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Anti-malaria activities of selected plants and gas chromatography-mass spectrometer chemical profiling of aqueous bark extract of *Prosopis africana* (Guill &Perr)

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Background: The development of resistance to currently known conventional anti-malaria drugs has necessitated search into more potent and less toxic anti-malaria drugs of plant origin.

Objective: Hence, this study aimed to document plants commonly used to treat malaria in Ilorin metropolis, Nigeria and validate the traditional claims using *in vivo* anti-plasmodial tests.

Methods: Semi-structured questionnaires (70) were used to explore the ethno-botanical practices amongst the traditional healers. The most common species cited were identified, authenticated and their aqueous extracts were screened for antimalarial activities using *Plasmodium berghei* (NK 65 chloroquine sensitive) and chloroquine as the malarial parasite and positive control respectively. For *in vivo* anti plasmodial testing, the mice were infected with 1 × 107 parasitized erythrocytes and plant extracts were subsequently administered orally for suppressive, prophylaxis and curative assays. Percentage parasitemia was estimated by standard microscopy and haematological parameters were also measured using standard analyser.

Results: Seventy traditional healers from Ilorin metropolis, Nigeria were involved in the study. Forty-three species were recorded with their local names and parts used in the traditional therapeutic preparations. Ten plants with highest frequency of citation (*Cymbopogon citrates* (17.1%), *Azadirachta indica* (12.9%), *Prosopis africana* (12.9%), *Vernonia amygdalina* (11.4%), *Khaya grandifoliola* (10%), *Terminalia glaucescens* (10%), *Ziniber officeinale* (7.1%), *Citrus paradise* (7.1%), *Parquetina nigrescens* (7.1%), *Psidium guajava* (7.1%),) were selected and investigated for anti-malaria activities. The aqueous extracts of all the selected plants showed significant ($p<0.05$) anti-malaria activities. *P. africana* bark extract at 200 mg/kg body weight had the highest chemo-suppressive effect (90.02%) in comparison with other plant extracts and the standard, chloroquine (61.70%) on the 8th day. In addition, the maximum mean survival time (MST) of 23 days were observed in animals administered with *P. africana* and chloroquine. The extract of *P. africana* was further analysed for possible bioactive components using Gas Chromatography-Mass Spectrometer (GC-MS). The GC-MS analysis revealed that the aqueous bark extract of *P. africana* contained lipid (eight), phytochemical (sixteen) and essential oil (eighteen) components. The histological analysis of the liver revealed that the extract of *P. africana* was able to protect the liver against *B. bergei* induced damages.

Conclusion: Most of the species tested had some antiplasmodial effects, which to some extent supports their traditional inclusion in herbal preparations for treatment of malaria. The bioactive components identified may be responsible for the observed antimalarial activity of *P. Africana* extract.

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