MAGLUMI HIV Ab/Ag Combi (CLIA)

Shenzhen New Industries
Biomedical Engineering Co., Ltd.
No.16, Jinhui Road,
Pingshan New District,
Shenzhen, 518122, P.R.China
Tel: 0086-755-21536601
Fax:0086-755-28292740

FOR PROFESSIONAL USE ONLY
Store at 2-8°C

CAUTION: COMPLETELY READ THE INSTRUCTIONS BEFORE PROCEEDING

SYMBOLS EXPLANATIONS

MANUFACTURER

CONSULT INSTRUCTIONS FOR USE

CONTENTS — KIT COMPONENTS

IVD — IN VITRO DIAGNOSTIC MEDICAL DEVICE

LOT — BATCH CODE

REF — CATALOGUE NUMBER

USE BY

2 °C – 8 °C — TEMPERATURE LIMITATION
(STORE AT 2-8 °C)

SUFFICIENT FOR

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INTENDED USE
The kit has been designed for the simultaneously qualitative determination of HIV-1 p24 antigen and antibodies to HIV-1, HIV-2 in human serum and plasma.
The test has to be performed on MAGLUMI Fully-auto chemiluminescence immunoassay (CLIA) analyzer (Including Maglumi 600, Maglumi 800, Maglumi 1000, Maglumi 1000 Plus, Maglumi 2000, Maglumi 2000 Plus, Maglumi 4000, Maglumi 4000 Plus).

Catalog Number	Specification
130219004M	100 tests
130619004M	50 tests

SUMMARY AND EXPLANATION OF THE TEST
The human immunodeficiency virus (HIV) is a subgroup of retrovirus that causes the acquired immunodeficiency syndrome (AIDS). HIV is transmitted by sexual contact, exposure to blood or blood products, and prenatal infection of a fetus or perinatal infection of a newborn.
Early after infection with HIV, but prior to seroconversion, HIV antigen(s) may be detected in serum or plasma specimens. The HIV structural protein most often used as the marker of antigenemia is the core protein, p24. The viremia of HIV infection is about one to two weeks, the level of p24 antigen increases significantly in the blood soon after initial infection, and a peak appears in 20 to 30 days. The level of p24 declines as the disease progresses. HIV p24 antigen can also be detectable in the late phase of HIV disease (AIDS) as a result of excessive viremia. Therefore, the detection of p24 antigen may shorten the window period, and provide early diagnosis.
HIV-1 is the virus that was initially discovered and is the cause of the majority of HIV infections globally, and HIV-2 infection is endemic in West Africa. Phylogenetic analysis classifies HIV-1 into group M, N and O. HIV antigen and antibody test may give the serological evidence of infection with HIV. Group M viruses have spread throughout the world; groups N and O are relatively rare and endemic to west central Africa. The clinical course of HIV-2 infection is generally characterized by a longer asymptomatic stage, lower plasma HIV-2 viral loads, and lower mortality rates compared with HIV-1 infection. However, HIV-1/HIV-2 antibodies can be detected from shortly after the acute phase to the end stage of AIDS. Therefore, the highly sensitive HIV-1/HIV-2 antibodies assay is irreplaceable for the serodiagnosis of HIV infection. False negative results may be obtained by only testing the antibody during the window period, an interval of three weeks to six months between the times of HIV infection. The body makes antibodies to try to fight HIV, although the antibodies cannot eradicate the virus. Antibody testing is often done in two parts. First a sensitive screening test is performed on the blood. If the screening test is positive, a second test is done to confirm that HIV antibodies are present. What is more, repeatedly reactive samples must be confirmed according to recommended confirmatory tests, including Western Blot, HIV RNA tests and so on.

