

INTISARI

ISOLASI DAN SELEKSI BAKTERI ENDOFIT PENGHASIL ANTIMIKROBIA DARI TANAMAN OBAT SERTA KARAKTERISASI PENDAHULUAN SENYAWANYA

KEZIA SHANIA VALENTINA

17/412857/PN/15179

Penemuan dan pengembangan senyawa antimikrobia terutama dari sumber alami perlu terus dilakukan seiring dengan peningkatan penyakit menular dan perkembangan mikrobia patogen resisten antibiotik. Bakteri endofit asal tanaman obat merupakan sumber alami potensial untuk eksplorasi senyawa antimikrobia baru. Penelitian ini bertujuan untuk isolasi, seleksi, dan karakterisasi senyawa antimikrobia yang dihasilkan bakteri endofit asal tanaman obat. Isolasi dilakukan menggunakan metode *surface plating* dengan meletakkan belahan jaringan tanaman yang telah disterilisasi permukaan pada medium nutrisi agar (NA) mengandung antijamur nistatin. Seleksi bakteri endofit penghasil antimikrobia dilakukan dengan metode difusi kertas cakram terhadap mikrobia indikator *Bacillus subtilis*, *Candida albicans*, dan *Fusarium oxysporum*. Medium yang digunakan untuk produksi senyawa antimikrobia adalah nutrisi cair, glukosa *yeast*, dan antibiotik-3. Dua isolat bakteri endofit unggul dengan daya hambat terbesar dipilih untuk dikarakterisasi senyawa antimikrobanya menggunakan teknik kromatografi kertas. Dari hasil isolasi dan seleksi diperoleh 45 isolat bakteri endofit dari 8 jenis tanaman obat, 7 isolat diantaranya yakni RBDY1, RBDY2, RKT1, RKT4, RKT5, DKCB1, dan DKCB2 mampu menghasilkan senyawa antimikrobia bersifat antagonistik terhadap mikrobia indikator. Dua isolat unggul RKT1 dan RBDY2 memiliki daya hambat tertinggi, berturut-turut sebesar 8,77 terhadap *Bacillus subtilis*, 4,10 terhadap *Candida albicans*, dan 32,54 terhadap *Fusarium oxysporum*. Hasil karakterisasi senyawa antimikrobia isolat RKT1 dan RBDY2 memiliki nilai R_f masing-masing sebesar 0,22 dan 0,97 ketika dielusi dengan eluen akuades dijenuhi butanol.

Kata kunci : isolasi dan seleksi, bakteri endofit, tanaman obat, antimikrobia, karakterisasi

ABSTRACT

**ISOLATION AND SELECTION OF ENDOPHYTIC BACTERIA PRODUCING
ANTIMICROBE FROM MEDICINAL PLANTS AND ITS ANTIMICROBE'S
PRELIMINARY CHARACTERIZATION**

KEZIA SHANIA VALENTINA

17/412857/PN/15179

The discovery and development of antimicrobial compounds, particularly from natural sources, needs to be continued along with the rise in infectious diseases and the development of antibiotic-resistant pathogenic microbes. Endophytic bacteria in medicinal plants are potential natural sources for discovering new antimicrobial compounds. This study aims to isolate, select, and preliminarily characterization of antimicrobial compounds produced by endophytic bacteria in medicinal plants. Isolation was carried out using surface plating method by placing surface-sterilized plant tissue pieces on the surface of nutrient agar (NA) medium that contains the antifungal agent nystatin. The endophytic bacteria producing antimicrobes selection was carried out using the paper disc diffusion method towards the indicator microbes *Bacillus subtilis*, *Candida albicans*, and *Fusarium oxysporum*. The medium used for producing antimicrobial compounds were nutrient broth, glucose yeast, and antibiotics-3. Two endophytic isolates with the greatest inhibitory were selected for characterization of its antimicrobial compounds using paper chromatography technique. The isolation and selection results is obtained 45 isolates of endophytic bacteria from 8 types of medicinal plants, and 7 of the isolates consisting of RBDY1, RBDY2, RKT1, RKT4, RKT5, DKCB1, and DKCB2 were able to produce antimicrobial compounds that were antagonistic to the indicator microbes. Isolates RKT1 and RBDY2 had the highest inhibitory effect values of 8,77 againts *Bacillus subtilis*, 4,10 againts *Candida albicans*, and 32,54 againts *Fusarium oxysporum*, respectively. The RKT1 and RBDY2 isolates, that were selected for the characterization of antimicrobial compounds, showed to produce compounds with Rf values of 0.22 and 0.97, respectively, using butanol-saturated aquadest eluent.

Keywords: isolation and selection, endophytic bacteria, medicinal plants, antimicrobia, characterization