RightSign®

HIV 1.2.O Rapid Test Cassette (Whole Blood/ Serum/ Plasma) Package Insert

REF IHIV-C42	English

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 HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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 HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) is a rapid test to qualitatively detect the presence of antibodies to HIV type1, type 2, and/or Subtype O in whole blood, serum or plasma specimen.

【PRINCIPLE】

The HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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 type1, type 2, and Subtype O recombinant antigens coated particles and HIV type1, type 2, and Subtype O recombinant antigens coated on the membrane.

【PRECAUTIONS】

- For professional *in vitro* diagnostic use only. Do not use after expiration date.
- Do not eat, drink or smoke in the area where the specimens or test cassettes 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 all procedures 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 assayed.
- The used test should be discarded according to local regulations.
- Humidity and temperature can adversely affect results.

【STORAGE AND STABILITY】

Store as packaged in the sealed pouch either at room temperature or refrigerated (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 after the expiration date.

【SPECIMEN COLLECTION AND PREPARATION】

- The HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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.
  - Add the Fingerstick Whole Blood specimen to the test by using hanging drops:
    - Position the patient's finger so that the drop of blood is just above the specimen area of the test cassette.
    - Allow 2 hanging drops of fingerstick whole blood to fall into the center of the specimen area on the test cassette, or move the patient's finger so that the hanging drop touches the center of the specimen area. Avoid touching the finger directly to the specimen area.
- 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 2-8°C for up to 3 days. For long term storage, specimens should be kept below -20°C. Whole blood collected by venipuncture should be stored at 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.

【MATERIALS】

Materials provided

- Test cassettes
- Buffer
- Droppers
- Package insert

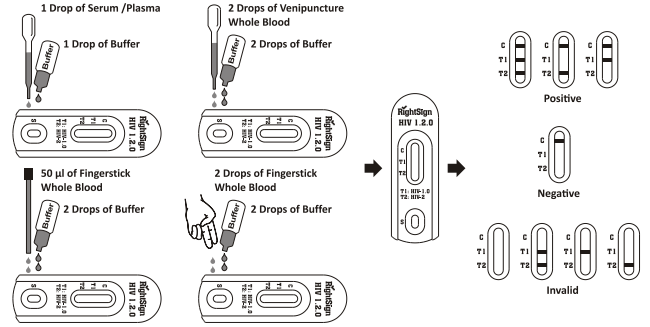
Materials required but not provided

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

【DIRECTIONS FOR USE】

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

1. Bring the pouch to room temperature before opening it. Remove the test cassette from the sealed pouch and use it within one hour.
2. 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.
   - To use hanging drops: Allow **2 hanging drops of fingerstick whole blood specimen** (approximately 50 μL) to fall into the specimen area of test cassette, then **add 2 drops of buffer** (approximately 80 μL) and start the timer. See illustration below.
3. Wait for the colored line(s) to appear. **Read results at 10 minutes.** Do not interpret the result after 20 minutes.



【INTERPRETATION OF RESULTS】

(Please refer to the illustration above)

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 line region (C) is considered an internal procedural control. It confirms sufficient specimen volume, adequate membrane wicking and correct procedural technique.
Control standards are not supplied with this test cassette; 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 HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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 HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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.

【EXPECTED VALUES】

The HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) has been compared with a leading commercial HIV ELISA test. The correlation between these two systems is 99.6%.

【PERFORMANCE CHARACTERISTICS】

Sensitivity and Specificity

The HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) has correctly identified specimens of seroconversion panels and has been compared to a leading commercial ELISA HIV test using clinical specimens. The results show that the relative sensitivity of the HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) is >99.9% and the relative specificity is 99.5%.

Method			HIV 1.2.O Rapid Test Cassette		Agreement
	Results		Positive	Negative	
ELISA	Positive	HIV-1 (Serum)	403	0	>99.9% (403/403)
		HIV-2 (Serum)	132	0	>99.9% (132/132)
		HIV-1 Serotypes A-K (Plasma)	45	0	>99.9% (45/45)
		HIV-1 Subtype O (Plasma)	3	0	>99.9% (3/3)
		Total	583	0	>99.9% (583/583)
	Negative	Blood Donations (Serum)	0	1000	>99.9% (1000/1000)
		Clinical Negative Serum/Plasma	2	218	99.1% (218/220)
		Negative Samples from Pregnant Women (Serum)	0	205	>99.9% (205/205)
		Potentially Interfering Samples (Plasma)	6	104	94.5% (104/110)
		Total	8	1527	99.5% (1527/1535)
Total Result			**591**	**1527**	**99.6%(2110/2118)**

