Dokumenttyp: journal article

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Titel des Beitrags:
Interactive role of trauma cytokines and erythropoietin and their therapeutic potential for acute and chronic wounds.

Abstract:
If controllable, stem cell activation following injury has the therapeutic potential for supporting regeneration in acute or chronic wounds. Human dermally-derived stem cells (FmSCs) were exposed to the cytokines interleukin-6 (IL-6), IL-1?, and tumor necrosis factor-? (TNF-?) in the presence of erythropoietin (EPO). Cells were cultured under ischemic conditions and phenotypically characterized using flow cytometry. Topical EPO application was performed in three independent clinical wound healing attempts. The FmSCs expressed the receptor for EPO. EPO had a strong inhibitory effect on FmSC growth in the absence of IL-6 and TNF-?. With IL-6, the EPO effects were reversed to that of growth stimulation. TNF-? had the strongest stimulatory effect. In contrast, IL-1? had an inhibitory effect. Topically applied EPO considerably enhanced wound healing and improved wound conditions of acute and chronic wounds. Site specificity of stem cell activation is mediated by IL-6 and TNF-?. In trauma, EPO ceases its inhibitory role and reverts to a clinically relevant boosting function. EPO may be an important therapeutic tool for the topical treatment of acute and chronic wounds.

Zeitschriftentitel / Abkürzung:
Rejuvenation Res

Jahr: