

Rapid Response™

HIV 1/2/O Tri-Line Test Cassette (Whole Blood/Serum/Plasma)

REF HIV1/2/O-13C40

Product Insert

A rapid test for the diagnosis of Human Immunodeficiency Virus to detect antibodies to HIV type 1, type 2 and Subtype O qualitatively in whole blood. Serum or plasma.

For professional *in vitro* diagnostic use only.

Intended Use

The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette is a rapid chromatographic immunoassay for the qualitative detection of antibodies to Human Immunodeficiency Virus (HIV) type 1, type 2 and subtype O in whole blood, serum or plasma to aid in the diagnosis of HIV infection

Summary

HIV (Human Immunodeficiency Virus) is the etiologic agent of Acquired Immune Deficiency Syndrome (AIDS). The virion is surrounded by a lipid envelope that is derived from the host cell membrane. Several viral glycoproteins are on the envelope. Each virus contains two copies of positive-sense genomic RNAs. HIV-1 has been isolated from patients with AIDS and AIDS-related complex, and from healthy people with high potential risk for developing AIDS.¹ HIV-1 consists of Subtype M and Subtype O. Highly divergent strains of HIV-1 were first recognized in 1990 and grouped provisionally as Subtype O as this variation has similar glycoprotein markers to HIV-1 but a slight variation to the protein marker. Although rarely compared to HIV-1 and HIV-2, infections caused by Subtype O have so far been identified in Africa (Cameroon), France and Germany. HIV-2 has been isolated from West African AIDS patients and from seropositive asymptomatic individuals.² HIV-1, HIV-2, and Subtype O all elicit immune responses.³ Detection of HIV antibodies in serum, plasma or whole blood is the most efficient and common way to determine whether an individual has been exposed to HIV and to screen blood and blood products for HIV.⁴ Despite the differences in their biological characters, serological activities and genome sequences, HIV-1, HIV-2, and Subtype O show strong antigenic cross-reactivity.^{5,6} Most HIV-2 positive sera can be identified by using HIV-1 based serological tests. The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette is a rapid test to qualitatively detect the presence of antibodies to HIV type 1, type 2, and/or Subtype O in whole blood, serum or plasma specimen.

Principle

The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette is a

qualitative, membrane based immunoassay for the detection of antibodies to HIV-1, HIV-2, and Subtype O in whole blood, serum or plasma. The membrane is pre-coated with recombinant HIV antigens in the test line regions, T1 and T2. The T1 test line is pre-coated with HIV-1 and Subtype O antigen and the T2 test line is pre-coated with HIV-2 antigen. During testing, the whole blood, serum or plasma specimen reacts with HIV antigen coated particles in the test strip. The mixture then migrates upward on the membrane chromatographically by capillary action and reacts with recombinant HIV antigen on the membrane in the test line region. If the specimen contains antibodies to HIV-1 and/or Subtype O, or HIV-2, one colored line will appear in the test line region; if the specimen contains antibodies to HIV-1 and/or Subtype O, and HIV-2, two colored lines will appear in the test line region. Both indicate a positive result. If the specimen does not contain HIV-1, Subtype O, and/or HIV-2 antibodies, no colored line will appear in the test line region indicating a negative result. To serve as a procedural control, a colored line will always appear in the control line region indicating that proper volume of specimen has been added and membrane wicking has occurred.

Reagents

The test contains HIV type 1, type 2, and Subtype O recombinant antigens coated particles and HIV type 1, type 2, and Subtype O recombinant antigens coated on the membrane.

Precautions

- For professional *in vitro* diagnostic use only. Do not use after the expiration date.
- Do not eat, drink or smoke in the area where the specimens or kits are handled.
- Do not use test if pouch is damaged
- Handle all specimens as if they contain infectious agents. Observe established precautions against microbiological hazards throughout testing and follow the standard procedures for proper disposal of specimens.
- Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are being tested.
- The used test should be discarded according to local regulations.
- Humidity and temperature can adversely affect results.

Materials

Materials provided

- Test cassettes
- Buffer
- Droppers
- Product insert

Materials required but not provided

- Specimen collection containers
- Lancets (for fingerstick whole blood)

- Heparinized capillary tubes and dispensing bulb (for fingerstick whole blood only)
- Centrifuge
- Timer

Storage and Stability

Store as packaged in the sealed pouch at room temperature or refrigerated (35.6-86°F; 2-30°C). The test is stable through the expiration date printed on the sealed pouch. The test must remain in the sealed pouch until use. **DO NOT FREEZE.** Do not use beyond the expiration date.

