

EVALUATION OF THAI MEDICINAL PLANT PREPARATIONS FOR  
ANTIMALARIAL ACTIVITY AGAINST DRUG - RESISTANT  
STRAINS OF *PLASMODIUM FALCIPARUM*

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PROBLEM : Antimalarial drug resistance in Thailand is a major health problem that continues to intensify. There is an urgent need to identify new compounds effective against malaria parasites resistant to chloroquine and to pyrimethamine-sulfonamide combinations. Thai medicinal plants with purative antimalarial activity offer a unique source for biological and chemical study to elucidate active antimalarial compounds for use against drug-resistant *P. falciparum*. Botanical preparations are of special interest to Thailand because they represent a natural resource with considerable economic potential.

PROGRESS : We have identified two Thai plants with impressive antimalarial activity. Four active compounds were isolated from the whole fruit of *Brucea javanica* (L.) Merr. Two of these compounds (BJ/A and BJ/B) were obtained as pure crystals in good yield. These two compounds showed activity *in vitro* against multi-drug resistant strains of *P. falciparum* comparable to that observed for mefloquine in parallel tests. The structure of BJ/A was determined as a guassinoid bruceolide - bruceine A. In addition a pure compound was isolated from the chloroform extract of the root of *Plumbago indica* L. This compound also demonstrated good activity against *P. falciparum*. The *Plumbago* compound has the structure of a naphthoquinone. At present 3 other plants that have shown antimalarial activity in their crude extracts are undergoing chemical fractionation for continued study. Work is currently underway to assess the mechanism of action of the bruceolide and naphthoquinone compounds. These are the first studies in Thailand to confirm the antimalarial properties of Thai medicinal plants used in the traditional treatment of human malaria.

FUTURE OBJECTIVES : These studies should be continued. Further work is needed to complete the structural characterization of the bruceine group of compounds. Once structure determination and isolation procedures have been completed *in vivo* studies using an animal malaria model should be undertaken.