Display of bacterial lipase on the *Escherichia coli* cell surface by using Y protein as an anchoring motif

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In this work, the utility of a putative outer membrane protein Y as an anchoring motif for the cell surface display on the *Escherichia coli* was examined. To find the best surface anchoring motif, full-length Y protein (27 kDa) and its C-terminal truncated forms (R181 and R232 sites), were evaluated. A lipase from *Pseudomonas fluorescens* SIK W1 (49.9 kDa) was used for display as a target protein. SDS-PAGE, Western blot, immunofluorescence microscopy, and whole-cell enzyme activity measurement confirmed the expression of fusion proteins on the surface of *E. coli*. The fusion protein with YR232 as the anchoring motif had the highest expression level and enzyme activities, suggesting that YR232 is the best carrying protein. Cell surface displayed lipase showed the highest activity at 37-45°C and pH 8.0. These results suggest that Y protein could be used as an anchoring motif of E. coli for displaying active enzymes and this system could be employed to various biocatalytic applications. [This work was supported by the Basic Science Research Program (2010-0008826) through the National Research Foundation of Korea funded by the Ministry of Education, Science and Technology]