

# MPure Viral Nucleic Acid Extraction Kit

For the extraction and purification of high quality viral DNA and RNA from serum, plasma or cell-free body fluids using magnetic particle separation technology and the MPure-12 NA purification system.

Cat. No. **117022300**

Size: **48 tests**

Storage: **15–25 °C**

Revision Date: **2022-08**

## INTRODUCTION

MPure Viral Nucleic Acid Extraction Kit is used with the MPure-12 Automated Nucleic Acid Purification System for extraction of Viral DNA or RNA from human biological specimens, such as serum, plasma, and other cell-free fluids. Nucleic acids extracted from MPure Viral Nucleic Acid Extraction Kit can be used in a number of downstream applications, including PCR, qPCR, Sequencing (NGS), Microarray, RFLP, and Southern Blot Analysis.

## DESCRIPTION OF SYMBOLS USED

The following are graphical symbols used in or found on MP Biomedicals' products and packaging. They are explained in more detail in the European Standard BS EN ISO 15223-1:2012.



Use by



Temperature  
Limitation



Batch Code  
(Synonyms: Lot Number,  
Batch Number)

## KIT COMPONENTS

Component Name	Quantity
Reagent Cartridge	48 pcs (4 x 6 x 2)
Reaction Chamber	48 pcs (4 x 6 x 2)
Tip Holder	48 pcs (24 x 2)
Filtered Tip	50 pcs (25 x 2)
Piercing Pin	50 pcs (25 x 2)
Sample Tube (2 mL)	50 pcs (25 x 2)
Elution Tube (1.5 mL)	50 pcs (25 x 2)
RNA Carrier (1 mg)	1 pc
Instructions for Use	1 pc

## STORAGE

Store at room temperature (15–25 °C). Do not freeze the reagent cartridges. The kits are stable for 12 months under these conditions.

After extraction, store the purified nucleic acids at 4 °C (short-term) or aliquot and store at -70 °C (long-term) before performing downstream analysis. Repeated freeze-thawing is not recommended.

## REAGENT CARTRIDGE CONTENT



Well 1: Proteinase K Solution (30  $\mu$ L)

Well 2: Lysis Buffer 2 (720  $\mu$ L)

Well 3: Binding Buffer 1 (1000  $\mu$ L)

Well 4: Magnetic Bead Solution (800  $\mu$ L)

Well 5: Washing Buffer 1 (1000  $\mu$ L)

Well 6: Washing Buffer 2 (1000  $\mu$ L)

Well 7: Washing Buffer 3 (1000  $\mu$ L)

Well 8: RNase-free water (1000  $\mu$ L)

Well 9: RNase-free water (1000  $\mu$ L)

Well 10: Empty

## STARTING MATERIAL

- The kit is designed for extraction of viral nucleic acids (*e.g.*, those from HIV, HCV, HBV, CMV and EBV) from plasma or serum, or from a pool of cell-free body fluids.
- After extraction, store the nucleic acids at 4 °C (up to 24 hours) or -20 °C for longer storage. Repeated freeze–thawing is not recommended.

Sample Type	Target Nucleic Acid	Sample Volume (Amount of starting material)	Elution Volume
Serum	Total Viral Nucleic Acids (DNA + RNA)	100-400 $\mu$ L	50-300 $\mu$ L
Plasma			
CSF			
Pretreated Urine			
Cell-free body fluids			
Controls/ Internal control	Add controls/internal control in the extraction procedure if required in the downstream analysis		

## SAMPLE PREPARATION

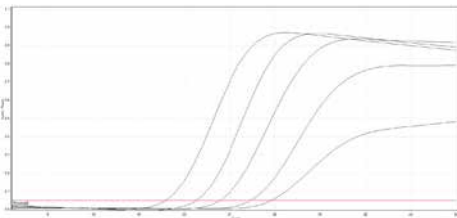
- The purification procedure is optimized for use with 100–400  $\mu\text{L}$  serum, plasma, CSF, or pretreated urine samples. (Blood samples treated with EDTA or citrate as an anticoagulant can be used for plasma preparation).
- Samples can be either fresh or frozen, provided that they have not been refrozen after thawing.
- After collection and centrifugation, plasma, serum, or CSF can be stored at 2–8  $^{\circ}\text{C}$  for up to 6 hours. For longer storage, we recommend freezing aliquots at -20  $^{\circ}\text{C}$  or -80  $^{\circ}\text{C}$ . Thaw samples at room temperature (15–25  $^{\circ}\text{C}$ ), and process the samples immediately when they have equilibrated to room temperature. Do not refreeze the aliquots after thawing. Repeated freeze–thawing leads to denaturation and precipitation of proteins, resulting in reduced viral titers and therefore reduced yields of viral nucleic acids. If cryoprecipitates are visible in the samples, centrifuge at 6800  $\times g$  for 3 minutes, transfer the supernatants to fresh tubes without disturbing the pellets, and start the purification procedure immediately.

