

VDx[®] FMDV A genotyping qRT-PCR

Cat. No. NM-FMD-37



1. Description

VDx[®] FMDV A genotyping qRT-PCR Kit is used for the detection of viral RNA of Foot-and-mouth disease Virus (FMDV) and can amplify the specific genotype (Asia/G-VII or SEA-97) in serotype A by using the multiplex qRT-PCR method.

This kit can measure the **VP1** gene of FMDV qualitatively by using TapMan probe.

2. Contents

No	Reagents	96T
1	2x qRT-PCR Master mix (A)	1ml
2	4x Oligo mix (B)	500µl
3	Control DNA	100µl
4	Manual	1ea

3. Storage

The components of VDx[®] FMDV A genotyping qRT-PCR Kit should be stored at -20°C. The components of the kit are stable for 6 months from the manufacturing date (see expiry date on package).

4. Materials required (But not supplied)

- Dust-Free disposable gloves (without talcum powder).
- Microcentrifuge.
- Tube shaker.
- Real-time thermocycler.
- Micropipettes (10-100µl).
- Sterile pipette tips (with filter).
- Sterile DNAses/RNAses free wster.

5. Precautions to avoid contamination

The following points should be read with care:

- Disposable items must be DNase and RNase-free.
- Use DNase and RNase-free autoclaved D.W. (25min, 120 °C).
- Use sterile filtered tips.
- Maintain the qRT-PCR premix stored in ice during all the test procedure. Exposing them to temperatures above 4 °C reduces the efficacy of PCR.
- Repeated cycles of freezing and thawing may reduce the sensitivity of the reagents. Protect them from exposure to strong light until use.

To avoid contaminations leading to false positives, it is important to:

- Physically separate the positive PCR control from the remaining reagents of the kit.
- To handle another samples to be tested in a different place (or room) from the one where the amplified products are being analyzed.
- Add the positive PCR control in a different place/room from the one where the mix is added and where the samples to be tested are being handled.

6. Template preparation

- Test Sample : whole blood, serum, lesion tissue, tissue homogenates and cultivated virus(The samples should be kept as fresh as possible and frozen during storage.).
- Template genes are extracted from 100~300µl of sample using QIAmp Viral RNA Mini Kit (Qiagen). Refer to the manufacturer's instructions for gene extraction methods.

* The gene extraction kit can be used with other products, but please check the manufacturer's manual in advance.

7. Required equipment

Real-time thermal cycler capable of reading the following Fluorescence Dyes: **FAM, HEX(or VIC)**

Examples of compatible thermal cycler : CFX96 Biorad , LC96 Roche, 7500 AB and Rotor-Gene Q Qiagen. Please contact us regarding suitability with other thermal cyclers

8. Preparation of the qRT-PCR

- ❖ Thaw the qRT-PCR Kit, ideally at 5°C(±3°C) in a refrigerated rack. Thaw at room temperature 21°C(±5°C) only when the mix has to be used immediately after thawing.

- 1) Prepare and identify as many tubes for the amplification as samples to be processed, adding an additional tube for the positive amplification control, and another one for the negative control.
- 2) Take mixtures A and B out from the cooler keeping them in crushed ice. Make sure that they are homogenized well enough before taking out the required volume for the assay.
- 3) Prepare an suitable amount of amplification mixture for the number of samples to be processed. The volume of each reagent to be mixed for each of the samples is:

	Per sample	For 10 samples
A : 2X Master Mix	10µl	100µl
B : 4X Oligo Mix	5 µl	50 µl
Final Master Mix	15µl	150µl

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The tube used for mixing should be kept in crushed ice during all procedures. Likewise, it is recommendable to prepare an excess amount of mixture in order to compensate for possible losses of volume during pipetting.

