Trinity Biotech

Uni-Gold™ HSV-2 Rapid

REF Cat No 1206730 15 Tests

Pour d'autres langues
Für andere Sprachen
Para otras lenguas
Per le altre lingue
Dla innych języków
Para outras línguas
Για τις άλλες λώσσες
För andra språk
For andre språk

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INTENDED USE

Uni-Gold™ HSV-2 Rapid is a rapid test intended for qualitatively detecting the presence or absence of human IgG class antibodies to herpes simplex virus type 2 (HSV-2) in human whole blood (venous or capillary) or serum. The test is indicated for testing sexually active adults or pregnant women to aid in the presumptive diagnosis of HSV-2 infection.

The Uni-Gold™ HSV-2 Rapid device has not been established for use in the pediatrics population, for neonatal screening, or for testing immunocompromised patients. This kit is not intended for self-testing, and this test is neither FDA cleared nor approved for testing blood or plasma donors.

For *in vitro* diagnostic use.
Moderate Complexity Test.

SUMMARY AND EXPLANATION

Herpes simplex virus (HSV) is a common human pathogen found worldwide which produces a variety of diseases. Herpes simplex virus has been characterized into two different serotypes: HSV-1 is generally associated with infection in the tongue, month, lips, pharynx and eyes; whereas HSV-2 is primarily associated with genital and neonatal infection. In the U.S., most young sexually active persons with genital ulcers have genital herpes.[2] Genital ulcers have been associated with an increased risk for HIV infections.[2] Many cases of genital herpes are transmitted by persons who are unaware that they are infected or do not recognize symptoms. The Centers for Disease Control and Prevention (CDC) states that counseling is an important aspect of managing patients who have genital herpes.[2]

One of the most serious consequences of genital herpes is neonatal herpes.[3] Almost all neonatal HSV-2 infections are acquired by passage through an infected birth canal of mothers who are asymptomatic at delivery.[2,5] Mothers are at greater risk for contracting a primary or initial genital HSV infection when they are seronegative to one or both HSV types, and their partner is seropositive.[7,8]

TEST PRINCIPLE

Uni-Gold™ HSV-2 Rapid is an immunochromatographic test that uses purified gG-2 antigen bound to a nitrocellulose membrane to detect HSV-2 antibodies. Sample is added to the sample well and filtered through the blood separation membrane in the lid of the housing. The lid of the housing is opened after 30 seconds after sample addition, where a buffer well is accessible. The buffer is added to the buffer well to cause the sample and antibody-gold conjugate specific for human IgG deposited between the buffer pad and the sample deposition zone to migrate across the nitrocellulose membrane. As the sample migrates across the membrane, the HSV-2 test line captures any HSV-2 antibodies present in the sample. If there is no HSV-2 antibody present in the sample no test line is seen. The sample contacts the control line, which captures human IgG present in the sample. Formation of a pink line in the control zone of the device indicates the device is working correctly.

MATERIALS SUPPLIED

Uni-Gold™ HSV-2 Rapid kit contains sufficient materials to perform 15 determinations. All un-opened materials are stable at 35°F to 86°F (2 to 30°C) until the expiration date stated on the reagent label.

Test Devices, 15 individually pouched devices

Each device is individually packaged in a pouch with desiccant. Active ingredients in the device are purified native gG-2 and anti-human IgG on a nitrocellulose membrane and antibody to human IgG conjugated to colloidal gold particles.

Buffer, 1 vial of 2.5 mL

The buffer consists of a buffered isotonic saline solution (0.9% sodium chloride) containing non-ionic detergent and 0.1% sodium azide as a preservative.

Disposable Capillary Collection Tubes and Plungers, 15 tubes & plungers

Disposable metered lithium heparin coated capillary tubes and plungers for use with capillary whole blood.

Sample Well

Buffer Well

MATERIALS REQUIRED AND AVAILABLE AS AN ACCESSORY TO THE KIT

Uni-Gold™ HSV-2 Rapid Test Kit Controls. Catalog number 1206735. Each pack of kit controls contains Positive Control, 1 vial, (0.5 mL) and Negative Control, 1 vial, (0.5 mL).

MATERIALS REQUIRED BUT NOT SUPPLIED

- Clock or stopwatch capable of measuring seconds
- Biohazard waste container
- Disposable gloves
- Antiseptic wipe
- Sterile gauze pad
- Adhesive bandage

Additional items required for venipuncture whole blood collection

- Blood collection devices for venipuncture whole blood and serum.
- Calibrated pipette for use with venous whole blood (20 µL) and serum (15 µL).
- Centrifuge to process.

Additional items required for finger stick (capillary whole blood)

- Sterile lancet capable of producing a 20 µL sample.

