

TMDA/DMD/MDA/F/014
Rev #:00



THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH



TANZANIA MEDICINES AND MEDICAL DEVICES AUTHORITY

PUBLIC ASSESSMENT REPORT FOR WONDFO (MALARIA P.F (HRP2/PLDH) TEST)

Version number 2.0, 18.05.2026

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1. Introduction

Wondfo is a class C in-vitro diagnostic device belonging to the Infectious disease - parasitology specialty category. It is approved in Tanzania as kit for use in adults, children, elderly etc. by healthcare professionals.

1.1. Administrative Information

Registration number	TAN 25 MDR 0205
Brand Name (if relevant)	Wondfo
Common name	Malaria P.F (HRP2/PLDH) Test
Class of the device and rule applied	Class C as per Rule 3 for classification of In Vitro Diagnostic Devices
GMDN code and term	52336, Plasmodium falciparum antigen IVD, kit, rapid ICT, clinical
Name and complete address of the Market Authorization Holder	Guangzhou Wondfo Biotech Co. Ltd. 510663 no. 8 Lizhihishan Road, Luangang district Guangzhou China
Name and address(es) of local responsible person (LRP).	Qualtrust Company Limited, Trust House, 4th Floor, Plot No. 58, Block 29B, Mwananyamala, Komakoma, Mwinyijuma Road, Dar es Salaam

1.2. Assessment Procedure

The application for registration of Wondfo was submitted on 03.01.2025. The product underwent abridged assessment. Assessment was completed in 2 rounds of evaluation. Wondfo was registered on 18.12.2025

2. Technical information

2.1. Intended use

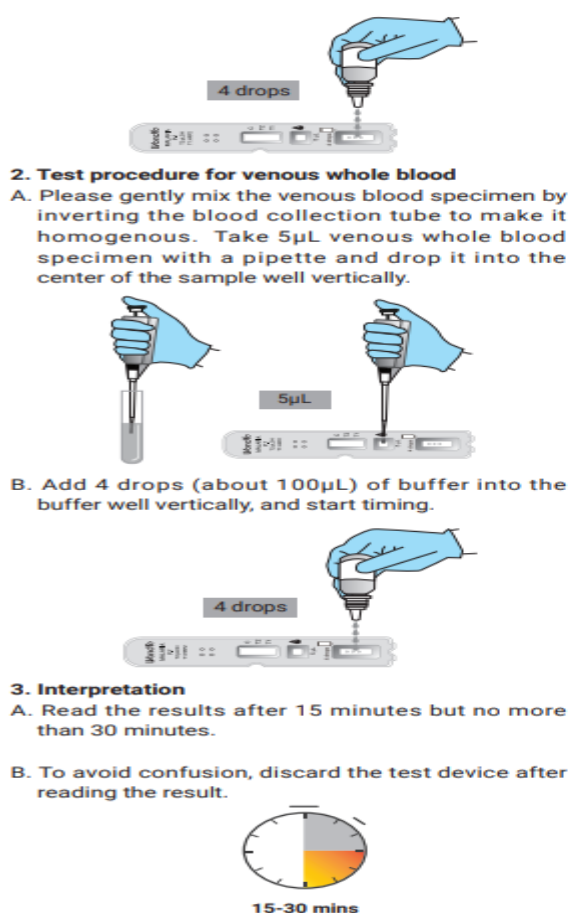
The intended use of Wondfo as declared by the manufacturer and approved by TMDA is an immunochromatographic, rapid diagnostic assay intended for the qualitative detection of P. falciparum specific histidine rich protein-2 (P.f HRP2) and P. falciparum specific pLDH (P.f pLDH) in human fingerstick whole blood and venous whole blood. Wondfo is approved for use in healthcare settings, point of care by trained professionals only.

2.2. Device details and features

Wondfo is a single device with no additional components or accessories. Wondfo has been registered as a kit which consists of Cassette, Instruction for use, Alcohol prep pad, the invented cup Sterile lancet, and Blood lancet for single use

Wondfo is a manually operated device. It is used for diagnosis of malaria. Wondfo operates by immunochromatographic, rapid diagnostic assay. The test out-put is qualitative.

The type of specimen used is whole blood and is collected by human fingerstick and venous collection



2. Test procedure for venous whole blood

A. Please gently mix the venous blood specimen by inverting the blood collection tube to make it homogenous. Take 5µL venous whole blood specimen with a pipette and drop it into the center of the sample well vertically.

