

ABSTRACT

M. Iqtada Binnabi, 24020121120041, Isolation and Screening of Endophytic Fungi Producing α -Amylase Inhibitors from Cashew (*Anacardium occidentale* L.) at KHDTK Wanadipa UNDIP as Antidiabetes Melitus. Under the guidance of Sri Pujiyanto and Hermin Pancasakti Kusumaningrum.

Diabetes mellitus is a metabolic disease characterized by high blood sugar levels caused by insulin hormone dysfunction. α -Amylase inhibitors are compounds that work by preventing the breakdown of carbohydrates into glucose by the α -amylase enzyme. Cashew (*Anacardium occidentale* L.) contains various bioactive compounds such as alkaloids, flavonoids, saponins, and tannins, which are known to have antidiabetic properties. Endophytic fungi that live within plant tissues are capable of producing secondary metabolites with potential antidiabetic effects by inhibiting carbohydrate-degrading enzymes. This study aims to obtain endophytic fungal isolates from cashew plants and to determine the potential α -amylase inhibitory activity of selected endophytic fungal isolates from cashew plants as anti-diabetic agents. Isolation was carried out on surface-sterilized samples using 70% ethanol and 5% sodium hypochlorite (NaOCl), followed by incubation on Potato Dextrose Agar (PDA) for 5 days. The α -amylase inhibitory activity was tested using the DNS method and measured using a UV-Vis spectrophotometer at 540 nm. GC-MS analysis was used to identify the bioactive compounds in the extract. Data were analyzed using SPSS software, including normality test, homogeneity test, ANOVA, Duncan's test, and PASS analysis for compound activity prediction. The results showed that nine isolates of endophytic fungi were obtained, which were classified into two genera: *Aspergillus* and *Rhizopus*. Isolate BM1(1) from the Genus *Aspergillus* exhibited the highest α -amylase inhibitory activity, with a value of 96.52%. Further testing on the ethyl acetate extract of BM1(1) showed the highest inhibitory activity at 50% concentration, with an inhibition rate of 77% and an IC_{50} value of 18.93%. GC-MS analysis of BM1(1) extract identified seven bioactive compounds: 4-Cycloocten-1-One, Propyl nitrite, 5-Hydroxymethylfurfural, 2-Furancarboxaldehyde, 5-Methyl furfural, Heptadecanoic acid, trimethylsilyl ester, and Propyl heptanoate.

Keywords: diabetes mellitus, endophytic fungi, Anacardium occidentale L., α -amylase inhibitor, GC-MS