

***IN VITRO* ROOT INDUCTION OF *Curcuma sumatrana* Miq.
FOR THE SUCCESSFUL MICROPROPAGATION OF SUMATRAN
ENDEMIC TURMERIC SPECIES**

UNDERGRADUATE THESIS

By:

ANNISA PUTRI AMALIA MA'RUF

ID 2010423003



PEMBIMBING

Dr. M. IDRIS

APRILIANA DYAH PRAWESTRI, M. Si

**DEPARTMENT OF BIOLOGY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS ANDALAS
PADANG**

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ABSKTRAK

Curcuma sumatrana merupakan tanaman endemik Sumatra yang memiliki berbagai manfaat terutama di bidang medis, makanan, dan textil. *C. sumatrana* memiliki sebaran yang terbatas di habitat aslinya, berdasarkan IUCN keberadaannya di alam termasuk ke kategori rentan. Maka dari itu, diperlukan upaya konservasi yang salah satu caranya dengan kultur jaringan. Induksi akar secara in vitro dapat meningkatkan potensi bertahan di alam bebas. Penelitian ini bertujuan untuk mengetahui pengaruh kombinasi dari beberapa konsentrasi NAA dan MS pada media kultur terhadap induksi akar *C. sumatrana*. Penelitian di desain dengan Rancangan Acak Lengkap (RAL) faktorial dengan 8 perlakuan dan 5 ulangan. Media yang digunakan adalah media Murashige Skoog (MS) penuh dan setengah dengan konsentrasi NAA 0, 0.25, 0.5, 1 mg L⁻¹. Hasil penelitian ini memperlihatkan bahwa faktor MS penuh dan setengah tidak memberikan hasil berbeda nyata pada semua parameter. Namun, pemberian NAA 0.25-1 mg L⁻¹ memberikan cenderung lebih baik untuk jumlah akar, konsentrasi NAA 0.25 mg L⁻¹ cenderung lebih baik juga untuk jumlah daun. Kombinasi MS penuh + 0.25 mg L⁻¹ dan ½ MS + 0 mg L⁻¹ NAA menghasilkan akar terpanjang. Persentase hidup tertinggi mencapai 100% pada kombinasi 0 dan 0.25 mg L⁻¹ baik pada MS penuh maupun setengah dan MS penuh + 1 mg L⁻¹ NAA.

Kata kunci: *Curcuma sumatrana*, NAA, Media Murashige dan Skoog, induksi akar, aklimatisasi, kultur jaringan tanaman, konservasi.

ABSTRACT

Curcuma sumatrana is an endemic plant species from Sumatra with various potential applications, particularly in the fields of medicine, food, and textiles. Due to its limited distribution in natural habitats and its classification as a vulnerable species by the IUCN, conservation efforts are urgently needed. One promising method is through plant tissue culture. In vitro root induction can enhance the plant's ability to survive upon reintroduction into natural habitats. This study aimed to evaluate the effects of different concentrations of NAA combined with full- and half-strength Murashige and Skoog (MS) media on root induction of *C. sumatrana*. The experiment was arranged in a Completely Randomized Design (CRD) in factorial with 8 treatment and 5 replications. The culture media used were full-strength and half-strength MS supplemented with NAA at concentrations of 0, 0.25, 0.5, and 1 mg L⁻¹. The results showed that MS strength (full or half) did not significantly affect any observed parameter. However, NAA treatments at concentrations of 0.25–1 mg L⁻¹ tended to promote better root formation, with 0.25 mg L⁻¹ for leaf development. The longest roots were observed in the combinations of full-strength MS + 0.25 mg L⁻¹ NAA and ½ MS + 0 mg L⁻¹ NAA. The highest survival rate (100%) during acclimatization was achieved under NAA concentrations of 0 and 0.25 mg L⁻¹ in both full- and half-strength MS media, as well as full-strength MS + 1 mg L⁻¹ NAA.

Keywords: *Curcuma sumatrana*, Murashige and Skoog medium, root induction, acclimatization, plant tissue culture, conservation.