WARNINGS AND PRECAUTIONS

1. For *in vitro* Diagnostic Use.
2. Read the package insert completely before using the product. Follow procedure as described in this package insert and easy reference guide. Failure to follow procedures may produce erroneous results.
3. Before performing testing operators should read and become familiar with the Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and other Blood-borne Pathogens in Health-Care settings.[11]
4. All human blood products should be handled as potentially infectious material. Controls, serum specimens, and equipment coming into contact with these specimens should be considered potentially infectious and decontaminated or disposed of with proper biohazard precautions.
5. Uni-Gold™ HSV-2 Rapid buffer contains 0.1% sodium azide as a preservative. Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. If the buffer is discarded into the sink, flush with a large volume of water to prevent azide build-up. Occasionally decontaminate the drains with 10% sodium hydroxide (CAUTION: caustic), allow standing for 10 minutes, and then flushing with large volumes of water.
6. Testing materials (specimens, test devices and collection tubes) should be disposed of as biohazard waste in accordance with local, state and/or federal regulations.
7. Do not substitute or mix reagents from different lots or from different manufacturers.
8. Do not puncture the test membrane with the collection pipette or pipette tip. The membrane may be damaged from contact.
9. Microbial contamination of serum specimens can produce erroneous results. Use aseptic techniques to avoid microbial contamination.
10. Do not use any device if the pouches have been perforated.
11. Each device is for single use only.
12. Do not use the kit past the expiration date.
13. Adequate lighting is required to read the test results.
14. Perform the test at room temperature 59°F to 86°F (15°C to 30°C).
15. The intensity of the test line does not necessarily correlate with the level of antibody in the specimen.

STORAGE INSTRUCTIONS

1. Store Uni-Gold™ HSV-2 Rapid at 35°F to 86°F (2°C to 30°C).
2. Kit components are stable until expiration date when stored as directed.
3. DO NOT FREEZE.
4. If stored refrigerated, allow components to be come to room temperature prior to use (approximately 30 minutes).
5. Do not use after the expiration date indicated.
6. Store the separately supplied Uni-Gold™ HSV-2 Rapid Test Kit Controls at 35°F to 47°F (2°C to 8°C).

SPECIMEN COLLECTION AND PREPARATION

Only capillary or venous whole blood or serum can be used to perform this test. Collect samples aseptically using approved sample collection techniques

WHOLE BLOOD COLLECTED BY FINGER STICK

Collect blood samples aseptically using approved techniques.[19,20] Use an antiseptic wipe to clean the finger. Allow the finger to dry thoroughly or wipe dry with a sterile gauze pad. Use a sterile lancet capable of producing enough blood droplets to fill the 20 µL collection tube. Puncture the skin just off the center of the finger pad. Hold the finger downward. Apply gentle pressure beside the point of puncture. Avoid squeezing the finger to make it bleed. Wipe away the first drop of blood with a sterile gauze pad. Allow a new drop of blood to form. Massage at the finger base to produce a droplet of sufficient volume if blood flow is inadequate. Avoid "milking" the finger. Whole blood collected by finger stick should be used on the Uni-Gold™ HSV-2 Rapid **immediately** after collection.

WHOLE BLOOD COLLECTED BY VENIPUNCTURE

Collect blood samples aseptically using approved venipuncture techniques by qualified personnel.[12] Collect a venipuncture whole blood specimen using a blood collection tube containing EDTA (lavender top). Other anticoagulants have not been tested and may give incorrect results. If the specimens are not tested at the time of collection, the whole blood may be stored at 35°F to 47°F (2°C to 8°C) for up to 48 hours. Prior to testing, mix the blood tube gently by inversion several times to ensure a homogeneous sample.

SERUM

Collect blood samples aseptically using approved venipuncture techniques by qualified personnel.[12] Collect a venipuncture whole blood specimen using a blood collection tube without coagulants. Allow blood sample to clot at room temperature before centrifugation. Aseptically transfer serum to a tightly closing sterile container for storage. Separated serum should remain at room temperature 59°F to 86°F (15°C to 30°C) for no longer than 4 hours. If the assay will not be completed within 48 hours, or for shipment of samples, freeze at -4°F (-20°C) or colder. Thaw and mix samples well prior to use. Avoid multiple freeze thaw cycles. Hyperlipemic, heat-inactivated, hemolyzed or contaminated sera should not be used.

Serum Storage Conditions are as follows:

Room Temperature 59°F to 86°F (15°C to 30°C): 4 hours
Refrigerate 35°F to 47°F (2°C to 8°C): 8 hours (bring sample to room temperature before use.)
Freeze ≤ -4°F (≤ -20°C): 2 months (thaw and bring samples to room temperature prior to using) .

PROCEDURE

PROCEDURAL NOTES

1. Do not use the test after the expiration date.
2. Store the test kit at 35°F to 86°F (2°C to 30°C). Do not freeze. Allow approximately 30 minutes for test kit to come to room temperature, if refrigerated, before use.
3. Use the test within 2 hours after removing the test device from the pouch.
4. Do not open top of test device prior to adding sample.
5. Do not damage the test membrane.
6. Place the device horizontally on a flat surface while performing the test.
7. Use a separate collection tube for each sample.
8. Hold collection tube and buffer bottle vertically to dispense blood and buffer onto the test device.
9. Ensure the collection tube is directly over the sample well before depressing the plunger. Insufficient sample quantities may result in invalid results.
10. **Do not touch collection tube tip or buffer bottle tip directly to the test membrane.**

ASSAY PROCEDURE

Tear open the foil pouch and place the test device on a flat horizontal surface. Discard desiccant.