B. Add 4 drops (about 100µL) of buffer into the buffer well vertically, and start timing.

3. Interpretation

A. Read the results after 15 minutes but no more than 30 minutes.

B. To avoid confusion, discard the test device after reading the result.

15-30 mins

QUALITY CONTROL

1. Internal control: This kit contains a built-in control feature as a procedural control, the control region (C). A colored line develops in the control region (C) after addition of the specimen and buffer. If a colored line does not-develop in the C region, the test is invalid. Review the procedure and repeat the test with a new device.
2. External control: The test kit does not provide external control.

INTERPRETATION OF RESULTS

Lines that you see	Picture	Read and Interpretation of Results
No line at 'C' (control)		Result: Invalid. Action: Take a new cassette and repeat the test. Please contact the local distributor or manufacturer if invalid results continuously appear.
Line at 'C' and No other line		Result: Negative. Action: No
1. Line at 'C' , 'T1' and 'T2'		Result: Positive. 1. Line at 'C' , 'T1' and 'T2' indicates positive for P.f HRP2 and P.f pLDH.
2. Line at 'C' and 'T1' and/or 'T2'		2. Line at 'C' and 'T1' indicates positive for P.f HRP2. 3. Line at 'C' and 'T2' indicates positive for P.f pLDH.
3. Line at 'C' and at 'T1' and/or 'T2'		Note: Line intensity may vary from faint to strong intensity. Consider a faint test line as a positive result. Action: No

2.3. Commercial presentation

There are three (3) approved commercial presentations as follows: One test cassette and desiccant in the foil pouch. 25, 40 and 100 pouches are placed in a box

Additional contents include quick guide, sterile lancet or blood lancet, test cassette desiccant, inverted cup and alcohol prep pad

2.4. Items required but not submitted

- Timer
- Protective gloves
- Specimen and test waste container
- Sterile cotton swab/ball

3. Storage instructions

3.1.1. Shelf-life

24 months.

3.1.2. Storage conditions

The recommended storage conditions are Store the kit at 1°C-40°C.

3.1.3. Shipping conditions

The recommended shipping conditions is 1-40°C

4. Manufacturing site audit

The manufacturer of the device is Guangzhou Wondfo Biotech Co., Ltd. No.8, Lizhi Shan Road, Science City, Huangpu District, 510663, Guangzhou, P.R. China. sales@wondfo.com.cn

Quality audit of the manufacturing facility was conducted through site visit, on 12th – 13th June, 2019. The site was found to be compliant to ISO 13485 requirements.

5. Performance Evaluation

5.1. Analytical Performance

The analytical performance characteristics of the device was established through the following test parameters: precision (repeatability and reproducibility), analytical sensitivity and analytical specificity.

5.2. Clinical Performance

Clinical performance was conducted at Centers for Disease Control and Prevention on behalf of WHO in the fourth quarter of 2022, according to protocol PQDx_317, version 3.1. The following parameters were tested; precision (repeatability and reproducibility), clinical sensitivity and clinical specificity.

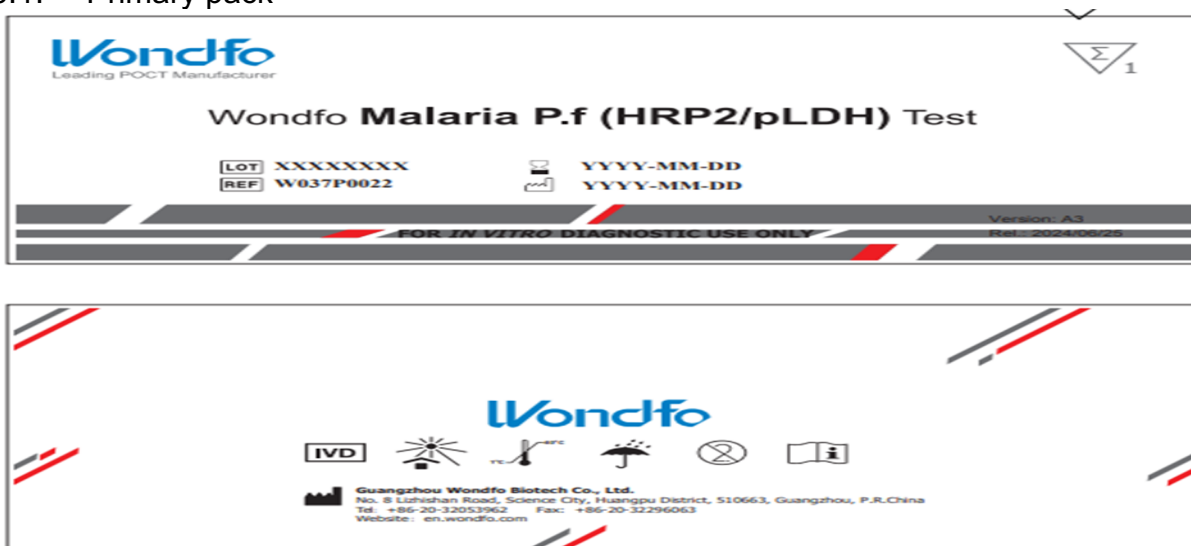
Based on results of the performance studies, it was concluded that the test sensitivity and specificity is 100% and 100% respectively. The studies further concluded that Wondfo is capable of consistently producing accurate and reliable test output.