Specimen Collection and Preparation

- The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette can be performed using whole blood (from venipuncture or fingerstick) serum or plasma.
- To collect **Fingerstick Whole Blood specimens:**
 - Wash the patient's hand with soap and warm water or clean with an alcohol swab. Allow to dry.
 - Massage the hand without touching the puncture site by rubbing down the hand towards the fingertip of the middle or ring finger.
 - Puncture the skin with a sterile lancet. Wipe away the first sign of blood.
 - Gently rub the hand from wrist to palm to finger to form a rounded drop of blood over the puncture site.
 - Add the Fingerstick Whole Blood specimen to the test by using a capillary tube:
 - Touch the end of the capillary tube to the blood until filled to approximately 50 µL. Avoid air bubbles.
 - Place the bulb onto the top end of the capillary tube, then squeeze the bulb to dispense the whole blood to the specimen area of the test cassette.
- Separate serum or plasma from blood as soon as possible to avoid hemolysis. Use only clear non-hemolyzed specimens.
- Testing should be performed immediately after the specimens have been collected. Do not leave the specimens at room temperature for prolonged periods. Serum and plasma specimens may be stored at 35.6-46.4°F (2-8°C) for up to 3 days, for long term storage, specimens should be kept below -4°F (-20°C). Whole blood collected by venipuncture should be stored at 35.6-46.4°F (2-8°C) if the test is to be run within 2 days of collection. Do not freeze whole blood specimens. Whole blood collected by fingerstick should be tested immediately.
- Bring specimens to room temperature prior to testing. Frozen specimens must be completely thawed and mixed well prior to testing. Specimens should not be frozen and thawed repeatedly.
- If specimens are to be shipped, they should be packed in compliance with local regulations covering the

transportation of etiologic agents.

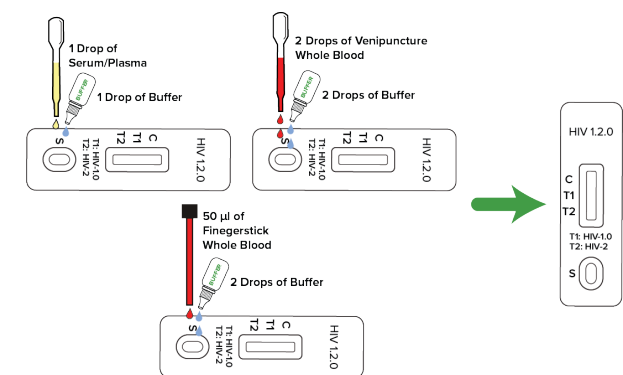
- EDTA K2, Heparin sodium, Citrate sodium and Oxalate potassium can be used as the coagulant tube for collecting the blood specimen.

Test Procedure

Allow the test, specimen, buffer and/or controls to reach room temperature (59-86°F; 15-30°C) prior to testing.

- Bring the pouch to room temperature before opening it. Remove the test cassette from the sealed pouch and use it as soon as possible.
- Place the cassette on a clean and level surface.
 - For **Serum or Plasma** specimen: Hold the dropper vertically and **transfer 1 drop of serum or plasma** (approximately 25 µL) to the specimen area, then **add 1 drop of buffer** (approximately 40 µL), and start the timer, see illustration below.
 - For **Venipuncture Whole Blood** specimen: Hold the dropper vertically and **transfer 2 drops of whole blood** (approximately 50 µL) to the specimen area, then **add 2 drops of buffer** (approximately 80 µL), and start the timer. See illustration below.
 - For **Fingerstick Whole Blood** specimen:
 - To use a capillary tube: Fill the capillary tube and **transfer approximately 50 µL of fingerstick whole blood specimen** to the specimen area of test cassette, then **add 2 drops of buffer** (approximately 80 µL) and start the timer. See illustration below.
- Wait for the colored line(s) to appear. **Read results at 10 minutes.** Do not interpret the result after 20 minutes.

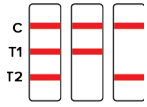
NOTE: It is suggested not to use the buffer, beyond 6 months after opening the vial.



Results Interpretation

POSITIVE: * Two or three distinct colored lines appear. One line should always appear in the control line region (C), and another one or two apparent colored line(s) should appear in the test line region(s) (T1 and/or T2).

