



LABORATORY UPDATE

A d v a n c e d M e d i c a l A n a l y s i s L a b o r a t o r y

DETECTION AND IDENTIFICATION OF HERPES SIMPLEX VIRUS TYPE 1 AND 2 CULTURE

CLINICAL SIGNIFICANCE

Herpes Simplex Virus is responsible for several clinically significant human viral diseases, with severity ranging from mild to fatal. *Herpes Simplex Virus Type 1* infection are usually found above the waist. *Herpes Simplex Virus Type 2* infections are more commonly seen in association with the genitalia and surrounding areas, and are usually but not always sexually transmitted. It is important to note however, that both *Herpes Simplex Type 1* and *2* have been involved in all disease manifestations and locations of the body, following introduction of the virus through broken skin or mucous membranes.

Testing for HSV

AMA now offers a test that detects Herpes Simplex Virus and identifies the type. This method is the ELVIS™ (enzyme linked virus inducible system) HSV assay which involves the utilization of Baby Hamster Kidney Cell (BHK) monolayers genetically engineered to contain a reporter gene. When the monolayer is infected with *Herpes Simplex Virus* (HSV) an enzyme, B-galactosidase is produced. After incubation, the monolayers are fixed and then treated with a chromogenic substrate which is specific for the HSV induced enzyme. They hydrolysis of the substrate by the enzyme B-galactosidase causes the HSV infected cells to stain blue; uninfected cells do not stain. Monolayers are examined using low power brightfield microscopy for infected blue cells. The ELVIS™ system is specific for HSV and will often detect HSV before cytopathic effects are evident.

Two monoclonal antibodies (one directed against HSV-1 proteins and one directed against HSV-2 proteins) are included with the detection reagent. These murine antibodies will bind with the specific HSV proteins of the infected cells. The antibody directed against HSV-2 is fluorescein labeled. Cultures with blue cells present can be examined using a fluorescent microscope equipped with the appropriate filters for FITC for the presence of HSV-2 infected cells. The cells, if present, stain with an "apple-green" cytoplasmic pattern. Cultures with blue cells that do have the fluorescent cells are considered negative for HSV-2. The specific HSV-1 monoclonal is unlabeled and must be identified by applying to the monolayer a second fluorescein labeled goat-antimouse IgG antibody. The HSV-1 cells will stain with an "apple-green" nuclear pattern.

SPECIMEN REQUIREMENTS

Volume: Viral Transport

Minimum Volume: 1 Viral Transport

Containers: Body fluids and tissue samples may be submitted in viral transport media or in a sterile leak proof container. Swab from lesions of the vulva, cervix, penis, or other areas are to be submitted in an appropriated viral transport media.

Patient Preparation: Creams, ointments, lotions, ice, alcohol, Betadine solution, zinc or a sitz bath reduce viral recovery. Blood introduced into the specimen can be inhibitory.

Collection: All specimens should be collected from the patient by an appropriately trained individual. Ideally specimens should be collected within 3-4 days of the onset of symptoms but no more than 7 days. Specimens collected from lesions in the acute or vesicular stage will yield a higher number of viable viruses. During specimen collection, appropriate measure should be employed to avoid contaminating the sample from the other body sites, or from the environment. Rayon or Dacron swabs are suggested. Calcium alginate swabs are not acceptable.

Storage: If the specimen is to be processed within 72 hours after collection, store at 2° to 8°C. If the specimen will not be set up within 72 hours, it is to be frozen at -70°C.

Causes for rejection:

1. Specimens received with name or identification discrepancies.
2. Unlabeled specimens
3. Improper collection or transportation of specimens
4. Dry Specimens.