ABSTRACT

Dinda Nurbaiti Dea Athaya. 24020221140058. Isolation, Identification, and Enzyme Activity Testing of Protease Isolates from Traditional Fermented Food Dage. Under Arina Tri Lunggani and Ditta Putri Kumalasari's supervision.

Dage is a traditional fermented food that is being potential souce of microbial biodiversity for enzyme production. As a fermented product who made from tofu pulp and coconut residue, dage is thought to contain molds that can produce protease enzymes. Protease enzymes themselves play an important role in industrial applications in food processing, detergents, and pharmaceuticals. However, research based on exploration of protease enzyme from microbial isolates, especially fungi which contained in dage, is still very limited. Therefore, this study was conducted to isolate, identify, and test the protease enzyme acitivity of mold isolates that found in dage. Isolatioan was started out by growing dage samples on Potato Dextrose Agar (PDA) media to produce pure mold isolates, which were then identified morphologically by macroscopic and microscopic examination. Pure isolates were then qualitatively screened for enzymes using Skim Milk Agar (SMA) media to measure the Proteolytic Index. Isolates with the highest IP were then selected to quantitative enzyme testing. Quantitative testing was performed using casein as a substrate and a tyrosine standard curve. The isolation results showed two molds, coded by R1 and A1. Isolate R1 shows characteristics typical of the genus *Rhizopus*, with dense grayish-white mycelium and also contains rhizoid, while isolate A1 is characterized by yellowish-green colonies with chain-like conidia resembling the genus *Aspergillus*. Qualitative enzyme test results showed that both isolates had proteolytic activity, as indicated by the presence of clear zone with a Proteolytic Index value of 1,24 for isolate R1 and 1,67 for isolate A1. Isolate A1 was selected for further quantitative testing, with an enzyme activity of 0,150 U/ml. Thus, it was concluded that the mold isolated from dage is capable of producing protease enzyme activity, with isolate A1 being the best isolate. This study shows the initial potential of dage as a source of protease-producing mold, which can be further developed for industrial purposes.

Keywords: *dage, isolation, identification, mold, protease*