

A new era of silk – recombinant silk protein derived from sea anemone

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Despite tremendous opportunity to discover new silks with extraordinary properties, scientists have only focused on certain spider and cocoon silks. However, in recent years, there is a report that Caerostris' dragline shows the best toughness ever as well as almost twice higher of elasticity than Nephilaclavipes'. New types of silk or silk-like proteins from spider, bee, ant, beetle, mussel, pearl oyster and shrimp have also been introduced. Considering infinite potential of excellent silk's existence, discovery of new silks from unrevealed Nature and to fabricate them will be an optimum way to acquire the original technology at the first in the world and to proceed forward as a pioneer in sea anemone silk-based biomaterial. Here, we propose a new silk-like protein, which has high contents of glycine and proline, derived from sea anemone (*Nematostella vectensis*). As it varies their body length almost ten-fold by shrinking and expanding itself under stimulus, we assumed that certain silkilke protein plays an important role in contraction and relaxation. With this observation, we attempted to produce recombinant sea anemone protein in *Escherichia coli*, fabricated the protein as a fiber and analyzed its mechanical properties.