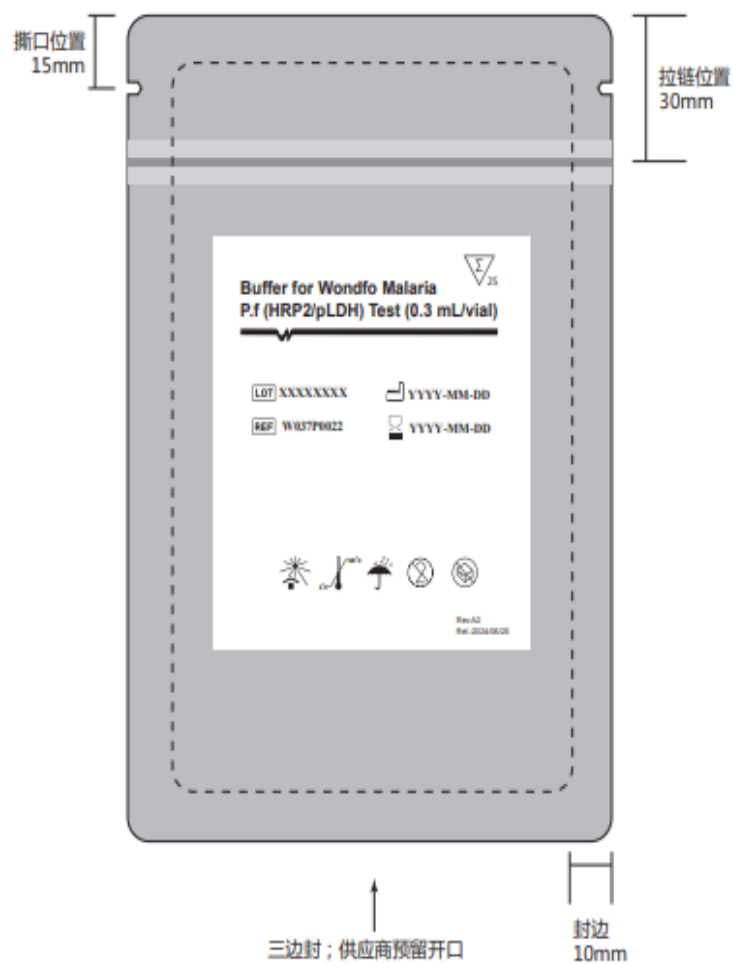
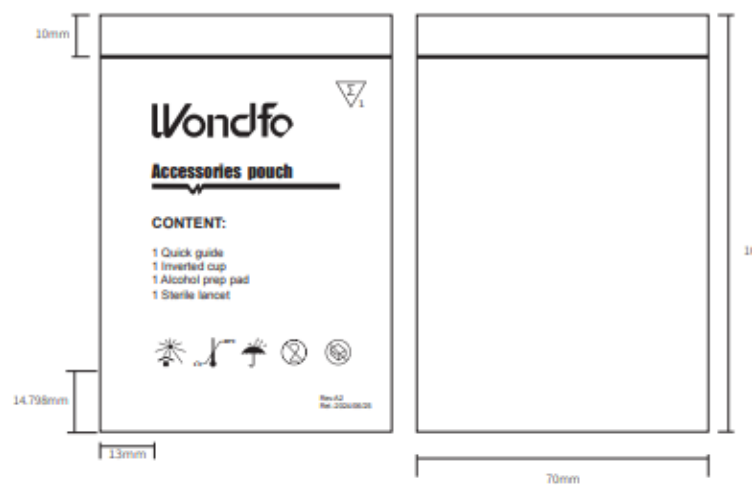
6. Product label and instructions for use

The content of the primary and secondary labels is in line with TMDA labeling requirements in terms of content, layout and design. The label contains sufficient information for proper identification of the device and post marketing follow up of the product in the market.

