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## Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus

- ▶ The Human Herpes Simplex Viruses type 1 and 2 (HSV-1 and HSV-2), together with varicella-zoster virus (VZV), belong to the **alphaherpesvirus** subfamily. Following primary infection, these viruses can establish latency in human sensory ganglia, which act as reservoirs, and may subsequently reactivate.
- ▶ **Human Herpes Simplex Viruses (HSV) types 1 and 2** are among the most prevalent human viruses worldwide and are commonly associated with conditions such as oral herpes, genital herpes, herpetic stromal keratitis, meningitis, and encephalitis. Oral infections are most frequently caused by herpes simplex virus type 1 (HSV-1), whereas genital infections are more commonly associated with HSV-2. Both are large double-stranded DNA viruses that establish lifelong persistent infections characterized by periods of latency and reactivation. Although they share a high degree of genetic homology, they exhibit differences in certain genomic regions that allow their identification. Infection occurs following viral inoculation through mucosal surfaces or damaged skin. These neurotropic viruses subsequently establish latency in sensory ganglia, from which they may periodically reactivate, causing symptomatic lesions or asymptomatic viral shedding with transmission potential. Treatment of HSV-1 and HSV-2 infections is similar and is based on antiviral therapy, adjusted according to the site of infection, severity, and whether the infection is primary or recurrent
- ▶ **Varicella-zoster virus (VZV)** is the etiological agent responsible for two distinct clinical conditions: varicella (chickenpox) and herpes zoster (shingles). Varicella is highly contagious and causes an acute infection characterized by a dermal vesiculopustular rash that develops 10–21 days after exposure. This condition occurs primarily in children and presents as an itchy, vesicular rash that starts on the face, scalp and trunk, and then spreads to the rest of the body. VZV remains latent in sensory neurons and may later reactivate, causing herpes zoster. Herpes zoster is a painful condition that typically affects older adults who are not immunized or who have reduced immunity to VZV, as well as patients with impaired cell-mediated immunity.

## Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus

VIASURE *Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus Real Time PCR Detection Kit* is a non-automatized qPCR test designed for the **simultaneous qualitative detection** of DNA from Herpes simplex virus type 1 (HSV-1), Herpes simplex virus type 2 (HSV-2) and/or Varicella Zoster virus (VZV) in **cerebrospinal fluid, lesion swab, ocular samples, and in EDTA-plasma and EDTA-whole blood samples** collected in EDTA K2 tubes.

After DNA isolation, the identification of target sequences is performed by the amplification of a conserved region of the *US4* gene (HSV-1), *US6* gene (HSV-2) and *ORF29* gene (VZV), using specific primers and fluorescent-labelled probes.

### ► Analytical sensitivity

VIASURE *Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus Real Time PCR Detection Kit* showed a detection limit indicated in the following table, with a positive rate of  $\geq 95\%$ .

	LoD					
	EDTA - plasma	CSF	CSF WE	EDTA - whole blood	Ocular matrix	Lesion swabs
HSV-1	0,008 TCID50/μL	0,016 TCID50/μL	0,064 TCID50/μL	0,032 TCID50/μL	0,002 TCID50/μL	0,002 TCID50/μL
HSV-2	0,001 TCID50/μL	0,001 TCID50/μL	0,006 TCID50/μL	0,001 TCID50/μL	$2,5 \times 10^{-4}$ TCID50/μL	$2,5 \times 10^{-4}$ TCID50/μL
VZV	$5 \times 10^{-6}$ TCID50/μL	$10^{-5}$ TCID50/μL	$4 \times 10^{-5}$ TCID50/μL	$5 \times 10^{-6}$ TCID50/μL	$5 \times 10^{-6}$ TCID50/μL	$5 \times 10^{-6}$ TCID50/μL

**Table 1.**

LoD results of VIASURE *Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus Real Time PCR Detection Kit* using the validated workflows and EDTA-plasma, EDTA-whole blood, CSF, lesion swabs and ocular matrixes spiked with reference material for HSV-1, HSV-2, and VZV. TCID50 = Tissue Culture Infectious Dose 50. CSF = Cerebrospinal fluid, WE = without nucleic acid extraction procedure.

### ► References - VIASURE *Herpes virus 1, Herpes virus 2 & Varicella Zoster Virus Real Time PCR Detection Kit*

#### - With internal control:

1 x 8-well strips, low profile ..... VS-HHZ101L  
 6 x 8-well strips, low profile ..... VS-HHZ106L  
 12 x 8-well strips, low profile ..... VS-HHZ112L  
 96-well plate, low profile ..... VS-HHZ113L  
 2 x 4-well strips, Rotor-Gene® ..... VS-HHZ101  
 18 x 4-well strips, Rotor-Gene® ..... VS-HHZ172

1 x 8-well strips, high profile ..... VS-HHZ101H  
 6 x 8-well strips, high profile ..... VS-HHZ106H  
 12 x 8-well strips, high profile ..... VS-HHZ112H  
 96-well plate, high profile ..... VS-HHZ113H  
 9 x 4-well strips, Rotor-Gene® ..... VS-HHZ136  
 4 tubes x 24 reactions ..... VS-HHZ196T

#### - With extraction control:

1 x 8-well strips, low profile. .... VS-HHZ101LE  
 6 x 8-well strips, low profile. .... VS-HHZ106LE  
 12 x 8-well strips, low profile ..... VS-HHZ112LE  
 96-well plate, low profile ..... VS-HHZ113LE  
 2 x 4-well strips, Rotor-Gene® ..... VS-HHZ101E  
 18 x 4-well strips, Rotor-Gene® ..... VS-HHZ172E

1 x 8-well strips, high profile. .... VS-HHZ101HE  
 6 x 8-well strips, high profile. .... VS-HHZ106HE  
 12 x 8-well strips, high profile ..... VS-HHZ112HE  
 96-well plate, high profile ..... VS-HHZ113HE  
 9 x 4-well strips, Rotor-Gene® ..... VS-HHZ136E  
 4 tubes x 24 reactions ..... VS-HHZ196TE