On-Chip Escherichia coli Culture, Purification and Detection of Expressed Proteins

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ABSTRACT

Recently, we reported a rapid high-throughput expression analysis of the affinity-tagged proteins present in total cell lysates using a surface plasmon resonance(SPR) imaging protein chip system. Here we describe that glutathione-S-transferase (GST) fusion protein expressed in small scale *Escherichia coli* culture was purified on a micro-well chip with GSH-immobilized gold surface in the stable formation of recombinant protein. To avoid the time-consuming cell culture step that requires external device in the recombinant protein purification, on-chip micro-cell culture system was developed. In this system, major steps for the purification of recombinant protein, including the procedures of *E. coli* cell culture, IPTG induction, cell lysis and recombinant protein elution, are integrated on a single micro-well chip. Our system reduced analytic time, experimental resources and sample consumption by avoiding laborious conventional procedures related to the expression and purification recombinant protein in *E. coli*.

Reference

1. Hyeon-Su Ro, Sun Ok Jung, Byung Hoon Kho, Hyung Pyo Hong, Jae Sung Lee, Yong-Beom Shin, Min-Gon Kim, and Bong Hyun Chung, Surface plasmon resonance imaging-based protein array chip sys for monitoring a hexahistidine-tagged protein during expression and purification(2005), Applied and Enviromnental Microbiology, 71(2), 1089-1092.