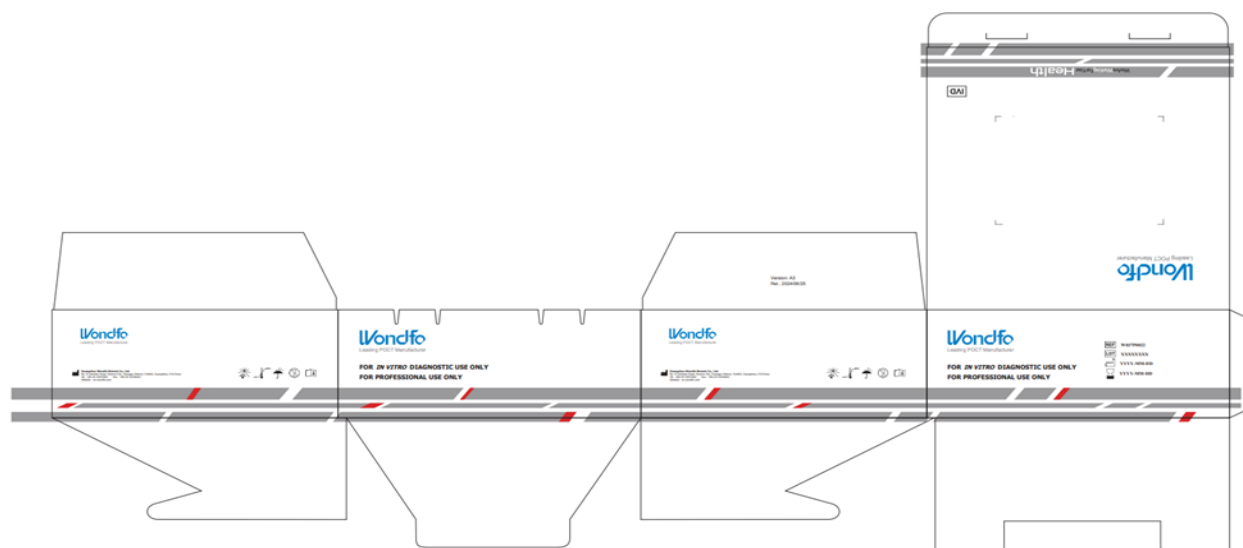
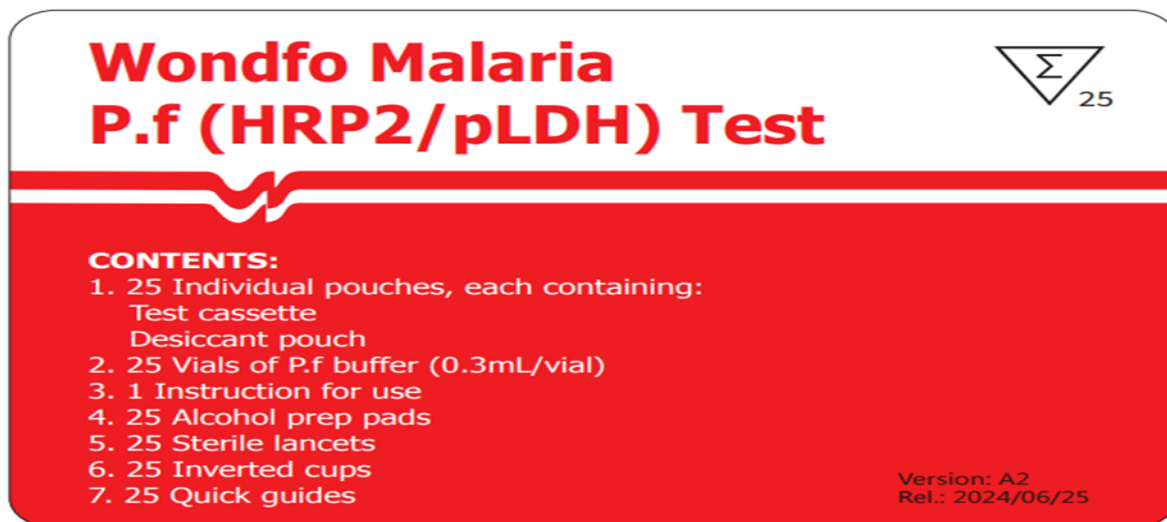
The package insert includes all the relevant information to ensure correct and safe use of the device by intended user.

