

## ABSTRACT

**Background:** Malaria is one of the infectious diseases that has spread throughout the world especially in tropical and sub-tropical countries. The number of malaria cases during 2016 had been estimated as 216 million and 445,000 deaths due to malaria. The event worsened by the existence of resistance to antimalarial drugs. Based on the above facts, other alternative treatments are needed in dealing with malaria cases, for example by using drugs derived from natural ingredients. *Morinda citrifolia* or noni is a medicinal plant that found in all parts of Indonesia has many benefits for human health, such as antibacterial, analgesic, anticancer, antioxidant, anti-inflammatory, and can increase immunity. The aims of this study were to determine the antimalarial activity of ethanol extract of noni leaves and its effect on splenomegaly and hepatomegaly.

**Method:** Extract of noni leaves was prepared by maceration using ethanol solvent. The in vivo test of ethanol extract of noni leaves was done in 5 groups of mice infected with *P. berghei* ANKA base on Peter test. Group 1, 2, and 3 given with 100, 10, and 1 mg/kgWB respectively. Group 4 was a positive control that infected with *P. berghei* ANKA and treated with 20 mg/kgWB of chloroquine. Negative control of mice were infected with *P. berghei* ANKA but without any additional treatment. Ethanol extract of noni leaves and chloroquine were given daily at day 5 post infection for 4 days course of treatment. Observation of parasitemia was done every day since first day post infection. At the end of test, mice were sacrificed and spleen and liver were collected to measure their sizes. Probit analysis were performed to find out the ED<sub>50</sub> and Spearman test to analyze the correlation between doses and the size of splenomegaly and hepatomegaly.

**Result:** Probit analysis resulted in ED<sub>50</sub> was 0.882 mg/kg/WB. Spearman test showed there was no correlation between doses with the size of splenomegaly with  $p=0,2$  and between doses with the size of hepatomegaly with  $p=0,6$  (significance :  $p<0,05$ ).

**Conclusion:** Ethanol extract of noni leaves possess antimalaria activity with ED<sub>50</sub> was 0.882 mg/kg/WB. There is no correlation between doses with the splenomegaly and hepatomegaly.

**Keyword:** *Morinda citrifolia*, Antimalarial, In vivo, *P. berghei* ANKA, Hepatomegaly, Splenomegaly