



Published in final edited form as:

Wound Repair Regen. 2014 ; 22(5): 569–578. doi:10.1111/wrr.12205.

Clinical Application of Growth Factors and Cytokines in Wound Healing

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Abstract

Wound healing is a complex and dynamic biological process that involves the coordinated efforts of multiple cell types and is executed and regulated by numerous growth factors and cytokines. There has been a drive in the past two decades to study the therapeutic effects of various growth factors in the clinical management of non-healing wounds (e.g. pressure ulcers, chronic venous ulcers, diabetic foot ulcers). For this review, we conducted a nonlinear search of Medline and Pub Medical and critically analyzed the literature regarding the role of growth factors and cytokines in the management of these wounds. We focused on currently approved therapies, emerging therapies and future research possibilities. In this review we discuss four growth factors and cytokines currently being used on and off label for the healing of wounds. These include: granulocyte-macrophage colony stimulating factor (GM-CSF), platelet derived growth factor (PDGF), vascular endothelial growth factor (VEGF), and basic fibroblast growth factor (bFGF). While the clinical results of using growth factors and cytokines are encouraging, many studies involved a small sample size and are disparate in measured endpoints. Therefore, further research is required to provide definitive evidence of efficacy.

Keywords

Growth factors; cytokines; wounds

INTRODUCTION

Wound healing is a complex, evolutionarily conserved, multi-cellular process aimed toward epithelium restoration after injury. These processes rely on a multitude of growth factors and cytokines that execute and regulate a complex signaling network altering the growth, differentiation, and metabolism of target cells. During acute wound healing, these biologically active polypeptides are readily present in the wound bed and play a role in all

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The authors have no conflict of interest.

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