

# A Novel Malaria Pf/Pv Ab Rapid Diagnostic Test Using a Differential Diagnostic Marker Identified by Network Biology

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### Abstarc :

Rapid diagnostic tests (RDTs) can detect anti-malaria antibodies in human blood. As they can detect parasite infection at the low parasite density, they are useful in endemic areas where light infection and/or re-infection of parasites are common. Thus, malaria antibody tests can be used for screening bloods in blood banks to prevent transfusion-transmitted malaria (TTM), an emerging problem in malaria endemic areas. However, only a few malaria antibody tests are available in the microwell-based assay format and these are not suitable for field application. A novel malaria antibody (Ab)-based RDT using a differential diagnostic marker for falciparum and vivax malaria was developed as a suitable high-throughput assay that is sensitive and practical for blood screening. The marker, merozoite surface protein 1 (MSP1) was discovered by generation of a Plasmodium-specific network and the hierarchical organization of modularity in the network. Clinical evaluation revealed that the novel Malaria Pf/Pv Ab RDT shows improved sensitivity (98%) and specificity (99.7%) compared with the performance of a commercial kit, SD BioLine Malaria P.f/P.v (95.1% sensitivity and 99.1% specificity). The novel Malaria Pf/Pv Ab RDT has potential for use as a cost-effective blood-screening tool for malaria and in turn, reduces TTM risk in endemic areas

### Key Word :

Malaria antibody test, MSP1, Transfusion-transmitted malaria, Blood screening

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