- 4) Once mixture is prepared, homogenise it well. Place the tubes previously labelled in crushed ice and add 15 µl of the mixture prepared in this way to each tube.
- 5) Add the following to the qPCR premix tube.
 - 5 µl of Negative Control(DW)
 - 5 µl of RNA extracted from each sample to be analyzed
 - 5 µl of Control DNA(PC)
- 6) Cover the tubes with the caps.
- 7) Gently mixed and briefly centrifuged.
- 8) Perform PCR reaction of samples as the below process using PCR machine.

9. Programming the amplification

No	Target	Fluorophore	Quencher
1	FMDV A Asia/G-VIII (VP1)	FAM	non-Fluorescent
2	FMDV A SEA-97 (VP1)	HEX / VIC	non-Fluorescent

*For devices requiring an internal reference, 4xoligo mix contains ROX.

Step	qPCR Cycle (20 µl reaction)		
	Temp	Time	Cycle
cDNA synthesis	50°C	30min	1 cycle
Initial inactivation	95°C	15min	1 cycle
Denaturation	95°C	10 sec	40 cycles
Elongation	60°C	1 min	
hold	4°C	10 sec	1 cycle

*The fluorescence is read at the end of the elongation phase at 60 °C.

10. Assay validation

The analysis of results is based on Cq (Quantification cycle) value of each sample that is obtained by each detector. The Cq is also known as the Ct value (Threshold cycle).

The test is validated according to criteria outlined in the table below. Results should not be interpreted if any of these criteria are not met.

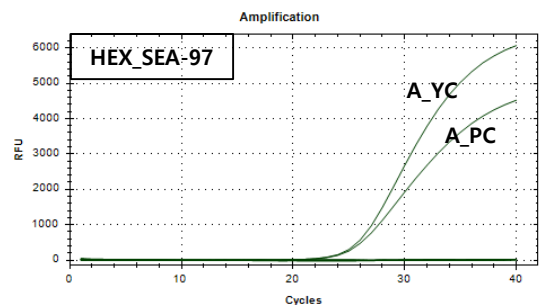
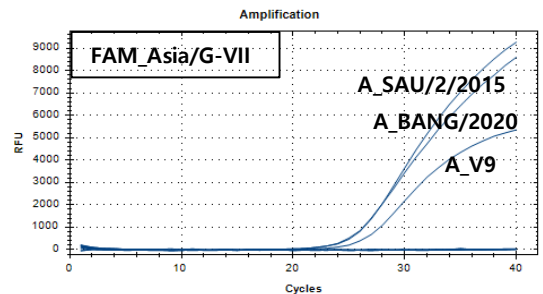
	Expected result
Negative control	FAM : No detection if water used. HEX : Detection if virus-negative sample used
Control DNA	FAM & HEX : detection

11. Suggested interpretation of results

This kit is the FMDV A genotyping kit so please use the FMDV O/A/Asia1 serotyping kit first before using this kit. If the result of the serotype A was confirmed, please use this kit. For each sample, results may be interpreted according to the following criteria.

	FMDV		Interpretation
	FAM	HEX	
Case1	POS	NEG	FMDV type A Asia/G-VIII
Case2	NEG	POS	FMDV type A SEA-97
Case3	NEG	NEG	If the sample was amplified in serotype A, that is not both genotype (Asia/G-VIII and SEA-97)
Case4	POS	POS	The sample was cross contaminated or both genotypes were detected (in that case re test is required)

Technical data



No.	Name	Genotype	FAM	HEX	Results
			ASIA/G-VII	SEA-97	
1	A_YC	ASIA/Sea-97	-	+	ASIA/Sea-97
2	A_PC	ASIA/Sea-97	-	+	ASIA/Sea-97
3	A_V9	ASIA/G-VII	+	-	ASIA/G-VII
4	A_SAU/2/2015	ASIA/G-VII	+	-	ASIA/G-VII
5	A_BANG/2020	ASIA/G-VII	+	-	ASIA/G-VII
6	O_SKR2002	Me-SA/PanAsia	-	-	Negative
7	Asia1_shamir		-	-	Negative
8	Control DNA		+	+	Positive
9	NTC		-	-	Negative

For questions or technical support,
Please contact : median@mediandx.com