APLIKASI METODE *SUN DRYING* DAN *ARTIFICIAL DRYING* PADA PENGERINGAN BIJI KAKAO (*Theobroma cacao* Linn) YANG DIFERMENTASI DENGAN PENAMBAHAN INOKULUM *Lactobacillus plantarum* HL-15

INTISARI

Oleh:
VINCENTIUS LINTANG KHRESNA KARISMA
14/365775/TP/11007

Indonesia merupakan penghasil utama biji kakao dunia selain Ghana, Pantai Gading, dan Brazil. Namun, harga biji kakao Indonesia masih rendah. Hal tersebut disebabkan oleh kontaminasi jamur. Selain berpotensi menyebabkan kerusakan pada biji kakao, beberapa jenis jamur dapat menghasilkan mikotoksin yang berbahaya bagi kesehatan manusia. Salah satu metode penghambatan jamur adalah penambahan inokulum Bakteri Asam Laktat (BAL) pada proses fermentasi. Isolat bakteri *Lactobacillus plantarum* HL-15 diketahui memiliki kemampuan menghambat jamur. Tahapan proses pengolahan biji kakao selanjutnya adalah pengeringan biji. Proses pengeringan merupakan salah satu metode untuk menurunkan kadar air bahan sehingga menghambat pertumbuhan mikrobia, salah satunya jamur. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh metode pengeringan *sun drying* dan *artificial drying* pada biji kakao yang difermentasi menggunakan penambahan inokulum *Lactobacillus plantarum* HL-15 dalam menghambat pertumbuhan jamur. Bahan yang digunakan dalam penelitian ini adalah: biji kakao jenis *Lindak* yang difermentasi dengan penambahan isolat BAL maupun tanpa penambahan isolat BAL dari Gunungkidul, Yogyakarta. Pengeringan dilakukan dengan 8 variasi perlakuan yaitu : (1) penjemuran sinar matahari biji fermentasi di kotak lama secara alami; (2) penjemuran sinar matahari biji fermentasi di kotak lama dengan starter; (3) penjemuran sinar matahari biji fermentasi di kotak baru secara alami; (4) penjemuran sinar matahari biji fermentasi di kotak baru dengan starter; (5) pengeringan *cabinet dryer* biji fermentasi di kotak lama secara alami; (6) pengeringan *cabinet dryer* biji fermentasi di kotak lama dengan starter; (7) pengeringan *cabinet dryer* biji fermentasi di kotak baru secara alami; (8) pengeringan *cabinet dryer* biji fermentasi di kotak baru dengan starter. Sampling dilakukan setiap 24 jam pengeringan. Selama proses pengeringan dilakukan analisis total jamur. Kemudian biji kakao kering dianalisis sesuai mutu Standar Nasional Indonesia (SNI) Biji Kakao. Hasil dari penelitian ini adalah aplikasi metode *artificial drying* pada biji kakao fermentasi yang diberi inokulum *Lactobacillus plantarum* HL-15 pada biji kakao fermentasi mampu menghambat pertumbuhan jamur selama proses pengeringan lebih baik daripada tanpa penambahan inokulum. Mutu biji kakao kering yang dihasilkan merupakan mutu B dan C.

Kata kunci: pengeringan biji kakao, mikotoksin, aktivitas anti-jamur, bakteri asam laktat, *Lactobacillus plantarum* HL-15,

APPLICATIONS OF SUN DRYING AND ARTIFICIAL DRYING METHOD IN THE DRYING PROCESS OF FERMENTED COCOA BEANS (*Theobroma cacao* Linn) WITH *Lactobacillus plantarum* HL-15 INOCULUM ADDITION

ABSTRACT

By:

VINCENTIUS LINTANG KHRESNA KARISMA

14/365775/TP/11007

Indonesia is a major producer of cocoa beans in the world besides Ghana, Ivory Coast, and Brazil. However, Indonesia's cocoa beans price is still low, because mold contamination in cocoa beans. Besides its potential to cause damage in cocoa beans, some kinds of mold can produce mycotoxin that is dangerous to human's health. One of fungal inhibition methods is adding Lactic Acid Bacteria (LAB) starter culture in the fermentation process. The following stage of cocoa bean's processing after fermentation is the drying process. The drying process aims to reduce cocoa bean's moisture content to inhibit microorganisms' growth, including mold. This research's objective is to find out the effect of *Lactobacillus plantarum* HL-15 starter addition to the fermentation process during the drying process of cocoa beans using sun drying and artificial drying method in Gunungkidul, Yogyakarta. The materials used in this study were: fermented cocoa bean *var. Lindak* with or without addition of LAB isolate. Drying was conducted in 8 treatments: (1) sun drying of fermented cocoa beans without starter addition in an old box (2) sun drying of fermented cocoa beans with starter addition in an old box (3) sun drying of fermented cocoa beans without starter addition in an new box (4) sun drying of fermented cocoa beans with starter addition in an new box (5) cabinet drying of fermented cocoa beans without starter addition in an old box (6) cabinet drying of fermented cocoa beans with starter addition in an old box (7) cabinet drying of fermented cocoa beans without starter addition in an new box (8) sun drying of fermented cocoa beans with starter addition in an new box. Samples for microbial analysis were taken every 24 hours. During drying process the analysed microbes included total mold. Finally, dried cocoa beans were analysed in accordance with Indonesian National Standard for cocoa beans. The results of this research show that the addition of *Lactobacillus plantarum* HL-15 can inhibit mold's growth better than without addition. The quality of the dried cocoa bean was classified as B and C.

Keywords: cocoa beans drying process, mycotoxin, antifungal activity, lactic acid bacteria, *Lactobacillus plantarum* HL-15