ABSTRAK

ELMITA HAPSARI. Isolasi dan Kloning pada *Escherichia coli* Gen *AaWRKY1* *Artemisia annua* L Dibimbing oleh I MADE ARTIKA dan SRI KOERNIATI.

Gen *AaWRKY1* menyandi protein WRKY1 yang merupakan aktivator transkripsi Amorpha-4,11-diene synthase (ADS) yang berfungsi sebagai katalisator biosintesis artemisinin sehingga peningkatan ekspresi gen *AaWRKY1* secara berlebih dapat meningkatkan kadar artemisinin. Studi ini bertujuan mengisolasi gen *AaWRKY1* dari *Artemisa annua* L. Amplifikasi gen *AaWRKY1* dilakukan dengan teknik PCR (*Polymerase Chain Reaction*) menggunakan pasangan primer spesifik dan cetakan cDNA. Fragmen gen *AaWRKY1* produk PCR selanjutnya diklon pada vektor kloning pJET 1.2 dengan bantuan enzim T4-*ligase* dan ditransformasikan ke sel kompeten bakteri *Escherichia coli* DH5α melalui metode kejut panas, serta ditumbuhkan pada media LB agar yang mengandung antibiotik ampisilin, kemudian koloni diseleksi dengan PCR Koloni. Hasil studi menunjukkan bahwa amplifikasi gen *AaWRKY1* dengan primer spesifik menghasikan amplikon berukuran ± 1500 pb. Fragmen gen tersebut berhasil diklon ke vektor pJET 1.2 dan digunakan untuk mentransformasi sel *E. coli* DH5α. Konfirmasi klon rekombinan dilakukan dengan PCR Koloni untuk mendapatkan koloni rekombinan pembawa gen *AaWRKY.*

Kata kunci : *Artemisia annua L*, gen *AaWRKY1,* kloning, PCR Koloni, pJET 1.2.

ABSTRACT

ELMITA HAPSARI. Isolation and Cloning in *Escherichia coli* gene *AaWRKY1* of *Artemisia annua L WRKY* gene (*AaWRKY1*) from *Artemisia annua L* Supervised by I Made Artika and Sri Koerniati.

Artemisia annua WRKY1 (AaWRKY1) gene encodes a protein *WRKY* a transcriptional activator of *Amorpha-4,11-diene synthase* (ADS). The overexpression farnesil diphosphate AaWRKY1 genes can increase levels of artemisinin. This study was aimed to isolate an *AaWRKY1* gene from Artemisia annua L. Amplification of *AaWRKY1* gene was done by PCR (*Polymerase Chain Reaction*) technique using specific primer pairs and cDNA as a template. Subsequently, *AaWRKY1* gene fragment was cloned into a cloning vector pJET 1.2 using T4-ligase and transformed into competent cell *Escherichia coli* DH5α through heat shock method, and grown on LB agar medium containing ampicillin. Result showed that amplification with specific primers of *AaWRKY1* gene generated an amplicon fragment of ± 1500 bp. The gene fragment was succesfully cloned into pJET 1.2 and transformed into cells of *E. coli* DH5α. Confirmation of recombinant clone was carried out using colony PCR to obtain recombinant colonies.

Keywords : *Artemisia annua L* , *AaWRKY1* gene, cloning, colony PCR, pJET 1.2 Vector