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Screening of Regulatory Gene for OmpW Expression in *Salmonella typhimurium*

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Salmonella, facultative anaerobic Gram negative bacteria, are able to infect humans and animals. In considering *Salmonella's* success at being a pathogen, it is essential that an ability to synthesize adhesions that would enable *Salmonella* to adhere to tissue upon oral entry into inside of the host. In a preliminary study, *S. typhimurium* grown under iron-replete condition adheres better to the host cell than grown in iron-deficient conditions, indicating the existing of iron-regulated adhesions. We detected and identified an outer membrane protein expressed under iron-replete condition. The results of N-terminal sequences and MALDI-TOF analysis of the protein exhibited that the protein is an outer membrane protein W(OmpW) of *Salmonella*. It was reported that OmpW is a receptor for colicin S4 and forms 8-stranded β-barrel with a long and narrow hydrophobic channel in *E. coli*. The exact function is unknown. In addition to iron-regulated expression of the protein our recent data suggested that OmpW expression is regulated by various forms of environmental stress salts concentration. Using a *Salmonella* strains carrying *OmpW::lacZYA* fusion, experiments to identify regulator protein for OmpW expression are ongoing with the employment of transposon mediated randon mutagenesis.

Key words: *S. typhimurium*, OmpW, regulator protein

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Differential Expression of Genes by Resveratrol Treatment in Human Colorectal HCT116 Cells

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To investigate whether phytochemical resveratrol could affect cancer cell viabilities, human colorectal HCT116 cells were treated with resveratrol in a dose-dependent manner. Resveratrol decreased cancer cell viabilities detected by MTS assay and the cytotoxic effects showed dose-dependent manner. To unveil the molecular mechanism of cell death in response to resveratrol treatment, we carried out oligo DNA microarray analysis. We found that 47 genes were up-regulated more than 3-folds, whereas 116 genes were down-regulated more than 3-folds by 24 hr treatment of 50 μM resveratrol. Among the up-regulated genes, we selected 4 genes (*NAG-1, p21, MT2A, AREG*) and performed RT-PCR and real-time PCR to confirm microarray data. The results of RT-PCR and real-time PCR were highly associated with those of microarray experiment. And also, we detected changes of NAG-1 expression by treatment of several different phytochemicals with real-time PCR. The results indicate that all phytochemicals treated can induce NAG-1 expression. This result implies that NAG-1 may be a key molecule in anti-cancer activity by phytochemicals. Overall, these results may provide clues for the molecular mechanism of the anti-cancer activities by phytochemicals in human colorectal cancer.

Key words: resveratrol, oligo DNA microarray, gene expression, NAG-1, colorectal cancer