PRINCIPLE OF THE TEST
Sandwich chemiluminescence immunoassay:
The MAGLUMI HIV Ab/Ag Combi assay is a two-step immunoassay.
Use ABEI to label anti-HIV-1 p24 monoclonal antibodies and the HIV-1/HIV-2 recombinant antigens (HIV-1 envelope protein (gp41 and gp120) and HIV-2 envelope protein (gp36)); and use another anti-HIV-1 p24 monoclonal antibodies and HIV-1/HIV-2 recombinant antigens (HIV-1 envelope protein (gp41 and gp120) and HIV-2 envelope protein (gp36)) to coat magnetic microbeads.
In the first incubation, sample (or calibrator/control, if applicable), the magnetic microbeads and ABEI labeled anti-HIV-1 p24 monoclonal antibodies are mixed thoroughly and incubated at 37°C. The antibodies to HIV-1 and/or HIV-2 present in the sample bind to the HIV-1 and HIV-2 recombinant antigens to form a complex, and the HIV-1 p24 antigen present in the sample bind to the anti-HIV-1 p24 monoclonal antibodies. After washing, ABEI labeled HIV-1 and HIV-2 recombinant antigens are added, and bind to the complex. Following another wash cycle, the rest unbound materials are removed, Starter 1+2 is added to initiate a flash chemiluminescent reaction. The light signal is measured by a photomultiplier within 3 seconds as RLU which is proportional to the concentration of HIV-1 p24 antigen and antibodies against HIV-1 and/or HIV-2 present in samples.

CONTENTS **KIT COMPONENTS**

Material Supplies

Component	100 tests	50 tests
Magnetic Microbeads: coated with anti-HIV-1 p24 monoclonal antibodies and HIV-1/HIV-2 recombinant antigens. containing BSA, 0.09%NaN_3.	2.5 mL	2.0 mL
Calibrator Low: low concentration of HIV-1 p24 antigen (recombinant), containing BSA, 0.09%NaN_3.	3.0 mL	2.0 mL
Calibrator High: high concentration of HIV-1 p24 antigen (recombinant), containing BSA, 0.09%NaN_3.	3.0 mL	2.0 mL
ABEI-1 Label: anti-HIV-1 p24 monoclonal antibodies labeled with ABEI, containing BSA, 0.09%NaN_3.	17.5 mL	10.0 mL
ABEI-2 Label: HIV-1 and HIV-2 recombinant antigens labeled with ABEI, bovine serum, 0.09% NaN_3.	22.5 mL	12.5 mL
All reagents are provided ready-to-use.		

Reagent Vials in kit box	
Internal Quality Control:	
Negative Control: containing BSA, 0.09%NaN_3.	2.0 mL
Positive Control 1: Anti-HIV-1 positive, containing BSA, 0.09%NaN_3.	2.0 mL
Positive Control 2: Anti-HIV-2 positive, containing BSA, 0.09%NaN_3.	2.0 mL
Positive Control 3: HIV-1 p24 antigen (recombinant), containing BSA, 0.09%NaN_3.	2.0 mL

Internal quality control is only applicable with MAGLUMI system. For instructions for use and target value refer to Quality Control Information data sheet. User needs to judge results with their own standards and knowledge.

Accessories Required But Not Provided

MAGLUMI Reaction Module	REF: 630003
MAGLUMI Starter 1+2	REF: 130299004M
MAGLUMI Wash Concentrate	REF: 130299005M
MAGLUMI Light Check	REF: 130299006M

Please order accessories from Shenzhen New Industries Biomedical Engineering Co., Ltd (SNIBE) or our representative.

Preparation of the Reagent Integral

Mix contents of new (unopened) reagent packs by gently inverting pack several times. Resuspension of the microbeads takes place automatically prior to use. Visually verify that the microbeads are completely resuspended in brown color. In case microbeads are not resuspended, it is recommended to perform a gentle horizontal motion until the microbeads are completely resuspended.

Do not interchange integral components from different reagents or lots!

Storage and Stability

- Sealed: Stored at 2-8°C until the expiration date.
- On-board: Minimum stability is 4 weeks. After this period, it is still possible to keep on using the Reagent Integral provided that the controls are found within the expected ranges.


