

Mass-production and bulk properties of mussel adhesive protein fp-5 for multi-functional adhesion and coating

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Mussel adhesive proteins have been generally regarded as promising bioadhesives thanks to their fascinating properties including strong and flexible adhesion in any substrates in wet environments. Especially, fp-5 among mussel adhesive proteins has been considered a powerful bioadhesive from the highest DOPA content, although it was difficult to obtain high amount by natural extraction and recombinant approaches. In this study, we over-expressed *Mytilus galloprovincialis*-originated fp-5 in *Escherichia coli* and efficiently purified the protein using affinity chromatography. Bulk adhesion ability of fp-5 as a bioadhesive in medical or water environment was firstly determined from mass-production of fp-5, and its mechanical characteristics were also investigated. From this study, we expect fp-5 can be used as a significant bioadhesive material and an efficient multi-functional surface coating material.