IN VITRO AND *IN VIVO* ANTIPLASMODIAL ACTIVITY AND CYTOTOXICITY OF EXTRACTS OF *PHYLLANTHUS NIRURI* L. HERBS TRADITIONALLY USED TO TREAT MALARIA IN INDONESIA

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Abstract. In endemic areas where malaria is prevalent, medicinal plants are often used to treat malaria. This study was conducted to evaluate the *in vitro* and *in vivo* antiplasmodial activity and cytotoxicity of extracts of meniran (*Phyllanthus niruri* L.) herb traditionally used to treat malaria in Indonesia. Three extracts *viz* aqueous, methanolic and chloroformic extracts were obtained by maceration of the herbs. A radioactive method was used to evaluate the *in vitro* antiplasmodial activity of the extracts on chloroquine-resistant (FCR-3) and chloroquine-sensitive (D-10) strains of *Plasmodium falciparum*. *In vitro* antiplasmodial activity was expressed by the concentration inhibiting 50% of parasite growth (IC_{50}). Cytotoxicity was estimated on Hela cells and the Cytotoxicity Index (CI = IC_{50} on HeLa cells/IC_{50} on FCR-3 strain) was calculated to evaluate the safety of tested extracts. A standard 4-day test on *P. berghei* infected mice was used to evaluate the *in vivo* antiplasmodial activity of the extracts showing strong *in vitro* antiplasmodial activity, for both the methanolic and aqueous extracts. The *in vivo* antiplasmodial activity was expressed by the dose inhibiting 50% of parasite growth (ED_{50}). The IC_{50} values obtained for these extracts against *P. falciparum* ranged from 2.3 to 202.4 µg/ml. The methanolic extract was the most active *in vitro* extract with an IC_{50} that ranged from 2.3 to 3.9 µg/ml and a CI that ranged from 41.3 to 57.5. This was also the most *in vivo* active extract with an ED_{50} of 9.1 mg/kg/d. Further study will be conducted to isolate and purify active compounds presented in the methanolic extract.

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