SUMMARY

The Antimalarial Activity of Dichlorometane Extract of *Artocarpus champeden* Spreng. Stem Bark Isolate *In Vitro*

In the recent time, the medicinal plants have been as source of lead compounds to treat any diseases, especially infectious diseases. One of infection deseases which often occurred in the tropical countries is malarial disease. The research for medicinal plants to obtain the new compounds which posses antimalarial activity has been done intensively by some reseacher in the recent decade.

In Indonesia, one of plants which has been used traditionally to treat malaria was *Artocarpus champeden* Spreng. The early test antimalarial activity of dichlorometane extract of *A. champeden* showed that it possesed potency to inhibit the growth of *Plasmodium falciparum.* In this research the isolation of dichlorometane extract of *A. champeden* stem bark has been done, and followed by test of antimalarial activity for each step isolation.

The pulverized of *A. champeden* stem bark (750 grams) was macerated with n-hexane to remove the fat. Residue was air-dried and macerated again with dichlorometane. The extract which was obtained then concentrated and produced 6.6 grams diclorometane extract.

The dichlorometane extract was tested for antimalarial activity *in vitro*. Asyncronized *P. falciparum* 3D7 strain was used in this research. The dichlorometane extract was diluted in 0.5% dimethylsulfoxide (DMSO). As a negative control was DMSO and as positive control was chloroquine diphosphate.

The inhibition of parasite growth was calculated by counting microscopicaly parasitized-erytrocytes per 5000 erytrocytes on giemsa stained-thin blood films. The IC_{50} value was calculated by means of probit analysis.

The isolation was continued by fractionation to 4 grams dichloromethane extract. Fractionation was done by vacuum liquid chromatography with the stationary phase was silica gel and the mobile phase were n-hexane, n-hexane-dichlorometane, dichlorometane, dichlorometane- methanol and methanol respectively with declin concentration gradient 5%. This fractionation produced 15 fractions. The 14^{th} fraction (985 grams) which possesed antimalarial potency, futhermore separated by open column chromatography. As the stationary phase was used silica gel and as mobile phase were used n-hexane:ethylasetate with ratio 2:1 to 0:1. This separtion produced 8 sub fractions. The 14.6 sub fraction separated by preparative thin layer chromatogrphy, as the stationary phase was used silica gel RP8 and as the mobile phase was used acetonitril:methanol:water (2:2:1), produced the Isolate I 1,1 grams. This isolate was tested for its antimalarial activity.

The result of antimalarial activity of dichlorometane extract, 14^{th} fraction and the Isolate I were found to have IC_{50} value of 0.974 ± 0.181 μg/ml, 0.189 ± 0.016 μg/ml, 0.024 ± 0.011 μg/ml respectively.

Futhermore, the Isolate I was identified by chromatogrphy and spectroscopy methods. The result of identification by TLC with some stationary phases and mobile phases, visualitation with ammonia was found one intensive yellow spot. The Isolate I was then analyzed by high perfomance liquid chromatography method, and showed that it contain one major compound and

that it contain one major compound and 1 - 2 additonal compounds under λ 365 nm. The UV-Vis spectrum profile of the major peak was found to be identical with the UV-Vis spectrum profile of flavonol. After identification of the compound by TLC and the UV-Vis spectrum profile, could be concluded that the compound was flavonol. This conclusion was confirmed by the infrared spectrum of the Isolate I which showed that there were vibration of O-H and C=O bonding, while by the NMR spectrum of Isolate I showed there were aril protons ArH

Overall, the conclusion was, that Isolate I contained a major compound of flavonol and active as an antimalarial. It is necessary to conduct a further research to determine the structure of that compound and its mechanism of action.

ABSTRACT

Artocarpus champeden stem bark has been used traditionally to treat malaria. Early testing for dichlorometane extract of *A. champeden* stem bark show that it has a potency to inhibit the growth of *Plasmodium falciparum* by *in vitro* method.

The aim of this research was to obtain an isolat from dichlorometane extract of *A. champeden* stem bark which posseses potency to inhibit the growth of *P. falciparum.*

The test of antimalarial activity for dichlorometane extract, 14th fraction and Isolate I showed the IC_{50} value of 0.974 ± 0.181 µg/ml, 0.189 ± 0.016 µg/ml, 0.024 ± 0.011 µg/ml respectively.

The Isolate I identification by chromatography and spectroscopy methods gave conclusion that Isolate I contain the flavonol as major compound.

Key word : *Artocarpus champeden* stem bark, *Plasmodium falciparum*, flavonol, antimalarial activity.