New strategy for Purification of Aggregation-Prone Recombinant Proteins in *Escherichia coli*

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In the production of recombinant proteins, the protein solubility is one of the important issues because protein misfolding causes the formation of insoluble and non-functional aggregates and it requires high-cost and laborious refolding process to obtain an active protein. In Escherichia coli, to improve the protein solubility, various strategies including co-expression of molecular chaperones and foldase, fusion with soluble partner, secretion into periplasm have been developed. However, some proteins are highly insoluble and it was difficult to obtain active proteins in preparative scale. Here, we would like to introduce new strategy for simple purification of aggregation-prone proteins based on Anchored Periplasmic Expression(APEx) in which proteins are anchored on inner membrane. Using APEx system, individual proteins are displayed on inner membrane and protein aggregations can be prevented. After cultivation and cell disruption, the membrane-anchored proteins can be isolated in insoluble fraction by simple centrifugation. The anchored proteins can be dissociated from the membrane by protease treatment and the target protein can be purified in soluble fraction with high purity after centrifugation. We will show some successful purification of recombinant proteins.