HEME POLYMERIZATION INHIBITION ASSAY AND PHYTOCHEMICAL SCREENING OF ETHANOL EXTRACT AND FRACTION OF n-Hexane:Ethyl Acetate (2:1) OF TEMU MANGGA (Curcuma mangga Val.)

Dian Yuliyanti
Department of Pharmacy

ABSTRACT

Resistance of malaria parasites towards existing drugs is one of the causes malaria is still a health problem in the world, include Indonesia, so the discovery of new antimalarial drugs is required. Nature resources of Indonesia give a chance to evolve novel medicines from nature materials, one of them is temu mangga (Curcuma mangga Val.). This study aimed to find out the activities of antimalarial through the mechanism of heme polymerization inhibition from ethanol extract and n-hexane:ethyl acetate (2:1) fraction of temu mangga and to identify compound class that contain within it. The extract of temu mangga was obtained by soxhlet extraction method using 100 % ethanol solvent followed by fractionation using Vacuum Liquid Chromatography with solvent sequence n-hexane, n-hexane: ethyl acetate (2:1), ethyl acetate and ethanol. This study only used ethanol extract and n-hexane:ethyl acetate (2:1) fraction to be evaluated for the activities of heme polymerization inhibition with contain dose 5 mg/mL compared to positive control (chloroquine) and negative control (DMSO 10%). This assay performed as many as 3 replications using 5 different concentrations. Activities of heme polymerization inhibition showed by IC\(_{50}\) values which were obtained from analysis of relationship between concentration sample and the percentage of inhibition using the PROBIT on statistical software. The result showed that ethanol extract and n-hexane:ethyl acetate (2:1) fraction has a mean IC\(_{50}\) values of 1.67 mg/mL ± 0.83 and 0.73 mg/mL ± 0.17, respectively. Both have lower IC\(_{50}\) values than chloroquine which has IC\(_{50}\) value of 12 mg/mL, so it can be said that both have inhibitory activity of heme polymerization. The result of phytochemical screening proved that ethanol extract and n-hexane:ethyl acetate (2:1) fraction contains terpenoid and phenolic compounds. The dominant compounds contained in ethanol extract and n-hexane:ethyl acetate (2:1) fraction based on the identification results of GC-MS was a terpenoid compound, (E)-labda-8(17),12-dien-15,16-dial, which has retention time of ± 43.49 minutes and molecular weight of 302 m/z.

Key Word: Malaria, Curcuma mangga Val., hem polymerization, GC-MS