1. **Use the disposable Mylar-wrapped blood collection tube provided in the kit for collection of whole blood capillary (finger stick) samples.**
   Insert the plunger into the collection tube. Place the tip of the collection tube into the sample. The sample should fill to the mark on the collection tube. If the sample is not collected to the mark, the collection tube should be discarded and another specimen should be collected from another finger by repeating the sample collection process. Transfer the entire contents (approximately 20 µL) of whole blood to the sample well by pushing down on the plunger. Do not allow the collection tube tip to damage the membrane. Discard the used collection tube into a biohazard waste receptacle. For venous whole blood use a calibrated laboratory transfer pipette to deliver 20 µL of sample to the sample addition well. For serum, use a calibrated laboratory transfer pipette to deliver 15 µL of sample to the sample addition well.
2. Wait 30 seconds to let the sample penetrate the sample well. Open the device top (uncovering the buffer addition well).
3. Add 5 drops of buffer to the buffer well. Allow the buffer to fall drop-wise onto the buffer well. Do not allow the buffer bottle tip to touch the membrane. Leave the test device open until test results are read.
4. Leave the test device lying flat. Set the timer for 15 minutes and start timing the test.
5. Read the result at 15 minutes, but do not read result after more than 20 minutes.

QUALITY CONTROL

Built-in Control Features

Uni-Gold™ HSV-2 Rapid has a built-in procedural control that demonstrates assay validity. A pink/red line in the CONTROL (C) line indicates that the test is running correctly. Test results are invalid if there is no control line. Invalid tests should be repeated.

1. The CONTROL (C) line is **NOT** an internal reference for test result line intensity.
2. The CONTROL (C) line may appear before 15 minutes. It is important to wait at least 15 minutes prior to reading a negative result.
3. A positive TEST (T) line may develop before 15 minutes, if the CONTROL (C) line is observed; the test may be read as positive.

External Quality Control

Uni-Gold™ HSV-2 Rapid Test Kit Controls (Catalog No. 1206735) are available separately for use only with the Uni-Gold™ HSV-2 Rapid Test Kit. The kit controls are used to verify your ability to perform the test and interpret the test result. Controls should be tested by the same procedure as patient samples. Use of kit control reagents manufactured by any other source may not produce the required results.

The positive control should produce a weak to moderate positive TEST line (T) combined with a clearly visible CONTROL (C) line. The negative control should produce a clearly visible CONTROL (C) line combined with no visible line on the Test (T) line.

Run the kit control under the following circumstances:[18]

- Each new operator prior to performing testing on patient specimens.
- When opening a new test kit lot.
- When a new shipment of test kits is received.
- If the temperature of the test kit storage area falls outside of 35°F to 86°F (2°C to 30°C).
- If the temperature of the testing area falls outside of 59°F to 86°F (15°C to 30°C).
- At periodic intervals in conformance with local, state and/or Federal regulations or accreditation programs.

Refer to the Uni-Gold™ HSV-2 Rapid Test Kit Controls package insert for instructions on the use of these reagents. It is the responsibility of each laboratory using the Uni-Gold™ HSV-2 Rapid Test Kit to establish an adequate quality assurance program to ensure the performance of the device under its specific locations and conditions of use.

For assistance or additional information about user controls, contact Trinity Biotech Technical Services at (800) 325-3424.

INTERPRETATION OF RESULTS

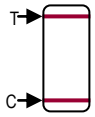
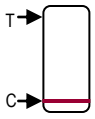
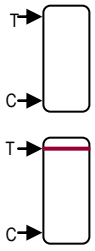
Test Validity: The test result is only valid if a pink/red line appears in the CONTROL (C) line of the device. If no CONTROL (C) line is observed, the result should be considered invalid and the test should be repeated.

Positive Result

The presence of a pink/red line in the TEST (T) line and the CONTROL (C) line of the device is a positive test, which indicates that HSV-2 antibody is present in the sample. The TEST (T) line l should be considered a positive result, regardless of width over the test strip.

Negative Result

The complete absence of a line in the TEST (T) line with a pink/red line in the CONTROL (C) line of the device should be considered a negative result, which indicates no HSV-2 antibody present in the sample.

READING TEST RESULTS	
	**Positive**: Two lines appear - one in the Test (T) Line and one in the Control (C) Line.
	**Negative:** One line appears in the Control (C) Line and no line appears in the Test (T) Line.
	**Invalid:** The line in the Control (C) Line fails to appear in 20 minutes. Regardless of whether a line appears in the Test (T) Line, the result is invalid and the test should be repeated with a new cassette.

LIMITATIONS

The Uni-Gold™ HSV-2 Rapid Test must be used in accordance with the instructions in this package insert to obtain accurate results.

1. The performance of this assay has not been established for the general population.
2. The performance of this assay has not been established for monitoring HSV-2 therapy.
3. Cross-reactivity testing of this assay has not been evaluated for *Chlamydia trachomatis*, *Treponema pallidum*, human papilloma virus, *Toxoplasma gondii, Candida albicans, Neisseria gonorrhea, Bacteroides* species, *Gardnerella vaginalis*, or *Mobiluncus* species.
4. Do not test lipemic, heat-inactivated, hemolyzed or contaminated samples.

