

Predictive, Preventive and personalized Medicine & Molecular Diagnostics

October 05-06, 2017 Chicago, USA

The synergy effect of TMF and Glycitin on wound repair

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Keratinocyte-fibroblast interactions are critical for skin repair after injury. During the proliferative phase of wound healing, proliferation, migration and differentiation of these cells are the major mechanisms leading to tissue remodeling. We have previously reported that glycitin, a major soy isoflavone, stimulate dermal fibroblast proliferation; and the phytochemical, 4',6,7-Trimethoxyisoflavone (TMF), and induce migration of HaCaT keratinocyte cells. We therefore investigated whether these compounds display synergistic effects on skin cells during wound healing *in-vitro* and *in-vivo*. Co-treatment with TMF and glycitin synergistically promotes the proliferation and migration of both keratinocytes and dermal fibroblasts, with a 1:1 ratio of these compounds showing the greatest efficacy in our co-culture system. This keratinocyte-fibroblast interaction occurred via the secretion of TGF- β , and the induction of differentiation and proliferation was confirmed in both indirect and direct co-culture assays. In an excisional and burn wound animal model, mice treated with a 1:1 ratio of TMF and glycitin showed faster wound closure, regeneration and scar reduction than even the positive control drug. These data indicate that two isoflavones, TMF and glycitin, act synergistically to promote wound healing and anti-scarring and could potentially be developed together as a bioactive therapeutic for wound treatment.

Biography

Moonjae Cho is currently working in the Department of Biotechnology in Jeju National University. He has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. He has extended his valuable service towards the scientific community with his extensive research work.

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