

PRIZE O3

Action of Nepidermin on cutaneous wound healing in a diabetic rat model.

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Introduction.- Diabetes mellitus is associated to functional alterations in epidermic, conjunctive and immunologic tissues, limiting an efficient cicatrization of cutaneous ulcers. Local administration of epidermic growth factor (EGF) could improve this alteration of remarked morbidity in patients. We have investigated the effects of local treatment with human recombinant EGF (rh-EGF, Nepidermin) in excisional wounds of rats with diabetes mellitus.
Material and methods.- A cutaneous excisional defect (diameter=1,5cm) was made. Animals were distributed in 4 groups (n=64): healthy rats (RS; n=16), rats suffering diabetes mellitus induced by streptozotocin, treated with placebo (RD-PLCB; n=16) or with 0,5 (RD-0,5; n=16), 2 (RD-2; n=16) µg/mL Nepidermin in peri- and intralesional injection (3d/week for 15d). Animals were sacrificed at 3d, 7d, 14d and 21d. Cicatrization tissue samples were processed for histological and morphometrical studies. Blood samples were taken at sacrifice time to obtain serum, which was used for IL-12, IFN-γ and TNF-α quantification by ELISA techniques. Data was processed in order to determine statistic significance with ANOVA and Student's t tests.
Results.- At 21d, RS achieved total cicatrization, while placebo diabetic rats did not reach continuity solution of the defect. Animals of RD-0.5 and RD-2 groups significantly accelerated reepithelization, dermic growth of the wound and inhibited contraction. In healthy rats group (RS) IL-12 studies showed a decrease in the level of this cytokine over time. On the other hand, untreated diabetic rats levels of IL-12 tend to increase over time. In diabetic rats groups treated with 0,5 µg/mL Nepidermin, IL-12 levels follow the same pattern than RS group, while diabetic rats treated with a concentration of 2,0 µg/ml are further from the pattern followed by healthy rats. As for INF-γ and TNF-α levels, they also decrease with time in normal cicatrization (RS), while Nepidermin treatment seems to induce a disregulation in the activation process of both cytokines.
Conclusions.- Local administration of rh-EGF accelerates and improves excisional wound cicatrization in diabetic rats, as well as it seems to induce a disregulation of immunologic response, being the group of 0,5 µg/mL treated rats the closest to the observed response in control group of healthy rats.