Identification and cloning of putative PKS-like module for PUFA biosynthesis from *Shewanella oneidensis* MR-1

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Abstract

Polyunsaturated fatty acids (PUFAs) are important constituents of cell membrane, and especially EPA and DHA have been considered to play important roles in the health of human. However it is generally known that a way of traditional PUFAs supply is problematic. In this context, various microorganisms and algae are proposed as alternative resources for commercial production of PUFAs. *Shewanella* sp. are generally associated with aquatic habitats and produce PUFAs under specific condition. In this study, we expect to investigate the existence of newly proposed PKS-like pathway for PUFA synthesis, operated by multimodular form similar to archetypal FAS pathway, in this genus and the function of each ORF in a PKS-like module through the cloning of putative genes. As for the purpose, gene sequences between *shewanella oneidensis* MR-1 whole genome and reported PKS-like module were aligned, and putative PKS-like module in MR-1 strain was determined. All ORFs and whole module were amplified by PCR, then subcloned into expression and cloning vectors. Currently, functional assignment of each ORF for PUFAs synthesis is being under progress. The resulting biochemical and structural information will provide evidences for evolutionary relationship between a PKS-like module for PUFA synthesis and a typical PKS module for antibiotics synthesis. Besides, new routes for the synthesis of PUFAs or hybrid antibiotics will be proposed.

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References

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