

ABSTRAK

Penelitian ini bertujuan untuk mengisolasi, mengkarakterisasi, serta menguji aktivitas antioksidan dan inhibitor α -glukosidase dari bakteri endofit daun pandan wangi (*Pandanus amaryllifolius Roxb.*) sebagai kandidat antidiabetes alami. Metode penelitian meliputi isolasi bakteri endofit menggunakan teknik sterilisasi permukaan dan penanaman pada media Nutrient Agar (NA) dan Nutrient Broth (NB), dilanjutkan dengan pemurnian menggunakan metode streak plate. Karakterisasi dilakukan secara makroskopis dan mikroskopis melalui pewarnaan Gram dan uji katalase. Uji aktivitas antioksidan dilakukan menggunakan metode DPPH dengan spektrofotometri pada panjang gelombang 517 nm, sedangkan uji inhibitor α -glukosidase dilakukan menggunakan metode mikroplate dengan substrat p-nitrofenil- α -D-glukopiranosida. Hasil penelitian menunjukkan diperoleh 7 isolat bakteri endofit yang seluruhnya berbentuk basil, Gram negatif, dan positif katalase. Isolat P8 menunjukkan aktivitas antioksidan tertinggi dengan persentase inhibisi sebesar 75%. Pada uji inhibitor α -glukosidase, isolat P8 juga menunjukkan aktivitas penghambatan sebesar 97%, lebih tinggi dibandingkan kontrol positif akarbosa sebesar 80%. Kesimpulannya, bakteri endofit dari daun pandan wangi memiliki potensi sebagai sumber senyawa bioaktif yang berperan sebagai antioksidan dan antidiabetes melalui mekanisme penghambatan enzim α -glukosidase.

Kata kunci: bakteri endofit, pandan wangi, antioksidan, α -glukosidase, antidiabetes

ABSTRACT

This study aimed to isolate, characterize, and evaluate the antioxidant and α -glucosidase inhibitory activities of endophytic bacteria from pandan leaves (*Pandanus amaryllifolius Roxb.*) as a potential natural antidiabetic agent. The research methods included isolation of endophytic bacteria through surface sterilization followed by cultivation on Nutrient Agar (NA) and Nutrient Broth (NB), and purification using the streak plate method. Characterization was carried out both macroscopically and microscopically using Gram staining and catalase tests. Antioxidant activity was determined using the DPPH method with spectrophotometric measurement at 517 nm, while α -glucosidase inhibitory activity was assessed using a microplate method with p-nitrophenyl- α -D-glucopyranoside as the substrate. The results showed that 7 isolates of endophytic bacteria were obtained, all of which were rod-shaped (bacilli), Gram-negative, and catalase-positive. Isolate P8 exhibited the highest antioxidant activity with an inhibition percentage of 75%. In the α -glucosidase inhibition assay, isolate P8 also demonstrated the highest inhibitory activity of 97%, exceeding the positive control acarbose (80%). In conclusion, endophytic bacteria from pandan leaves have significant potential as a source of bioactive compounds with antioxidant and antidiabetic properties through α -glucosidase inhibition.

Keywords: endophytic bacteria, pandan leaf, antioxidant, α -glucosidase, antidiabetic