

ABSTRACT

Malaria affects hundreds of millions of people worldwide and equally claims hundreds of thousands of lives each year. With the current spread of drug resistance to standard antimalarial drugs like chloroquine and the emergence of artemisinin-resistant parasites, new antimalarial drugs and formulations are urgently needed.

An ethnobotanical survey was carried out in this study in search of novel compounds with promising antiplasmodial activity. Using the ethnobotanical approach, a total of 61 plant species from 59 genera distributed in 34 plant families were found to be used traditionally for the treatment of malaria in Nigeria.

Biological evaluation of the plant's methanolic extracts was assessed using the parasite lactate dehydrogenase (pLDH) assay against the chloroquine-sensitive (3D7) and chloroquine-resistant (K1) strains of *Plasmodium falciparum*. A total of five (5) plant species showed more potent antiplasmodial activities against the malaria parasites. These are *Acanthospermum hispidum*, *Cassia occidentalis*, *Kaempferia aethiopica*, *Prosopis africana* and *Physalis angulata* with MIC values ranging between 7.815µg/ml to 31.25µg/ml (3D7 strain) and 15.63µg/ml to 62.50µg/ml (K1 strain) against the malaria parasites, respectively. Two plants, *Prosopis africana* (Leguminosae-mimosoideae) and *Physalis angulata* (Solanaceae) were selected for further study.

The phytochemical investigation of the active chloroform extracts of *P. africana* and *P. angulata* yielded several compounds with three known alkaloids, namely, prosopinine (I), prosopine (II) and acetamide (III). Their structures were confirmed by MS, 1D and 2D NMR spectroscopy. Compounds **I, II and III** have moderate *in vitro* antiplasmodial activity against the malaria parasites. Both chloroquine and artemether were used as standard control.

Key words: Malaria, Ethnobotanical survey, Medicinal plants, Alkaloids, *Plasmodium falciparum*, Drug resistance, Antiplasmodial activity, *Physalis angulata*, *Prosopis africana*.

DEDICATION

To my Lord and Saviour Jesus Christ
Who holds the hidden secrets of all plants.

The tender grass grows up at His command to feed the cattle,
and there are fruit trees, vegetables,
and grain for man to cultivate.

~ **Psalms 104:14**
(The Living Bible)

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