# ABSTRAK

## BIOAKTIVITAS EKSTRAK ETIL ASETAT FUNGI ENDOFIT MANGROVE SEBAGAI ANTIBAKTERI, *Staphylococcus aureus* DAN *Pseudomonas aeruginosa*

**Oleh**

**Riski Pangestu**

Kasus resistensi bakteri petogen menjadi salah satu permasalahan yang serius di dunia, termasuk di Indonesia. Pada penelitian ini bertujuan untuk mendapatkan senyawa antibakteri yang berasal dari fungi endofit mangrove. Metode sampling diambil secara acak di hutan mangrove Petengoran Desa Gebang, Kec. Padang Cermin, Kab. Pesawaran. Bagian mangrove yang diambil terdiri dari akar, batang dan daun menggunakan media agar koloid kitin 1%, serta isolasi fungi menggunakan malt ekstrak agar. Pengamatan morfologi fungi dilakukan menggunakan mikroskop cahaya dengan perbesaran 400x dan SEM. Isolat fungi selanjutnya dikultivasi menggunakan metode *solid state fermentation* (SSF), biomass fungi didapatkan dengan ekstraksi menggunakan pelarut EtOAc dan bioaktivitas ekstraksnya diuji dengan bakteri resisten *Staphylococcus aureus* dan *Pseudomonas aeruginosa*. Berdasarkan hasil sampling didapatkan 17 isolat fungi endofit yang berjenis *Aspergillus* sp., *Trichoderma* sp. dan *Penicillium* sp. serta didapatkan berat ekstrak EtOAc berkisar 0,521-1,0 g. Ekstrak dengan kode 22-PLP1-F1 dapat menghambat pertumbuhan *S. aureus* dengan persentase penghambat sebesar 74,6% pada kadar 250 µg/mL. Analisis FTIR pada fraksi 22-PLP1-F1-KU-MeOH menunjukkan bilangan gelombang 3324 $cm^{-1}$ merupakan gugus O-H dan 1267 $cm^{-1}$ menunjukkan adanya serapan gugus C-N, dari karakterisasi LC-MS/MS diperoleh molekul $C_{11}H_{19}N_2O_3$ dengan m/z 227 dalam keadaan $M^+$ yang mengindikasikan struktur siklo(L-Leu-trans-4-hidroksi-L-Pro). Penelitian ini berhasil mendapatkan senyawa yang mampu menghambat pertumbuhan bakteri Gram Positif, sehingga dapat menambah informasi tentang potensi senyawa antibakteri yang dihasilkan oleh fungi endofit mangrove.

Kata Kunci: Fungi, Antibakteri, Mangrove, LC-MS/MS, *Solid State Fermentation*

## ABSTRACT

**BIOACTIVITY OF ETHYL ACETATE EXTRACT OF MANGROVE ENDOPHITE FUNGI AS ANTIBACTERIA, *Staphylococcus aureus* AND *Pseudomonas aeruginosa***

**By**

**Riski Pangestu**

The case of petogen bacterial resistance is one of the serious problems in the world, including in Indonesia. This study aims to obtain antibacterial compounds derived from mangrove endophytic fungi. The sampling method was taken randomly in the Petengoran mangrove forest, Gebang village, Padang Cermin sub-district, Pesawaran district. Mangrove parts taken consisted of roots, stems and leaves using 1% chitin colloidal agar media, and isolation of fungi using malt extract agar. Observation of fungi morphology was carried out using a light microscope with 400x magnification and SEM. Fungi isolates were then cultivated using the solid state fermentation (SSF) method, fungi biomass was obtained by extraction using EtOAc solvent and the bioactivity of the extract was tested with resistant bacteria *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Based on the sampling results, 17 isolates of endophytic fungi were obtained, which were *Aspergillus* sp., *Trichoderma* sp. and *Penicillium* sp. and the weight of the EtOAc extract ranged from 0.521-1.0g. The extract with the code 22-PLP1-F1 can inhibit the growth of *S. aureus* with an inhibitory percentage of 74.6% at a level of 250 µg/mL. FTIR analysis on fraction 22-PLP1-F1-KU-MeOH showed wave number 3324 $cm^{-1}$ is O-H group and 1267 $cm^{-1}$ shows the absorption of C-N group, from LC-MS/MS characterization obtained molecule $C_{11}H_{19}N_2O_3$ with m/z 227 in $M^+$ state which indicates the structure of cyclo(L-Leu-trans-4-hydroxy-L-Pro). This study succeeded in obtaining compounds that were able to inhibit the growth of Gram-positive bacteria, this information is essential for enlighten the potetial of antibacterial compounds produced by mangrove endophytic fungi.



Keywords: Fungi, Antibacterial, Mangrove, LC-MS/MS, Solid State Fermentation