Relative sensitivity=583/583= >99.9% (95%CI*: 99.5%~100.0%);
Relative specificity=1527/(1527+8) = 99.5% (95%CI*: 99.0%~99.8%);
Accuracy= (583+1527)/(583+8+1527)=99.6%(95%CI*:99.3%~99.8%).
*Confidence Intervals

Whole Blood vs. Serum vs. Plasma

Sensitivity in Seropositive Whole Blood and Paired Serum and Plasma Specimens

A total of 30 seropositive whole blood specimens with paired serum and plasma were tested with HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma), respectively.
There was a good correlation of testing results between whole blood, serum and plasma with HIV seropositive samples

Specimen Type	Number of Specimens Tested	Agreement for positive results by HIV 1.2.O Rapid Test
Whole Blood	30	>99.9%(30/30)
Paired Serum	30	>99.9%(30/30)
Paired Plasma	30	>99.9%(30/30)

Specificity in Seronegative Whole Blood and Paired Serum and Plasma Specimens

A total of 100 seronegative whole blood specimens with paired serum and plasma collected from healthy volunteers were tested with HIV 1.2.O Rapid Test Cassette (Whole Blood /Serum /Plasma), respectively.
There was a good correlation of testing results between whole blood, serum and plasma with HIV seronegative samples

Specimen Type	Number of Specimens Tested	Agreement for negative results by HIV 1.2.O Rapid Test
Whole Blood	100	>99.9%(100/100)
Paired Serum	100	>99.9%(100/100)
Paired Plasma	100	>99.9%(100/100)

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 HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) 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

There was no cross reactivity for HIV 1.2.O Rapid Test Cassette (Whole Blood/Serum/Plasma) to be tested by HAMA, HBsAb, HbeAg, HBeAb, HBcAb, anti-HCV, anti-Syphilis, anti-*H. Pylori*, MONO, anti-CMV, anti-Rubella and anti-Toxoplasmosis positive specimens. Some cross-reactivity was observed with samples positive for Rheumatoid Factor, EBV IgM and HBsAg

Interference studies

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

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

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

【BIBLIOGRAPHY】

1. Chang, SY, Bowman, BH, Weiss, JB, Garcia, RE and White, TJ. The origin of HIV-1 isolate HTLV-IIIB. Nature (1993) 3;363:466-9
2. Arya, SK, Beaver, B, Jagodzinski, L, Ensoli, B, Kanki, PJ,Albert, J, Fenyo, EM, Biberfeld, G, Zagury, JF and Laure, F. New human and simian HIV-related retroviruses possess functional transactivator (tat) gene. Nature (1987) 328:548-550
3. Caetano JA Immunologic aspects of HIV infection. Acta Med Port (1991) 4 Suppl 1:52S-58S
4. Janssen, RS, Satten, GA, Stramer, SL, Rawal, BD, O'Brien, TR, Weiblen, BJ, Hecht, FM, Jack, N, Cleghorn, FR, Kahn, JO, Chesney, MA and Busch MP. New testing strategy to detect early HIV-1 infection for use in incidence estimates andand for clinical and prevention purposes.JAMA (1998) 280(1): 42-48
5. Travers, K, Mboup, S, Marlink, R, Gueye-Nidaye, A, Siby, T, Thior, I, Traore, I, Dieng-Sarr, A, Sankale, JL and Mullins, C. Natural protection against HIV-1 infection provided by HIV-2. Science (1995) 268:1612-1615
6. Greenberg, AE, Wiktor, SZ, DeCock, KM, Smith, P, Jaffe HW and Dondero, TJ, Jr. HIV-2 and natural protection against HIV-1 infection. Science (1996) 272:1959-1960

Index of Symbols

⚠	Attention, see instructions for use	Σ	Tests per kit	EC REP	Authorized Representative
IVD	For in vitro diagnostic use only		Use by		Do not reuse
2°C 30°C	Store between 2-30°C	LOT	Lot Number	**REF**	Catalog #
	Do not use if package is damaged				

Manufacturer BiotesT
Hangzhou Biotest Biotech Co., Ltd.
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