5. Reading the test earlier than 15 minutes, or later than 20 minutes, may give incorrect results. All results from this and other serologies must be correlated with clinical history, epidemiological data, and other data available to the attending physician in evaluating the patient.
6. The prevalence of infection will affect the assay's predictive value.
7. As with other serological tests, negative results do not rule out the diagnosis of herpes simplex virus-2 disease. The time required to seroconvert following primary infection varies with the individual, the specimen may have been drawn prior to the appearance of detectable antibodies.[15] There are reports of sero-reversion.[15,16] When appropriate, e.g., in suspected early herpes simplex virus-2 disease, the test should be repeated or tested with a different assay, such as a type specific HSV-2 IgG ELISA.[2,14] If upon re-testing, the result remains negative, then a second sample should be drawn 4 to 12 weeks later and testing repeated.[14,15]
8. Liljeqvist reported about 0.2% (5/2400) HSV-2 isolates did not have detectable gG2 as determined by binding to monoclonal antibodies.[14]
9. As with other serological tests, false positive results may occur. Repeat testing or testing with a different device may be indicated in some settings, e.g., patients with a low likelihood of HSV infection.[2,14]
10. A single positive result only indicates previous immunologic exposure; level of antibody response or class of antibody response may not be used to determine active infection or disease stage.
11. Serology cannot distinguish genital from oral infections. When appropriate, culture is recommended to identify the infection site. However, false negative HSV cultures are common, especially in patients with recurrent infection or with healing lesions.[2]
12. The intensity of a line in the TEST (T) line is not an indication of the level of antibody in the specimen.
13. The performance of the assay has been not been established for ruling out diseases with similar symptoms, e.g. *Candida albicans*, Bacteroides species, *G. vaginalis*, Mobiluncus species, or HPV. Instead, use culture or other appropriate methods.
14. The performance of this assay has not been established for matrices other than undiluted whole blood (capillary or venous with EDTA), or serum.

EXPECTED VALUES

Outside investigators assessed the device with masked, prospective samples from 1) sexually active adults (n = 575), and 2) from pregnant women (n = 401). The reference method was a commercially available 1 and 2 IgG Immunoblot test. The observed prevalences and the hypothetical predictive values for the two populations are shown below. The positive predictive value will decrease proportionally to the prevalence of HSV infection as reflected in the table below.

Observed Prevalence	Observed Rate of Positives in Indicated Populations			
	Uni-Gold™ HSV-2 Rapid In Sera	Uni-Gold™ HSV-2 Rapid In Venous Whole Blood	Uni-Gold™ HSV-2 Rapid In Capillary Whole Blood	Commercially available Immunoblot test
HSV-2 positives(+) with Pregnant Women	(118/400) 29.5%	(118/400) 29.5%	(124/400) 31.0%	(117/399) 29.3%
HSV-2 positives(+) with Sexually Active Adults	(241/573) 42.1%	(240/573) 41.9%	(243/573) 42.4%	(226/570) 39.6%

Prevalence vs. Hypothetical Predictive Values (In Pregnant Women)

Prevalence	Serum		Venous Whole Blood		Capillary Whole Blood	
	PPV	NPV	PPV	NPV	PPV	NPV
50%	96.7%	94.8%	97.0%	93.4%	95.7%	94.9%
40%	95.2%	96.5%	95.6%	95.5%	93.7%	96.6%
30%	92.7%	97.7%	93.4%	97.1%	90.5%	97.8%
25%	90.8%	98.2%	91.6%	97.7%	88.1%	98.2%
20%	88.1%	98.7%	89.1%	98.3%	84.7%	98.7%
15%	83.9%	99.0%	85.3%	98.8%	79.7%	99.1%
10%	76.6%	99.4%	78.5%	99.2%	71.2%	99.4%
5%	60.8%	99.7%	63.3%	99.6%	53.9%	99.7%

Prevalence vs. Hypothetical Predictive Values (In Sexually Active Adults)

Prevalence	Serum		Venous Whole Blood		Capillary Whole Blood	
	PPV	NPV	PPV	NPV	PPV	NPV
50%	92.0%	93.6%	92.5%	93.3%	92.0%	93.7%
40%	88.4%	95.7%	89.1%	95.4%	88.5%	95.7%
30%	83.1%	97.2%	84.1%	97.0%	83.1%	97.2%
25%	79.3%	97.8%	80.4%	97.7%	79.3%	97.8%
20%	74.2%	98.3%	75.5%	98.2%	74.2%	98.3%
15%	67.0%	98.8%	68.5%	98.7%	67.0%	98.8%
10%	56.1%	99.2%	57.8%	99.2%	56.1%	99.3%
5%	37.7%	99.6%	39.3%	99.6%	37.7%	99.6%

Note: Sexually active adult and pregnant women populations in different geographic areas may produce different frequency distributions from the table above. Each laboratory should establish frequency distributions for their specific patient populations.