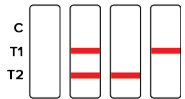
*NOTE: The intensity of the color in the test line region (T1 and T2) will vary depending on the concentration of HIV antibodies present in the specimen. Therefore, any shade of color in the test line region (T1 and/or T2) should be considered positive.



NEGATIVE: One colored line appears in the control region (C). No apparent colored lines appear in the test line regions (T1 and T2).



INVALID: Control line fails to appear. Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the procedure and repeat the test with a new test device. If the problem persists, discontinue using the test kit immediately and contact your local distributor.



Quality Control

A procedural control is included in the test. A colored line appearing in the control region (C) is the internal quality procedural control. It confirms sufficient specimen volume and correct procedural technique. Control standards are not supplied with this kit; however, it is recommended that positive and negative controls be tested as a good laboratory practice to confirm the test procedure and to verify proper test performance.

Limitations

1. The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette is for *in vitro* diagnostic use only. The test should be used for the detection of HIV antibodies in whole blood, serum or plasma specimens only. Neither the quantitative value nor the rate of increase in HIV antibodies can be determined by this qualitative test.
2. The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette will only indicate the presence of HIV antibodies in the specimen and should not be used as the sole criteria for

the diagnosis of HIV infection.

3. As with all rapid test cassettes, all results must be interpreted together with other clinical information available to the physician.
4. If the test result is negative and clinical symptoms persist, additional testing using other clinical methods is recommended. A negative result does not at any time preclude the possibility of HIV infection.
5. The hematocrit of the whole blood should be between 25% and 65%.

Performance Characteristics

Sensitivity and Specificity

The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette has correctly identified specimens of seroconversion panel and has been compared to a leading commercial ELISA HIV test using clinical specimens. The results show that the relative sensitivity of the Rapid Response™ HIV 1/2/O Tri-Line Test Cassette is >99.9% and the relative specificity is 99.9%.

Method	Results	ELISA		Total Result
		Positive	Negative	
Rapid Response™ HIV 1/2/O Tri-Line	Positive	148	2	150
Test Cassette	Negative	0	1728	1728
Total Result		148	1730	1878

Relative Sensitivity: >99.9% (98.0%-100%)*
 Relatively Specificity: 99.9% (99.6%-100%)*
 Accuracy: 99.9% (99.6%-100%)*
 *95% Confidence Intervals

Precision

Intra-Assay

Within-run precision has been determined by using 15 replicates of four specimens: a negative, a low positive, a medium positive and a high positive. The negative, low positive, medium positive and high positive values were correctly identified >99% of the time.

Inter-Assay

Between-run precision has been determined by 15 independent assays on the same four specimens: a negative, a low positive, a medium positive and a high positive. Three different lots of the Rapid Response™ HIV 1/2/O Tri-Line Test Cassette have been tested over a 3-day period using negative, low positive, medium positive and high positive specimens. The specimens were correctly identified >99% of the time.

Cross-reactivity

The Rapid Response™ HIV 1/2/O Tri-Line Test Cassette has been tested by anti-HAMA IgG, anti-RF IgG, HBsAg, HBsAb, HbeAg, HBeAb, HBcAb, anti-HCV IgG, anti-Syphilis IgG, anti-H. Pylori IgG, anti-MONO IgM, anti-CMV IgG, anti-CMV IgM, anti-Rubella IgG, anti-Rubella IgM, anti-Toxo IgG and anti-Toxo IgM positive specimens. The results showed no cross-reactivity.

Interfering Substances

The following potentially interfering substances were added to HIV negative and positive specimens.

Acetaminophen: 20mg/dL	Acetylsalicylic Acid: 20mg/dL
Ascorbic Acid: 2g/dL	Creatin: 200 mg/dL
Bilirubin: 1g/dL	Caffeine: 20 mg/dL
Gentisic Acid: 20 mg/dL	Albumin: 2 g/dL
Hemoglobin 1.1g/dL	Oxalic Acid: 600mg/dL

None of the substances at the concentration tested interfered in the assay.

Bibliography

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Glossary of Symbols

	Consult instructions for use		Test per Kit		Do Not Reuse
	Store between 35.6°F to 86°F		Use by		Catalogue #
	Lot Number		For <i>in vitro</i> diagnostic use only		Manufacturer
	Do not use if package is damaged				

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