CHANGES IN MMP-2 & MMP-9 ACTIVITY; SURFACE PH AND SIZE OF CHRONIC WOUNDS WHEN MANUKA HONEY DRESSINGS USED.

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Background: Matrix metalloproteases (MMPs) are responsible for the degradation of components of the extracellular matrix. Chronic wounds are highly proteolytic and their activity is pH dependent. Manuka honey has demonstrated efficacy in lowering surface pH of chronic wounds.

Aims: To determine the changes in MMP-2 and MMP-9 activity levels in chronic wounds over 2-weeks when Manuka honey dressings used. To monitor in vitro changes in MMP activity with in vivo evaluation of wound size and surface pH levels.

Inclusion and exclusion: Ethical approval was obtained. Patients over 18 years with chronic, non-healing, superficial, non-infected wounds. Persons with known sensitivity to honey were excluded.

Methods: All wounds were cleansed with saline and covered with film dressing* for 1-2 hours after which fluid was aspirated and stored at -70°C. Wound surface pH was recorded using Blueline 27 glass surface electrode (Reagecon/ Alkem Ireland), measured with a wound measurement system** digital planimetry. Fluid samples were defrosted in fridge at 40 C and allowed to return to room temperature for 6 hours. Humana MMP-9 Quantikine ELISA kit DM900 and MMP-2 Quantikine ELISA Kit RnD systems were used for analysis at a dilution factor of 1:5000.

Results: 11 patients enrolled of which 8 paired samples were obtained. Mean MMP-9 reduced from 30.9mg/ml (range.34 – 107) by 30% to 20.81mg/ml (range 5.0 – 40) (95% CI 15.3 to 15.8 SD 18.68, p 0.975) Mean MMP-2 reduced from 1.53mg/ml (range.76 – 4.3) by 8.5% to 1.40mg/ml (range.20 – 2.25) (95% CI -.95 to.98, SD 1.15, p 0.969).87% (n=7) of wounds reduced in size. 100% of wounds had reduction in pH.

Conclusion: Both MMP-2 and MMP-9 reduced over 2 weeks when Manuka honey dressings were used in chronic wounds. Monitoring of wounds using both in vitro and in vivo methods may provide more complete assessment of treatment evaluation.

* OpSite®
** Visitrak® (Smith+ Nephew)