Leptospermum Honey Dressings

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Essentials: Basics in Wound Management

Wound Dressings

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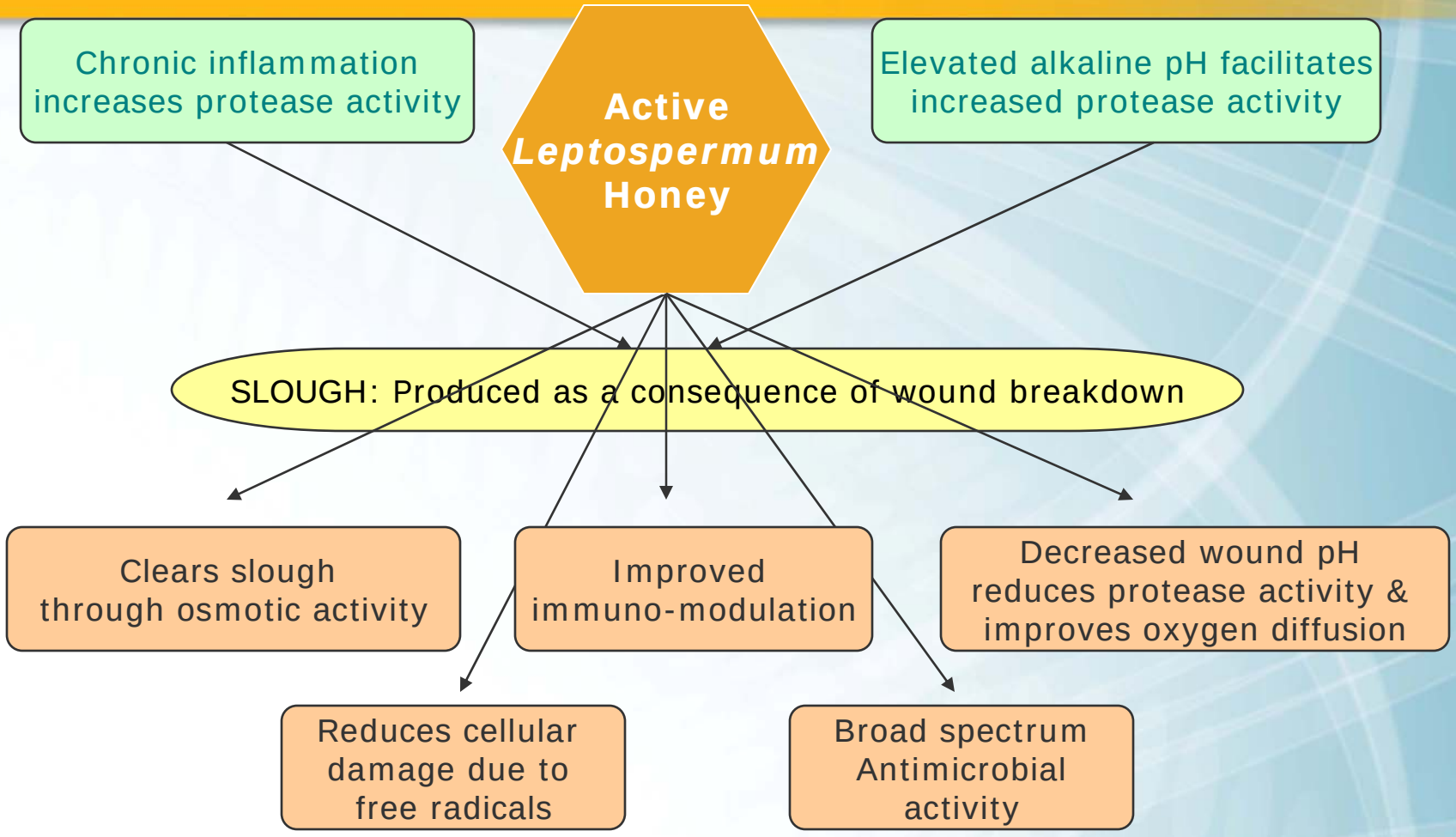
WOUND BED PREP / ALL WOUND PHASES



HONEYS ARE NOT ALL THE SAME.....

ALL HONEYS

- Low pH
- High Osmolarity

"ACTIVE" MEDICAL HONEYS

- Low pH - ↑ fibroblast activity
- High Osmolarity - ↑ autolytic and mechanical debridement
- Standardized level of activity
- Works in the presence of catalase
- Heat and irradiation resistant
- Produced under hygienic conditions
- Traceable source
- Free of pesticides and antibiotics
- Sterile
- Wound healing, debriding, immuno-modulatory, free radical scavenging activity

Manuka Honey

INDICATIONS

- Diabetic Foot ulcers
- Leg ulcers (venous stasis ulcers, arterial ulcers, and leg ulcers of mixed etiology)
- Pressure ulcers/sores (partial and full thickness, Stage II-IV)
- 1st and 2nd degree partial thickness burns
- Donor sites, traumatic and surgical wounds

Manuka Honey

PRECAUTIONS

- Known allergy or hypersensitivity to honey or alginates.
- Some patients may notice slight transient (< 5 min) stinging. If stinging does not stop and persists and can not be managed with an analgesic, remove dressing, cleanse area and discontinue use of dressing.
- Osmotic activity can draw increased fluid that, if not managed properly, can cause tissue maceration
  - Cover with absorbent dressing initially
  - Protect periwound skin with barrier

HONEYS ARE NOT ALL THE SAME……..

