Malaria Pf/Pan Antigen Rapid Test Kit (Colloidal Gold)

Instruction for Use

Read this instruction carefully before use

A rapid test for the qualitative detection of Human Malaria Pf/Panin human blood specimen.*For professional medical institutions use only,Not for self testing.*

PRODUCT NAME

Malaria Pf/Pan Antigen Rapid Test kit (Colloidal Gold)

SPECIFICATION

25 tests/kit; 5 tests/kit;1 test/kit

INTENDED USE

The Malaria Pf / Pan Antigen Rapid Test Kit is a lateral flow chromatographic immunoassay for the simultaneous detection and differentiation of Plasmodium falciparum (Pf) antigen and P. vivax, P. ovale, or P. malariae antigen in human blood specimen. This device is intended to be used as a screening test and as an aid in the diagnosis of infection with plasmodium. Any reactive specimen with theMalaria Pf / Pan Antigen Rapid Test kit must be confirmed with alternative testing method(s) and clinical findings.

SUMMARY AND EXPLANATION THE TEST

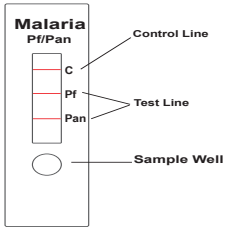
Malaria is a mosquito-borne, hemolytic, febrile illness that infects over 200 million people and kills more than 1 million people per year. It is caused by four species of Plasmodium: P. falciparum, P. vivax, P. ovale, and P. malariae. These plasmodia all infect and destroy human erythrocytes, producing chills, fever, anemia, and splenomegaly. P. falciparum causes more sever disease than the other plasmodial species and accounts for most malaria deaths. P. falciparum and P. vivax are the most common pathogens, however, there is considerable geographic variation in species distribution.

Traditionally, malaria is diagnosed by the demonstration of the organisms on Giemsa stained thick smears of peripheral blood, and the different species of plasmodium are distinguished by their appearance in infected erythrocytes1. The technique is capable of accurate and reliable diagnosis, but only when performed by skilled microscopists using defined protocols2, which presents major obstacles for the remote and poor areas of the world.

The Malaria Pf / Pan Antigen Rapid Test Kit is developed for solving these obstacles. The test utilizes a pair of monoclonal and polyclonal antibodies to P. falciparum specific protein, Histidine Repeat Protein II (pHRP-II), and a pair of monoclonal antibodies to plasmodium Lactate Dehydrogenase (pLDH), a protein produced by the four species of the plasmodium, thus enables simultaneous detection and differentiation of the infection with P. falciparum and or any of the other three plasmodia. It can be performed by untrained or minimally skilled personnel, without laboratory equipment.

PRINCIPLE

The Pf/ Pan Malaria Rapid Test kit is a lateral flow chromatographic immunoassay. The test strip components consist of: 1) a burgundy colored conjugate pad containing mouse anti- pHRP-II antibody conjugated with colloid gold (pHRP II-gold conjugates) and mouse anti-pLDH antibody conjugated with colloid gold (pLDH-gold conjugates), 2) a nitrocellulose membrane strip containing two test bands (Pan and Pv bands) and a control band (C band). Pan band is pre-coated with monoclonal anti-pLDH antibody by which the infection with any of the four species of plasmodia can be detected, the Pf band is pre-coated with polyclonal anti-pHRP-II antibodies for the detection of Pf infection, and the C band is coated with goat anti-mouse IgG.



During the assay, an adequate volume of the blood specimen is dispensed into the sample well (S) of the test cassette, a lysis buffer is added to the buffer well (B). The buffer contains a detergent that lyses the red blood cells and releases various plasmodium antigens, which migrate by capillary action across the strip held in the cassette. pHRP-II if presents in the specimen will bind to the pHRP II-gold conjugates. The immunocomplex is then captured on the membrane by the pre-coated anti-pHRP-II antibodies, forming a burgundy colored Pf band, indicating a Pf positive test result.

pLDH if presents in the specimen will bind to the pLDH gold conjugates. The immunocomplex is then captured on the membrane by the pre-coated anti pLDH antibody, forming a burgundy colored Pan band, indicating a plasmodium positive test result. In the absence of Pan band, a positive test result for any of the other three plasmodia can be recommended.

Absence of any test bands (Pan and Pf) suggests a negative result. The test contains an internal control (C band) which should exhibit a burgundy colored band of the immunocomplex of goat anti-mouse IgG / mouse IgG (pHRP-II and pLDH-gold conjugates) regardless of the color development on any of the test bands. Otherwise, the test result is invalid and the specimen must be retested with another device.

