Functional expression of single-chain variable fragment antibody against c-Met in the cytoplasm of *Escherichia coli*

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Abstract

c-Met, a high affinity receptor for hepatocyte growth factor/scatter factor, shown to be overexpressed in a variety of malignant cells, is a potential biomarker as well as a therapeutic target[1]. Thus single chain antibody fragment(scFv) specific for c-Met is expected to be efficiently employed in the clinical treatment or imaging of many cancer cells[2]. Here we constructed the expression system for anti c-Met scFv using pET vector and investigated the scFv expression conditions to achieve a functional and soluble expression in the *Escherichia coli*. The redox potential of *E. coli* cytoplasm was the most critical factor for the functional expression of anti c-Met scFv[3]. The employment of a host with oxidizing cytoplasm, *trxB/gor* double mutant, improved the productivity of anti c-Met scFv by approximately 10-fold compared to the reducing cytoplasm. Productivity of anti c-Met scFv could be further enhanced by co-expressing molecular chaperones such as GroELS, trigger factor and DsbC. Coexpression of DsbC increased the yield of anti c-Met scFv about 2.5-fold than only expression of anti c-Met scFv in the *trxB/gor* mutant. Lowering the IPTG concentration led to the slight enhancement, approximately 1.6-fold, of productivity of functional scFv.

References

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