PERFORMANCE CHARACTERISTICS

SUMMARY OF STUDIES

Study	Criteria	Sensitivity and Specificity with a commercially available Immunoblot test
Pregnant Women (Indicated population) in Serum	Sensitivity Specificity	92.3% (108/117) 96.1% (271/282)
Pregnant Women (Indicated population) in Venous Whole Blood	Sensitivity Specificity	93.2% (109/117) 97.2% (274/282)
Pregnant Women (Indicated population) in Capillary Whole Blood	Sensitivity Specificity	94.9% (111/117) 95.4% (269/282)
Sexually Active Adults (Indicated population) in Serum	Sensitivity Specificity	92.9% (210/226) 91.8% (315/343)
Sexually Active Adults (Indicated population) in Venous Whole Blood	Sensitivity Specificity	93.4% (211/226) 92.4% (317/343)
Sexually Active Adults (Indicated population) in Capillary Whole Blood	Sensitivity Specificity	93.8% (212/226) 91.8% (315/343)
Non-Sexually Active Adults (Low Prevalence Population) in Serum	Sensitivity Specificity	0% (0/2) 100% (101/101)
Non-Sexually Active Adults (Low Prevalence Population) in Venous Whole Blood	Sensitivity Specificity	0% (0/2) 100% (101/101)
Non-Sexually Active Adults (Low Prevalence Population) in Capillary Whole Blood	Sensitivity Specificity	0% (0/2) 100% (101/101)
CDC HSV/CMV Panel	Sensitivity Specificity	100% (35/35) 98.5% (64/65)
Cross-reactivity:	Overall Cross-reactivity	4.2% (9/213)
Inter-Lot Reproducibility	%CV	< 10%
Inter-Operator & Inter-Site Reproducibility	%CV range	≤ 65.0%
Intra-Operator Reproducibility	%CV	≤ 35.1%
Intra-Site Reproducibility	%CV of positives	≤ 23.0%
Interference	No effect on sample results	

SPECIFICITY AND SENSITIVITY WITH PREGNANT WOMEN (N = 401)

External Investigator I (n = 161), External Investigator II (n = 120), and External Investigator III (n = 120) assessed the device's agreement in subjects from pre-natal clinics. The capillary and venous whole blood and sera from sequential prospective subjects were collected, tested, and masked at the external investigator sites. The masked sera sample was submitted to the laboratory and tested in the reference methods. External investigator I was a medical school clinic in Southeastern United States; External investigator II was a pre-natal clinic located in the Mid-Atlantic Region of the United States; and External investigator III was an Ob-GYN practice in the Mid-Atlantic Region of the United States. A commercially available 1 and 2 IgG Immunoblot test was the typing reference method for calculation of Specificity and Sensitivity.

Pregnant Women in Sera The Uni-Gold™ HSV-2 Rapid showed 96.1% (271/282) agreement with Immunoblot negatives, and 92.3% (108/117) agreement with Immunoblot positives. Two samples were not tested on Immunoblot.
Of the 401 sera, the Immunoblot IgG was negative with 282 and positive with 117. Two samples were not tested in Immunoblot; one due to insufficient quantities and the other due to improper storage.
Of the 282 negative Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 96.1% (271/282), positive with 9, and invalid with 2.
Of the 117 positive Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 6, positive with 92.3% (108/117), and invalid with 3.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH PREGNANT WOMEN IN SERA (N= 401)

Site	Immunoblot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	117	108	6	3	92.3% (108/117) 95% CI 85.9 -96.4%	N/A
Combined Sites	Negative	282	9	271	2	N/A	96.1% (271/282) 95% CI 93.1-98.0%
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1] Two samples were not tested.

PREGNANT WOMEN IN VENOUS WHOLE BLOOD

The Uni-Gold™ HSV-2 Rapid showed 97.2% (274/282) agreement with Immunoblot negatives, and 93.2% (109/117) agreement with Immunoblot positives.
Of the 401 samples, the Immunoblot IgG test was negative with 282 and positive with 117. Two samples were not tested; one due to insufficient quantity and one due to improper storage.
Of the 282 negative Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 97.2% (274/282), positive with 8, and invalid with 0.
Of the 117 positive Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 8, positive with 93.2% (109/117), and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH PREGNANT WOMEN IN VENOUS WHOLE BLOOD (N = 401)

Site	Immuno-blot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	117	109	8	0	93.2% (109/117) 95% CI 87.0-97.0%	N/A
Combined Sites	Negative	282	8	274	0	N/A	97.2% (274/282) 95% CI 94.5- 98.8%
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1] Two samples were not tested.

PREGNANT WOMEN IN CAPILLARY WHOLE BLOOD

The Uni-Gold™ HSV-2 Rapid showed 95.4% (269/282) agreement with Immunoblot negatives, and 94.9% (111/117) agreement with Immunoblot positives.
Of the 401 samples, the Immunoblot IgG test was negative with 282 and positive with 117. Two samples were not tested on Immunoblot due to insufficient quantities.
Of the 282 negative Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 95.4% (269/282), positive with 12, and invalid with 1.
Of the 117 positive Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 6, positive with 94.9% (111/117), and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH PREGNANT WOMEN IN CAPILLARY WHOLE BLOOD (N = 401)

Site	Immuno-blot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	117	111	6	0	94.9% (111/117) 95% CI 89.2 - 98.1%	N/A
Combined Sites	Negative	282	12	269	1	N/A	95.4% (269/282) 95% CI 92.2– 97.5%
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1] Two samples were not tested.

