

IDENTIFIKASI SPESIES SECARA MOLEKULER DAN PERANCANGAN PRIMER SPESIFIK UNTUK BAKTERI *Streptomyces* sp. strain UGM_P-NI3 BERBASIS GEN *trpB*

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INTISARI

Streptomyces merupakan bakteri gram positif yang telah dikenal mampu menghasilkan metabolit sekunder yang mampu menghambat pertumbuhan patogen, seperti bakteri *Streptomyces* sp. strain UGM_P-NI3. Bakteri tersebut memiliki kemampuan dalam menghambat jamur patogen *Ganoderma boninense* tetapi bakteri ini belum diketahui identitas spesies dan alat untuk deteksi. Penelitian ini bertujuan mengetahui spesies dari bakteri *Streptomyces* sp. strain UGM_P-NI3 dan memperoleh primer spesifik berbasis gen *trpB* untuk deteksi bakteri *Streptomyces* sp. strain UGM_P-NI3. Penelitian ini menunjukkan hasil bahwa bakteri *Streptomyces* sp. strain UGM_P-NI3 berhasil teridentifikasi sebagai bakteri *Streptomyces collinus* sehingga penamaan bakteri tersebut menjadi *Streptomyces collinus* strain UGM_P-NI3 berdasarkan hasil analisis sekuensing gen *trpB*. Primer spesifik yang telah dirancang berbasis gen *trpB* berupa primer StrepPNI3-F (5' CAAGACCCGTGTCATCG 3') dan StrepPNI3-R (5' TGTCGCGCAGGTAGGAG 3') juga mampu mendeteksi bakteri *Streptomyces collinus* strain UGM_P-NI3 dengan panjang ampikon sebesar 650 bp pada suhu *annealing* 60°C.

Kata kunci: *Streptomyces* sp. strain UGM_P-NI3, identifikasi molekuler, gen *trpB*, primer spesifik

MOLECULAR SPECIES IDENTIFICATION AND DESIGN SPECIFIC PRIMERS FOR *Streptomyces* sp. strain UGM_P-NI3 BASED ON *trpB* GENE

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ABSTRACT

Streptomyces is a gram-positive bacterium known to produce secondary metabolites that inhibit the growth of pathogens, such as *Streptomyces* sp. strain UGM_P-NI3. This bacterium has the ability to inhibit the pathogenic fungus *Ganoderma boninense*, but its species identity and detection tools are not yet known. This study aims to determine the species of *Streptomyces* sp. strain UGM_P-NI3 and obtain *trpB* gene-based specific primers for the detection of *Streptomyces* sp. strain UGM_P-NI3. This study showed that *Streptomyces* sp. strain UGM_P-NI3 was successfully identified as *Streptomyces collinus*, thus the bacterium was named *Streptomyces collinus* strain UGM_P-NI3 based on the results of *trpB* gene sequencing analysis. The specific primers designed based on the *trpB* gene were StrepPNI3-F (5' CAAGACCCGTGTCATCG 3') and StrepPNI3-R (5' TGTCGCGCAGGTAGGAG 3') were also able to detect *Streptomyces collinus* strain UGM_P-NI3 with an amplicon length of 650 bp at an annealing temperature of 60°C.

Keywords: *Streptomyces* sp. strain UGM_P-NI3, molecular identification, *trpB* gene, specific primers