ABSTRACT

Nur Lulu Kaerunnisya. 24020121120020. **Optimization of Production and Identification of ∝-Amylase Inhibitor Compound Endophyte Fungus Isolate of Sisik Naga Plants (*Pyrrosia piloselloides*)**. Under the guidance of Sri Pujiyanto and Budi Raharjo.

Diabetes mellitus is a metabolic disease characterized by increased blood glucose levels due to disturbances in the production or function of the insulin hormone. α-amylase inhibitors are compounds that inhibit the breakdown of carbohydrates into glucose by the amylase enzyme. Sisik naga plant (*Pyrosia piloselloides*) is a medicinal plant used to lower blood sugar levels. This research aims to optimize the production of ∝-amylase inhibitor compounds through carbon and nitrogen source treatment and analyze the content of bioactive compounds from the endophytic fungus of the sisik naga plant (*P. piloselloides*) using the GC-MS method. The research was carried out by isolating endophytic fungi from the stems and leaves of sisik naga plant on PDA medium and 5 isolates were obtained. The results of characterization through macroscopic and microscopic observations show the genera *Aspergillus* and *Syncephalastrum*, as well as the *Mycelia sterilia* group. The best isolate was selected taking into account its inhibitory activity and used to optimize the production of α-amylase inhibitor compounds through carbon and nitrogen source treatment in PDB media, followed by analysis and identification of compounds using the GC-MS method. The optimal time for production of the best isolate α-amylase inhibitor is 72 hours. The statistical test results of carbon and nitrogen source treatment showed an insignificant effect ($P>0.05$). Based on the results of GC-MS analysis, 9 compounds were detected with 5 bioactive compounds showing potential biological activity. The PASS Online test showed all of them had potential as sugar-phosphatase inhibitors associated with antidiabetic activity, with 2-Pentadecyn-1-ol thought to be most effective in inhibiting glucose metabolism via the glucose-6-phosphatase enzyme.

Keyword: *α-amylase Inhibitor, Endophyte Fungi, Pyrrosia piloselloides, GC-MS*