

**PENGARUH KOMBINASI KADAR SUKROSA DAN KALIUM NITRAT
DALAM MEDIUM MURASHIGE-SKOOG
TERHADAP KADAR ATROPINA DAN ATAU HIOSIAMINA
PADA KULTUR KALUS *Datura stramonium*, L. var. *stramonium*.**

INTISARI

Telah dilakukan penelitian tentang pengaruh kombinasi kadar sukrosa dan kalium nitrat dalam medium Murashige-Skoog terhadap produksi biomasa dan kadar atropina dan atau hiosiamina pada kultur kalus *Datura stramonium* var. *stramonium*.

Dalam penelitian ini digunakan eksplan daun *Datura stramonium* var. *stramonium* yang ditanam dalam medium MS dengan penambahan zat pengatur tumbuh 2,4-D dan kinetin masing-masing 1 ppm. Medium produksi menggunakan medium yang sama dengan medium untuk induksi kalus dengan penambahan kombinasi konsentrasi sukrosa (30, 35, 40 dan 45 g/l) dan kalium nitrat (12,5 %, 25 %, 37,5 % dan 50 % dihitung dari kadar baku dalam medium MS). Pemanenan kalus dilakukan pada saat kalus berumur 7 minggu dan dilakukan pengukuran bobot basah dan bobot kering.

Analisis kimia dilakukan secara kualitatif dan kuantitatif. Analisis kualitatif dilakukan dengan metode KLT untuk membandingkan kandungan kimia kalus, tanaman asal dan atropin sulfat (senyawa pembanding). Sari metanol dianalisis secara KLT dengan fase diam silika gel 60 F₂₅₄ dan fase gerak aseton-air-amonia 25% (90:3:3 v/v). Bercak yang mempunyai nilai R_f sama dengan pembanding dikerok, kemudian dilakukan ko-KLT dan dikembangkan dengan fase gerak aseton-air-amonia 25% (90:3:3 v/v), toluena-etil asetat-dietilamina (70:20:10 v/v) dan amonia-metanol (1,5:100 v/v). Deteksi bercak pada sinar UV 254 nm dan pereaksi warna Dragendorff. Analisis kuantitatif terhadap kadar atropina dan atau hiosiamina dalam kalus dilakukan dengan metode KLT densitometri, fase diam silika gel 60 F₂₅₄ dan fase gerak aseton-air-amonia 25% (90:7:3 v/v).

Medium MS dengan kombinasi konsentrasi sukrosa 40 g/l dan penambahan kalium nitrat sebesar 37,5 % (medium S₄₀N₃₇₅) merupakan medium yang paling efektif untuk produksi biomasa, sedangkan medium MS dengan kombinasi konsentrasi sukrosa 40 g/l, tanpa penambahan kalium nitrat (medium S₄₀N₀) merupakan medium yang paling efektif untuk produksi atropina dan atau hiosiamina.

ABSTRACT

Study on combined effect of sucrose and potassium nitrate contents within Murashige-Skoog medium on producing biomass and atropine/hyoscyamine contents within callus culture of *Datura stramonium* var. *stramonium* has been conducted.

In the research, explant of *Datura stramonium* var. *stramonium* leaves, planted on MS medium applying the addition of plant growth regulator 2,4-D and kinetin, each of 1 ppm. Medium for producing alkaloids applied similar medium to one for callus induction with addition of combined sucrose concentration (30, 35, 40 and 45 g/l) and potassium nitrate (12.5%, 25%, 37.5%, and 50% based on standart content of MS medium). Callus harvesting was conducted at seven weeks of callus and then both fresh- and dry- weighting were measured.

Chemical analysis were qualitatively and quantitatively conducted. Qualitative analysis was performed using TLC method to compare alkaloids content of callus, original plant and atropine sulphate (standart compound). The methanol extract was analyzed by TLC using silica gel 60 F₂₅₄ as stationary phase and acetone-water-ammonia 25% (90:3:3 v/v) as mobile phase. Spot having the same R_f to standart was collected, then thin layer co-chromatography was carried out using acetone-water-ammonia 25% (90:3:3 v/v), toluene-ethylacetate-diethylamine (70:20:10 v/v) and ammonia-methanol (1,5:100 v/v) as mobile phase. Spot detected by UV 254 nm and Dragendorff reagent. Quantitative analysis on atropine/hyoscyamine contents within callus was conducted with the use of TLC densitometry, using silica gel 60 F₂₅₄ as stationary phase and eluted by acetone-water-ammonia 25% (90:7:3 v/v).

MS medium with combined sucrose concentration of 40 g/L and the addition of 37.5% potassium nitrate (S₄₀N₃₇₅ medium) turned to be the most effective medium to produce biomass, while MS medium with combined sucrose concentration of 40 g/L without the addition of potassium nitrate (S₄₀N₀ medium) was the most effective medium to produce atropine/hyoscyamine.