



Real-time PCR Diagnostic Kits

Human Herpesviruses



Human herpesvirus (HHV) types

Herpesviruses are members of Herpesviridae, which is a large family of DNA viruses. There are more than 100 herpesvirus types; however, only eight of them are pathogenic for humans. These HHV types belong to three subfamilies, which differ in their lifecycle's features.

Subfamilies	Type of virus	Features of the viral life cycle
α	HSV-1 and HSV-2 (Herpes simplex virus type 1 and 2) HHV- 3 (Varicella-zoster virus, VZV)	Short cycle, cytotoxic effect. Replication in the nerve and epithelial cells. Latent stage in neurons. Transmission ways: contact, sexual, airborne.
β	HHV-5 (Cytomegalovirus, CMV) HHV-6 HHV-7	Slow cycle. Replication is possible in a large number of cell types and tissues, but mainly in the lymphoid cells. Transmission ways: airborne, sexual, intrauterine, blood transfusion, organ transplantation.
γ	HHV-4 (Epstein-Barr virus, EBV) HHV-8	Slow cycle, lymphoproliferative effect. Replication and latent stage mainly in B (EBV) and T (HHV-8) lymphocytes. Transmission ways: transplacental, sexual, airborne, household contact (with saliva), rarely during unsafe drug injection, blood transfusion and transplantation of organs and tissues.

Infection of the population

- More than 90% of adults have been infected with at least one of five types of HHV (HSV-1, HSV-2, VZV, EBV and CMV)
- Primary infection usually occurs at the first years of life and is often accompanied by a self-limited period of clinical illness
- The latent form of the infection remains throughout life and often is symptom-free
- Reactivation of the infection is possible during immunodeficiency states (illness, stress, pregnancy, etc.)



HHV type	Occurrence among adults
HSV-1	60 – 90%
HSV-2	15 – 20%
VZV	More than 90%
EBV	90 %
CMV	50 – 80%
HHV-6	80 – 90%
HHV-7	80 – 90%
HHV-8	2 – 10%

Real-time PCR diagnostics of herpesvirus infections

- Basic method for the examination of patients with immune system pathology and children with immature immunity
- Additional method for the diagnosis of primary HHV infection
- An assay of amniotic fluid for the presence of viral DNA in the prenatal diagnostics
- Identification of eye disease etiology and neurological complications of HHV infection

A critical factor for the diagnosis of HHV by PCR is the correct choice of the bio sample type

Saliva: Salivary gland tissues are involved in the replication of all herpes viruses during acute infection. The study of saliva samples by real-time PCR is most appropriate for the detection of primary HSV infection in early childhood.

Urine: PCR an assay has a high diagnostic sensitivity during the acute phase of primary infection with CMV, VZV, HHV type 6 and during reactivations, when urine samples are tested.

Peripheral blood leukocytes: PCR is effective for the analysis of peripheral blood leukocytes for the detection of β - and γ -herpesviruses. However, DNA of these viruses can be detected in low concentrations in healthy individuals. In order to distinguish between the chronic and acute stages of infection and healthy virus carrier state it is necessary to use a quantitative version of PCR.

Cerebrospinal fluid (CSF): The detection of herpesviruses' DNA in cerebrospinal fluid is suggestive of virus replication in cells of the nervous system. The study of CSF samples using PCR an assay is the only way to timely diagnose the CNS damage, since serological markers appear only in the later stages of the disease.

Urogenital swabs: PCR an assay is relevant for the diagnosis of genital herpes, complications of CMV infection, as well as to define the risk of transmission of HSV-1, HSV-2, VZV, CMV, EBV from the mother to the child during childbirth.

The RealBest assay kits for diagnostics of HHV

Nucleic acid extraction kits

Sample type:

saliva, urine, peripheral blood leukocytes, cerebrospinal fluid, urogenital swabs



Kits for the detection of pathogen's DNA using real-time PCR

- High specificity and sensitivity
- Universal and rapid amplification protocol for all infections
- Multiplex detection

Features of RealBest kits



- Easy-to-use: just add a sample of eluted nucleic acids into tube with Lyophilized Ready Master Mix;
- Reliability of analysis: kit contains Noncompetitive Internal Control sample;
- High sensitivity: 100 copies (genome-equivalents) per sample;
- Universal and rapid amplification protocol for all infections;
- Convenience of storage and transportation: no freezing required, transportation up to 26 °C for no more than 10 days is acceptable

Compatible thermal cyclers: CFX96 (Bio-Rad, USA), DTprime (DT-96), DTLite (DNA-Technology, Russia), Gentier 96E/R (Xi'an TianLong, Science and Technology Co., Ltd., China).

It is possible to use other thermal cyclers with similar technical characteristics, but their application requires additional validation.



Kits for nucleic acids extraction

Cat. №	Kit Name	Method	Number of tests
8896	RealBest extraction 100 A kit for manual DNA/RNA extraction from whole blood, blood serum/plasma, leukocyte blood fraction, biopsy material, cerebrospinal fluid, urine, feces, epithelial cell specimens, environmental materials (tick suspensions, water samples).	Precipitation with magnetic particles	48 (8x6)
8883	RealBest UniMag A kit for automated DNA/RNA extraction from blood serum (plasma), leukocyte blood fraction, biopsy material, cerebrospinal fluid, urine (DNA extraction only), feces, epithelial cells specimens, environmental materials (tick suspensions, water samples).	Sorption on magnetic particles	96 (4x24)
8889	RealBest DNA-extraction 3 (variant 6x16) A kit for manual DNA extraction from blood serum/plasma, urine, epithelial cell specimens.	Sorption on magnetic particles	96 (6x16)
8878	RealBest DNA-extraction 3 (variant 2x48) A kit for automated DNA extraction from blood serum/plasma, urine, epithelial cell specimens.	Sorption on magnetic particles	96 (2x48)
8899	RealBest DNA-express A kit for manual DNA extraction from epithelial cell specimens from the cervical canal, urethra, vagina, posterior laryngeal wall, conjunctiva; semen, saliva, urine.	Thermolysis during 15 min	100

Solutions and components

8814	RealBest Hemolytic Reagent kit for preliminary preparation of whole blood.	50
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Kits for HHV detection by real-time PCR

Cat. №	Kit Name	Detection Channels	Number of tests
2193 CE	RealBest DNA HSV-1,2 (set 1) Detection of herpes simplex virus (HSV) types 1, 2 DNA	FAM, ROX	96
2185 CE	RealBest DNA VZV (set 1) Detection of varicella-zoster virus (VZV) DNA	FAM, ROX	48
2198 CE	RealBest DNA EBV (set 1)* Detection of Epstein-Barr virus (EBV) DNA	FAM, ROX	96
1598	RealBest DNA CMV (set 1)* Detection of cytomegalovirus (CMV) DNA	FAM, ROX	96
2153 CE	RealBest DNA HHV-6* Detection of human herpes virus (HHV) type 6 DNA	FAM, ROX	96
2148 CE	RealBest DNA HHV-8 Detection of human herpes virus (HHV) type 8 DNA	FAM, ROX	48
2195 CE	RealBest DNA HSV-1/HSV-2 (set 1) Differential detection of herpes simplex virus (HSV) types 1 and 2 DNA	FAM, ROX, HEX	96
0489	RealBest DNA CMV/HSV-1,2 Differential detection of cytomegalovirus (CMV) DNA and herpes simplex virus (HSV) types 1, 2 DNA	FAM, ROX, HEX	96

* Quantification is possible.

Kits contain the lyophilized Ready Master Mix into 0.2 ml white tubes of the 48 or 96-tube plate.

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