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Characterization and fabrication of *Ecklonia cava* phlorotannin/PVA blended hydrogel patch

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When skin wound occur, hydrogel patches have been generally used as wound dressing for wound healing. Poly(vinyl alcohol) (PVA) is one of the commonplace hydrogel patch's materials which have non-toxicity, non-carcinogenicity, biocompatibility and easy processing and *Ecklonia cava* (EC) is brown alga which is widely found in Jeju Island in Korea. EC has compounds have been associated with a variety of biological activities. It has various bioactivity including radical scavenging, immunomodulatory, anti-inflammatory, bactericidal activity and potential for skin whitening effect and it stimulates proliferation of normal human dermal fibroblast-neo cells (NHDF-neo). We designed to blend PVA hydrogel patches with EC phlorotannin and fabricated without chemical crosslink by using freezing/thawing method to make more effective PVA hydrogel-patches on wound healing. Then, we evaluated swelling property in water and mechanical property to know hydrogel patch's mechanical characterization and intermolecular interactions of hydrogel affected by EC phlorotannin were elucidated using FTIR and cell proliferation was measured by staining nuclear with Hoechst. As a result, EC phlorotannin/PVA hydrogel patches had high water absorption than those of pure PVA hydrogel patches. But, mechanical property was decreased, being proportional to EC phlorotannin concentration and FTIR result demonstrated that hydrogel patches including EC phlorotannin increased hydroxyl group in spite of the fact that EC phlorotannin do not affect PVA hydrogel's intermolecular interactions. Then, cell proliferation is increased on condition which have with EC phlorotannin hydrogel. Therefore, our results suggest that EC phlorotannin/PVA hydrogel patch will be effective wound dressing than that of pure PVA for wound healing.

Biography

Hyeon-Ho Park has studied in Biomedical Engineering and Chemistry Department from Pukyong National University in Busan, Korea. He applied double majors and holded qualification in it. He also has worked in Marine Biomedical Science lab where he is able to experiment constantly on cells, synthesis, extraction and others and then he applied for a Master's course in the same university and lab.

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