

**PENGARUH JENIS BIO-ELISITOR BERBASIS FUNGI
ENDOFIT (*Cladosporium sp*) TERHADAP KADAR
ANDROGRAFOLID PADA KULTUR SUSPENSI SEL
SAMBILOTO (*Andrographis paniculata*)**

SKRIPSI

**AURA ANDINA RAHAYU
A221011**



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Sebagai salah satu syarat untuk memperoleh gelar Sajarna Farmasi

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**Juli 2026
Disetujui Oleh :**

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Umi Baroroh, M.Biotek

Kutipan atau saduran baik sebagai ataupun seluruh naskah, harus menyebut nama pengarang dan sumber aslinya, yaitu Sekolah Tinggi Farmasi Indonesia.

Saya persembahkan skripsi ini untuk kedua orang tua dan nenek saya , yang selalu memberikan dukungan baik moral, materi, do'a, semangat, menyakinkan anak satu-satunya, cucu perempuan pertama ini sampai dititik ini. Semoga ibu, ayah dan mamah diberikan umur yang barokah dan panjang, hingga bisa melihat putri dan cucu kalian menjadi lebih baik.

ABSTRAK

Sambiloto (*Andrographis paniculata*) merupakan tanaman obat penghasil andrografolid, senyawa diterpen lakton dengan berbagai aktivitas farmakologi, namun produksinya secara konvensional masih rendah dan membutuhkan waktu lama. Kultur suspensi sel dengan elisitasi bio-elisitor fungi endofit merupakan pendekatan alternatif untuk mempercepat produksi andrografolid. Penelitian ini bertujuan menganalisis pengaruh bio-elisitor *Cladosporium* sp berupa larutan fermentasi (LF) dan larutan miselium (LM) terhadap pertumbuhan kalus dan kadar andrografolid pada kultur suspensi sel *A. paniculata*, dibandingkan kontrol negatif dan kontrol positif asam jasmonat (AJ). Kultur suspensi sel dielisitasi selama 24 jam pada fase stasioner, dianalisis menggunakan KCKT, dan data dianalisis dengan uji Welch ANOVA. Hasil menunjukkan LF menghasilkan bobot basah (0,338 g) dan bobot kering (0,037 g) lebih tinggi serta kadar air (89,05%) lebih rendah dibandingkan LM (0,301 g; 0,030 g; 90,03%), sehingga LF efektif meningkatkan biomassa kalus dibandingkan LM. Namun, kadar andrografolid tidak berbeda signifikan antara LF, LM, maupun kontrol ($p = 0,498 > 0,05$) dan masih berada di bawah batas kuantifikasi. Dengan demikian, hasil menunjukkan bahwa bio-elisitor *Cladosporium* sp mampu meningkatkan pertumbuhan biomassa kalus, tetapi elisitasi selama 24 jam belum optimal untuk meningkatkan akumulasi andrografolid pada kultur suspensi sel sambiloto.

Kata kunci: sambiloto, andrografolid, bio-elisitor, *Cladosporium* sp, kultur suspensi sel.

ABSTRACT

Andrographis paniculata (sambiloto) is a medicinal plant producing andrographolide, a diterpene lactone with various pharmacological activities, although its conventional production remained low and required a long cultivation period. Cell suspension culture elicited with fungal endophyte-based bio-elicitors was applied as an alternative approach to accelerate andrographolide production. This study aimed to analyze the effect of *Cladosporium* *sp* bio-elicitors, namely fermentation solution (FS) and mycelium solution (MS), on callus growth and andrographolide content in *A. paniculata* cell suspension culture, compared with negative and positive (jasmonic acid) controls. The culture was elicited for 24 hours at the stationary phase, analyzed using HPLC, and the data were statistically analyzed using Welch ANOVA. The results showed that FS produced higher fresh weight (0.338 g) and dry weight (0.037 g) with lower water content (89.05%) than MS (0.301 g; 0.030 g; 90.03%), indicating that FS was more effective than MS in promoting callus biomass growth. However, andrographolide content did not differ significantly among FS, MS, and the controls ($p = 0.498 > 0.05$) and remained below the quantification limit. It was concluded that fermentation solution was to mycelium solution in promoting callus biomass growth, but both bio-elicitors were not yet effective in increasing andrographolide content after 24 hours of elicitation.

