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THE PROTEIN COMPOSITION OF EQUINE WOUND FLUID COLLECTED BY MICRODIALYSIS AND THE POTENTIAL FOR MAPPING OF THE INFLAMMATORY RESPONSE

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Aim: Healing of traumatic wounds on the equine distal limb is often complicated by formation of exuberant granulation tissue. Existing research demonstrates a reduced influx of polymorph nuclear cells to the wound bed on the legs. This could indicate an attenuated inflammatory response. The aim of this study was to map the proteins presented in wound fluid from normal and aberrant healing equine wounds, and determine if wound fluid is suitable for investigation of the inflammatory response.

Methods: Large-pore microdialysis technique was used to collect wound fluid from experimental wounds on the body and the leg of a horse. Eight wound fluid samples were collected regularly over a 22-day healing period and analyzed by mass spectrometry (LC MS/MS). Data was searched against an equine database and classified using the gene ontology principles.

Results: A total of 161 unique proteins were identified. The main part was identified as well-known extracellular proteins. The biological classification was summarized into nine categories, of which the immune and inflammatory response categories include 31% of the proteins. Sixteen proteins have their primary influence on the inflammatory response, and another eight proteins have a potential impact on the inflammatory process as their secondary effect. The majority of these inflammatory proteins act in the acute phase response.

Conclusion: Wound fluid is suitable for analysis of the microenvironment and inflammatory response, especially the acute phase response, during wound healing. These findings provide the basis for the design of a targeted quantitative study for comparing normal and aberrant equine wound healing.