SPECIFICITY AND SENSITIVITY WITH SEXUALLY ACTIVE ADULTS (N = 575)

External investigator I (n = 195), External investigator II (n = 190), and External investigator III (n = 190) assessed the device's agreement with sexually active adult subjects at medical school, student and public health clinics. The capillary and venous whole blood and sera from sequential prospective subjects were collected, tested, and masked at the external investigator sites. The masked sera sample was submitted to the laboratory and tested on the reference methods. External investigator I was a medical school clinic in Southeastern United States; External investigator II was a public health clinic located in the Rocky Mountain Region of the United States; and External investigator III was a student health clinic in the Southeastern United States. The commercially available 1 and 2 IgG Immunoblot test was the typing reference method for calculation of Specificity and Sensitivity.

Sexually Active Adults in Sera

The Uni-Gold™ HSV-2 Rapid showed 91.8% (315/343) agreement with Immunoblot negatives, and 92.9% (210/226) agreement with Immunoblot positives.
Of the 575 sera, the Immunoblot IgG was negative with 343, positive with 226, and equivocal with 1. Five samples were not tested in Immunoblot. Two samples were lost between the Investigator and the laboratory, and three were not tested due to insufficient quantities.
Of the 343 negative Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 91.8% (315/343), positive with 28, and invalid with 0.
Of the 226 positive Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 14, positive with 92.9% (210/226), and invalid with 2.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH SEXUALLY ACTIVE ADULT IN SERA (N = 575)

Site	Immuno-blot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	226	210	14	2	92.9% (210/226) 95% CI 88.8 - 95.9%	N/A
Combined Sites	Negative	343	28	315	0	N/A	91.8% (315/343) 95% CI 88.4 -94.5%
Combined Sites	Equivocal	1	0	1	0	N/A	N/A

[1] Five samples were not tested.

Sexually Active Adults in Venous Whole Blood

The Uni-Gold™ HSV-2 Rapid showed 92.4% (315/343) agreement with Immunoblot negatives, and 93.4% (211/226) agreement with Immunoblot positives.
Of the 575 samples, the Immunoblot IgG was negative with 343 and positive with 226. Five samples were not tested in Immunoblot. Two samples were lost between the Investigator and the laboratory, and three were not tested due to insufficient quantities.
Of the 343 negative Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 92.4% (317/343), positive with 26, and invalid with 0.
Of the 226 positive Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 15, positive with 93.4% (211/226), and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH SEXUALLY ACTIVE ADULT IN VENOUS WHOLE BLOOD (N = 575)

Site	Immunoblot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	226	211	15	0	93.4% (221/226) 95% CI 89.3 – 96.2%	N/A
Combined Sites	Negative	343	26	317	0	N/A	92.4% (317/343) 95% CI 89.1-95.0%
Combined Sites	Equivocal	1	0	1	0	N/A	N/A

[1] Five samples were not tested.

Sexually Active Adults in Capillary Whole Blood

The Uni-Gold™ HSV-2 Rapid showed 91.8% (315/343) agreement with Immunoblot negatives, and 93.8% (212/226) agreement with Immunoblot positives.
Of the 575 samples, Immunoblot IgG was negative with 343 and positive with 226. Five samples were not tested on Immunoblot. Two samples were lost between the Investigator and the laboratory, and three were not tested due to insufficient quantities
Of the 343 negative Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 91.8% (315/343), positive with 28, and invalid with 0.
Of the 226 positive Immunoblot samples, Uni-Gold™ HSV-2 Rapid was negative with 14, positive with 93.8% (212/226), and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH SEXUALLY ACTIVE ADULT IN CAPILLARY WHOLE BLOOD (N = 575)

Site	Immuno-Blot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	226	212	14	0	93.8% (212/226) 95% CI 89.8-96.6%	N/A
Combined Sites	Negative	343	28	315	0	N/A	91.8% (315/343) 95% CI 88.4 -94.5%
Combined Sites	Equivocal	1	0	1	0	N/A	N/A

[1] Five samples were not tested.

Specificity and Sensitivity with Non-Sexually Active Adults {Low Prevalence} (n =104)

External investigator I (n = 46) and External investigator II (n = 58) assessed the device's agreement with non-sexually active adult subjects (low prevalence) from a metropolitan population and student population. The capillary and venous whole blood and sera from sequential prospective subjects were collected, tested, and masked at the external investigator sites. The masked sera sample was submitted to the laboratory and tested on the reference methods. External investigator I was a medical school clinic in Southeastern United States; External investigator II was an STD clinic located in the Pacific Northwest. A commercially available 1 and 2 IgG Immunoblot test was the typing reference method for calculation of Specificity and Sensitivity.

Non-Sexually Active Adults (Low Prevalence) in Sera

The Uni-Gold™ HSV-2 Rapid showed 100.0% (101/101) agreement with Immunoblot negatives and 0.0% (0/2) agreement with Immunoblot positives.

Of the 104 sera, Immunoblot IgG was negative with 101 and positive with 2. One sample was not tested on Immunoblot due to insufficient quantities.

