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Fluorescence in situ hybridization (FISH) assays for diagnosing malaria in endemic areas

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Malaria is a responsible for approximately 600 thousand deaths worldwide every year. Appropriate and timely treatment of malaria can prevent deaths but is dependent on accurate and rapid diagnosis of the infection. Currently, microscopic examination of the Giemsa stained blood smears is the method of choice for diagnosing malaria. Although it has limited sensitivity and specificity in field conditions, it still remains the gold standard for the diagnosis of malaria. Here, we report the development of a fluorescence *in situ* hybridization (FISH) based method for detecting malaria infection in blood smears and describe the use of an LED light source that makes the method suitable for use in resource-limited malaria endemic countries. The *Plasmodium* Genus (P-Genus) FISH assay has a *Plasmodium* genus specific probe that detects all five species of *Plasmodium* known to cause the disease in humans. The *P. falciparum* (PF) FISH assay and *P. vivax* (PV) FISH assay detect and differentiate between *P. falciparum* and *P. vivax* respectively from other *Plasmodium* species. The FISH assays are more sensitive than Giemsa. The sensitivities of P-Genus, PF and PV FISH assays were found to be 98.2%, 94.5% and 98.3%, respectively compared to 89.9%, 83.3% and 87.9% for the detection of *Plasmodium*, *P. falciparum* and *P. vivax* by Giemsa staining, respectively.

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Treatment of malaria using a new plant *Phyllantus amarus*

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Background: Malaria is endemic in all tropical regions of the world. Children are the most vulnerable to the infection of malaria due to their weak resistance because of age and inability to express themselves and to drive away the mosquitoes which are the vectors of the disease, although they are supposed to be more protected because of the very high volume of erythrocytes since malaria parasites actually destroy the erythrocytes. Also, the high cost of anti-malaria drugs due to high exchange rate of local currencies to the foreign currencies makes the purchase of anti-malaria drugs almost impossible to the people in this region who are worse hit by the malaria infection.

Methods: Two hundred (200) patients suspected of suffering from malaria were randomly recruited into the study, their consent was obtained verbally and were assured of strict confidentiality before the study commenced. The plant *Phyllantus amarus* was aseptically collected from some field in Benin City, identified in the Pharmacognosy Department of University of Benin, Benin city, Nigeria. They were brought to boil in about 100 ml of sterile distilled water. The patients were given after every meal a full cup of it to drink trice daily (TDS) carried out for a period of six months.

Results: Satisfactory clinical response was achieved at the end of treatment as symptoms of malaria disappeared and malaria parasites were not found in blood sample of the patients during laboratory diagnosis.

Conclusion: From this study, it can be concluded that plant *Phyllanthus amarus* is useful in the treatment of malaria.

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