Bio QControl

P0142
HCV 1000 copies/ml
Genotype reference panel

RUO

REF **P0142**

The kit insert contains a detailed protocol and should be read carefully before testing the run control to ensure optimal performance

Table of contents

Intended Use

The HCV 1000 copies/ml genotype reference panel provides a panel of quantified HCV-RNA preparations covering a large proportion of the currently available genotypes. All members were quantified to obtain dilutions with the same concentration in copies/ml. It can be used to investigate genotype detection efficiency, and quantification of molecular diagnostic test procedures on Hepatitis C virus RNA in blood samples. This product can be used with amplification methods, including (kinetic) TMA and real-time PCR assays and is useful for development and validation of nucleic acid test systems. It also can be used as a release panel for new batches of HCV-RNA test reagents. This product is not for diagnostic use and for research use only.

Key to Symbols Used


Manufacturer

Lot number

Catalogue number

Store below -65°C

Biological substance Category B

Research use only


Expiry date

Contents


Caution


Read instructions for use

Summary and Explanation

The HCV 1000 copies/ml genotype reference panel is designed for testing the analytical sensitivity or quantification limits of HCV-RNA tests. The panel helps ensure that procedures for HCV-RNA testing are properly validated, and that test results with an unknown group, genotype are consistent across manufacturers, testing laboratories, operators, platforms and assay formats. The bioQControl plasma HCV-RNA virus standards have been diluted in a pool of plasma units that tested negative for viral markers in individual donation NAT and serology testing. All viral standards were quantified by testing in the Siemens Versant bDNA 3.0 assays[1,2]. The viral concentrations in the plasma pool are ensured by gravimetrically recorded dilutions from calibrated viral stock solutions stored below –65°C.

HCV genotypes

In 2005 consensus for the classification of hepatitis C virus (HCV) was agreed[3]. The nomenclature for HCV variants and the criteria for their assignment into genotypes and subtypes was defined. An update is given to the previous nomenclature, incorporating additional sequence information, in May 2013[4]. Analysis resolved several nomenclature conflicts between genotype designations. Using consensus criteria a classification of HCV into seven confirmed genotypes, 67 subtypes and 20 provisionally geno, subtypes was created.

The variation was summarized and variants assigned as genotypes and subtypes in a consensus classification and nomenclature system and formal rules were agreed for the assignment and naming of future variants . Genotype and subtype assignments requires:

- one or more complete coding region sequence(s);
- at least three epidemiologically unrelated isolates;
- a phylogenetic group distinct from previously described sequences;
- exclusion of intergenotypic or intersubtypic recombination

Phylogenetic analysis of sequences containing >95% of the coding region reveals seven major phylogenetic groupings corresponding to genotypes 1-7. Based on the consensus criteria, confirmed subtypes (indicated by a letter following the genotype) require a complete or nearly complete coding region sequence differing from other sequences by at least 15% of nucleotide positions and sequence information.

Traceability to 1st WHO standard for HCV-RNA.

A standard dilution of HCV-RNA genotype 1 preparation was included in the WHO collaborative study[5] to establish the 1st WHO standard for HCV-RNA and calibration study[6]. It was found one bDNA copy is equal to 2.73 IU of the first WHO HCV-RDNA standard. The other genotypes were calibrated on the genotype 1 preparation (sample 01).

Composition P0142 HCV 1000 copies/ml genotype reference panel

Each panel member is quantified at 1.000 copies/ml#.

