

Abstract

Rahma Anggita Anma, 24020121120015. **Anti-Mold Test of Lactic Acid Bacteria from Fermented Arabica Coffee Beans and Its Application in Inhibiting Growth of *Aspergillus flavus* and *Penicillium* sp. on Coffee Beans.** Biotechnology Laboratory, Department of Biology, Faculty of Sains and Mathematics, Diponegoro University, Semarang under the guidance of Siti Nur Jannah and Wijanarka.

Aspergillus flavus and *Penicillium* sp. are pathogenic molds that are often found in coffee beans in storage warehouses. Lactic acid bacteria are microorganisms that have anti-fungal abilities. Lactic acid bacteria can be isolated from fermented Arabica coffee beans. The purpose of this study was to obtain lactic acid bacteria isolates from fermented Arabica coffee beans and determine their ability to inhibit the growth of *Aspergillus flavus* and *Penicillium* sp., as well as their application to coffee beans. This study was conducted by isolating and characterizing lactic acid bacteria from fermented Arabica coffee beans. After that, an anti-fungal test was carried out using the Agar well diffusion method. Furthermore, the coffee beans were soaked in CFS (Cell free supernatant) and CFSN (Cell free supernatant neutralized), then soaked with *Penicillium* sp. spores, after 72 hours the number of spores that appeared was counted using a hemocytometer. This study was conducted experimentally using a Completely Randomized Design (CRD) Factorial Pattern. There were two factors tested, namely the type of LAB isolate and the type of supernatant. The results of this study found 10 isolates of lactic acid bacteria from fermented Arabica coffee beans. Isolate BKA has the characteristics of Gram positive, bacillus, catalase negative and homofermentative. In the anti-mold test with Agar well diffusion, there were eight CFS and two CFSN BKA that were able to inhibit the growth of *Penicillium* sp., while CFS and CFSN BKA did not have the ability to inhibit the growth of *Aspergillus flavus*. Based on the number of *Penicillium* sp. spores that grew on coffee beans, it was known that coffee beans with CFS soaking had a better ability to inhibit the growth of *Penicillium* sp. than CFSN soaking or without soaking. The results of the Two-Way ANOVA test, obtained a P-value of 0.0001 ($P < 0.05$), indicating a significant interaction between the two factors analyzed.

Keywords: *Lactic acid bacteria, antifungal, arabica coffee, mold coffee storage, Agar diffusion method*