



## Herpes simplex Virus



The Herpesviruses occur worldwide in humans and animals with several hundred herpesviridae species. Common to all herpesviruses is a high level of generalized contamination (60-90% carriers) and the ability to persist in a latent state in the body over long periods.

The Herpes-simplex-Virus (HSV) is the pathogen that causes a vesicular exanthem (fever blisters, herpes labiales or genitalis), encephalitis and a generalized infection in newborns (herpes neonatorum). They have dsDNA genomes.

Herpes simplex viruses are classified in types 1 and 2:

Initial infection with herpes simplex virus Type 1 usually occurs in early childhood. HSV type 1 is transmitted by contact and possible by smear infection as well. The portal of entry is normally the oral mucosa ("oral type") and the infection usually manifests as a gingivostomatitis. The viruses wander along axons into the CNS, where they persist in latent state in the trigeminal (Gasseri) ganglion. As with all herpesviruses the pathogen remains in the macroorganism permanently after the primary infection. Following reactivation (endogenous recidivation), the viruses follow the same route back to the periphery, where they cause the familiar vesicular exanthema ("fever blister", herpes labialis). Despite established immunity such recidivations can manifest repeatedly because the virus wander within the nerve cells and do not enter the intercellular space, thus remaining beyond the reach of the immune defences. Possible complications include keratoconjunctivitis and a highly lethal form of encephalitis.

The initial infection with herpes simplex virus Type 2 normally affects the urogenital area („genital type“) and can be contracted despite an existing HSV type 1 infection. HSV type 2 persists in the latent state in the lumbosacral ganglia or periphel tissues, from where it causes episodes of manifest herpes genitalis. Neurological complications are very rare and more benign than in HSV type 1. On the other hand, infections of newborn children (herpes neonatorum) e.g. in cases of maternal genital herpes, are feared for their high lethality rate.

Transmission of HSV type 2 usually occurs during sexual intercourse, so that infections are generally not observed until after puberty.

Species	Disease	Symptoms	Mechanism of infection
HSV type 1 (Herpes labialis)	Oral herpes <u>Usually:</u> gingivostomatitis <u>complications:</u> e.g. keratoconjunctivitis, encephalitis <u>recidivation:</u> Herpes labialis	After an incubation period of ca. 1 week: vesicular exanthema (fever blister) at the mouth or face accompanied by feeling of sickness, fever, difficulties in swallowing	Transmission by droplets
HSV type 2 (Herpes genitalis)	Genital Herpes  Neonatal Herpes	Self-healing-lesions, influenza-like symptoms (fever, swollen glands), ulcers  encephalitis	Sexually transmitted disease  Infection during birth

Infections may be diagnosed by:

Microscopy:

Serology: Determination of specific antibodies based on the ELISA-technique

## NovaLisa™ HSV 1/HSV 2/HSV 1+2 IgG/IgM ELISA:

The NovaLisa™ HSV1/HSV2/HSV 1+2 IgG/IgM ELISA is intended for the qualitative determination of IgG-/IgM-class antibodies against Herpes simplex Virus Type 1 resp. Type 2 resp. Type 1+2 in human serum or plasma (citrate).

### Antigens:

HSV 1: recombinant gG1 protein of HSV Type 1  
HSV 2: recombinant gG2 protein of HSV Type 2  
HSV 1+2: purified membrane antigens of strain Mac Intyre (ATCC VR-539) (HSV1) and strain Ms (ATCC VR-540) (HSV2)

### Specific performance characteristics:

#### HSV1:

	Intraassay			Interassay			Sensitivity %	Specificity %
	n	Mean	CV %	n	Mean	CV %		
IgG	20	0,45	3,4	12	12,3	2,7	>95	>95
	24	1,88	3,7	12	42,5	4,9		
IgM	20	1,3	7,7	14	37	4,2	>95	>95
	24	0,46	6,9	14	12	5,6		

#### HSV2:

	Intraassay			Interassay			Sensitivity %	Specificity %
	n	Mean	CV %	n	Mean	CV %		
IgG	20	0,45	3,4	12	12,8	3,6	87,5	94,1
	24	1,88	3,7	12	48,3	5,1		
IgM	20	1,3	7,7	14	37	4,2	>95	>95
	24	0,46	6,9	14	12	5,6		

#### HSV1+2:

	Intraassay			Interassay			Sensitivity %	Specificity %
	n	Mean	CV %	n	Mean	CV %		
IgG	13	1,08	5,8	3	1,05	3,6	>95	>95
IgM	13	1,22	8,8	4	1,24	11,4	>95	>95

### External comparison study Novagnost™ (is equivalent to NovaTec):

“In summary, the novel Novagnost™ enzyme immunoassays for the determination of HSV-1 and HSV-2 IgG show a very good correlation with ELISA and immunoblot reference procedures approved by the US FDA. The novel procedures can be recommended for reliable automatic type-specific diagnosis of latent HSV infection.”  
(A. Sauerbrei, P. Wutzler/ Journal of Virological Methods 144 (2007) 138-142)

### Order information:

ELISA	Number of determinations	Product number
HSV Typ 1 IgG	96	HSV1G0500
HSV Typ 1 IgM	96	HSV1M0500
HSV Typ 2 IgG	96	HSV2G0540
HSV Typ 2 IgM	96	HSV2M0540
HSV Typ 1+2 IgG	96	HSVG0250
HSV Typ 1+2 IgM	96	HSVM0250