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INTISARI

Bawang putih (*Allium sativum* L.) merupakan komoditas hortikultura yang rentan terhadap infeksi *Potyvirus* sehingga dapat menyebabkan penurunan produktivitas tanaman. Infeksi virus tidak hanya memengaruhi fisiologi tanaman, tetapi juga dapat mengubah struktur komunitas bakteri endofit tanaman. Bio-Catharanthine merupakan ekstrak *Catharanthus roseus* yang berpotensi menginduksi ketahanan tanaman terhadap cekaman biotik. Penelitian ini bertujuan untuk mengetahui pengaruh Bio-Catharanthine terhadap keragaman, komposisi, dan profil komunitas bakteri endofit pada daun bawang putih terinfeksi *Potyvirus* berdasarkan analisis *metabarcoding*. Penelitian dilakukan menggunakan sampel daun bawang putih terinfeksi *Potyvirus* dengan perlakuan Bio-Catharanthine. Analisis komunitas bakteri endofit dilakukan menggunakan pendekatan *metabarcoding* gen 16S rRNA berbasis *Oxford Nanopore Technologies* (ONT). Data hasil sekuensing dianalisis untuk menentukan indeks keanekaragaman alfa yang meliputi *richness*, indeks Shannon, dan indeks Simpson, serta analisis *relative abundance* bakteri endofit pada berbagai tingkat taksonomi. Hasil penelitian menunjukkan bahwa komunitas bakteri endofit memiliki keanekaragaman sedang hingga tinggi dengan nilai *richness* 1083 ± 1048,57, indeks Shannon 6,66 ± 1, dan indeks Simpson 1 ± 0. Komunitas bakteri didominasi oleh filum Pseudomonadota dan Actinomycetota, famili dominan Caulobacteraceae, Xanthobacteraceae, dan Propionibacteriaceae, dengan genus dominan *Cutibacterium*, *Roseateles*, dan *Bradyrhizobium*. Keberadaan bakteri yang berpotensi sebagai *plant growth-promoting bacteria* (PGPB) menunjukkan bahwa mikrobioma endofit berpotensi mendukung pertumbuhan dan ketahanan tanaman. Perlakuan Bio-Catharanthine dapat memengaruhi komunitas bakteri endofit yang terbentuk pada daun bawang putih terinfeksi *Potyvirus*.

Kata Kunci: *Allium sativum*, bakteri endofit, Bio-Catharanthine, *metabarcoding, Potyvirus*

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Diversity of Endophytic Bacteria in Virus-Infected Garlic Leaves (*Allium sativum* L.) Treated with Bio-Catharanthine Based on Metabarcoding Analysis

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ABSTRACT

Garlic (*Allium sativum* L.) is a horticultural crop that is susceptible to *Potyvirus* infection, which can lead to a decline in crop productivity. Viral infection not only affects plant physiology but can also alter the structure of the plant's endophytic bacterial community. Bio-Catharanthine is an extract of *Catharanthus roseus* that has the potential to induce plant resistance to biotic stress. This study aimed to determine the effect of Bio-Catharanthine on the diversity, composition, and profile of the endophytic bacterial community in *Potyvirus*-infected garlic leaves based on metabarcoding analysis. The study was conducted using samples of *Potyvirus*-infected garlic leaves treated with Bio-Catharanthine. Analysis of the endophytic bacterial community was performed using a 16S rRNA metabarcoding approach based on Oxford Nanopore Technologies (ONT). The sequencing data were analyzed to determine *alpha diversity* indices, including species *richness*, the Shannon index, and the Simpson index, as well as to analyze the *relative abundance* of endophytic bacteria at various taxonomic levels. The results of the study indicate that the endophytic bacterial community exhibits moderate to high diversity, with a *richness* value of 1083 ± 1048.57, a Shannon index of 6.66 ± 1, and a Simpson index of 1 ± 0. The bacterial community was dominated by the phyla Pseudomonadota and Actinomycetota, with the dominant families being Caulobacteraceae, Xanthobacteraceae, and Propionibacteriaceae, and the dominant genera being *Cutibacterium*, *Roseateles*, and *Bradyrhizobium*. The presence of bacteria with the potential to act as plant growth-promoting bacteria (PGPB) indicates that the endophytic microbiome has the potential to support plant growth and resilience. Bio-Catharanthine treatment can influence the endophytic bacterial community that forms on garlic leaves infected with *Potyvirus*.

Keywords: *Allium sativum*, Bio-Catharanthine, endophytic bacteria, metabarcoding, *Potyvirus*