

## ABSTRAK

### **Upaya Meningkatkan Kemampuan Produksi Senyawa Antimikroba Bakteri Endofit Tumbuhan Andalas (*Morus macroura* Miq.) Isolat JDT 1B Melalui Proses Penyinaran Dengan Sinar UV**

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Produksi senyawa aktif antibakteri dapat diperoleh melalui fermentasi. Aktifitas produksi senyawa aktif dapat ditingkatkan dengan cara meningkatkan aktifitas galur mikroba melalui proses mutasi. Mutasi dapat diinduksi dengan mutagen. Dimana mutagen ada 2 jenis yaitu mutagen kimia dan fisika. Mutagen fisika adalah mutagen yang dihasilkan dari perlakuan fisik (radiasi) melalui penyinaran UV. Tujuan dari penelitian ini adalah untuk melihat pengaruh penyinaran dengan sinar UV terhadap jumlah sel bakteri, morfologi koloni dan aktivitas antibakteri endofit tumbuhan Andalas isolat JDT 1B.

Penelitian ini merupakan penelitian Deskriptif yang dilaksanakan dari September 2020 – Februari 2021 di Laboratorium Penelitian Jurusan Biologi FMIPA UNP. Penyinaran UV dilakukan terhadap bakteri endofit Andalas isolat JDT 1B dengan waktu pemaparan selama 10, 20, 30, 40, 50, dan 60 menit. Perhitungan jumlah sel bakteri yang tumbuh setelah penyinaran dengan sinar UV dilakukan dengan metode *Spread Plate*. Pengamatan yang dilakukan berupa: pertumbuhan bakteri, perubahan morfologi koloni bakteri, aktivitas antibakteri. Semua perubahan parameter yang diamati dibandingkan dengan *wild type*.

Hasil penelitian menunjukkan bahwa penyinaran UV pada bakteri endofit menyebabkan terjadinya penurunan jumlah sel bakteri. Bakteri mutan isolat JDT 1B mengalami perubahan morfologi koloni dan aktivitas antibakteri. Kesimpulan penelitian ini adalah proses penyinaran UV menghasilkan bakteri endofit Andalas Isolat JDT 1B mutan yang memiliki perbedaan morfologi dan meningkatkan kemampuan bakteri dalam menghasilkan senyawa antibakteri jika dibandingkan dengan *wild type*.

**Kata Kunci: Bakteri Endofit, Isolat, Mutan, Antimikroba**

**Efforts to Increase Production Ability of Andalas Endophytic Bacteria  
Antimicrobial Plant Compounds (*Morus macroura* Miq.) Isolate JDT 1B  
Through Irradiation Process With UV Light**

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**ABSTRACT**

The production of antibacterial active compounds can be obtained through fermentation. In addition to fermentation, the process of obtaining antibacterial active compounds can also be done by increasing microbial strains, one of which is mutation. Mutations can be induced with mutagens. Where there are 2 types of mutagens, namely chemical and physical mutagens. Physical mutagens are mutagens that result from physical treatment (radiation) through UV irradiation. The purpose of this study was to determine the number of bacterial cells, to determine the morphology of the colony and to determine the antibacterial activity of the endophytic plant andalas isolate JDT 1B after going through the UV irradiation process.

This research is a descriptive study which was conducted from September 2020 - February 2021 at the Research Laboratory of the Department of Biology, Faculty of Mathematics and Natural Sciences, UNP. UV irradiation was carried out on Andalas endophytic bacteria isolate JDT 1B with exposure times of 10, 20, 30, 40, 50, and 60 minutes. The calculation of the number of bacterial cells that grew after UV irradiation was carried out using the Spread Plate method. Observations were made in the form of: bacterial growth, changes in the morphology of bacterial colonies, antibacterial activity. All observed parameter changes were compared by wild type.

The results showed that UV irradiation on endophytic bacteria decreased the number of bacterial cells after irradiation for 10 - 60 minutes. Not only that, changes also occurred in colony morphology and antibacterial activity of JDT 1B isolates, the mutant activity was greater than wild type fermentation at 12, 24 and 36 hours. So, it can be concluded that the UV irradiation process can mutate bacteria by changing morphology and increase the ability of bacteria to produce antibacterial compounds.

Keywords: Endophytic Bacteria Isolate JDT IB, UV irradiation, Mutant.