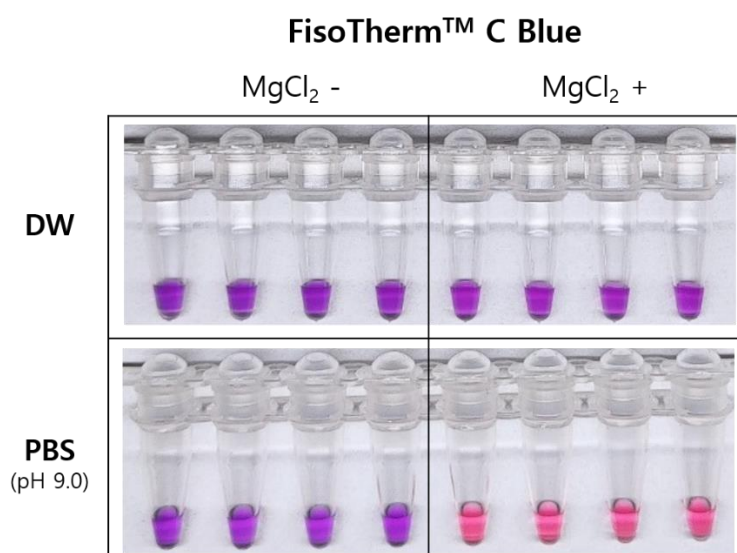


Figure 2. Color change of FisoTherm™ C Blue dependent on of Mg²⁺ ion in pH 9 buffer.

Successful amplification of target DNA sequence in LAMP causes FisoTherm™ C Blue to recover the original purple color.

Before beginning of Experiment

Materials and equipment required but not provided

- Micropipette
- PCR tube
- PCR instrument
- PCR reagents (polymerase, appropriate buffer, primer, template)

Experimental protocol

Detection of DNA amplification with FisoTherm™ dyes

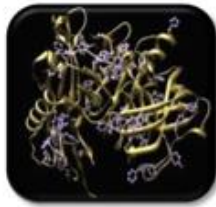
1. Prepare the real-time PCR or LAMP mixture in PCR tube
2. Add FisoTherm™ dyes to a concentration of 1X for the entire volume
 - 3-fold dilute initial dye solution to make 1X concentration and add 1 μL to total 25 μL of what
3. Mix by tapping and spin down by short centrifuge
4. Perform PCR or LAMP reaction under appropriate condition
 - Recommended condition for LAMP method: 63°C 40 min, 80°C 2 min
5. Read the results.
 - FisoTherm™ F Deep Red: Cy5
 - FisoTherm™ F Green: FITC
 - FisoTherm™ C Blue: Purple (positive), Red (negative)

Custom Labeling Service

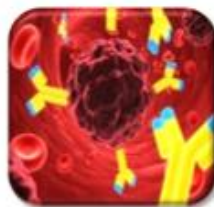
Based on accumulated know-how and technologies, BioActs provide a wide range of custom services such as protein fluorescence labeling, organic synthesis, oligonucleotide synthesis upon customers' request. Our reliable technology has acknowledged by our clients from domestic and overseas universities, institutions, in vitro diagnostic and pharmaceutical companies and has enabled to steadily conduct their requirements. In addition, we can introduce fluorescent materials to many other compounds such as organic and inorganic compounds, drugs, hormones, polymer, peptides, proteins, antibodies, etc. We also can provide chemical and optical analytical data, along with cell and animal experiments.



Nucleic acid



Peptide/Protein



Antibody



Small molecules
/Polymer

Technical Support

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SDS (Safety Data Sheets) You can find SDS at www.bioacts.com, the official website of BioActs.

CoA (Certificate of Analysis) provides detailed quality information of each product. To see CoA, check the lot number written on each product's page at www.bioacts.com, when having trouble with check, contact to our technical support team

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