Dengue IgG/IgM cassette CE

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For professional *in vitro* diagnostic use only			

Dengue IgG/IgM

A rapid one test for simultaneous detection and differentiation of IgG and IgM anti–dengue virus (DEN 1, 2, 3, and 4) in human serum, plasma or whole blood

ONE STEP

PRINCIPLE

LINEAR Dengue IgG/IgM cassette is intended to be used as a screening test and provides a preliminary test result to aid in the diagnosis of infection with dengue viruses.
Any interpretation of this test result must rely on other clinical findings and on the professional judgment of health care providers. Alternative test method(s) should be considered to confirm the test result obtained.
The test consists of: 1) a burgundy colored conjugate pad containing dengue recombinant envelope antigens conjugated with colloidal gold (dengue Ag conjugates) and a control antibody conjugated with colloidal gold, 2) a nitrocellulose membrane strip containing two test lines (G and M lines) and a control line (C line). The G line is pre-coated with antibodies for the detection of IgG anti-dengue virus, the M line is pre-coated with antibodies for the detection of IgM anti-dengue virus, and the C line is pre-coated with a control line antibody.
When an adequate volume of specimen is dispensed into the sample well of the cassette, the specimen migrates by capillary action along the cassette. IgG anti-dengue virus, if present in the specimen, will bind to the dengue Ag conjugates. The immunocomplex is then captured by the pre-coated anti-human IgG, forming a burgundy colored G line, indicating an IgG anti-dengue virus positive test result and suggesting a secondary or past infection with dengue virus.
IgM anti-dengue virus, if present in the specimen, will bind to the dengue Ag conjugates. The immunocomplex is then captured by the pre-coated anti-human IgM, forming a burgundy colored M line, indicating an IgM anti-dengue virus positive result and suggesting either an acute primary or secondary dengue infection. An IgM and IgG positive result indicates a late primary or early secondary infection.
Absence of any G, M or T lines suggests a negative result. Each test contains an internal control (C line) which should exhibit a burgundy colored line of the control antibodies regardless of color development on any of the test lines. If the C line does not develop, the test result is invalid and the specimen must be retested with another device.

PACKAGING CONTENTS

REF 4273240 40 Dengue IgG/IgM test device
40 Capillary tubes (5 µL)
1 Sample diluent (5 mL)

STORAGE AND STABILITY

Store at 2-30ºC. The test device is stable through the expiration date printed on the sealed pouch. The test device must remain in the sealed pouch until use. **Do not freeze the kit or expose the kit over 30°C**. Do not use beyond the expiration date.

SPECIMEN COLLECTION AND PREPARATION

Serum, (EDTA, citrate or heparin) or plasma unhemolyzed.
Test specimens as soon as possible after collecting. Store specimens at 2°C-8°C if not tested immediately. Stable up to 5 days at 2-8°C or frozen at -20°C for longer storage. Avoid multiple freeze-thaw cycles. Prior to testing, bring frozen specimens to room temperature slowly and mix gently. Specimens containing visible particulate matter should be clarified by centrifugation before testing. Do not use samples demonstrating gross lipemia, gross hemolysis or turbidity in order to avoid interference on result interpretation.

Whole Blood
Drops of whole blood can be obtained by either finger tip puncture or veinpuncture. Do not use any hemolized blood for testing.
Store at 2-8°C if not tested immediately. The specimens must be tested within 24 hours of collection.
Consider any materials of human origin as infectious and handle them using standard biosafety procedures.

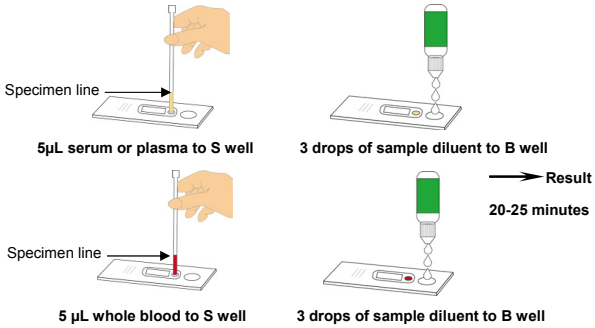
MATERIAL REQUIRED

- Timer or Clock

PROCEDURE

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

1. Remove the test device from the sealed pouch and use it as soon as possible.
2. Be sure to label the device with specimen's ID number.
3. Fill the capillary tube with the serum, plasma or whole blood specimen not exceeding the specimen line as shown in the image below. The volume of the specimen is around 5µL. ***For better precision, transfer the specimen by a pipette capable of delivering 5µL of volume.***
   Holding the capillary tube vertically, dispense the entire specimen (5 µL) into the center of the sample well **(S well)** making sure that there are no air bubbles.
   Immediately add 3 drops (about 90-120 µL) of Sample Diluent into the buffer well **(B well)** with the bottle positioned vertically.



4. Set up a timer.
5. Read the result at 20-25 minutes. Positive results may be visible in as short as 1 minute. Negative results must be confirmed at the end of the 25 minutes only. **Any results interpreted outside of the 20-25 minute window should be considered invalid and must be repeated. Discard used devices after interpreting the result following local laws governing the disposal of devices.**

NEGATIVE: If only the C band is present, the absence of any burgundy color in the both test bands (G and M) indicates that no anti- dengue virus antibodies are detected. The result is negative or non-reactive.

POSITIVE:
1. Two distinct red lines appear. C band and if only G band is developed, indicates the presence of IgG anti- dengue virus; the result suggests past infection or re-infection of dengue virus.

