Improved Skin Wound Healing Activity of Insulin Cream as Evidenced from the Morphological Evaluation in Guinea Pigs

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Abstract
Background: There is no histological study evaluating the effects of insulin-containing cream on skin injury. The goal of this study was to examine the effects of insulin-containing creams on wound healing. Methods: Creams consisting of nine parts of oil and one part of aqueous phase (9:1) mixed with 1.5 ml human insulin were prepared. Eighteen male guinea pigs were divided into three groups; the control (9.1 G) group received cream without insulin. The experimental groups received Humulin N (9.1 N) and Humulin R (9.1 R) respectively. A 1 cm² wound of 1-2 cm thickness was created in the skin. Each animal received 0.5 g of the respective creams which was topically applied once a day for 14 days. The progress of wound healing was monitored daily. Skin tissues were excised at the 14th days from the wound sites and processed for light microscopy. Results: Skin wound treated with the long acting insulin Humulin N had an accelerated wound healing process with restoration of vascular network, increased collagen deposition and early complete wound remodeling. Conclusions: Insulin cream with long acting mechanism facilitates in normalizing cell permeability, promoting vasculization, reducing eduation and stimulate proliferation of cells. These properties render insulin cream suitable for expediting wound healing.

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