Use of Escherichia coli EDA as a Fusion Partner to Improve Solubility of Aggregation-Prone Heterologous Proteins

강윤식, 송종암, 이지원*
고려대학교
(leejw@korea.ac.kr*)

As one of the most efficient methods for the production of recombinant proteins in Escherichia coli cytoplasm, the use of fusion expression partners has resulted in enhanced solubility. In our previous work, KHG/KDPG aldolase (EDA) was identified as a stress-responsive (i.e., aggregation-resistant) protein, and compared to nonstress conditions, a 1.65-fold increase in its synthesis was induced by heat shock treatment. This fusion partner, EDA, facilitated folding and increased the solubility of many aggregation-prone heterologous proteins in the E. coli cytoplasm. In addition, the efficacy of using EDA as a fusion partner to produce functional target proteins was evaluated by expression of their own native structure or function. Our results indicate that expression of EDA fusion proteins resulted in successful production of human ferritin light chain, bacterial arginine deiminase, and human granulocyte colony stimulation factor. In summary, the efficient production of heterologous aggregation-prone proteins in E. coli can be achieved by using a universal fusion partner, EDA.