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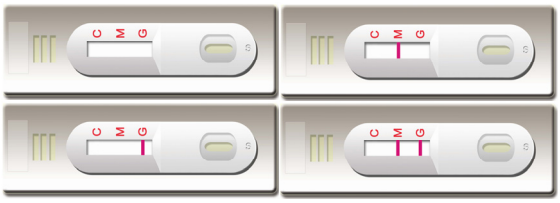
2. In addition to the presence of C band, if only M band is developed, the test indicates for the presence of IgM anti-dengue virus. The result suggests fresh infection of dengue virus.

3. In addition to the presence of C band, both G and M bands are developed, indicates for the presence of IgG and IgM anti-dengue virus. The result suggests current infection or secondary infection of dengue virus.

Samples with positive results should be confirmed with alternative testing method(s) and clinical findings before a diagnosis is made.

INVALID:
If no C band is developed, the assay is invalid regardless of any burgundy color in the test bands (G and M) as indicated below. Repeat the assay with a new device.



QUALITY CONTROL

An internal 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.
External controls are not supplied with this kit; however, it is recommended that positive and negative controls be tested as good laboratory testing practice to confirm the test procedure and to verify proper test performance. particularly under the following circumstances:

a. A new operator uses the kit, prior to performing testing of specimens.
b. A new lot of test kit is used.
c. A new shipment of kits is used.
d. The temperature during storage of the kit falls outside of 2-30°C.
e. The temperature of the test area falls outside of 15-30°C.
f. To verify a higher than expected frequency of positive or negative results.
g. To investigate the cause of repeated invalid results.

CLINICAL SIGNIFICANCE

Dengue virus is an enveloped, single-stranded, positive-sense RNA virus that comprises four related but distinct serotypes (DEN1, 2, 3, and 4). The virus is transmitted by mosquitoes of the daytime-biting *Stegemyia* family, principally *Aedes aegypti* and *Aedes albopictus*. Today, more than 2.5 billion people living in areas of tropical Asia, Africa, Australia, and the Americas are at risk for dengue infection. An estimated 100 million cases of dengue fever and 250,000 cases of life-threatening dengue hemorrhagic fever occur annually on a worldwide basis[1-3]. Serological detection is a common method for the diagnosis of infection with dengue virus. IgM anti-dengue virus starts to appear 3 days after initial exposure and remains in circulation for about 30-60 days. IgG anti-dengue virus levels rise around 7 days, peak at 2-3 weeks and persist for the duration of life[4-6].

ANALYTICAL PERFORMANCE

Clinical Performance For IgM Test
A total of 314 specimens were collected from susceptible subjects and tested with the Linear Dengue IgG/IgM cassette and by a commercial EIA. Comparison for all subjects is shown in the following table:

	Linear Dengue IgG/IgM Cassette		
IgM EIA	**Positive**	**Negative**	**Total**
Positive	31	1	32
Negative	3	279	282
Total	34	280	314

Relative Sensitivity: 96.9%, Relative Specificity: 98.9%, Overall Agreement: 98.7%

Clinical Performance For IgG Test
A total of 326 specimens were collected from susceptible subjects and tested with the Linear Dengue IgG/IgM cassette and by a commercial EIA. Comparison for all subjects is shown in the following table:

	Linear Dengue IgG/IgM Cassette		
IgG EIA	Positive	Negative	Total
Positive	36	1	37
Negative	2	287	289
Total	38	288	326

Relative Sensitivity: 97.3%, Relative Specificity: 99.3%, Overall Agreement: 99.1%.

Cross Reactivity
No false positive IgG and IgM anti-dengue virus test results were observed on 1-13 specimens from the following disease states or specific conditions, respectively:

HAV	HBV	HCV	HEV	HIV	*H. pylori*
CMV	Chagas	Chikungunya	hCG	Rubella	*T. gondii*
Typhi	*T. pallidum*	ANA	HAMA	RF (up to 8,400 IU/mL)	

LIMITATIONS OF TEST

1. This package insert must be followed closely when testing the presence of antibodies to dengue virus from individual subjects. Failure to follow the procedure may lead to inaccurate results.
2. The Linear Dengue IgG/IgM cassette is limited to the qualitative detection of IgG and IgM anti–dengue virus. The intensity of the test band does not have linear correlation with the antibody titer in the specimen.
3. Information about the dengue virus serotype(s) present in a specimen cannot be provided from this test.
4. The Linear Dengue IgG/IgM cassette cannot differentiate primary or secondary infection.
5. Serological cross-reactivity with other flaviviruses is common (e.g., Japanese encephalitis, West Nile virus, yellow fever, etc.). Therefore, it is possible that patients who were exposed to these viruses may show some level of reactivity with this test.
6. A negative or non-reactive result for an individual subject indicates absence of detectable dengue virus antibodies. However, a negative result does not preclude the possibility of exposure to or infection with dengue virus.
7. A negative result can occur if the quantity of antibodies to dengue virus present in the specimen is below the limits of detection, or if the antibodies that are detected are not present during the stage of disease in which a sample is collected.
8. Some specimens containing unusually high titer of heterophile antibodies or rheumatoid factor may affect expected results.
9. Infection may progress rapidly. If the symptoms persist, while the result is negative or non-reactive, it is recommended to test with an alternative test method.
10. The results obtained with this test should be interpreted in conjunction with other diagnostic procedures and clinical findings.

PRECAUTIONS

1. Do not open the sealed pouch, unless ready to conduct the assay.
2. Do not use expired devices.
3. Do not use the components of any other type of test kit as a substitute for the components in this kit.
4. Do not use hemolyzed blood specimen for testing.
5. Wear protective clothing and disposable gloves while handling the kit reagents and clinical specimens. Wash hands thoroughly after performing the test.
6. Users of this test should follow the US CDC Universal Precautions for prevention of transmission of HIV, HBV and other blood-borne pathogens.
7. Dispose of all specimens and materials used to perform the test as bio-hazardous waste.

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O4273240-2/1606

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