

Ada-dependent regulation of gene expression relating to DNA repair system in *Escherichia coli*

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Exposure of *Escherichia coli* cells to methylating agents causes to the activation of DNA repair system. This adaptive response is mainly controlled by Ada protein. In this study, the Ada-dependent adaptive response was investigated at transcriptome level using DNA microarray, followed by real-time PCR analyses. The growth-dependent transcriptome profiles were compared between the wild type and *ada* deletion mutant strains with or without treating methyl methanesulfonate (MMS). It could be concluded the gene expression levels for energy metabolism and propionate metabolism were significantly different between the strains, but there were small differences between the two when MMS was not added, indicating the action of Ada depending on the concentration of methylating agents. In addition, Ada-dependently regulated genes could be divided into the *ada*- and *alkA*-like regulated genes based on their expression profiles, suggesting the different regulatory mechanisms among them correlated with other studies. [This work was supported by the Korean Systems Biology Research Grant from the MOST. Further supports by LG Chem Chair Professorship and the IBM SUR program are appreciated.]