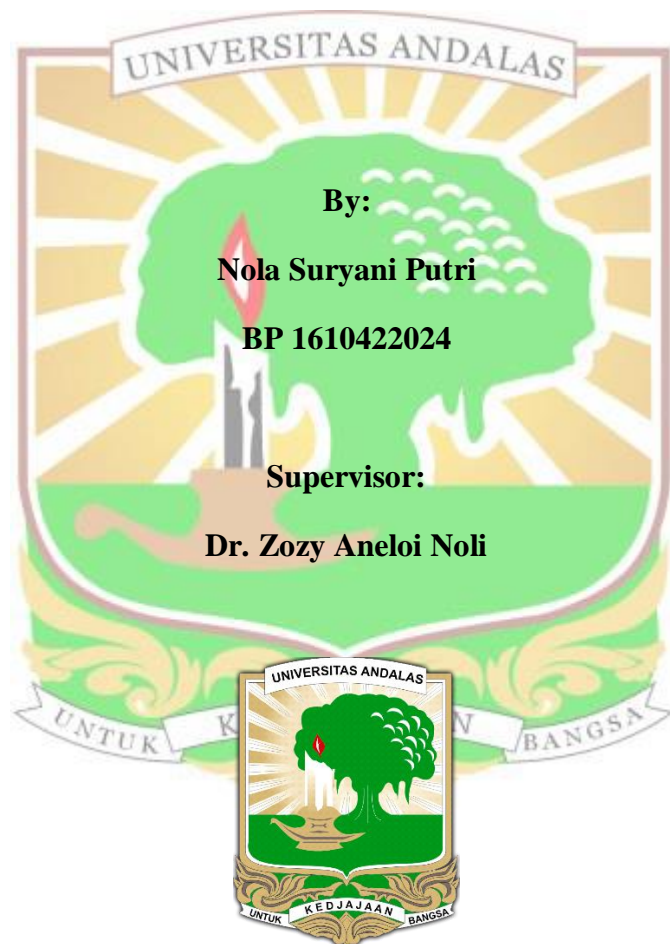


UNDERGRADUATE THESIS

**CALLUS CULTURE AS THE METHOD IN PROVIDING ANTIMALARIAL
COMPOUNDS OF PIPER GENUS**



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ABSTRACT

Malaria is still a serious cases all over the world especially in tropical country with a predict number 300-500 millions people infected per year. The resistance cases of these anti-malaria substance make a new effort to find the new strategy against malaria. This study aim to summarize the potential Piper genus as the source of potential antimalarial compound and recent research of callus induction in piper plant to obtain metabolites. The study of Piper genus represent the 11 Piper species were chemically studied and assayed against the plasmodium. The potential antimalarial compound isolates from several Piper genus were 20,60-Dihydroxy-40-methoxydihydro-chalcone, 3-Farnesyl-p-hydroxybenzoic acid, Piperine, Chabamide, Benzoic acid derivatives, Guineensine, pellitorine, brachystamide B, sarmentine, and sermentosine, 5,8-Hydroxy-7-methoxyflavone, Prenylated hydroxybenzoic acid, 4-Nerolidylcatechol, Piperitone, Champor, and Viridiflorol (EO). An effort to propagate necessary antiplasmodial resources especially by callus induction has been conducted for 7 Piper species such as *Piper betle*, *P. colubrinum*, *P. crocatum*, *P. longum*, *P. nigrum*, *P. permucronatum* and *P. solmsianum* to obtain higher content of secondary metabolites with a different plant growth hormone (PGR) supplementation while there are most of Piper genus have not been well studied. It conclude that callus culture could be the promising method to obtain antimalarial secondary metabolites as antimalarial.

Keyword: *Antimalarial, Callus, Malaria, Piper, Plant Growth Hormone (PGR), Secondary metabolites*



ABSTRAK

Malaria masih menjadi kasus yang serius di seluruh dunia terutama di negara tropis dengan prediksi jumlah 300-500 juta orang terinfeksi per tahun. Kasus resistensi zat anti-malaria membuat upaya baru untuk menemukan strategi baru melawan malaria. Penelitian ini bertujuan untuk meringkas genus Piper potensial sebagai sumber senyawa antimalaria dan penelitian terbaru tentang induksi kalus pada genus Piper untuk mendapatkan senyawa metabolit. Studi genus Piper mewakili 11 spesies Piper yang dipelajari secara kimia dan diuji terhadap Plasmodium. Isolat senyawa antimalaria potensial dari beberapa gen Piper adalah 20,60-Dihydroxy-40-methoxydihydro-chalcone, asam 3-Farnesyl-p-hydroxybenzoic, Piperine, Chabamide, turunan asam Benzoat, Guineensine, pellitorine, brachystamide B, serment, serment, serment, sermentine, 5,8-Hidroksi-7-metoksiflavon, asam hidroksibenzoat prenilasi, 4-Nerolidylcatechol, Piperitone, Champor, dan Viridiflorol (EO). Upaya untuk memperbanyak sumber daya antiplasmodial yang diperlukan terutama dengan induksi kalus telah dilakukan untuk 7 spesies Piper seperti *Piper betle*, *P. colubrinum*, *P. crocatum*, *P. longum*, *P. nigrum*, *P. permucronatum* dan *P. solmsianum* untuk mendapatkan kandungan metabolit sekunder yang lebih tinggi dengan suplementasi hormon pertumbuhan tanaman (ZPT) yang berbeda sementara sebagian besar genus Piper belum banyak diteliti. Oleh karena itu, disimpulkan bahwa kultur kalus bisa menjadi metode yang menjanjikan untuk mendapatkan metabolit sekunder sebagai antimalaria.

Keyword: *Antimalaria, Kalus, Malaria, Metabolit Sekunder, Piper, Zat Pengatur Tumbuh (ZPT)*

