

Study on the promotion of inflammation and whitening of natural materials using bioconversion technology

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Bioconversion, the enzymatic process by microorganism on organic precursor to desired products. The natural extract is converted into a form that can be easily absorbed into the skin, while scaling up of to higher quantity is possible. Selection of naturally processed raw material rather than chemically processed is preferred. Therefore, fermentation was carried out by mixing *Rubus coreanus Miquel*, soybean, *Zanthoxylum schinifolium* as bioconverting materials, the possibility of inflammation, whitening material were checked.

In this study, useful microorganisms were isolated from various salted fish, and 16S rDNA sequence was analyzed to confirm their genetic characteristics. Combining the three natural materials using bioconversion technology to study their activity before and after fermentation. To evaluate the antioxidant activity and the active ingredient content the DPPH radical scavenging activity and the total polyphenol content were examined. Raw 264.7 cells were used to evaluate MTT assay, NO and TNF- α production inhibitory activity. Also, to evaluate the whitening activity, tyrosinase inhibitory activity and melanin formation inhibitory activity were measured using B16F10 cells.

In total 34 strains were obtained from various salted fish. The effective strains useful for the bioconversion process, showed that DPPH radical scavenging ability and polyphenol content were increased in the two kinds of microbial treatment groups compared to the untreated group. 16S rDNA sequencing analysis of the strains showed excellent in *Pediococcus pentosaceus* B1 in comparison. An increase of up-to 156% in anti-oxidative activity and 141% in polyphenol content was observed after bioconversion. In addition, after mixed fermentation the toxicity of Raw 264.7 and B16F10 cells tended to decrease and a significant increase was observed in anti-inflammatory activity as well. Also, tyrosinase activity and melanin synthesis decreased significantly.

Key words: Bioconversion, Antioxidant, Anti-inflammatory, Anti-melanin, Anti-tyrosinase

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