Key Words: *Andrographis paniculata*, andrographolide, bio-elicitor, *Cladosporium* *sp*, cell suspension culture

KATA PENGANTAR

Bismillahirrahmanirrahim,

Puji dan syukur penulis panjatkan ke hadirat Allah SWT atas segala berkah rahmat dan ridho-Nya penulis dapat menyelesaikan penelitian dan penulisan skripsi yang berjudul **“Pengaruh Jenis Bio-Elisitor Berbasis Fungi Endofit (*Cladosporium* sp) Terhadap Kadar Andrografolid Pada Kultur Suspensi Sel Sambiloto (*Andrographis Paniculata*)”**.

Penelitian dan penulisan skripsi ini dilakukan untuk memenuhi salah satu syarat untuk mendapatkan gelar sarjana pada Program Studi Sarjana Farmasi Sekolah Tinggi Farmasi Indonesia.

Penulis mengucapkan terima kasih kepada dosen pembimbing Ibu Himalaya Wana Kelana, M.Pd. dan Ibu Umi Baroroh, M.Biotek. atas bimbingan, nasihat, dukungan, serta pengorbanan yang diberikan. Pada kesempatan ini, tidak lupa penulis mengucapkan terima kasih yang sebesar-besarnya kepada:

1. Dr. apt. Adang Firmansyah, M.Si., selaku Ketua Sekolah Tinggi Farmasi Indonesia,
2. Dr. apt. Diki Prayugo, M.Si., selaku Wakil Ketua I Bidang Akademik,
3. Dr. apt. Hesti Riasari, M.Si. selaku Ketua Program Studi Sarjana Farmasi,
4. Dr. apt. Revika Rachmaniar, M.Farm., selaku Dosen Wali yang telah banyak memberikan bimbingan dan arahan kepada penulis,
5. Seluruh staf dosen, staf administrasi, serta karyawan Sekolah Tinggi Farmasi Indonesia,
6. Kepada kedua orang tua, nenek dan almarhum kakek saya yang sudah menjaga penulis sedari kecil dan memberikan banyak inspirasi dan pelajaran kehidupan, serta keluarga yang telah memberikan do'a, semangat, dan materi selama penulis kuliah di Sekolah Tinggi Farmasi Indonesia.
7. Serta kepada sahabat-sahabat angkatan 2022 yang sudah selalu mendukung, dan memberikan semangat selama penulis kuliah di Sekolah Tinggi Farmasi Indonesia.

Dalam penyusunan skripsi ini masih banyak kesalahan dan kekurangan karena pengetahuan yang masih sangat terbatas. Oleh karena itu, dengan kerendahan hati diharapkan masukan berupa kritik dan saran yang bersifat membangun untuk perbaikan di masa yang akan datang. Penulis berharap semoga tugas akhir ini akan memberikan manfaat bagi penulis sendiri dan juga bagi pihak lain yang berkepentingan.

Bandung, Juli 2026

Penulis

DAFTAR ISI

LEMBAR PENGESAHAN	I
KUTIPAN	II
ABSTRAK	IV
ABSTRACT	V
KATA PENGANTAR	VI
DAFTAR ISI	VII
DAFTAR TABEL	IX
DAFTAR GAMBAR	X
DAFTAR LAMPIRAN	XI
BAB I PENDAHULUAN	1
1.1 Latar Belakang	1
1.2 Identifikasi Masalah	4
1.3 Tujuan Penelitian	4
1.4 Kegunaan Penelitian	4
1.5 Waktu dan Tempat Penelitian	4
BAB II TINJUAN PUSTAKA	5
2.1 Tanaman Sambiloto (<i>Andrographis paniculata</i> Ness)	5
2.2.1 Khasiat Tanaman	6
2.2.2 Kandungan Senyawa Aktif	6
2.2.3 Androgafolid	7
2.2 Kultur Jaringan	8
2.2.1 Kultur Suspensi Sel	8
2.3 Zat Pengatur Tumbuhan	9
2.4 Elisitor	11
2.4.1 Bio-elisitor	12
2.5 Fungi Endofit	12
2.5.1 <i>Cladosporium sp</i>	13
BAB III TATA KERJA	15

