Bio QControl

P0138
HBV genotype reference panel for blood screening

RUO

REF P0138

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

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Intended Use

The HBV genotype panel for blood screening tests provides a panel of quantified HBV-DNA 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 of molecular diagnostic test procedures on Hepatitis B virus DNA 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 HBV-DNA 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 -30°C

Biological substance Category B

Research use only


Expiry date

Contents


Caution


Read instructions for use

Summary and Explanation

The HBV genotype panel for blood screening is designed for testing the analytical sensitivity or quantification limits of HBV-DNA tests. The reference panel helps ensure that procedures for HBV-DNA 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 HBV-DNA 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 at –70°C.

HBV genotypes

In 1988 Okamoto et al[3] divide HBV into 4 genotypes based on a divergence of ≥ 8% in the complete genomic sequence and genotypes A,B,C and D were identified. The relationship between serotypes and genotypes is not clearly known. The same serotype may be classified into different genotypes[3]. Norder et al[4] identified genotypes E and F which differed by more than 4% in the *S* gene from the other genotypes. Genotype G is reported in 2000 from samples of French and American patients[5] but its geographic origin is still unknown[6]. The precore and core regions of genotype G are aberrant with a 36-nucleotide insertion within the core gene making it the longest of the HBV genotypes[7]. Genotype I

described in Vietnam[8] may not meet the criteria for a novel genotype since the diversity in its complete genome sequence is only 7% from that of its closest neighbour, genotype C[9]. Genotype J is a novel variant described in a Japanese patient. It is thought to be phylogenetically positioned between human and primate HBV variants being close to strains which had been previously found in orang-utans and gibbons[10]. Subgenotypes are also described if there is a divergence of > 4% (but less than 7.5%) of the nucleotide sequence in the complete genomic sequence. Divergence of < 4% between subgenotypes are referred to as "clades".

Principles of the Evaluation Procedure.

The HBV genotype panel for blood screening members have been carefully formulated to mimic human plasma specimens containing 100 copies/ml (19 IU/ml) HBV-DNA. The HBV genotype panel for blood screening is suitable for evaluate the ability of the assay specific primers and probes to recognise all HBV genotypes. The composition of the panel covers world-wide most spread HBV-variants. As HBV is continuously evolving we recognise not all variants are included. Laboratories should find equal, positive responses for the different samples.

Traceability to 1st WHO standard for HBV-DNA.

A standard dilution of HBV-DNA genotype A preparation was included in the WHO collaborative study[11] to establish the 1st and 2nd WHO standard for HBV-DNA. Later we calibrated the genotype A standard against the 1st WHO standard by testing standard dilution series in bDNA 3.0. It was found one bDNA copy is equal to 5.33 IU of the first WHO HBV-DNA standard. The other genotypes were calibrated on the genotype A preparation (sample 01). All panel members contain 19 IU/ml.

P0138 HBV 100 copies/ml genotype reference panel for blood screening

Each panel member is quantified at 100 copies/ml# and filled off with 4.3 ml.

Table 1 composition of the panel

Member	HBV genotype	HBV serotype	Country of origin
1	A	adw2	Netherlands
2	B	ayw1	Indonesia
3	C	adr	USA
4	D	ayw2	USA
5	E	ayw3	USA
6	F	adw4	USA
7	G	adw2	USA
8	A2	adw2	Germany
9	D	ayw2/3	Germany
10	A1	adw2	South Africa
11	A1	adw2	Brasilia
12	A2	adw2	Germany
13	B1	adw2	Japan
14	B2	adw2	Japan
15	B4	ayw1	Vietnam
16	C2	adr	Japan
17	C2	adr	Japan
18	C2	adr	Russia
19	D1	ayw2	Germany
20	D3	ayw2	South Africa
21	D1	ayw3	Iran
22	E	ayw4	West Africa
23	F3	adw4	Brasilia
24	G	adw2	Germany
25	negative		

The HBV-DNA 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.

Storage Instructions

It is recommended to store the panel at –30°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.

Warning and precautions

The P0138 HBV 100 copies/ml genotype reference panel members contain infectious *HBV* virions and are bio-hazardous. Observe the universal precautions for prevention of transmission of infectious agents when handling these materials[12,13,14]. Although the normal human plasma used in the production of this panel was negative for infectious disease markers the reference 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 P0138 HBV 100 copies/ml genotype reference panel 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.

Test procedure

- 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.

Limitations

The P0138 HBV 100 copies/ml genotype reference panel in 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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