## CARRIER RNA

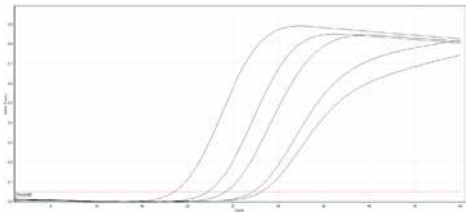
- For RNA virus, adding carrier RNA to the sample before extraction is recommended.
- Add 1.0 mL RNase-free water to the carrier RNA tube (*supplied*) and mix by vortexing. Store at 4  $^{\circ}\text{C}$  (short-term, up to 1 month) or -20  $^{\circ}\text{C}$  (long-term). Do not freeze–thaw the frozen carrier RNA more than three times.
- Add 5  $\mu\text{L}$  Carrier RNA (for 100  $\mu\text{L}$  sample), 10  $\mu\text{L}$  (for 200  $\mu\text{L}$  sample) or 20  $\mu\text{L}$  (for 400  $\mu\text{L}$  sample) into the Sample Tube.

## RESULTS

### DNA Virus (HBV)



### RNA Virus (HCV)



Using serum spiked with serial-diluted Hepatitis B Virus (in the range of 30–300,000 IU/mL). 200  $\mu\text{L}$  samples were extracted and eluted in 100  $\mu\text{L}$ . 30  $\mu\text{L}$  eluate was used for real-time PCR reaction by AmpliSens<sup>®</sup> HCV/HBV/HIV-FRT PCR kit. As little as 6 IU spiked (about 1 IU in PCR reaction) sample can be detected, demonstrating the excellent sensitivity and linearity of the isolation procedure.

## MPURE-12 PURIFICATION PROTOCOL

- 1 Turn on the MPure-12 instrument. Open the instrument door and remove the sample rack.
- 2 Load the Reagent Cartridge, then insert the Reaction Chamber, Tip Holder, Piercing Pins, and Filtered Tips into the instrument.
- 3 Insert the Sample tubes and Elution tubes into the Sample Rack.
- 4 Load the appropriate volume of sample into the sample tube, and place the sample rack back into the instrument.
- 5 Scan the protocol barcodes provided on the following page for the purification protocol, and the sample and elution volumes when prompted. Double check the selected options on the display screen to verify the appropriate program settings.
- 6 Press [ENTER] to start the program. At the end of the run, instrument will alarm briefly.
- 7 Open the instrument door and collect the elution tubes with the purified, ready-to-use nucleic acid. For short term, store at 4 °C. For long-term, store at -70 °C.
- 8 Discard all used cartridges and consumables into appropriate disposal.
- 9 Return the sample rack and close the door of the instrument.
- 10 Place in sleep mode by holding the "Start" button for 2 seconds or switch off the power to the instrument.

## **BARCODES FOR PURIFICATION PROTOCOL, SAMPLE VOLUME & ELUTE VOLUME SELECTION**

**NOTE ▶** Follow the instruction guide shown on MPure system's LCD screen to scan the barcodes.

### **1. Select Protocol**

MPure Viral Nucleic Acid Extraction Kit	 O P 0 2 0 0 3
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### **2. Select Sample Volume**

200 $\mu$ L	 S V 0 2 0 0
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User Setting	 S V M 0 0 1
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400 $\mu$ L	 S V 0 4 0 0
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Input sample volume by user via  
instrument control pad

### **3. Select Elute Volume**

50 $\mu$ L	 E V 0 0 5 0
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200 $\mu$ L	 E V 0 2 0 0
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100 $\mu$ L	 E V 0 1 0 0
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User Setting	 E V M 0 0 1
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Input elute volume by user via  
instrument control pad

## **QUALITY CONTROL**

In accordance with MP Biomedicals' ISO-certified Quality Management System, each lot of MPure Viral Nucleic Acid Extraction Kit is tested against predetermined specifications to ensure consistent product quality.

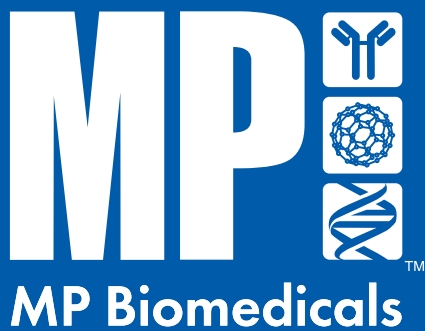
## **LIMITED EXPRESSED WARRANTY DISCLAIMER**

The manufacturer makes no expressed warranty other than that the test kit will function as a Research Use Only assay within the specifications and limitations described in the Instructions for Use and used in accordance with the instructions provided in the kit. The manufacturer disclaims any expressed or implied warranties with respect to merchantability, fitness for use or implied utility for any other purpose. The manufacturer's liability is limited.

## **TECHNICAL PROBLEMS**

Should there be any technical problems, please do the following:

- Note the kit lot number and the expiry date.
- Retain the kits and the results that were obtained.
- Contact the nearest MP Biomedicals office or your local distributor.



## MP BIOMEDICALS

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