6.1. Primary pack





6.2. Secondary pack



6.3 Instructions for use/Package insert

View the product insert at the last page

7. Risk – Benefit Analysis

On basis of the data submitted, the current state of knowledge and compliance of the manufacturer to ISO 13485, the benefit of the product outweighs the risks associated with its use when used in accordance to the manufacturer instruction. Wondfo is recommended for registration.

8. Post-approval updates

8.1. Variation applications

Reference number	Date submitted	Change requested	Recommendation	Granting date
NA	NA	NA	NA	NA

8.2. Feedback from pharmacovigilance, post marketing surveillance and enforcement activities

Type of feedback	Impact	Response
No any recorded Adverse Event	NA	NA

8.3. Re-registration applications

NA

CHANGE HISTORY

Version number	Date	Description of update	Section(s) Modified	Approval date

Wondfo Malaria P.f (HRP2/pLDH) Test

CATALOG No.

W037P0022	W037P0028	W037P0030
W037P0024	W037P0033	W037P0035
W037P0037		

INTENDED USE

The Wondfo Malaria P.f (HRP2/pLDH) Test is an immunochromatographic, rapid diagnostic assay intended for the qualitative detection of *P. falciparum* specific histidine rich protein-2 (Pf HRP2) and *P. falciparum* specific pLDH (Pf pLDH) in human fingerstick whole blood and venous whole blood. It is intended to be used by laboratory professionals and at point-of-care by healthcare workers or trained lay providers. It is used as an aid for diagnosis of *P. falciparum* Malaria infection for asymptomatic patients including paediatric testing. Results from the Wondfo Malaria P.f (HRP2/pLDH) Test should not be used as the sole basis for diagnosis.

For in vitro diagnostic use only. For professional use only.

BACKGROUND INFORMATION

Malaria remains one of the most serious tropical diseases in many regions of the world, mainly occurring in tropical and subtropical areas. Malaria is caused by a parasite that commonly infects the *Anopheles* mosquito which feeds on human blood. There are four kinds of malaria parasites that can infect humans: *P. falciparum*, *P. vivax*, *P. malariae*,

and *P. ovale*. Malaria can also be transmitted through blood transfusions, organ transplantation or shared needles/syringes contaminated with blood from an infected person. It can also be transmitted congenitally from mother to her unborn infant. It is estimated to affect more than 200 million people worldwide and cause more than 400,000 deaths every year [1-4].

PRINCIPLES OF THE PROCEDURE

The Wondfo Malaria P.f (HRP2/pLDH) Test utilizes the principles of immunochromatography to detect two targets: *P. falciparum* specific histidine rich protein-2 (Pf HRP2) and *P. falciparum* specific pLDH (Pf pLDH) in human fingerstick whole blood and venous whole blood. After adding specimen into the sample well and adding buffer into the buffer well, the specimen/buffer mixture migrates towards the other end of the cassette by capillary action. The antigen in the specimen will bind the antibody-gold colloid to form the antigen-antibody-gold colloid complex. The complex migrates further to capture Pf HRP2 specific antibody / Pf pLDH specific antibody that is pre-coated on the test line of the cassette. When a target antigen (Pf HRP2 and/or Pf pLDH) level is at or above the limit of detection (LoD) of the assay, the test line will form a visible red line, indicating a positive result.

Rabbit IgG-gold colloid combines with goat anti-rabbit IgG polyclonal antibody in C line (control line) to form a red reaction line. The control line is used for procedural control and shows only that the buffer has been applied successfully and that the active ingredients of the main components on the strip are functional.

