

## ABSTRAK

Mawadah, Z. R., 2021, ISOLASI BAKTERI ENDOFIT DAUN SUKUN (*Artocarpus altilis*) DAN KAJIAN PUSTAKA AKTIVITASNYA SEBAGAI INHIBITOR ALFA-GLUKOSIDASE, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. Ana Indrayati, M.Si. dan apt. Sri Rejeki Handayani, M.Farm.

Diabetes melitus (DM) merupakan gangguan metabolisme yang ditandai dengan hiperglikemia. Inhibitor  $\alpha$ -glukosidase yang dihasilkan daun sukun dapat menunda hidrolisis karbohidrat menjadi glukosa, sehingga mengobati hiperglikemia *postprandial* pada DM. Bakteri endofit di jaringan tanaman berpotensi menghasilkan senyawa yang sama seperti tanaman inangnya. Eksplorasi bakteri endofit dari tanaman dilakukan untuk memperoleh bakteri penghasil inhibitor  $\alpha$ -glukosidase. Tujuan penelitian ini adalah mengisolasi bakteri endofit daun sukun dan mengkaji aktivitasnya sebagai inhibitor  $\alpha$ -glukosidase.

Isolasi bakteri endofit dilakukan dengan menginokulasi daun sukun yang telah disterilisasi permukaannya pada media NA. Senyawa metabolit sekunder diperoleh dengan ekstraksi isolat bakteri pada media cair YPS. Identifikasi bakteri dilakukan dengan pewarnaan Gram dan uji biokimia. Identifikasi kandungan senyawa flavonoid dilakukan dengan uji tabung dan analisis KLT.. Data uji aktivitas inhibitor  $\alpha$ -glukosidase bakteri endofit diperoleh dari hasil studi pustaka.

Hasil penelitian diperoleh 7 isolat bakteri endofit dari daun sukun dengan genus yang berbeda yaitu *Actinobacillus*, *Enterobacter*, *Bordetella*, *Lactobacillus*, 2 isolat merupakan genus *Corynebacterium* dan satu isolat tidak diketahui genusnya. Hasil identifikasi flavonoid menunjukkan genus *Actinobacillus* dan *Bordetella* positif mengandung flavonoid. Hasil studi pustaka pada 4 tanaman obat diabetes mengungkapkan bahwa semua isolat dari beberapa tanaman mempunyai aktivitas menghambat enzim  $\alpha$ -glukosidase dengan kekuatan yang berbeda-beda.

**Kata kunci:** antidiabetes, bakteri endofit, daun sukun, inhibitor  $\alpha$ -glukosidase.

## ABSTRACT

Mawadah, Z. R., 2021, ISOLATION OF ENDOPHYTIC BACTERIA FROM BREADFRUIT LEAVES (*Artocarpus altilis*) AND LITERATURE REVIEW OF ITS ACTIVITY AS ALPHA-GLUCOSIDASE INHIBITORS, THESIS, FACULTY OF PHARMACEUTICAL, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. Ana Indrayati, M.Si. and apt. Sri Rejeki Handayani, M.Farm.

Diabetes mellitus (DM) is a metabolic disease characterized by hyperglycemia. The  $\alpha$ -glucosidase inhibitor produced by breadfruit leaves can delay the hydrolysis of carbohydrates into glucose, that treating postprandial hyperglycemia in DM. Endophytic bacteria in plant tissues have the potential to produce the same compounds as their host plants. Exploration of endophytic bacteria from plants was carried out to obtain bacteria that produce  $\alpha$ -glucosidase inhibitors. The purpose of this study was to isolate endophytic bacteria from breadfruit leaves and to study of its activity as  $\alpha$ -glucosidase inhibitors.

Isolation of endophytic bacteria was carried out by inoculation of sterilized surface of breadfruit leaves on NA media. Secondary metabolites were obtained by extracting bacterial isolates in YPS liquid media. Bacterial identification was carried out by Gram staining and biochemical test. Identification of flavonoid compounds was carried out by tube test and TLC analysis. The data for  $\alpha$ -glucosidase inhibitors endophytic bacteria activity test were obtained from literature study.

The results obtained 7 isolates of endophytic bacteria from breadfruit leaves with different genus, namely *Actinobacillus*, *Enterobacter*, *Bordetella*, *Lactobacillus*, 2 isolates belonging to the genus *Corynebacterium* and one isolate of unknown genus. The results of flavonoid identification showed that genus *Actinobacillus* and *Bordetella* were positive for flavonoids. The results of literature study of 4 diabetes medicinal plants revealed that each isolate from several plant had the activity of inhibiting the  $\alpha$ -glucosidase enzyme with different strengths.

**Keywords:** antidiabetic, endophytic bacteria, breadfruit leaves,  $\alpha$ -glucosidase inhibitor.