Of the 101 negative Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 100.0% (101/101), positive with 0, and invalid with 0.

Of the 2 positive Immunoblot sera, Uni-Gold™ HSV-2 Rapid was positive with 0.0% (0/2), negative with 2, and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH NON-SEXUALLY ACTIVE ADULTS (LOW PREVALENCE) IN SERA (N =104)

Site	Immunoblot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	2	0	2	0	0% (0/2)	N/A
Combined Sites	Negative	101	0	101	0	N/A	100% (101/101) 95% CI 96.4 - 100
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1]One sample was not tested.

Non-Sexually Active Adults (Low Prevalence) in Venous Whole Blood

The Uni-Gold™ HSV-2 Rapid showed 100.0% (101/101) agreement with Immunoblot negatives, and 0.0% (0/2) agreement with Immunoblot positives.
Of the 104 sera, Immunoblot IgG was negative with 101 and positive with 2. One sample was not tested on Immunoblot due to insufficient quantities.
Of the 101 negative Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 100.0% (101/101), positive with 0, and invalid with 0.
Of the 2 positive Immunoblot sera, Uni-Gold™ HSV-2 Rapid was positive with 0.0% (0/2), negative with 2, and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH NON-SEXUALLY ACTIVE ADULTS (LOW PREVALENCE) IN VENOUS WHOLE BLOOD (N =104)

Site	Immunoblot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	2	0	2	0	0% (0/2)	N/A
Combined Sites	Negative	101	0	101	0	N/A	100% (101/101) 95% CI 96.4 - 100
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1]One sample was not tested.

Non-Sexually Active Adults (Low Prevalence) in Capillary Whole Blood

The Uni-Gold™ HSV-2 Rapid showed 100.0% (101/101) agreement with Immunoblot negatives, and 0.0% (0/2) agreement with Immunoblot positives.
Of the 104 sera, the Immunoblot IgG was negative with 101 and positive with 2. One sample was not tested on Immunoblot due to insufficient quantities.
Of the 101 negative Immunoblot sera, Uni-Gold™ HSV-2 Rapid was negative with 100.0% (101/101), positive with 0, and invalid with 0.
Of the 2 positive Immunoblot sera, Uni-Gold™ HSV-2 Rapid was positive with 0.0% (0/2), negative with 2, and invalid with 0.

UNI-GOLD™ HSV-2 RAPID COMPARED TO IMMUNOBLOT WITH NON-SEXUALLY ACTIVE ADULTS (LOW PREVALENCE) IN CAPILLARY WHOLE BLOOD (N = 104)

Site	Immunoblot	n [1]	Uni-Gold™ HSV-2 Rapid			Sensitivity	Specificity
			Positive	Negative	Invalid		
Combined Sites	Positive	2	0	2	0	0% (0/2)	N/A
Combined Sites	Negative	101	0	101	0	N/A	100% (101/101) 95% CI 96.4-100
Combined Sites	Equivocal	0	0	0	0	N/A	N/A

[1]One sample was not tested.

Agreement with CDC Panel (n = 100)

The following information is from a serum panel obtained from the CDC and tested by the laboratory. Results from the panel were previously received during studies for a Multi-Analyte Diagnostic Instrument. These results were masked from the person performing the testing with the Uni-Gold™ HSV-2 Rapid device and the person performing the data analysis. The results are presented as a means to convey further information on the performance of this assay with a masked, characterized serum panel and do not imply an endorsement of the assay by the CDC.
The test panel consists of 100 samples. There are 65 HSV-2 negative and 35 HSV-2 positive specimens.

Determination of positive and negative samples
Of the 65 HSV-2 negative samples, the Uni-Gold™ HSV-2 Rapid correctly identified 98.5% (64/65). Of the 35 HSV-2 positive samples, the Uni-Gold™ HSV-2 Rapid correctly identified 100% (35/35).

AGREEMENT WITH CDC PANEL (N = 100)

CDC HSV2	n	Uni-Gold™ HSV-2 Rapid			% Agreement
		Positive	Negative	Invalid	
Positive	35	35	0	0	100% (35/35) 95% CI 90.0-100.0%
Negative	65	1	64	0	98.5% (64/65) 95% CI 91.7-100.0%

Cross-Reactivity (n = 213)

Cross-reactivity was assessed with samples that were sero-negative and sero-positive by at least one of

- (n= 25) Herpes Simplex 1 Virus (HSV-1)
- (n= 25) Rubella virus
- (n= 42) Varicella-Zoster virus, (VZV)
- (n= 25) Epstein-Barr virus (EBV)
- (n= 32) Cytomegalovirus (CMV)
- (n= 33) Rheumatoid Factor (RF)
- (n= 31) Anti-nuclear Antibodies (ANA)