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CALIBRATION AND TRACEABILITY

1) 2-Point Recalibration

Via the measurement of calibrators, the predefined master curve is adjusted (recalibrated) to a new, instrument-specific measurement level with each calibration.

2) Frequency of Recalibration

- After each exchange of lots (Reagent Integral or Starter Reagents).
- Every 2 weeks and/or each time a new Integral is used (recommended).
- After each servicing of MAGLUMI Fully-auto chemiluminescence immunoassay (CLIA) analyzer.
- If controls are beyond the expected range.
- Whenever room temperature changes exceed 5 °C (recommended).

SPECIMEN COLLECTION AND PREPARATION

Sample material: serum and plasma may be used (including serum collected in serum separator tubes). The anticoagulants, potassium EDTA, lithium and sodium heparin have been tested and may be used with this assay. Other types of blood collection tube have not been verified.

Follow manufacturers' instructions carefully when using plasma collection containers and gel separator containers.

Separate serum or plasma by centrifugation after standing whole blood at room temperature.

Specimen Conditions

- Do not use specimens with the following conditions:
  (a) heat-inactivated specimens;
  (b) Cadaver specimens;
  (c) Obvious microbial contamination.
- Use caution when handling patient specimens to prevent cross contamination. Use of disposable pipettes or pipette tips is recommended.
- Inspect all samples for bubbles. Remove bubbles with an applicator stick prior to analysis. Use a new applicator stick for each sample to prevent cross contamination.
- Serum specimens should be free of fibrin, red blood cells or other particulate matter.
- Ensure that complete clot formation in serum specimens has taken place prior to centrifugation. Some specimens, especially those from patients receiving anticoagulant or thrombolytic therapy, may exhibit increased clotting time. If the specimen is centrifuged before a complete clotting, the presence of fibrin may cause erroneous results.

Preparation for Analysis.

- Specimens must be mixed **thoroughly** after thawing by **low** speed vortexing or by gently inverting, and centrifuged prior to use to remove red blood cells or particulate matter to ensure consistency in the results. Multiple freeze-thaw cycles of specimens should be avoided.
- All samples (patient specimens or controls) should be tested within 3 hours of being placed on board the MAGLUMI System. Refer to the SNIBE service for a more detailed discussion of onboard sample storage constraints.
- To ensure consistency in results, specimens must be transferred to a centrifuge tube and centrifuged at ≥1,000 RCF (Relative Centrifugal Force) for 15 minutes before testing if they contain fibrin, red blood cells, or other particulate matter, or they were frozen and thawed.

Storage

- Samples can be stored for 24 hours at 2 °C ~ 8 °C, and for 90 days or less at -20 °C. Avoid repeated freezing and thawing. Stored samples should be thoroughly mixed prior to use (Vortex mixer).
- Please ask local representative of SNIBE for more details if you have any doubt.

Shipping

Before shipping specimens, it is recommended that specimens be removed from the serum separator, red blood cells or clot. When shipped, specimens must be packaged and labeled in compliance with applicable state, federal and international regulations covering the transport of clinical specimens and infectious substances. Specimens must be shipped frozen (dry ice).

WARNING AND PRECAUTIONS FOR USERS

IVD

- For use in *IN-VITRO* diagnostic procedures only.
- Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

Safety Precautions

CAUTION: This product requires the handling of human specimens.

- All samples, biological reagents and materials used in the assay must be considered potentially able to transmit infectious agents. They should therefore be disposed of in accordance with the prevailing regulations and guidelines of the agencies holding jurisdiction over the laboratory, and the regulations of each country. Disposable materials must be

incinerated; liquid waste must be decontaminated with sodium hypochlorite at a final concentration of 5% for at least half an hour. Any materials to be reused must be autoclaved using an overkill approach. A minimum of one hour at 121°C is usually considered adequate, though the users must check the effectiveness of their decontamination cycle by initially validating it and routinely using biological indicators.