WARNINGS AND PRECAUTIONS

- This kit is for in vitro use only.
- Apply standard biosafety precautions for handling and disposal of potentially infective material.
 - Handle all specimens as potentially infectious.
 - Wear gloves while handling specimens and performing the test.
 - Avoid splashing and aerosol formation.
 - Clean up spills thoroughly using an appropriate disinfectant.
- Do not reuse the test cassette, inverted cup, lancet, and alcohol prep pad.
- Do not use the kit beyond the expiration date.
- Do not use the test cassette if the pouch is punctured or improperly sealed.
- Do not mix a buffer and a test cassette from different lots.
- Do not open the sealed pouch until you are ready to conduct the assay. Once opened, use the test cassette within 1 hour.
- Decontaminate and dispose of all specimens, reaction kits and potentially contaminated materials as biohazardous waste.
- Read the instructions for use completely before using the kit. Failure to follow directions may yield inaccurate test results.
- DISPOSAL OF DIAGNOSTIC DEVICE: The used device has risk of infection. The process for disposing the diagnostic device must follow local infectious waste disposal laws or laboratory regulations.
- Keep out of reach of children.
- The Buffer contains 2% Triton X-100, which presents no hazard to the user if normal laboratory safety precautions are followed. Wear protective gloves. In case of contact with skin

and/or the eyes, rinse with water immediately. If irritation or signs of toxicity occur, seek medical attention. Follow local regulation or laws to dispose the Buffer.

KIT CONTENTS

There are 7 configurations of the test kits. The inclusion of quick guide, sterile lancet or blood lancet for single use are optional/available in different combinations per end user's request.

A. Kit components

Each individually sealed pouch contains one test cassette and one desiccant pouch (for storage purposes only). The kit component configurations are provided below:

Catalogue No.	W037P0022	W037P0024	W037P0028	W037P0030	W037P0033	W037P0035	W037P0037
Components (pcs)	20	40	20	20	40	40	100
Instruction (book)	1	1	1	1	1	1	1
Buffer	20x0.5mL/roll	40x0.5mL/roll	20x0.5mL/roll	20x0.5mL/roll	40x0.5mL/roll	40x0.5mL/roll	100x0.5mL/roll
Quick guide (pc)	20 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	40 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	20 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	20 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	40 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	40 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.	100 pouches, each containing one quick guide, one desiccant pouch, alcohol prep pad, one sterile lancet.
Desiccant (pc)	20	40	20	20	40	40	100
Alcohol prep pad (pc)	20	40	20	20	40	40	100
Sterile lancet (pc)	20	40	20	20	40	40	100
Blood lancet for single use (pc)	1	1	1	1	1	1	1

B. Reactive ingredients of main components

The test strip is coated with gold conjugates (Malaria Pf HRP2 monoclonal antibody-gold colloid, Malaria Pf pLDH monoclonal antibody-gold colloid, rabbit IgG-gold colloid), test line (Malaria Pf HRP2 monoclonal antibody and Malaria Pf pLDH monoclonal antibody) and control line (goat anti-rabbit IgG polyclonal antibody).

MATERIALS REQUIRED BUT NOT PROVIDED

- Timer
 - Protective gloves
 - Specimen and test waste container
 - Sterile cotton swab/ball
- Note: If whole blood is collected by venipuncture, venipuncture blood collection materials are required in addition to a precision pipette and pipette tips.

STORAGE AND STABILITY

- Store the kit at 1°C-40°C. The shelf life of the kit is 24 months.
- Use the test cassette within 1 hour after opening. For 0.3 mL buffer, discard after every use. For 5 mL buffer, store at 1°C-40°C for no more than 8 weeks after opening.

USE OF THE KIT

- Use the kit at 20%-90% humidity and 15°C-40°C, on a clean and flat surface.
- Recap and store the buffer (5mL) in the original container after use.
- Keep away from sunlight, moisture, and heat.
- Do not freeze.

SPECIMEN COLLECTION AND PREPARATION

Fingerstick whole blood:

*Specimen type used for 30 Buffer-venous whole blood. Specimen type used for 40 Buffer-venous whole blood and fingerstick whole blood.

Analytical performance study

- The repeatability and reproducibility of Wondfo Malaria Pf (HRP2/pLDH) Test are of good performance demonstrated by in-house panel according to CLSI EP-05 (A3). 100% reproducibility was observed in studies within run, between run, between lots, and between sites and operators.
- The following potential interfering substances have no impact on Wondfo Malaria P. f (HRP2/ pLDH) Test.

