CDIA™ Lentivirus (HIV-1 P24) Semi-Quantitative Rapid Test Kit

Cat.No: DTSJZ026

Lot. No. (See product label)

Intended Use

CDIA™ Lentivirus (HIV-1 P24) Semi-Quantitative Rapid Test Kit is a rapid chromatographic immunoassay for semi-quantitative detection of lentivirus titers in the supernatant of cell culture. This assay takes only 10-15 minutes, compared to the conventional re-infection based assay that takes 2-3 days.

General Description

Lentivirus vector based on the human immunodeficiency virus-1 (HIV-1) has become a promising vector for gene transfer studies. Lentiviral vectors have been shown to deliver genes toneurons, lymphocytes and macrophages, cell types that previous retrovirus vectors could not be used. Lentiviral vectors have also proven to be effective in transducing brain, liver, muscle, and retina in vivo without toxicity or immune responses. Lentivirus particles are produced from 293T cells through transient transfection of 3 or 4 plasmids that encodes for the components of the virion. Viral medium containing viral particles produced by packaging cells within 48-72 hr can be harvested. To ensure that pseudoviral medium is viable, and to control the number of copies of integrated viral constructs per target cell, the viral titer needs to be determined before proceeding with transduction experiments.

Principle of the Test

CDIA™ Lentivirus (HIV-1 P24) Semi-Quantitative Rapid Test Kit is a semi-quantitative, membrane based immunoassay for the detection of lentivirus titers. The membrane is pre-coated with anti-HIV-1 24 antibodies on the test line region. During testing, specimen reacts with the particles coated with anti- HIV-1 24 antibodies. The mixture migrates upward on the membrane by capillary action to react with anti- HIV-1 24 antibodies on the membrane and generate a colored line. The minimum detection level of this test is 1 ng/mL (T Line). When the HIV-1 P24 level in the specimen is between 1-500 ng/mL, it shows a positive correlation between the concentration of HIV-1 P24 in the specimen and the intensity of the color of the test line (T). The HIV-1 P24 concentration is semi-quantitatively determined by Color Chart (Fig 1), realizing the rapid estimation of lentivirus titer.

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	T1	T2	T3	T4	T5
Conc. of P24	500 ng/mL	100 ng/mL	50 ng/mL	10 ng/mL	1 ng/mL
LPs/mL	6.25×10^{9}	1.25×10^{9}	6.25×10^{8}	1.25×10^{8}	1.25×10^{7}
TU/mL	$6.25\times10^{6\text{-}7}$	$1.25\times10^{6\text{-}7}$	$6.25\times10^{5\text{-}6}$	$1.25\times10^{5\text{-}6}$	$1.25\times10^{4\text{-}5}$

Fig.1 Color Chart

*A lentiviral particle (LP) contains about 2000 HIV-1 P24 proteins, so,

The mass of a LP = $2000\times24\times10^{3}/(6\times10^{23})$g of P24=$8\times10^{-5}$ pg of HIV-1 P24 proteins

or

1ng P24=1.25×10^{7} LPs (≈$1.25\times10^{4\text{-}5}$ TU)

**In general, there is 1 TU (Transducing Unit) in every 100-1000 LPs.

Note:

1. The above formulas are calculated as theoretical values, it might make the value too high if there are free HIV-1 P24 proteins in specimen.
2. It is usually required to exceed 10^{6} TU/mL in the supernatant, to ensure to get the enough-concentration of lentivirus after enrichment.

Reagents and Materials Provided

1. Cassette
2. Package insert: for operation instruction

Storage

The kit can be stored at 4-30°C. The test kit is stable through the expiration date (18 months). DO NOT FREEZE. Do not store the test kit in direct sunlight. Do not use beyond the expiration date.

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Assay Procedure

1. Place the card horizontally;
2. Add 100 μL of supernatant directly to the Sample Well;
3. Wait for 10-15 minutes.

Interpretation of Results

Negative result

The presence of only one band (C) within the result window indicates a negative result.

Positive result

The presence of two color bands ("T" and "C") within the result window, no matter which band appears first indicates a positive result. The HIV-1 P24 concentration is semi-quantitatively determined by Color Chart. If the color of T line is too dark, please dilute the sample and retest again.

Invalid Result

If the red color band is not visible within the result window after performing the test, the result is considered invalid. The directions may not have been followed correctly or the test may have deteriorated. It is recommended that the specimen be retested.

Negative Positive Invalid

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Precautions

1. For professional in vitro diagnostic use only. Do not use after expiration date.
2. Do not eat, drink or smoke in the area where the specimens and kits are handled.
3. Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are assayed.
4. Follow standard biosafety guidelines for handling and disposal of potential infective material.
5. Humidity and temperature can adversely affect results.

Problems and Solutions

Problem	Possible Reason	Solution
Light-colored of T and C line	There is interference in the specimens	Diluted with DMEM, and then retest
Failure Detection	Invalid test cassette	Check expiration date, and avoid dampness after opening the bag
High background	Medium pH, high salt concentration or other interference	Diluted several times with PBS

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