Uni-Gold™ HSV-2 Rapid Reactivity with Cross-Reactants

The Uni-Gold™ HSV-2 Rapid showed 4.2% (9/213) overall cross-reactivity.
With the HSV-1 IgG positives the Uni-Gold™ HSV-2 Rapid was positive with 0.0% (0/25), negative with 25, and invalid with 0.
With the Rubella virus positives the Uni-Gold™ HSV-2 Rapid was positive with 4.0% (1/25), negative with 24, and invalid with 0.
With the VZV IgG positives the Uni-Gold™ HSV-2 Rapid was positive with 9.5% (4/42), negative with 38, and invalid with 0.
With the EBV IgG positives the Uni-Gold™ HSV-2 Rapid was positive with 4.0% (1/25), negative with 24, and invalid with 0.
With the CMV IgG positives the Uni-Gold™ HSV-2 Rapid was positive with 3.1% (1/32), negative with 31, and invalid with 0.
With the RF positives the Uni-Gold™ HSV-2 Rapid was positive with 3.0% (1/33), negative with 32, and invalid with 0.
With the ANA positives the Uni-Gold™ HSV-2 Rapid was positive with 3.2% (1/31), negative with 30, and invalid with 0.

UNI-GOLD™ HSV-2 RAPID AGREEMENT CROSS-REACTANT

Cross-reactant	n	Uni-Gold™ HSV-2 Rapid			% Cross-Reactivity
		Positive	Negative	Invalid	
HSV-1 IgG +	25	0	25	0	0.0% (0/25) 95% CI 0.0 - 13.7%
Rubella +	25	1	24	0	4.0% (1/25) 95% CI 0.0 -20.4%
VZV IgG +	42	4	38	0	9.5% (4/42) 95% CI 2.7- 22.6%
EBV IgG +	25	1	24	0	4.0% (1/25) 95% CI 0.0 - 20.4%
CMV IgG +	32	1	31	0	3.1% (1/32) 95% CI 0.0 - 16.2%
RF +	33	1	32	0	3.0% (1/33) 95% CI 0.0 - 15.8%
ANA +	31	1	30	0	3.2% (1/31) 95% CI 0.0 -15.8%
Combined Cross-reactants	213	9	204	0	4.2% (9/213) 95% CI 1.9 - 7.8%

Interference

The device performance was evaluated with the presence of interferents. Two subjects were drawn: one positive for herpes simplex virus-2 and negative for herpes simplex virus-1 and one negative for both herpes simplex virus 1 and herpes simplex virus 2 by a commercially available IgG ELISA. Baseline levels for triglycerides, albumin, bilirubin, and hemoglobin were established for each subject. The remaining serum was spiked with purchased interferents at levels which exceeded the expected human range. The spiked samples were tested again in the assay to determine if the elevated levels of interferents affected the assay. No interference was observed for any of the interferents in either the positive or negative sample.

Matrix Comparison

The device's relative reactivity was compared with serum with venous whole blood by spiking a Uni-Gold™ HSV-2 Rapid positive serum into negative serum and negative venous whole blood, serially diluting the spiked serum and whole blood, and testing the diluted serum and blood with the device in triplicates. Two of three of the serum replicates end-pointed at 1:8 and one at 1:4. Three of three whole blood replicates end-pointed at 1:4.

Reproducibility

In-house laboratory; a clinical laboratory located in Southern California; a public health clinic located in the Rocky Mountain Region of the United States; a student health clinic in the Southeastern United States; and an STD clinic located in the Pacific Northwest assessed the device's Inter-lot, Inter/Intra-operator reproducibility and Inter/Intra-site reproducibility. Each of the sites tested at ten samples in singlicate on three different days.

		Inter-Lot Reproducibility		Inter-Operator			Inter-Site		
ELISA Range	Sample ID	Mean	%CV	Accu-racy	Preci-sion	%CV	Accu-racy	Preci-sion	%CV
High Negative	HSV-1	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%
Borderline	HSV-2	100.0%	0.0%	98.8%	96.3%	3.7%	98.8%	97.8%	2.2%
Negative	HSV-11	100.0%	0.0%	97.5%	92.4%	7.6%	97.5%	95.6%	4.4%
High Positive	HSV-12	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%
Positive	HSV-13	100.0%	0.0%	97.5%	92.4%	7.6%	97.5%	95.6%	4.4%
Low Positive	HSV-14	100.0%	0.0%	59.3%	35.0%	65.0%	59.3%	65.2%	34.8%
Negative	HSV-15	77.8%	24.7%	82.7%	71.4%	28.6%	82.7%	83.0%	17.0%
Positive	HSV-26	100.0%	0.0%	97.5%	95.0%	5.0%	97.5%	97.8%	2.2%
Negative	HSV-27	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%
Positive	HSV-28	100.0%	0.0%	98.8%	96.3%	3.7%	98.8%	97.8%	2.2%

Intra-Operator			
Operator	Accuracy	Precision	%CV
1	96.7%	89.1%	10.9%
2	97.8%	95.2%	4.8%
3	90.0%	64.9%	35.1%
4	98.9%	96.4%	3.6%
5	87.8%	70.5%	29.5%
6	96.7%	89.1%	10.9%
7	87.8%	86.1%	13.9%
8	92.2%	77.2%	22.8%
9	91.1%	69.1%	30.9%
Intra-Site			
Site	Accuracy	Precision	%CV
1	94.8%	87.6%	12.4%
2	94.4%	87.3%	12.7%
3	90.4%	79.0%	21.0%

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