3.1 Alat	15
3.2 Bahan	15
3.3 Metode Penelitian.....	15
3.3.1 Sterilisasi	15
3.3.2 Induksi Kalus pada Media MS	16
3.3.3 Inisiasi dan Pemeliharaan Kultur Suspensi	17
3.3.4 Elisitasi Kultur Suspensi dengan Elisitor Fungi	17
3.3.5 Ekstraksi Kalus	17
3.3.6 Analisis Kadar Andrografolid	17
3.3.7 Analisis Data Stastik	18
BAB IV HASIL PENELITIAN DAN PEMBAHASAN	19
4.1 Optimasi Pertumbuhan	19
4.1.1 Optimasi Metode Sterilisasi Eksplan	19
4.1.2 Optimasi Kombinasi ZPT	20
4.1.3 Warna Kalus.....	25
4.1.4 Tekstur Kalus	28
4.1.5 Pengaruh Kontaminasi dan Bleaching terhadap Keberhasilan Induksi Kalus	29
4.2 Pengaruh Bio-elisitor Fungi (<i>Cladosporium sp</i>) Terhadap Kadar Andrografolid.....	33
4.2.1 Bobot Kalus	33
4.2.2 Analisis Larutan Standar Andrografolid	35
4.2.3 Analisis Pengaruh Bio-elisitor Kadar Andrografolid Pada Kultur Suspensi Sel	36
4.2.4 Hasil Uji Data Statistik	40
BAB V SIMPULAN DAN ALUR PENELITIAN SELANJUTNYA	44
5.1 Simpulan.....	44
5.2 Alur Penelitian Selanjutnya.....	44
DAFTAR PUSTAKA	45
LAMPIRAN	53

DAFTAR TABEL

Tabel	Halaman
4.1 Pengaruh penambahan NAA dan BAP terhadap pertumbuhan eksplan kalus sambiloto dengan masa inkubasi 28 hari.....	21
4.2 Pengaruh penambahan 2,4-D (1 mg/L) dan BAP (1 mg/L) terhadap pertumbuhan eksplan kalus sambiloto dengan masa inkubasi 28 hari	22
4.3 Tabel Perbandingan Pertumbuhan Kalus	24
4.4 Perubahan warna kalus pada media MS	26
4.5 Bobot Basah dan Bobot Kering	33
4.6 Hasil Analisis Larutan Standar Andrografolid	35
4.7 Hasil Analisis Kadar Andrografolid Pada Sampel	37
4.8 Hasil Uji Normalitas	40
4.9 Hasil Uji Homogenitas	41
4.10 Hasil Uji Welch ANOVA	43

DAFTAR GAMBAR

Gambar	Halaman
2. 1 (A) Tanam Herbal Sambiloto, (B) Daun Sambiloto	5
2. 2 Struktur andrografolid	7
4. 1 Perbedaaan Hasil Metode Sterilisasi dengan Alkohol Berdasarkan Waktu Kontak (A) 30 detik (B) 2 menit	19
4. 2 (A) Warna Kalus Hijau Kecoklatan (B) Warna Kalus Hijau Kuning Hari Ke- 28	27
4. 3 (A) Tekstur Kalus Hasil Subkultur Kompak (B) Tekstur Kalus Remah Hari Ke-21	28
4. 4 Kontaminasi Pertumbuhan Bakteri, Jamur, dan Bleaching	29
4. 5 Jumlah Kontaminasi dan Bleaching	31
4. 6 Jumlah Kontaminasi dan Bleaching	31
4. 7 (A) Kontaminasi Bakteri (B) Kontaminasi Jamur (C) Bleaching	32
4. 8 Regerasi Linier Standar Andrografolid	35

DAFTAR LAMPIRAN

Lampiran		Halaman
1.	Hasil derteminasi tanaman	53
2.	Dokumentasi penelitian	54
3	Hasil spektrum standar andrografolid	56
4	Hasil spektrum sampel	62
5	Perhitungan pembuatan media	74
6	Perhitungan pembuatan larutan standar andrografolid	76
7	Perhitungan perhitungan larutan baku andrografolid	77
8	Perhitungan konsentrasi sampel	79
9	Perhitungan kadar sampel	82
10	Hasil data SPSS	84

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