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Evaluation of anti-plasmodium activity and toxicity of andrographolide derivate

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The decreased efficacy of antimalarial drugs is one of the biggest challenges in malaria treatment which encourages search for new antimalarial drugs. This study aimed to investigate the anti-plasmodium activity and toxicity of the andrographolide derivate *in vitro*. The *in vitro* anti-plasmodium activity of andrographolide derivate was selective (SI>10) and classified as good activity against falciparum 3D7 with IC50 value of 4 μM whereas chloroquine as the control had IC50 value of 0.06 μM. The compound was found to inhibit the ring, trophozoite and schizont stages of the malarial parasite. Transmission electron microscope examination on the andrographolide derivate treated P. *falciparum* showed the inhibition of hemozoin formation in the parasite. ROS measurement has been conducted in order to understand the mechanism. ROS depletion occurred on andrographolide derivate treatment (40, 80, 160 and 320 μM). The exposure of andrographolide derivate did not affect to intracellular GSH/GSSG ratio of P. *falciparum* 3D7 ($p<0.05$) and also similar effect has shown in SOD (superoxide dismutase) activity. This condition was caused by ROS concentration on parasite has been over SOD capacity. It is concluded that andrographolide derivate has an anti-plasmodium activity although its mechanisms is not yet fully understood.

Biography

Ni Luh Putu Eka Kartika Sari is the Faculty Member of Faculty of Medicine and Health Sciences, Warmadewa University, Indonesia. She has completed her graduation in Biochemistry, Faculty of Mathematic and Life Sciences, Bogor Agriculture University and Biomedical Science, Medicine Faculty, University of Indonesia. Her latest research is about potency of andrographolide derivate as an anti-plasmodium using toxicity analysis and the target mechanism of P. *falciparum in vitro* technique.

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