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Abstract

Cutaneous Biology

Wound healing effects of porcine placental extracts on rats with thermal injury

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Summary

Background: Placental extracts have been used as Chinese folk medicines to accelerate wound healing. However, the molecular mechanism of placental extracts on wound healing has not been identified. It is known that fibroblast growth factors (FGF) and transforming growth factors (TGF) are two key factors involved in wound healing.

Objectives: To determine the molecular mechanism of placental extracts on wound healing.

Methods: The protein levels of both growth factors in rat skins with thermal injury were therefore studied to explore the molecular mechanism of placental extracts on wound healing. As cell proliferation is essential for wound healing, effects of placental extracts on fibroblast proliferation were also determined.

Results: As compared with the controls, the S phase of fibroblasts was significantly increased by 1·5-, 1·7- and 4·7-fold for 1, 10 and 30 mg mL^{1} of placental extracts, respectively. The increase of the S phase was not due to the minute amount of sex hormones in the placental extracts as the addition of equivalent amounts of hormones showed no increase of the S phase. In addition, a 2·5-fold increase of TGF-1 in wound

skin biopsy was noticed with 30 mg mL^{1} of porcine placental extracts. The FGF levels in the wound skin receiving 30 mg mL^{1} of porcine placental extracts were also significantly increased compared with the controls.

Conclusions: These *ex vivo* data support the observation that the application of 30 mg mL^{1} of placental extracts reduced the wound healing time by about 50%. To the best of our knowledge, this is the first report to explore the molecular mechanisms of porcine placental extracts on wound healing. These results may provide the insight into the potential use of porcine placental extracts as an alternative medicine for accelerating wound healing.