Table 1 composition of the panel

Member	HCV genotype	Copies/ml (95% C.I.)	Country of origin
1	1	1000 (973-1028)	The Netherlands
2	2	1000 (808-1238)	The Netherlands
3	3	1000 (862-1160)	The Netherlands
4	4	1000 (758-1319)	The Netherlands
5	4	1000	Egypt
6	4	1000 (658-1522)	Egypt
7	5	1000 (753-1328)	Germany
8	5	1000 (825-1214)	Germany
9	1a	1000 (853-1174)	USA
10	1a	1000 (628-1592)	USA
11	1a/1b	1000	Lithuania
12	1b	1000	Japan
13	1b	1000 (373-2680)	Japan
14	2a	1000 (536-1871)	Japan
15	2a	1000 (435-2299)	Japan
16	2b	1000 (784-1276)	Japan
17	2b	1000 (582-1718)	Japan
18	3a	1000 (554-1805)	Lithuania
19	3a	1000 (616-1623)	Lithuania
20	3a inact.	1000 (739-1353)	Lithuania
21	3b	1000 (815-1227)	USA
22	4c	1000	USA
23	4e	1000	USA
24	5a	1000 (773-1294)	USA
25	6a	1000 (746-1340)	USA
26	6n	1000 (837-1195)	USA

The HCV-RNA standards has been diluted in a pool of plasma units that tested individually negative for HBsAg, anti-HBc, anti-HBs, anti-HCV, anti-HIV 1 and 2, HBV-DNA, HCV-RNA and HIV-1 RNA.

Kit contents (materials provided)

The run control contains human plasma without preservatives and is provided in two formats as detailed in Table 2.

Table 2. Description of kit formats and contents

Cat. Code	Description of contents	Primary packing	Secondary packing
P0142/01	26 x 4.0 mL panel member	10 mL vial	60 vial rack in box
P0142/02	26 x 1.5 mL run control	2 mL vial	Plastic zip bag

Materials required but not supplied

The test kits and liquid handling devices provided by the NAT manufacturer

Warning and precautions

The P0142 HCV 1000 copies/ml genotype reference panel contain infectious HCV virions and are bio-hazardous. Observe the universal precautions for prevention of transmission of infectious agents when handling these materials[7,8,9]. Although the normal human plasma used in the production of this panel was negative for infectious disease markers the panel members should be handled as if capable of transmitting (unknown) infectious agents.

- Do not pipette by mouth.
- Use personal protective equipment, including lab coats, gloves and safety glasses.
- Do not eat, drink or smoke in areas where P0142 HCV 1000 copies/ml genotype reference panel for blood screening tests and specimens are handled.
- Disinfect liquids, materials or spills with a 0.5% sodium hypochlorite solution or equivalent.
- Dispose of all materials and liquids used in the procedure as if they contained pathogenic agents.

Reagent preparation

- Thaw the panel members quickly in a water bath at 37°C to avoid formation of cryo-precipitates.
- Mix gently during thawing until ice clot has disappeared.
- Immediately after thawing, vortex briefly, and give a short spin before releasing screw cap from the vials.
- The panel members should be handled and tested in a manner identical to that required for clinical specimens run in the test procedure being evaluated.
- Follow the manufacturers or testing laboratory instructions and recommendations for the handling and testing of clinical specimens.

Storage Instructions

It is recommended to store the panel below –65°C or lower to ensure highest quality. Discard any unused material after the first use. Any panel members that appear cloudy or contain precipitates after thawing should be discarded.

Limitations

The P0142 HCV 1000 copies/ml genotype reference panel is not intended to replace the internal calibrators integral to in vitro diagnostic (IVD) test kits, but may be used as

external, independent standards for the assessment of the performance of qualitative or quantitative NAT assays. The panel is not an in vitro diagnostic and for research use only.

References

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4. Smith DB, Bukh J, Kuiken C, Scott Muerhoff AC, Rice CM, Stapleton JT, Simmonds P, Expansion Classification of Hepatitis C Virus into 7 genotypes and 67 subtypes; updated criteria and genotype assignment web resource. Hepatology 2014 Jan;59(1):318-27
5. SaldanhaJ, Lelie N, Establishment of the first international standard for nucleic acid amplification technology (NAT) assays for HCV RNA. WHO Collaborative Study Group. Heath A.Vox Sang. 1999;76(3):149-58
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7. Centers for Disease Control (CDC). Recommendations for prevention of HBV transmission in health care settings. MMWR 1987; 36 (supplement no. 2S).
8. Centers for Disease Control (CDC). Update: Universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings. MMWR 1988; 37:377-388.
9. Centers for Disease Control (CDC). Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health-care and public-safety workers. MMWR 1989; 38(S-6): 1-36.

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