

KULTUR *IN VITRO* TANAMAN ANGGREK
Dendrobium spectabile (Blume) Miq. DAN KARAKTERISASI GEN
HOMEBOX HOMOLOGINYA DENGAN TANAMAN LAIN

Ana Ainina
22/509627/PBI/01908

INTISARI

Dendrobium spectabile (Blume) Miq. adalah anggrek spesies Indonesia bertipe simpodial yang berasal dari Papua, memiliki nilai ekonomi yang tinggi sebagai tanaman hias dengan ciri khas keriting pada sepal, petal dan labellumnya. Namun spesies asli di alam mulai langka karena deforestasi untuk infrastruktur dan eksploitasi berlebihan. Perbanyakan anggrek secara konvensional melalui biji sulit dilakukan karena biji anggrek sulit tumbuh di alam bebas. Teknik kultur *in vitro* banyak dimanfaatkan untuk mendapatkan individu dalam jumlah banyak dan seragam sebagai upaya konservasi maupun perbanyakan untuk industri ekonomi. Tujuan dari penelitian ini adalah mendapatkan konsentrasi IAA atau BAP terbaik untuk kultur *in vitro* *D. spectabile* dan mengkarakterisasi gen HOMEBOX pada *D. spectabile*. Metode yang digunakan dalam penelitian ini meliputi beberapa tahap: (1) subkultur planlet *D. spectabile* pada media KC dengan variasi penambahan ZPT IAA konsentrasi 5 μ M, 10 μ M, dan 15 μ M, dan ZPT BAP konsentrasi 5 μ M, 10 μ M, dan 15 μ M; (2) Isolasi DNA dan amplifikasi gen HOMEBOX menggunakan primer POH1 pada *D. spectabile*; (3) Analisis motif protein HOMEBOX. Hasil penelitian menunjukkan bahwa subkultur *D. spectabile* pada media KC + IAA 10 μ M mampu meningkatkan pertumbuhan batang tanaman secara signifikan. Fragmen gen HOMEBOX berhasil diisolasi secara parsial dari *D. spectabile* yang menunjukkan adanya motif protein HOMEBOX yaitu ELK dan Homeobox-KN pada fragmen DNA hasil PCR. Analisis filogenetik menunjukkan bahwa protein HOMEBOX pada *D. spectabile* memiliki kekerabatan paling dekat dengan protein HOMEBOX spesies *D. catenatum*.

Kata Kunci: *D. spectabile*, gen HOMEBOX, Kultur *in vitro*

IN VITRO CULTURE OF THE NATURAL ORCHID
Dendrobium spectabile (Blume) Miq. AND THE CHARACTERISTICS OF ITS
HOMEBOX HOMOLOGOUS GENES

Ana Ainina
22/509627/PBI/01908

ABSTRACT

Dendrobium spectabile (Blume) Miq. is a sympodial-type Indonesian orchid species native to Papua. It has high economic value as an ornamental plant with characteristic curls on its sepals, petals, and labellum. However, native species in nature are becoming rare due to deforestation for infrastructure and overexploitation. Conventional propagation of orchids through seeds is difficult because orchid seeds are difficult to grow in the wild. In vitro culture techniques are widely utilized to obtain many uniform individuals as a conservation effort or propagation for the economic industry. The purpose of this study was to obtain the best type of hormone concentration for in vitro culture of *D. spectabile* and characterize the HOMEBOX gene in *D. spectabile*. The method used in this study includes several stages: (1) subculture of *D. spectabile* planlets on KC media with variations in the addition of IAA hormone concentrations of 5 μ M, 10 μ M, and 15 μ M, and BAP hormone concentrations of 5 μ M, 10 μ M, and 15 μ M; (2) DNA isolation and amplification of the HOMEBOX gene using POH1 primers in *D. spectabile*; (3) HOMEBOX protein motif analysis. The results showed that the subculture of *D. spectabile* on KC + IAA 10 μ M media was able to significantly increase plant stem growth. The HOMEBOX gene fragment was partially isolated from *D. spectabile*, which showed the presence of HOMEBOX protein motifs, namely ELK and Homeobox-KN in the PCR-generated DNA fragment. Phylogenetic analysis showed that the HOMEBOX protein in *D. spectabile* was most closely related to the HOMEBOX protein of *D. catenatum* species.

Keywords: *D. spectabile*, HOMEBOX gene, *In vitro* culture