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THE ROLE OF MATRIX METALLOPROTEINASES IN WOUND HEALING

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Aim: Recent advances in understanding of chronic wound biology have led to new and innovative therapeutic approaches. Increasing numbers of patients with chronic wounds represent major challenges and are a significant burden in terms of cost and impaired quality of life.

A chronic wound is characterised by non resolving inflammation. Increased neutrophils and macrophages produce large amounts of inflammatory mediators and proteinases leading to increased exudate production.

Methods: Proteinases are classified into four groups including Metalloproteinases. MMPs are necessary components of the wound healing process. If activity is uncontrolled they can collectively degrade almost all the extracellular matrix (ECM). Tissue inhibitors of MMPs (TIMPs) are produced to inhibit activity in order to maintain physiological and pathological processes.

Results: Early studies provide correlative data by analysing and comparing acute and chronic wound fluid. Results provide evidence that levels of MMP and reduced TIMPS are found in chronic wound fluid (Wysocki et al, 1993).

Further studies expand on earlier findings to show that elevated levels of MMPs exert effects on other key functional molecules (Tren Grove et al, 1999).

Tissue biopsy does allow direct analysis of a wound. Lobmann et al (2002) have extended observations through biopsy analysis to determine MMP expression in diabetic foot ulcers.

Conclusion: The evidence demonstrates there is a need to support and develop services to undertake research. Recommendations include directing research to balancing contributory factors and addressing underlying pathology, further research to provide a suitable animal model with comparable human complexities, and continue therapeutic approaches targeting MMP activity.