

## **DRESSINGS BASED ON POLY HYDRATED IONOGENS (PHI-5) COMBINED WITH AND WITHOUT HONEY WITH A HIGH FENOLIC CONTENT IMPROVE WOUND HEALING CONDITIONS**

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### **Introduction:**

Three major factors that influence the potency of wounds to heal properly are bacterial colonization, reactive oxygen species (ROS) (over)production and the Matrix metalloproteases (MMPs) (im)balance. Retardation of wound healing colonized with resistant bacteria is a major problem in the treatment of burns, acute as well as chronic wounds. Antimicrobials that aren't effective will be toxic too, especially after prolonged application. Innovative antimicrobial strategies influencing biofilm formation are under development still. A new technology based on Polyhydrated Ionogens (synthetic blend of metal ions = PHI-5) and a antioxidant rich type of honey has shown to be effective in 'cleaning and healing' wounds. Fenolic rich dark Buckwheat honey induces strong down-regulation of ROS and MMP production and prevents tissue to breakdown further. Combining this type of honey with PHI-5 fine-tuning of the MMP/TIMP balance will support progress of epithelialization.

**Methods:** Patients (n=21) with critical contaminated burns, residual burn defects (n=35) and chronic recalcitrant wounds (n=17) treated with the PHI-5 in honey dressing were evaluated. Clinical assessment, wound perimeter tracing, digital photography and bacteriology were performed two times weekly at least.

**Results:** Full closure is achieved in 94% of all wounds. A clear reduction of wound debris and exudates production is seen. Progressive epithelialization is leading to stable wound closure. During healing all wounds still were contaminated with variable, but often reduced quantities of microbiologic (resistant) species. Unless bacterial colonization PHI-5 in honey treated wounds don't show any sign of infection.

**Conclusions:** Dressings based on PHI-5 in fenolic rich dark Buckwheat honey can be used effectively as alternative to conventional topical antimicrobials in all wounds, acute as well as chronic ones. If bacterial contamination is no issue, but wound healing still retarded, dressings with a higher content of PHI-5 without honey also have shown to be effective. For both dressings patient acceptance is excellent.