

## 1. DESCRIPTION

Noroviruses (Norwalk and Norwalk-like viruses) are known to be one of the major pathogenic viruses implicated in outbreaks of gastroenteritis caused by feeding of seafood. Norwalk virus contain a positive strand RNA genome of 7.5 kb and a single structural protein of about 60 kDa. It is supposed that Norwalk virus would be emitted into water environment through sewage and the shellfish growing in polluted water environment would enrich with contaminated virus particles in their body.

The most common symptoms of Norwalk virus infection are diarrhea and/or vomiting that may be accompanied by abdominal pains, myalgia, headache and sometimes mild fever. In most cases people who are otherwise healthy recover from the infection within one to three days without any treatment. Those infected with norovirus disease should not cook or serve food to others. Thorough handwashing and hygiene are always essential and the most effective means of preventing transmission.

VetPCR™ NWV Detection Kit is the direct detection of *Norwalk virus* on the basis of a genetic database, so it can diagnose very fast and accurately. It can amplify only specific gene using the PCR (Polymerase Chain Reaction) method, and take only 3 hours for detection. Therefore, it is a very fast, accurate and reliable technique.

## 2. STORAGE

The components of VetPCR™ NWV Detection Kit should be stored at -20°C. Under this condition, the kit is stable until expiration date stated on the label.

## 3. CONTENTS

	Kit 48	Kit 96	
VetPCR™ NWV RT-PCR Pre-mixture .....	48	96	tubes
VetPCR™ NWV PCR Pre-mixture .....	48	96	vial
BrigRT-PCR™ solution .....	1	1	vial
Biotech™ Transcriptase solution .....	1	1	vial
DNase/RNase-free water .....	1	1	vial
NWV RT-PCR Positive control .....	1	1	vial
NWV RT-PCR Positive control Pre-mixture .....	4	8	tubes
NWV PCR Positive control Pre-mixture .....	4	8	tubes
Brig™ Molecular Weight marker .....	1	1	vial
Mineral Oil .....	1	2	vial(s)
RNA extraction kit (see step 6.1) .....	50	100	tests

## 4. SPECIMEN

Tissue, ovas, sperm, feces.

## 5. ADDITIONAL REQUIRED MATERIALS

- Pipettes, Sterile pipette tip, Vortex mixer
- Centrifuge for microcentrifuge tubes
- Thermal cyler, Electrophoresis kit, UV transilluminator

## 6. PROCEDURE

Please read through the entire procedure before starting.

### 6.1 RNA PREPARATION

Various manufacturers offer RNA isolation kits. Please carry out the RNA isolation according to the manufacturers instructions. The following standard RNA Purification kit is recommended.

Product	Catalog No.	Manufacturer
Bioingentech™ Total RNA Purification Kit (50 test)	230041(50)	Bioingentech Biotechnology Inc.
Bioingentech™ Total RNA Purification Kit(100 test)	230041(100)	Bioingentech Biotechnology Inc.

### 6.2 AMPLIFICATION

1.- Prepare appropriate RT-PCR Premix tubes and one RT- PCR Premix tube for Positive control. Label.

2.- Add 5µl of DNase/RNase-free water into the RT-PCR Premix tube to total volume as 8,5µl.

3.- Add 1,5µl of template RNA into the RT-PCR Premix tube to total volume as 10µl.

4.- Add 5µl of DNase/RNase-free water and 1,5µl of RT-PCR Positive control into a RT-PCR Positive control Premix tube for monitoring of amplification and easy interpretation.

5.- Add mineral oil (11µl). This step is necessary, even when using a thermal cyler that employs a top heating method.

6.- Perform RT-PCR reaction (RT-PCR 1) of samples as the below process using a PCR thermal cyler.

7.- Add 0,3µl of BrigRT-PCR™ solution and 0,5µl of Biotech™ Transcriptase solution.

