Lacking osteopontin delayed re-epithelialization in the process of skin wound healing.

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Purpose: We show loss of osteopontin (OPN) suppresses TGF signal in skin wound in mice.

Methods: Circular full-thickness skin wounds were made on the dorsal skin of OPN-null (KO) mice and C57BL/6 (WT) background with a diameter of 5mm. We examined expressions of extracellular matrix and cytokine and signal transfer in cultured MBF of KO and WT. Results: Re-epithelialization of the wound was significantly delayed in KO mice as compared with WT mice. Histology showed that the thickness of the granulation tissue at the edge and the center of the wound were thinner in KO mice compared with WT mice. Immunohistochemistry did not reveal difference of nature of granulation tissue as evaluated by distribution pattern of myofibroblasts and F4/80-labeled macrofages between WT and KO mice. Expression level of TGFβ1 mRNA and collagen Iα1 mRNA are lower in KO than in WT. In cultured fibroblasts, lacking OPN counteracted TGFβ-promotion of aSMA and fibronectin expression as compared with WT. Expression of phospho-Smad2 less marked in KO fibroasts than in WT. Conclusion: Loss of OPN suppresses activation of TGFβ-related fibrogenic reaction in fibroblasts.