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RATIBOOT SALLABHAN: IDENTIFICATION AND CHARACTERIZATION OF *XANTHOMONAS CAMPESTRIS* PV. *PHASEOLI FUR* HOMOLOGUE. THESIS ADVISORS: SKORN MONGKOLSUK Ph.D., WATANALAI PANBANGRED Dr.Eng., CHUENCHIT BOONCHIRD Ph.D. 140 p. ISBN 974-661-993-4

Subcloning of pJII to localize region involved in organic peroxide resistance phenotype and complementation analysis showed that the 1.7 kb of *Eco*RI-*Cla*I fragment could confer t-BOOH resistance. DNA sequencing analysis of this gene showed an ORF with 60.3 % homology to *E. coli fur* gene. Expression of the gene and subsequent analysis by blotting against *E. coli* anti-Fur antibody and the gene ability to repress *fur* regulated gene in an *E. coli* Fur mutant confirm that the cloned gene was a functional *fur* gene. Southern blot analysis also showed that the gene was derived from *Xp* and highly conserved among *Xanthomonas* spp. Results from Northern analysis revealed the gene was monocistronically transcribed with size corresponded to the predicted *fur* from DNA sequence analysis. Furthermore, *Xp fur* mutant was isolated by select for $MnCl_2$ resistance. These mutants have abnormal siderophore production and altered resistance to oxidative stress. Three mutants of interest, XPM6, XPM7, XPM8 were selected for further study. All mutants showed higher sensitivity to t-BOOH killing by a disc inhibition zone assay. The phenotype can be complemented by expression of a functional *fur* on an expression vector. Sequencing analysis of the mutant XPM7 *fur* gene, showed single point mutation at the amino acid residue 72 that changed amino acid Phe. to Cys. This mutation renders the Fur inactive and could not complement *Xp* for t-BOOH hypersensitive phenotype. The study of *Xp fur* gene and its phenotype confer resistant to oxidative stress still on progress.