

**UTILIZATION COFFE FRUIT SKIN WASTE
FOR THE PRODUCTION OF XYLANASE ENZYMES**

Dr. Silvia Oktavia Nur Yudiastuti, S.TP., M.TP

Danar Pujo Pangestu

*Food engineering technology study program
Agricultural technology major*

ABSTRACT

*Coffee fruit skin waste is a plantation waste containing hemicellulose, cellulose and lignin which has the potential to be used as a xylanase enzyme producer. Xylanase is an enzyme that can be used to hydrolyze hemicellulose (xylan) to xylose. This study aims to determine the optimum substrate concentration and fermentation time using the response surface methodology (RSM) in the production of xylanase enzymes from coffee skin waste and *Trichoderma viride* mold through a solid state fermentation process. This study used time variations (24 hours, 48 hours, 72 hours) and substrate concentration (25%, 50% 75%). Data were analyzed using Analysis of Variance (ANOVA) in the Design Expert application version 13, especially the central composite design (CCD) with a total of 13 runs. The optimization results suggest a substrate concentration formula of 75% and a fermentation time of 72 hours with a desirability value of 0.933 and is predicted to produce an enzyme activity of 29.146 U/ml and a protein content of 0.763 mg/ml. The validation results provide an enzyme activity value of 29.275 U/ml and a protein content of 0.7569 mg/ml. One sample t-test showed that the predicted value and actual value were not significantly different (>0.05) with an accuracy rate of 99,55% for enzyme activity and 99.2% for protein content.*

Keywords : Xylanase, Solid State Fermentation, Response Surface Methodology