No.	Type	Interfering substances
1	Antigen	HBsAg
2		HbA1c
3		Dengue Virus Type 1
4		HIV-1
5		HCV
6		Syphilis
7		Leishmania sp.
8		Legionella sp.
9		M. tuberculosis
10		Schistosoma sp.
11		Toxoplasma gondii
12		Plasmodium vivax
13	Antibody	WNV
14		IGM
15		Albumin
16		Endogenous
17		Anticardiolipin
18		Anti-nuclear antibodies
19		Anti-Histamine
20		Anti-Cardiolipin
21		Anti-Cardiolipin
22		Anti-Cardiolipin
23	Exogenous	Interferon
24		Interferon
25		Interferon
26		Interferon
27		Interferon
28		Interferon
29		Interferon
30		Interferon
31		Interferon
32		Interferon
33		Interferon

QUALITY CONTROL

- Internal control: This kit contains a built-in control feature as a procedural control, the control region (C). A colored line develops in the control region (C) after addition of the specimen and buffer. If a colored line does not develop in the C region, the test is invalid. Review the procedure and repeat the test with a new device.
- External control: The test kit does not provide external control.

INTERPRETATION OF RESULTS

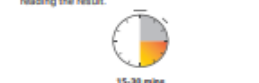
Lines that you see: Picture: Read and Interpretation of Results

Result: Invalid. Action: Take a new cassette and repeat the test. Please contact the local distributor or manufacturer if invalid results continuously appear.

Result: Negative. Action: No.

3. Interpretation

- Read the results after 15 minutes but no more than 30 minutes.
- To avoid confusion, discard the test device after reading the result.



LIMITATIONS OF PROCEDURE

- The kit is a qualitative assay designed to detect *P. falciparum* specific histidine rich protein-2 (Pf HRP2) and *P. falciparum* specific pLDH (Pf pLDH) antigens in human whole blood only.
- Strictly operate according to the instructions for use when testing. False operation will result in a false result.
- Use EDTA, heparin sodium, and sodium citrate as anticoagulants. Do not use other anticoagulants.
- False-negative results can occur in the following conditions:
 - Very low antigen concentrations/parasite densities, for instance < 100 parasites/ µL. Note that most clinical cases have higher parasite densities.
 - Very high parasite densities (very exceptional, prozone or high-hook effect) for the HRP2 antigen.
 - Deletions in the HRP2 gene result in no production of the HRP2 antigen, which is of particular relevance for mRDTs that detect this antigen. These deletions were first identified in the Peruvian Amazon but have since been reported in various malaria-endemic regions worldwide.
 - High fraction of interstitial fluid due to "milking" of finger tip.
- The presence of the control line only means that migration of added liquid occurred. It does not guarantee that:
 - The correct specimen has been used.
 - The specimen has been applied correctly.
 - The specimen and kit have been correctly stored.
 - The test procedure has been followed correctly.
- As with all diagnostic tests, a definitive clinical diagnosis should not be based on the result of a single test but instead should be determined by a healthcare provider in conjunction with clinical findings and the results from other laboratory tests and evaluations. Results from the Wondfo Malaria P.f (HRP2/pLDH) Test should not be used as the sole basis for diagnosis.
- The product can give a false positive Pf result even after the patient was treated for malaria several weeks before testing. The test cannot be used to monitor treatment response to antimalarials.

Note: Please contact the local distributor or manufacturer if there is suspicion of an increased rate of false negative or positive results.

PERFORMANCE CHARACTERISTICS

Clinical performance study

1. Internal Evaluation

Phase of Evaluation	30 Buffer	40 Buffer	Test Result (95% CI)
Specificity	100	100	Specificity: 100.00% (95.27-100.00%)
Sensitivity	1	424	Sensitivity: 99.94% (99.14-100.00%)

*Specimen type used for 30 Buffer-venous whole blood. Specimen type used for 40 Buffer-fingerstick whole blood.

2. External Evaluation

2.1 Diagnostic Sensitivity and Specificity

Phase of Evaluation	30 Buffer	40 Buffer	Test Result (95% CI)
Specificity	100	100	Specificity: 100.00% (95.27-100.00%)
Sensitivity	1	424	Sensitivity: 99.94% (99.14-100.00%)

*Specimen type used for 30 Buffer-venous whole blood. Specimen type used for 40 Buffer-fingerstick whole blood.

2.2 Comparison with PCR assay

Phase of Evaluation	30 Buffer	40 Buffer	Test Result (95% CI)
Specificity	100	100	Specificity: 100.00% (95.27-100.00%)
Sensitivity	1	424	Sensitivity: 99.94% (99.14-100.00%)

*Specimen type used for 30 Buffer-venous whole blood. Specimen type used for 40 Buffer-fingerstick whole blood.

