

ABSTRACT

Jonathan Cor Riyanto. 24020221140071. **Optimization of Antioxidant Activity of Endophytic Fungus DSN2 from Dragon Scale Fern (*Drymoglossum piloselloides*)**. Under the supervision of Sri Pujiyanto and Irfan Anwar Fauzan.

The endophytic culture DSN2 isolated from the dragon scale fern has demonstrated antioxidant activity through its secondary metabolites. This study aimed to identify which added carbon and nitrogen compounds could enhance the antioxidant activity of DSN2. Five general steps were performed in this research: reculturing of DSN2, preparation of optimization media with added carbon and nitrogen sources, culture inoculation, secondary metabolite harvesting, and antioxidant testing using DPPH. Rejuvenation of the DSN2 isolate is done by transferring the stock culture onto a petri dish containing PDA medium. The carbon-source optimized medium contains PDB medium supplemented with 2 % carbon sources (dextrose, sucrose, and starch). The nitrogen-source optimized medium contains PDB medium supplemented with 0.2 % nitrogen sources (yeast extract, peptone, and ammonium sulfate). The control medium contains only PDB medium and is prepared in three replicates. The experimental design used is a completely randomized design (CRD) with three replicates per factor. One-way ANOVA ($\alpha = 0.05$) is used to determine the presence of effects. It was found that the addition of dextrose and sucrose significantly increased antioxidant activity compared to the control. Dextrose is part of the pentose-phosphate pathway (PPP) that is responsible for antioxidant production to fight free radicals. The study also suggests that adding peptone may lead to lower antioxidant activity in the DSN2 isolate, although this cannot be confirmed because the effect of peptone on antioxidant yield was not measured in this research.

Keywords: *antioxidant activity, carbon source, nitrogen source, supplementation*