ABSTRACT

Hadistiyani Yusuf 24020221120014. Isolation and molecular identification of cellulase enzyme producing fungi from *Avicennia marina* mangrove litter in Mangkang Wetan Semarang. Under the guidance of Wijanarka and Yustian Rovi Alfiansah

Cellulase (EC 3.2.1.4) is an enzyme capable of degrading cellulose with its main products being glucose, cellobiose and cellooligosaccharides. Cellulase enzyme can be produced by cellulolytic mold isolatd from *Avicennia marina* mangrove litter. The purpose of this study was to isolat cellulolytic mold from mangrove litter that is capable of producing cellulase enzyme and to test the activity of crude enzyme extract with different carbon sources including 1% CMC, 1% Sellobiose, PDB, and 5% CMC & 5% Sellobiose and to find out the species name of the isolatd cellulolytic mold isolat. The method used in mold isolation is a spread plate. The mold isolats were measured for their cellulolytic activity qualitatively using congo red and quantitatively with different carbon sources using the DNS method then measured in a spectrophotometer at λ580 nm. The results of mold isolation were 3 samples from 2 locations that were successfully overgrown with mold and there were 10 mold isolats from purification. Screening of cellulolytic molds produced 2 mold isolats that formed clear zones around the colonies, namely isolat codes C3.3 and A3.3. The results of quantitative cellulase activity tests on differences in carbon sources showed that the optimum carbon source for producing cellulase enzymes was CMC 5% & Cellobiose 5% in isolat code A3.3 with an optimum time of day 3 of 46.736,19 U/mL with a pH of 6.11. The results of molecular identification of the two selected isolats code C3.3 showed the closest kinship with a similarity percentage of 100% in *Aspergillus aculeatus* and isolat code A3.3 showed the closest kinship with a similarity percentage of 99% in *Penicillium javanicum*.

Keywords: *Molecular identification, Cellulase, Mangrove litter, Carbon source.*