- It is recommended that all human sourced materials be considered potentially infectious and handled in accordance with the 29 CFR. 1910.1030 Occupational exposure to bloodborne pathogens. Biosafety Level 2 or other appropriate biosafety practices should be used for materials that contain or are suspected of containing infectious agents.
- This product contains Sodium Azide; this material and its container must be disposed of in a safe way.
- Safety data sheets are available on request.

Handling Precautions

- Do not use reagent kits beyond the expiration date.
- Do not mix reagents from different reagent kits.
- Prior to loading the Reagent Kit on the system for the first time, the microbeads requires mixing to re-suspend microbeads that have settled during shipment.
- For microbeads mixing instructions, refer to the KIT COMPONENTS, Preparation of the Reagent Integral section of this package insert.
- To avoid contamination, wear clean gloves when operating with a reagent kit and sample.
- Pay attention to the residual liquids which has dried on the kit surface.
- For detailed handling precautions during system operation, refer to the SNIBE service information.

TEST PROCEDURE

To ensure proper test performance, strictly adhere to the operating instructions of MAGLUMI Fully-auto chemiluminescence immunoassay (CLIA) analyzer. Each test parameter is identified via a RFID tag on the Reagent Integral. For further information please refer to the operating instructions of MAGLUMI Fully-auto chemiluminescence immunoassay (CLIA) analyzer.

+200 µL +150 µL +20 µL	Sample, calibrator or controls ABEI-1 Label Magnetic microbeads
25 min	Incubation
400 µL	Wash cycle
+200 µL	ABEI-2 Label
15 min	Incubation
400 µL	Wash cycle
3 s	Measurement

DILUTION

Sample dilution by analyzer is not available in this reagent kit.

Samples with concentrations above the measuring range can be diluted manually. After manual dilution, multiply the result by the dilution factor.

Please choose applicable diluents or ask SNIBE for advice before manual dilution must be processed.

QUALITY CONTROL

- Observe quality control guidelines for medical laboratories.
- Use suitable controls for in-house quality control. Controls should be run at least once every 24 hours (a run cannot exceed 24 hours), once per reagent kit and after every calibration. The control intervals should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined ranges. Each laboratory should establish guidelines for corrective measures to be taken if values fall outside the range.

LIMITATIONS OF THE PROCEDURE

1) Limitations

Assay results should be utilized in conjunction with other clinical and laboratory data to assist the clinician in making individual patient management decisions.

A skillful operation and strict adherence to the instructions are necessary to obtain reliable results.

Procedural directions must be followed exactly and careful operation must be used to obtain valid results. Any modification of the procedure is likely to alter the results.

Bacterial contamination of samples or repeated freeze-thaw cycles may affect the test results.

2) Interfering Substances

The assay is unaffected by Bilirubin<30 mg/dL, Hemoglobin<500 mg/dL or Triglycerides <2000 mg/dL.

3) HAMA

Patient samples containing human anti-mouse antibodies (HAMA) may give falsely elevated or decreased values. Although HAMA-neutralizing agents are added, extremely high HAMA concentrations may occasionally influence results.

RESULTS

1) Calculation of Results

The analyzer automatically calculates the concentration of antibodies to HIV-1 and/or HIV-2 in each sample by means of a calibration curve which is generated by a 2-point calibration master curve procedure. For further information please refer to the operating instructions of MAGLUMI Fully-auto chemiluminescence immunoassay (CLIA) analyzer.

2) Interpretation of Results

Results obtained with the MAGLUMI HIV Ab/Ag Combi assay can be interpreted as follows:

Non-Reactive Results: Samples giving a concentration <1.0 AU/mL are considered non-reactive in MAGLUMI HIV Ab/Ag Combi.

Reactive Results: Samples giving a concentration ⩾1.0 AU/mL are considered reactive in MAGLUMI HIV Ab/Ag Combi.

