

Nurul Sofi, Amalia. 2019. Identifikasi Senyawa Metabolit Sekunder Kalus Sirih Hitam (*Piper betle* L. var *Nigra*) dengan Pemberian Konsentrasi Zat Pengatur Tumbuh *Indole Acetic Acid* (IAA), Kinetin, dan *Benzyl Amino Purin* (BAP). Skripsi Ini Di Bawah Bimbingan Dr.Junairiah, S.Si M.Kes. dan Prof. Dr.Y.Sri Wulan Manuhara, M.Si. Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Sirih hitam (*Piper betle* L. var *Nigra*) merupakan salah satu jenis tanaman obat yang berpotensi untuk dikembangkan dengan metode kultur jaringan. Penelitian ini bertujuan untuk mempelajari pengaruh variasi zat pengatur tumbuh IAA, BAP, kinetin terhadap morfologi dan senyawa metabolit sekunder kalus Sirih hitam (*Piper betle* L. var *Nigra*). Penelitian ini bersifat deskriptif eksperimental. Data yang dikumpulkan berupa data kualitatif (morfologi kalus termasuk tekstur dan warna kalus) dan data kuantitatif (jumlah senyawa metabolit sekunder pada analisis GCMS). Eksplan daun dari sirih hitam (*Piper betle* L. var *Nigra*) diinduksi dengan pemberian media MS dengan 4 konsentrasi dan kombinasi (I1,0K1,0; I1,0K1,5; I1B1,5; I0,5B0,5). Pengamatan mengenai morfologi kalus dilakukan hingga kalus berumur 8 minggu. Hasil dari penelitian tersebut menunjukkan bahwa dari ke-4 kombinasi dan konsentrasi zat pengatur tumbuh menghasilkan tekstur kalus kompak, sedangkan warna kalus menunjukkan hasil yang beragam yaitu putih, putih kekuningan, dan coklat. Simplisia dari kalus sirih hitam di maserasi menggunakan pelarut metanol dan diidentifikasi menggunakan *Gas Chromatography Mass Spectra* (GCMS). Analisis GCMS menggunakan tipe Agilent 19091S-105. Identifikasi senyawa metabolit sekunder dilakukan berdasarkan perbandingan spektrum massa menggunakan pustaka WILEY versi 8.0. Senyawa metabolit sekunder dengan presentase tertinggi terdapat pada masing- masing perlakuan yaitu senyawa *gamma sitosterol* (14,88%) pada perlakuan I1,0K1,0 ; senyawa *14-Beta H Pregna* (15,94%) pada perlakuan I1,0K1,5 serta senyawa *beta-d-glucopyranoside* (15,54%) pada perlakuan I0,5B0,5; dan senyawa *beta-d-glucopyranoside* (5,63%) pada perlakuan I1,0 B1,5.

Kata kunci: Induksi kalus, analisis GC-MS, *Piper betle* L. var *Nigra*, senyawa metabolit sekunder, ekstrak metanol.

Nurul Sofi, Amalia. 2019. Identification of Secondary Metabolite components in callus *Piper betle* L. var Nigra with growth regulators of *Indole Acetic Acid* (IAA), Kinetin, and *Benzyl Amino Purin* (BAP). This undergraduate thesis was under guidance of Dr.Junairiah, S.Si M.Kes. and Prof. Dr.Y.Sri Wulan Manuhara, M.Si. Undergraduate program of Biology, Faculty of Sains and Teknologi, Airlangga University, Surabaya.

ABSTRACT

Black betel (*Piper betle* L. var *nigra*) is one of a medicinal plant potentially to be developed with in vitro culture method. The purpose of this study was to investigate the effect of variation of growth regulators IAA, BAP, Kinetin on callus morphological and secondary metabolite components callus of *Piper betle* L. var *Nigra*. Data that be collected were qualitative data (callus morphology included texture, and color of callus) and quantitative data (amount of secondary metabolite components from GCMS Analysis). Leaves explant of *Piper betle* L. var *Nigra* was grown on giving MS media with 4 different combination and concentration (I1,0K1,0; I1,0K1,5; I1B1,5; I0,5B0,5). The observation of morphological callus done when the culture are 8 week old. The result of this study showed that 4 different combination and concentration has compact texture and also showed various kind of color like white, yellowish white, and brown. Symplicia callus of black betel was extracted with methanolic solvent, and indentified using Gas Chromatography Mass Spectra (GCMS). The GC-MS analysis of the sample was performed using an Agilent 19091S-105. The identification of secondary metabolite components was based on comparison of their mass spectra with those of WILEY version 8.0 Libraries. The secondary metabolite components which had the highest presentation among all the combination was *gamma sitosterol* (14,88%) in I1,0K1,0; *14-Beta H Pregna* (15,94%) in I1,0K1,5; *beta-d-glucopyranoside* (15,54%) in I0,5B0,5; and *beta-d-glucopyranoside* (5,63%) in I1,0 B1,5.

Keyword: Callus induction, GCMS analysis, *Piper betle* L. var *Nigra*, secondary metabolite components, methanolic extract.