Enhanced cell-free synthesis of active rPA through the modifications of the S30 extract and the reaction conditions

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ABSTRACT

Cell-free protein synthesis is now readily accepted as an alternative method for high-throughput gene expression. In contrast to *in vivo* gene expression, cell-free protein synthesis provides a completely open system that allows direct manipulation of the environment for transcriptional and translational reactions. For example, for the expression of disulfide-containing proteins, redox environment of cell-free protein synthesis can be stably controlled through the chemical inactivation of reducing activity of the S30 extract. In the present study, we demonstrate the productivity of the functionally active protein can be further enhanced through the use of chaperone-enriched S30 extract. We expect the proposed system will broaden the application of cell-free protein synthesis for the expression of complicated recombinant proteins.