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PRELIMINARY PHYTOCHEMICAL INVESTIGATION ON MAMA POWDER — AN APPROVED HERBAL ANTIMALARIAL IN NIGERIA

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Statement of the Problem: Malaria is an endemic disease in Africa where one out of four mortalities is reported regularly. Despite the discovery of artemisinin-combination therapy (ACT), high mortality rate persists due to chloroquine-resistant Plasmodium falciparum; hence, there is a need for new antimalarial drugs. A mixture of powdered Alstonia boonei De Wild (Apocynaceae) stem-bark (A) and powdered Picralima nitida (Stapf) T. Durand & H. Durand (Apocynaceae) seed (P), in the ratio 1:2 (Mama powder), is an FDA-approved herbal antimalarial in Nigeria. Hitherto, no phytochemical investigation on the mixture has been reported; hence, a preliminary phytochemical investigation is hereby communicated for the first time.

Methodology: The two plant materials were collected from their locations in Ile Ife, Nigeria, authenticated in IFE Herbarium, Obafemi Awolowo University, Nigeria, oven-dried at 45˚C and separately pulverized. The two powdered samples were used to compose Mama powder as above, decocted in distilled water, concentrated in vacuo at 60˚C and lyophilized. The lyophilized crude extractive was re-constituted with distilled water and partitioned with n-hexane, dichloromethane, ethyl acetate and n-butanol. The resulting fractions were tested for antimalarial activities orally on chloroquine-sensitive Plasmodium berghei-infected mice at 13, 26 and 52 mg/kg with chloroquine (5 mg/kg) as positive control.

Findings: At 52 mg/kg, the n-hexane, dichloromethane, ethyl acetate and n-butanol fractions gave chemosuppressive activities of 78.8, 47.2, 85.4 and 64.9%, respectively while chloroquine (5 mg/kg) gave 88.5%.

Conclusion & Significance: The highest activity was obtained in the ethyl acetate fraction which is being further purified in our laboratories in order to isolate and characterize the active constituent(s) of Mama powder.

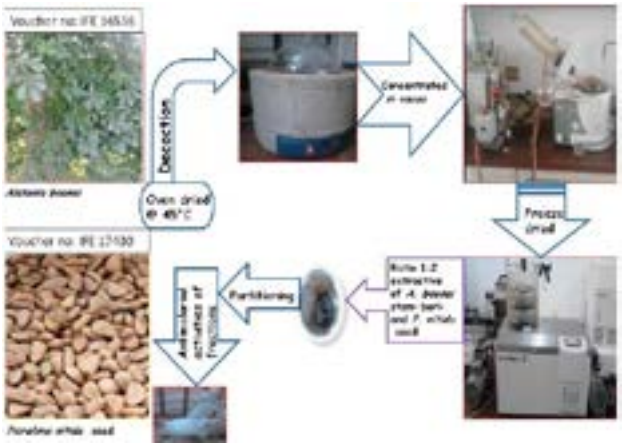

Figure 1: Flow chart showing the preparation and antimalarial evaluation of solvent-partitioned fractions obtained from Mama powder decoction.

Recent Publications

1. Ajayi C O, Elujoba A A and Adepiti A O (2015) Antiplasmodial properties of Alstonia boonei stem-bark and Picralima nitida seed in different combinations. Nigerian Journal of Natural Products and Medicines 19:71–77.
2. Adepiti A O, Elujoba A A and Bolaji O O (2014) *In vivo* antimalarial evaluation of mama decoction on Plasmodium berghei in mice. Parasitol Res. 113:505–511.
3. Pulcini S, Staines H M, Pittman J K, Slavic K, Doerig C, et al. (2013) Expression in yeast links field polymorphisms in PfATP6 to *in vitro* artemisinin resistance and identifies new inhibitor classes. Journal of Infectious Diseases 208(3):468–478.
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5. Iwu M M and Klayman D L (1992) Evaluation of the *in vitro* antimalarial activity of Picralima nitida extracts. Journal of Ethnopharmacology 36(2):133–135.
6. Asuzu I U and Anaga A O (1991) Pharmacological screening of the aqueous extract of Alstonia boonei stem-bark. Fitoterapia 63:411–417

Biography

Clement Olusoji Ajayi is a PhD student in Pharmacognosy, being mentored in botanical, biological, physico-chemical, toxicity and chemical standardization of African medicinal plants for building-up monographs as necessary requirements for herbal pharmacopoeias.

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