Enhanced synthetic spider dragline silk protein production in *Escherichia coli*

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Naturally found spider silk show attraction to many industrial applications. However, these characteristics hinder its expression in heterologous hosts by creation of extensive secondary structure from the repetitive sequences in mRNA, and the structures decrease ribosome processivity and facilitate mRNA degradation. Here, we present strategies to solve biological problems that occur using the naturally found protein, spider dragline silk protein: increasing available ribosome pool and stabilizing mRNA to stop degradation. Increased titer than those previously reported, was seen with the newly synthesized dragline silk protein, proving that the strategies used were efficient. From the results, we were able to provide insight into approaches to control translation efficiency of proteins containing high molecular weight and highly repetitive sequence. [This work was supported by the Korean Systems Biology Research Project (20110002149) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea. Further support by the World Class University Program (R32-2008-000-10142-0) through the National Research Foundation of Korea funded by the MEST is appreciated.]