

Cell Surface Display of Xylanase on Escherichia coli by TibA Autotransporter

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Abstract : Industrial biocatalysis is mainly based on the use of cell free or intracellular enzyme systems. However, the expensive cost and relatively lower operational stability of free enzymes limit practical use in industries. Cell surface display system can be used as a cost-efficient alternative to overcome the laborious purification and substrate transport limitation. In this research, TibA autotransporter from *E. coli* was used to display *Aspergillus fumigatus* xylanase (xyn). The amplified xyn was fused in between N-terminal signal peptide and C-terminal β -barrel of TibA. The cloned was transformed and expressed in *E. coli* BL21 (DE3). Outer membrane localization of TibA-xyn fusion protein was confirmed by SDS PAGE and western blot with expected size of 62.5 kDa. Functional display of xyn was examined by activity assay. Cell surface displayed xyn exhibited the highest activity at 37 °c, 0.3 mM IPTG. As a summary, TibA displaying system has the potential for further industrial applications. Moreover, this is the first report of the display of xylanase using TibA on the surface of *E. coli*.

Keywords : biocatalysis, cell surface display, *Escherichia coli*, TibA autotransporter

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