REAGENTS AND MATERIALS PROVIDED

Components	25tests/kit	5tests/kit	1test/kit
Cassettes	25 cassettes with dependent sealed foil pouch	5 cassettes with dependent sealed foil pouch	1 cassette with dependent sealed foil pouch
Sample Diluent Solution with dropper	25tubes (300ul/tube)	5tubes (300ul/tube)	300ul/tube
Transfer tube	25 pcs	5 pcs	1 pcs
Package insert	1	1	1

MATERIALIS REQUIRED BUT NOT PROVIDED

Clock or Timer

STORAGE AND STABILITY

•The kit should be stored at 2~30°C, valid for 24months.
•The test must remain in the sealed pouch until use.
•Do not freeze.
•Cares should be taken to protect components in this kit from contamination. Do not use if there is evidence of microbial contamination or precipitation. Biological contamination of dispensing equipment, containers orreagents can lead to false results.

WARNINGS AND PRECAUTIONS

For in Vitro Diagnostic Use

1.This package insert must be read completely before performing the test. Failure to follow the insert gives inaccurate test results.
2.Do not open the sealed pouch, unless ready to conduct the assay.
3.Do not use expired devices.
4.Bring all reagents to room temperature (15°C-30°C) before use.
5.Do not use the components in any other type of test kit as a substitute for the components in this kit.
6.Do not use hemolized blood specimen for testing.
7.Wear protective clothing and disposable gloves while handling the kit reagents and clinical specimens. Wash hands thoroughly after performing the test.
8.Users of this test should follow the US CDC Universal Precautions for prevention of transmission of HIV, HBV and other blood-borne pathogens.
9.Do not smoke, drink, or eat in areas where specimens or kit reagents are being handled.
10.Dispose of all specimens and materials used to perform the test as biohazardous waste.
11.Handle the Negative and Positive Control in the same manner as patient specimens.
12.The testing results should be read within 25 minutes after a specimen is applied to the sample well or sample pad of the device. Read result after 25 minutes may give erroneous results.
13.Do not perform the test in a room with strong air flow, ie. electric fan or strong air-conditioning.

REAGENT PREPARATION AND STORAGE INSTRUCTIONS

All reagents are ready to use as supplied. Store unused test device unopened at 2°C-30°C. The positive and negative controls should be kept at 2°C-8°C. If stored at 2°C-8°C, ensure that the test device is brought to room temperature before opening. The test device is stable through the expiration date printed on the sealed pouch. Do not freeze the kit or expose the kit over 30°C.

SPECIMEN COLLECTION AND HANDLING

Consider any materials of human origin as infectious and handle them with standard biosafety procedures.

Collect whole blood in a clean container containing anti-coagulant (EDTA, citrate or heparin) by venipuncture. Blood can be obtained by finger tip puncture as well.

Whole blood specimen should be stored in refrigeration (2°C-8°C) if not tested immediately for up to 3 days. The specimen should be frozen at -20°C for longer storage. Avoid repeat freeze and thaw

ASSAY PROCEDURE

Step 1: Bring the specimen and test components to room temperature if refrigerated or frozen. Mix the specimen well prior to assay once thawed. Blood will be hemolyzed after thawing.

Step 2: When ready to test, open the pouch at the notch and remove device. Place the test device on a clean, flat surface.

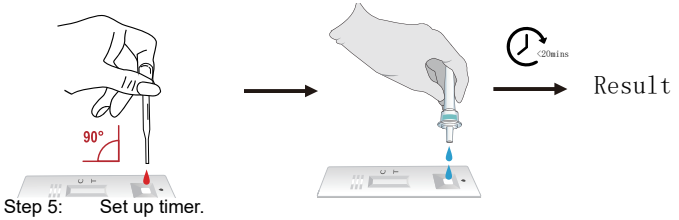
Step 3: Be sure to label the device with specimen's ID number.

Step 4: Fill in the mini plastic dropper with the blood specimen not to exceed the specimen line as showed in the following image. The volume of the specimen is around 5 μL.

Note: Practice a few times prior to testing if you are not familiar with the mini dropper. For better precision, transfer specimen by pipette capable to deliver 5μL of volume.

Holding the dropper vertically, dispense all of the specimen into the center of the sample well making sure that there are no air bubbles.

Then add 3 drops (about 100-150 μL) of Lysis Buffer immediately.



Step 5: Set up timer.

Step 6: Results can be read in 20 minutes. Positive results can be visible in as short as 1 minute.

Don't read results after 30 minutes.To avoid confusion, discard the test device after interpreting the result.

QUALITY CONTROL

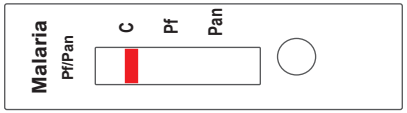
Using individual Pf / Pan Malaria Ag Rapid Test cassettes as described in the Assay Procedure above, run 1 positive control and 1 Negative Control under the following circumstances to monitor test performance:

1.A new operator uses the kit, prior to performing testing of specimens.
2.A new test kit is used.
3.A new shipment of kits is used.
4.The temperature used during storage of the kit fall outside of 2°C-30°C.
5.The temperature of the test area falls outside of 15°C-30°C.

Expected results are as follows:

Negative Control

Only the C band shows color development, the two Test bands (Pan and Pf) show no color development.

