

High-level expression of silk protein in *Escherichia coli*

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Dragline spider silk has a number of notable mechanical properties such as high tensile strength and elasticity. Strong natural fibers with good tensile and compressive properties would be useful for many applications in medicine, membranes and temporary scaffolds. The recombinant silk protein was produced as soluble forms in *E. coli*. Genes for fibrous proteins are likely to be long and repetitive. Therefore, the propagation and expression of such genes in *E. coli* present difficulties not usually encountered with the more commonly produced pharmaceutical protein. The sources of difficulty encountered in the expression of the synthetic genes acerbated by poor codon adaptation and genetic instability. In order to obtain high-level production of silk proteins, we modified plasmid pSH16A to pSH32 and pSH16 II. The size of pSH32 (32 repeats of the monomer sequence) and pSH16 II is about 110kDa. IPTG-induced extracts of the silk gene were subjected to PAGE and stained by Coomassie Brilliant Blue. (Acknowledgement: Our work was supported by ITEP and National Research Laboratory Program(2000-N-NL-01-C-237) of the MST.