ABSTRACT

Isolation of the constituents of *C. siamea* Lamk leaves yielded cassiarin A, cassiarin B, anhydrobarakol and two unidentified isolates.

In vitro assays of antimalarial activity of all isolates against *P. falciparum* 3D7 indicated that cassiarin A was the most active compound with IC_{50} of 0.001 µg/ml. *In vivo* assays of antimalarial activity of cassiarin A and chloroquine diphosphate against *P. berghei* infected mice showed that cassiarin A was more active than chloroquine diphosphate (ED_{50} 0.17 and 0.21 mg/kg body weight), respectively.

In vitro assay of cassiarin A against *P. falciparum* led to morphological alterations of ring form and trophozoites stages, as well as hemozoins. The growth of parasites was found slower than that untreated parasites. Ultrastructural analysis of parasites found only a small amount of hemozoin with irregular shape, some parasites showed no hemozoin at all, swelling of food vacuoles, increase in vesicle transport of hemoglobin, and lamellar formations.

Identification of biochemical targets of cassiarin A by means of inhibition test of endocytosis processes, hemoglobin degradation and heme detoxification indicated that cassiarin A inhibited all those processes. But, inhibition of endocytotic process by cassiarin A in this experiment showed a higher activity than that of chloroquine diphosphate.

The results indicated that *C. siamea* Lamk leaves possesses antimalarial activity was an active antimalarial both *in vitro* and *in vivo* against *P. falciparum* and *P. berghei*, as well as inhibiting endocytosis, hemoglobin degradation, and heme detoxification. Hence, cassiarin A has a high potential as candidate for novel antimalarials agent.

Key word: *Cassia siamea* Lamk, antimalarial activity, endocytosis, hemoglobin degradation, heme detoxification.