2.3 Comparison among different specimen types

Phase of Evaluation	30 Buffer	40 Buffer	Test Result (95% CI)
Specificity	100	100	Specificity: 100.00% (95.27-100.00%)
Sensitivity	1	424	Sensitivity: 99.94% (99.14-100.00%)

REFERENCES

- WHO. World Malaria Report 2019, Geneva: World Health Organization; 2019.
- WHO. TSS-3 Malaria rapid diagnostic tests, Geneva: World Health Organization; 2017.
- WHO. TSS-5 Designing instructions for use for in vitro diagnostic medical devices, Geneva: World Health Organization; 2017.
- WHO. Malaria rapid diagnostic test performance. Results of WHO product testing of malaria RDTs: round 7 (2015/2016), Geneva: World Health Organization; 2017.
- WHO. Global technical strategy for malaria

- Wash hands and put on protective gloves. Select the middle or ring finger of the patient and avoid calloused areas of the finger. Clean the finger to be lanced with an alcohol prep pad.
- Prick the lateral side of finger with a lancet. Gently squeeze the end of finger and wipe off the first drop of blood with a sterile cotton swab/ball. Squeeze the finger again and allow a new drop of blood to form.
- Draw 5 microliter (5µL) of blood with an inverted cup. Test immediately after whole blood specimens collected by fingerstick.

Venous whole blood:

- Draw venous whole blood via standard phlebotomy procedures into a blood collection tube with anticoagulant (EDTA, sodium citrate, or heparin sodium).
- If immediate testing is not possible then the specimen may be stored at 2°C-8°C for up to 72 hours before testing.
- The specimens should be stored at -70°C or below for longer storage.

Note:

- Prior to testing, bring specimens to room temperature slowly and mix well gently once thawed. Do not freeze and thaw the specimens repeatedly in case repeated freezing and thawing of specimens is required, no more than 5 cycles should be allowed.
- To ensure the accuracy of test result, whole blood specimens partly or completely coagulated should be excluded even though they are not validated.

TEST PROCEDURE

Bring all specimens and kit components to room temperature (15°C-40°C) before testing. When ready to test, remove the test cassette from the foil pouch by tearing the notch and place it on a flat, dry

surface. Label the device with specimen ID number.

For 0.3mL buffer configurations, please refer to QUICK GUIDE. For 5mL buffer configurations, please follow the instruction as below.

1. Test procedure for fingerstick whole blood

- Wash hands and put on protective gloves before testing. Wipe the finger to be lanced with an alcohol prep pad. Select the middle or ring finger for sampling and avoid calloused areas of the finger.



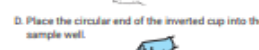
- Prick the lateral side of finger with a lancet. Wipe off the first drop of blood with a sterile cotton swab/ball. Squeeze the finger again and allow a new drop of blood to form.



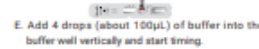
- Dip the circular end of the inverted cup into the blood specimen (5µL).



- Place the circular end of the inverted cup into the sample well.



- Add 4 drops (about 100µL) of buffer into the buffer well vertically and start timing.



2016-2030, Geneva: World Health Organization; 2015.

SYMBOLS KEY

MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS
MS	MS	MS	MS

MANUFACTURER INFORMATION

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Tel: +86-20-32533662 400-888-5588 (Toll Free)
Fax: +86-20-32298803
E-mail: gina@wondfo.com.cn
Website: www.wondfo.com

Please contact the manufacturer or your local distributor if you have any questions about the product.

Language: English

Rev.	Date	Version Information
Rev. A0	2014/03/05	Initial version
Rev. A1	2015/12/22	Minor changes in the instructions of use and the packaging information
Rev. A2	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A3	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A4	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A5	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A6	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A7	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A8	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A9	2017/12/16	Supplementation of storage conditions and the shelf life of the product
Rev. A10	2017/12/16	Supplementation of storage conditions and the shelf life of the product

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- WHO. World Malaria Report 2019, Geneva: World Health Organization; 2019.
- WHO. TSS-3 Malaria rapid diagnostic tests, Geneva: World Health Organization; 2017.
- WHO. TSS-5 Designing instructions for use for in vitro diagnostic medical devices, Geneva: World Health Organization; 2017.
- WHO. Malaria rapid diagnostic test performance. Results of WHO product testing of malaria RDTs: round 7 (2015/2016), Geneva: World Health Organization; 2017.
- WHO. Global technical strategy for malaria