8.- Perform RT-PCR reaction (RT-PCR 2) of samples as the below process, using a PCR thermal cyler.

RT-PCR cycle		Temp.	Time
RT-PCR 1	1Cycle	Initial Denaturation	80°C 10 min.
	1Cycle	Stop	4°C 5 min.
Add 0,3µl of BrigRT-PCR™ and 0,5µl of Biotech™ Transcriptase			
RT-PCR 2	1Cycle	Denaturation	80°C 10 min.
	1Cycle	Annealing	25°C 10 min.
	1Cycle	Extension	37°C 50 min.

9.- Prepare appropriate PCR Premix tubes and one PCR Premix tube for Positive control. Label.

10.- Add 6µl of DNase/RNase-free water into the PCR Premix tube to total volume as 11µl.

11.- Add 2µl of template (cDNA) into the PCR Premix tube to total volume as 13µl.

12.- Add 6µl of DNase/RNase-free water and 2µl of Positive control (Positive control tube from RT-PCR) into a PCR Positive control Premix tube for monitoring of amplification and easy interpretation.

13.- Add mineral oil (11µl). This step is necessary, even when using a thermal cyler that employs a top heating method.

14.- Perform PCR reaction of samples as the below process, using a PCR thermal cyler.

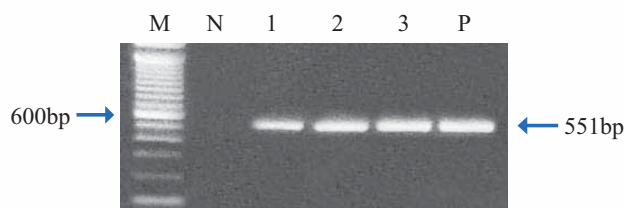
PCR cycle		Temp.	Time
1 Cycle	Initial Denaturation	94°C	2 min.
30 Cycles	Denaturation	94°C	30 sec.
	Annealing	56°C	30 sec.
	Extension	72°C	30 sec.
1 Cycle	Final extension	72°C	5 min.

### 6.3 DETECTION OF AMPLIFIED PRODUCTS

- 1.- Prepare 1.5% agarose gel containing Ethidium bromide (Et-Br).
- 2.- Load 7µl of PCR product, 7µl of Positive control and 2µl of Brig™ Molecular Weight marker on agarose gel without adding a loading-dye buffer and perform electrophoresis.
- 3.- Run electrophoresis by 100V (required about 30–40 minutes).
- 4.- Identify the result on ultra-violet (UV) transilluminator.

### 6.4 INTERPRETATION

- Expected PCR product size : 551 bp



**Fig 1.** Electrophoresis of PCR product by VetPCR™ NVW Detection Kit  
 Lane M : Brig™ Molecular Weight Marker (Bioingentech Ltd.)  
 Lane N : Negative control  
 Lane 1~3 : NVW Positive sample  
 Lane P : Positive control

### 7. NOTICE

- For research purpose only. Not for use in diagnostic procedures for clinical purposes. *For in Vitro Use Only.*
- Take care in handling of specimen to minimize risk of infection.
- The PCR process is covered by patents issued and applicable in certain countries. Bioingentech Biotechnology Inc. does not encourage or support the unauthorized or unlicensed use of the PCR process. Use of this product is recommended for persons that either have a license to perform PCR or are not required to obtain a license.

### 8. TROUBLE SHOOTING

- 1.- In the case of difficult to interpret results due to non-specific bands; reduce amount of template by 1/10 dilution, heated at 65° C for 5 min. and reacts again.
- 2.- Preparation of PCR reaction at room temperature may cause the non-specific band.
- 3.- All procedure should be carried out on ice.

### 9. ORDERING INFORMATION

Product	Catalog No.
VetPCR™ NWV Detection Kit 48	VET0003QR(48)
VetPCR™ NWV Detection Kit 96	VET0003QR(96)
Brig™ Molecular Weight Marker	24012



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