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Mussel adhesive protein-conjugated vitronectin (MAP151-V) induces anti-inflammatory activity on LPS-stimulated macrophages and UVB-irradiated keratinocyteKyung Bae Pi¹, Seul Gee Um¹, Jung Mo Ahn¹, Beom Seop Rho¹, Ki Beom Lee¹, Sung Gil Park², Ho Jin Kim¹ and Yoonjin Lee³¹Biotechnology & Business Center, Incheon business information Technopark, Incheon, Korea²R&D center, Advanced BioTech Co., Ltd, Pilot Plant 12 Gaetbeol-ro, Yeonsu-gu, Incheon, Korea³Cosmocor Corporation, Incheon, Korea

Skin inflammation and dermal injuries is a major clinical problem due to the current therapies limited to established scars with poor understanding of healing mechanisms. Unique adhesive and biocompatibility properties of mussel adhesive proteins (MAPs) are known for their great potential in many tissue engineering and biomedical applications. Previously it was successfully demonstrated that redesigned hybrid type MAP, fb-151, mass produced in gram-negative bacterium *Escherichia coli*, could be utilized as a promising adhesive biomaterial. However, the biological activity of vitronectin-bound recombinant fb-151 has not been established. The aim of this study was to develop a novel recombinant protein using MAP and vitronectin and to elucidate the anti-inflammatory effects of these on macrophages and keratinocytes. We investigated the anti-inflammatory activities of recombinant fb-151 conjugated vitronectin (MAP151-V). LPS (Lipopolysaccharide) was used as a stimulant for macrophages and UVB was used as a stimulant for keratinocytes. Macrophages stimulated by LPS increased the expression of iNOS and COX-2, which are inflammatory factors, while the MAP151-V -treated groups suppressed the expression of iNOS and COX-2 in a dose-dependent manner. In addition, keratinocyte stimulated with UVB showed reduced expression of iNOS and COX-2 MAP151-V treatment. Interestingly, in UVB-irradiated keratinocytes, inflammatory cytokines such as IL-1 β , IL-6 and TNF- α were significantly reduced by MAP151-V treatment. These results suggest that MAP151-V has a more effective anti-inflammatory activity on keratinocyte, suggesting its use as a skin inflammation and therapeutic agent of skin..

Biography

Kyung Bae Pi completed his MS from Kyung Hee University, South Korea. He is a Senior Researcher and Project Leader of Incheon Business Information Technopark, South Korea. He has published more than 14 papers in reputed journals and has been serving as an Editorial Board Member of *repute*.

kbpi@ibitp.or.kr

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