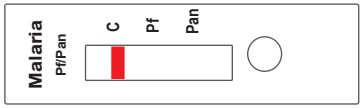


Positive Control
The C band and two Test bands (Pan and Pf) show color development.

The appearance of any burgundy color in the test bands, regardless of intensity, must be considered as presence of the band.

INTERPRETATION OF ASSAY RESULT

Negative Control
If only the C band is present, the absence of any burgundy color in the both test bands (Pan and Pf) indicates that no plasmodium antigens are detected. The result is negative.



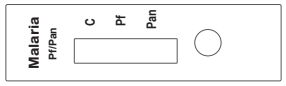
Positive Control
Pan Positive: In addition to the presence of C band, if only Pan band is developed, the test indicates for the presence of pLDH antigen. The result is either Pv, Pm, or Po positive.

Pf Positive: In addition to the presence of C band, if only Pf band is developed, the test Indicates for the presence of pHRP-II antigen. The result is Pf positive.

Pf/Pan Positive: In addition to the presence of C band, both Pan and Pf bands are developed, the test indicates for the presence of both pHRP-II and pLDH. The result is Pf positive (Subject Limitations of Test -3).

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

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



PERFORMANCE CHARACTERISTICS

1. Clinical Performance with Pf positive specimen

A total of 400 samples from susceptible subjects were tested by the Malaria Pf/Pan Malaria Ag Rapid Test and by thick blood smear test. Comparison for all subjects is showed in the following table.

	Malaria Pf/Pan Malaria Ag Rapid Test		
Smear test	**Positive**	**Negative**	**Total**
Positive	149	1	150
Negative	1	249	250
Total	150	250	400

Relative Sensitivity:99.33% , Relative Specificity:99.6%, Overall Agreement: 99.5%

2. Clinical Performance with Pan positive specimen

A total of 500 samples from susceptible subjects were tested by the Malaria Pf/pan Malaria Ag Rapid Test and by thick blood smear test. Comparison for all subjects is showed in the following table.

	Malaria Pf/Pan Malaria Ag Rapid Test		
Smear test	**Positive**	**Negative**	**Total**
Positive	165	1	166
Negative	1	333	334
Total	166	334	500

Relative Sensitivity:99.4% , Relative Specificity:99.7%, Overall Agreement: 99.6%

3. External Evaluation

The Malaria Pf /Pan Ag rapid test was evaluated by the Research Institute for Tropical Medicine, a WHO affiliation in Philippines. The result is showed in the following table:

Quality control dilutions		Pf /Pan malaria Ag Rapid Test		
Sample ID	(parasites/μl)	Device tested	Positive result	% positive
P5F2 (Pf)	200	2	2	100%
	2000	1	1	100%
P5F4 (Pf)	200	2	2	100%
	2000	1	1	100%
P5F5 (Pf)	200	2	2	100%
	2000	1	1	100%
P5F8 (Pf)	200	2	2	100%
	2000	1	1	100%
P5V2 (Pv)	200	2	2	100%
	2000	1	1	100%
P5V5 (Pv)	200	2	2	100%
	2000	1	1	100%
P5V7(Pv)	200	2	2	100%
	2000	1	1	100%
P31(Pv)	200	2	2	100%
	2000	1	1	100%
		Device tested	Negative result	% negative
Negative control	0	1	1	100

LMITATIONS OF TEST

1.The Assay Procedure and the Test Result Interpretation must be followed closely when testing the presence of plasmodium protozoa antigen in whole blood from individual subjects. Failure to follow the procedure may give inaccurate results.
2.The Pf / Pan Malaria Ag Rapid Test is limited to the qualitative detection of plasmodium protozoa antigen in whole blood. The intensity of the test band does not have linear correlation with the antigen titer in the specimen.
3.In the case of co-infection with Pf and any of the other three plasmodia, both Pan and Pf band will be developed. Thus, interpret the result cautiously when both Pan and Pf bands are visible.
4.A negative result for an individual subject indicates absence of detectable plasmodium protozoa antigen. However, a negative test result does not preclude the possibility of exposure to or infection with plasmodium protozoa.
5.A negative result can occur if the quantity of the plasmodium protozoa antigen present in the specimen is below the detection limits of the assay, or the antigen that are detected are not present during the stage of disease in which a sample is collected.
6.Some specimens containing unusually high titer of heterophile antibodies or rheumatoid factor may affect expected results.
7.The results obtained with this test should only be interpreted in conjunction with other diagnostic procedures and clinical findings.

SYMBOLS

Symbol	Used For	Symbol	Used For
	Use-by date		Consult instructions for use
LOT	Batch code	IVD	In vitro diagnostic medical device
	Temperature limit		Manufacturer
	Please don't reuse it		Keep away from sunlight
	Don't use the product when the package is damaged		Keep dry
	Date of manufacture	Σ	Tests per kit
CE	CE Mark		Biological Risks
EC REP	Authorized representative in the European Community		

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