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1) Wound healing is an integrated and complex process involving a large number of regulatory molecules, including proinflammatory cytokines and growth factors, and an orchestrated tissue response. Dysregulation in cytokine or growth factor expression dramatically alters the normal wound healing process, and blocking the inappropriate production of specific proinflammatory cytokines or supplementing the milieu with increased quantities of growth factors has demonstrated the central role played by these mediators. Both protein-based and DNA-based (gene transfer) therapies are currently under clinical development as tools to improve the healing process ( Rodrigues *et al .,* 2019),. Although there has been some success with these approaches in both experimental models and in patients, only through a better understanding of the complexity and diversity of the wound healing process, as well as an improved comprehension of the time-dependent and concentration-dependent responses to individual proinflammatory cytokines or growth factors, will further development in the therapeutic treatment of healing wounds be attained.

2) In wounds where oxygenation is not restored, healing is impaired.

Wounds that exhibit impaired healing, including delayed acute wounds and chronic wounds, generally have failed to progress through the normal stages of healing. Such wounds frequently enter a state of pathologic inflammation due to a postponed, incomplete, or uncoordinated healing process. Most chronic wounds are ulcers that are associated with ischemia, diabetes mellitus, venous stasis disease, or pressure.

Impaired wound healing in the elderly presents a major clinical and economic problem. With the aging population growing in both number and percentage, the importance of understanding the mechanisms underlying age-related impairments in healing is increased(Gosain & DiPietro 2004).

. Normal skin exhibits characteristic changes with age that have implications for wound healing. Additionally, the process of wound healing is altered in aged individuals. Although historically healing in the aged was considered defective, there is now consensus that healing in the elderly is delayed but the final result is qualitatively similar to that in young subjects.

3) A large percentage of the population suffers from wound healing abnormalities, in particular aged individuals, patients with diabetes, and those treated with immunosuppressive drugs, chemo- or radiotherapy.( Barrientos *et al .,*2008) The mechanisms underlying the impaired healing response are still poorly understood. Recent studies provided strong evidence for a role of oxidative stress in the pathogenesis of non-healing ulcers. Therefore, it is of major importance to identify and functionally characterize the factors involved in the generation and detoxification of reactive oxygen species (ROS). This will provide the basis for the development of new strategies for therapeutic intervention. In this review we summarize the current information about the roles of low molecular weight antioxidants and ROS-detoxifying enzymes in normal and impaired wound repair, and we report on the consequences of their modulation at the wound site.

Reference:

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