Stabilization of L-asparaginase by fusion with *Bombyx mori* 30Kc19 protein

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L-asparaginase (ASNase) from *E. coli* is one of the chemotherapy agents currently being used to treat acute lymphoblastic leukemia (ALL). However, one of the problems of ASNase is short half-life. Current solution of this is PEG-conjugated ASNase (PEG-ASNase) which enhances stability by steric effect. However, PEG conjugation and purification step can increase production cost. Moreover, PEGylated proteins or their metabolites may accumulate in the kidney, causing formation of PEG hydrates which interfere with normal glomerular filtration. In previous studies, we reported that the 30Kc19 protein from *Bombyx mori* has enzyme stabilizing effect. Here, we constructed pET-23a/*ASNase-30Kc19* vector and overexpressed the fusion protein in *E. coli* system. We demonstrated that the stability of ASNase was enhanced by fusion with 30Kc19 protein. We also optimized the culture condition for the expression of ASNase-30Kc19 fusion protein. From these results, it is expected that the 30Kc19 fusion protein, without any chemical conjugation process, will extend the half-life of ASNase *in vivo*.