

**BIOCHEMICAL DIFFERENCES IN FLUID FROM CHRONIC WOUNDS AND THE EFFECT OF COLLAGEN/ORC**

Breda Cullen<sup>1</sup>, Alicia Essler<sup>1</sup>, Lorraine Nisbet<sup>1</sup>, Derek Silcock<sup>1</sup>, Janice Lalikos<sup>2</sup>, Raymond Dunn<sup>2</sup>

<sup>1</sup>*Systagenix Wound Management, North Yorkshire, United Kingdom,*

<sup>2</sup>*UMASS Memorial Plastic Surgery, Worcester, Massachusetts, United States*

**Introduction:** As our knowledge of chronic wound pathophysiology increases so also does the number of therapies, which address the underlying biochemistry. However as the products become more specific it becomes important to recognize that they will not always be applicable for all chronic wounds. In this study we have evaluated clinical wound fluids, from venous leg ulcer patients, upon recruitment and over a 4 week time period after treatment with Collagen/ORC.

**Method:** Fluids were split into 2 groups; diabetics with VLU and VLU and compared before and after treatment, to assess if different etiologies affected the underlying biochemistry and to determine the effects of Collagen/ORC therapy. The fluids collected were analysed for elastase activity, and the levels of various inflammatory mediators. These biomarkers were measured using substrate activity assays and microarray methodology.

**Results:** Although VLUs in these two patient populations often receive the same treatment; we have found fundamental differences in the biochemistry of these wounds. Specifically diabetics with VLUs have a 10-fold increase in elastase activity over VLU patients. There are also significant differences in the levels of TNF-alpha and IL-1 beta levels, with diabetic patients having a higher level of inflammation. Patients treated with collagen/ORC and who responded to this therapy showed a concomitant reduction in elastase activity, IL-1 beta and TNF-alpha levels, irrespective of etiology. However, the reduction observed was more significant for patients with VLUs than diabetic patients with VLUs.

**Conclusion:** Our results show that there are significant differences in the levels of proteases and inflammatory cytokines in the VLUs of diabetic versus non-diabetics patients. For therapies which address wound biochemistry it is important to ensure that they are effective in the wounds that they are indicated for.