Assay results should be interpreted in conjunction with the patient's clinical presentation, history, and other laboratory results. All initially reactive should be redetermined in duplicate with the MAGLUMI HIV Ab/Ag Combi. If the concentration values <1.0 AU/mL are found in both cases, the samples are considered negative for antibodies and p24 antigen against HIV. And repeatedly reactive samples must be confirmed according to recommended confirmatory algorithms.

PERFORMANCE CHARACTERISTICS

1) Precision

Precision for MAGLUMI HIV Ab/Ag Combi assay was determined as described in the CLSI EP5-A2, low and high positive samples and controls containing different concentration of analyte were assayed in duplicate of two at two independent runs per day for 20 testing days on MAGLUMI analyzer. The results are summarized in the following table:

Sample	Mean	Within-Run		Between-Run		Total	
	(N=80)	SD	%CV	SD	%CV	SD	%CV
anti-HIV-1 (Low Positive)	2.991	0.16	5.35%	0.05	1.67%	0.16	5.35%
anti-HIV-2 (Low Positive)	2.004	0.08	3.99%	0.03	1.50%	0.09	4.49%
HIV-1 p24 Ag (Low Positive)	2.099	0.11	5.24%	0.06	2.86%	0.13	6.19%
anti-HIV-1 (High Positive)	98.258	2.6	2.65%	1.75	1.78%	3.14	3.20%
anti-HIV-2(High Positive)	28.326	1.4	4.94%	0.82	2.89%	1.65	5.83%
HIV-1 p24 Ag (High Positive)	41.685	1.02	2.45%	0.12	0.29%	1.03	2.47%
anti-HIV-1 (Control)	48.348	1.72	3.56%	0.91	1.88%	1.95	4.03%
anti-HIV-2 (Control)	9.496	0.34	3.58%	0.52	5.48%	0.62	6.53%
HIV-1 p24 Ag (Control)	20.916	0.61	2.92%	0.19	0.91%	0.64	3.06%
Negative Control	0.525	0.26	NA	0.12	NA	0.29	NA

NA = not applicable

2) Analytical Specificity

The MAGLUMI HIV Ab/Ag Combi assay was evaluated for potential cross-reactivity with other viral infections and disease state specimens. The results are shown in the table below:

Clinical Category	Number of expected negative samples	MAGLUMI HIV Ab/Ag Combi positive result
Hemolysis	12	0
Lipemia	7	0
Icterus	10	0
Rheumatoid factor	14	0
ANA	9	0
CMV	11	0
HTLV-1/2	5	0
SLE	8	0
IAV	1	0
EBV	8	0
HAV	6	0
HBV	20	0
HCV	7	0

Pregnant	37	0
Total	155	0

3) Sensitivity

Seroconversion sensitivity of the MAGLUMI HIV Ab/Ag Combi assay has been evaluated by testing 20 commercial seroconversion panels, which have been tested by commercially available HIV Ab/Ag Combi assays. The MAGLUMI HIV Ab/Ag Combi assa showed equivalent performance when compared to the results from other commercially available test.

4) Clinical Sensitivity

The resulting sensitivity of confirmed positive samples is 100%. The data from this study are summarized in the following table.

Specimen Type	N	Reactive	Confirmed reactive	Sensitivity(%)
Clinical HIV positive samples	477	477	477	100.00
Seroconversion samples	48	48	48	100.00
Genotype samples	76	76	76	100.00
Total	601	601	601	100.00

5) Clinical specificity

In a group of randomly selected blood donors, hospitalized patients and pregnant women, the specificity of the MAGLUMI HIV Ab/Ag Combi assay was found to be greater than 99.5% (RR).

Specimen Type	N	Non-Reactive	Confirmed NonReactive	Specificity (%)
Clinical negative samples	699	699	699	100.00
HTLV samples	5	5	5	100.00
Seroconversion samples	96	96	96	100.00
Total	800	800	800	100.00

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