ANALISIS FENOTIP DAN GENOTIP TANAMAN ANGGREK *Dendrobium* BERDAUN VARIGATA

Della Rosiana Ningtias
16/393159/BI/09579

INTI SARI

Keindahan anggrek *Dendrobium* dapat ditingkatkan dengan memunculkan karakter unggul dan unik misalnya tanaman anggrek berdaun varigata. Varigata terjadi karena adanya mutasi pada kloroplas dan mitokondria yang menyebabkan perubahan motif warna daun. Penelitian ini bertujuan untuk mengkarakterisasi morfologi tanaman anggrek *Dendrobium* berdaun varigata, struktur gen *VAR2* (gen penentu pertumbuhan kloroplas) pada tanaman *Dendrobium* berdaun varigata, menganalisis fungsi gen *VARIEGATED2* (*VAR2)* melalui urutan sekuens nukleotida dan asam aminonya. Analisis fenotip dilakukan dengan pengamatan morfologi, analisis kadar klorofil dengan spektrofotometer, dan analisis genotip tanaman dilakukan dengan isolasi DNA menggunakan metode CTAB, amplifikasi DNA menggunakan *Polymerase Chain Reaction* (PCR) dengan primer VAR2F1 dan VAR2R1 dan primer ACTINF1 dan ACTINR1 sebagai kontrol internal, dilengkapi dengan sekuensing Amplikon DNA. Analisis sekuen DNA menggunakan MS.Excel, GeneStudio, dan BLASTX. Hasil penelitian menunjukkan terdapat lima karakter daun yang berbeda berdasarkan motif varigata yaitu panjang sekuen DNA pada bagian daun berwarna hijau 980 bp, yaitu 246 bp lebih panjang dibandingkan dengan sekuen DNA pada bagian daun berwarna putih/kuning yang berukuran 734 bp, terdapat perbedaan sekuen protein VAR2 yang ditunjukkan dengan perbedaan motif asam amino, pada daun warna hijau dengan 3 motif asam amino FtSH superfamily dan bagian daun warna putih hanya memiliki satu motif asam amino FtSH superfamily. Perbedaan jumlah asam amino dengan motif FtSH superfamily tersebut kemungkinan menjadi penyebab ketidakmampuan pembentukan kloroplas pada bagian daun berwarna putih yang tampak sebagai fenotip daun varigata pada tanaman *Dendrobium*.

Kata kunci: *Dendrobium*, Varigata fenotip, gen *VAR2*, FtSH superfamily Motif, Klorofil.

PHENOTYPIC AND GENOTYPIC ANALYSIS VARIEGATED-LEAVES OF *Dendrobium* ORCHID

Della Rosiana Ningtias
16/393159/BI/09579

ABSTRACT

The beauty of *Dendrobium* orchids can be enhanced by bringing out superior and unique characters, for example the variegated leaf. Variegated plant occurs due to mutations in chloroplasts and mitochondria that cause change in leaf color motif. This study aims to characterize the morphology variegated leaf of *Dendrobium* orchids, characterize the structure of the *VARIEGATED2* (*VAR2)* gene in *Dendrobium* variegated leaf plants, analyze the function of the *VAR2* gene through DNA sequences and amino acids that cause the variegated phenotype. The phenotypic analysis method was carried out by morphological observations and chlorophyll content analysis by using a spectrophotometer, and genotypic analysis was carried out by DNA isolation using CTAB method and amplification of the genome DNA by using Polymerase Chain Reactin (PCR) by using VAR2 F1 and VAR2R1 primers and ACTIN F1 and ACTIN R1 primers to amplify ACTIN gene as internal control, followed by sequencing of Amplicon DNA. Analysis using MS. Excel, GeneStudio, and BLASTX. The results showed that there were five different leaf characters based on the variegated motive, the length of the DNA sequence of the green leaf part was 980 bp, that is 246 bp longer than the white/ yellow leaf DNA sequence, there were differences in the sequence indicated by the amino acid motif, the green leaf had 3 FtSH superfamily amino acid motifs and the white part the leaf has only one sequence of FtSH superfamily amino acid motif. The difference in the number of FtSH superfamily amino acid motifs probably causes the inability to form chloroplasts on the white leaves, which appears as a change in the leaf color pattern to varigata in *Dendrobium*.

Keywords: *Dendrobium*, Variegated phenotype, *VAR2* gene, FtSH superfamily Amino acid Motif, Chlorophyl