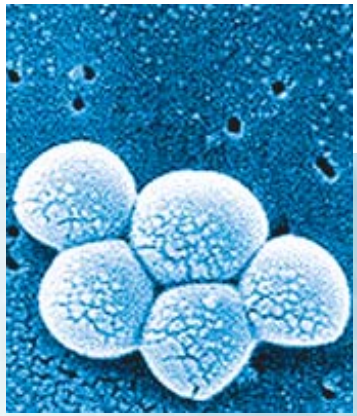
Active *Leptospermum* Honey

- *Leptospermum scoparium* (Manuka): tea tree bush indigenous to New Zealand
- *Leptospermum polygalifollum* (Jellybush): sister species indigenous to Australia
- Both “distant cousins” to *Melaleuka alternifolia*: tea tree bush indigenous to Australia – tea tree oil used as an antispetic in burn dressings)

ANTIMICROBIAL ACTIVITY OF ACTIVE *LETOSPERMUM* HONEY

- More than 80 microbial species inhibited
  - Bacteria: Staph, MRSA, VRE, Pseudomonas
  - Dermatophytes
  - Yeasts and moulds
  - Protozoa
  - Viruses

Molan (1992) Bee World 73: 5-28
Blair, Carter (2005) Australian Infection Control 10: 24-30



HONEY WOUND HEALING BENEFITS

Wound Healing and Debridement : *Leptospermum scoparium* Honey vs. Hydrogel to deslough venous ulcers: A randomised controlled trial [Georgina Gethin poster presentation at *The Clinical Advances in Skin and Wound Care Conference*, October 2007 – results to be published Q1, 2008]

Immuno-modulatory: A 5.8-kDa Component of Manuka Honey Stimulates Immune Cells Via TLR4 [Tonks, AJ, et al. (2007) J Leukoc Biol, 82(5) 1147-55.]

Free Radical Quenching: Free radical production and quenching in honeys with wound healing potential [Henriques, Jackson, Cooper, Burton (2005) J. Antimic. Chem. 58:773-777]

pH Modulation: The impact of Manuka honey dressings on the surface pH of chronic wounds [Gethin, Cowman, Conroy (2007) Int Wound J; 00:1-10]

ANTIMICROBIAL ACTIVITY

Manuka honey dressing: An effective treatment for chronic wound infections

Visavadia, BG, et al. (2006) British Journal of Oral and Maxillofacial Surgery.

Antibacterial Honey (MEDIHONEY™): *in vitro* activity against clinical isolates of MRSA, VRE, and other multi-resistant gram negative organisms including *Pseudomonas aeruginosa*

George, N, Cutting, K (2007) WOUNDS. Vol 19. 231 – 236.

The Use of MEDIHONEY Antibacterial Wound Gel on surgical wounds post-CABG

Bateman, S, Graham, T (2007) WOUNDS UK. Vol 3. 76 – 83.

Healing of an MRSA-colonized hydroxyurea-induced leg ulcer with honey

Natarajan, S, Williamson, D, Grey, J, Harding, KG, Cooper, R (2001) Journal of Dermatological Treatment. Vol 12. 33 – 36.

Available Evidence

- The *in vivo* evidence supporting the use of honey is more substantial than for many other wound treatments.
- RCT's, Meta-analysis of RCT's, case studies and expert opinion.

Bolton L. “Evidence Corner” in Wounds: December 2008

- Author reviewed a recent RCT on fibrin-covered venous ulcers (Gethin) and a Cochrane Review of the effects of topical honey in clinical wounds (Jull, Rodgers, & Walker).
- “Honey matches or exceeds hydrogel when used for debridement of sloughy VUs”.
- “Honey facilitates healing for VUs independent of risk factors for delayed healing.”
- “Honey is safe and may improve healing in burns and skin graft donor sites.”
- Future RCTs are recommended.

Review of Evidence-Cochran Review

- Cochrane Systematic Review: analysis of nineteen trials (2554 patients)
- Reduced healing time (Topical honey vs. silver sulfadiazine.
- Shorter healing time in pressure ulcers (honey vs. NS gauze) in 3 small studies, infected postoperative gynecologic wounds (honey BID vs. 70% ethanol with povidone iodine), and Fournier's gangrenes (honey vs. Eusol gauze).

Jull, Rodgers, Walker (2008). Honey in Wound Care: A Cochrane Review. Cochrane Database Systematic Review, (4): CD005083

Review of Evidence-Cochrane Review

- Combined analysis of 2 VU studies (241 receiving honey) reported that the 12 week honey had a higher percentage of healed wounds, but lacked statistical significance.

Adverse events in honey groups were comparable to controls except:

- Infected postoperative gynecology wounds (fewer events reported); and
- VU (more events reported)

Jull, Rodgers, Walker (2008). Honey in Wound Care: A Cochrane Review. Cochrane Database Systematic Review, (4): CD005083

Adverse event reporting-Cochrane Review

- Adverse events rarely caused study withdrawal.
- Estimated to be “short-lived and tolerable”

Not addressed in the Adverse event analysis:

- Manuka honey use associated with total of 10 study days of VU related hospitalization compared to 40 days for usual care.

Jull, Rodgers, Walker (2008). Honey in Wound Care: A Cochrane Review. Cochrane Database Systematic Review, (4): CD005083

Authors conclusion –Cochrane Review

- “Honey may improve healing in superficial burns, skin graft donor sites, but when used with compression does not significantly increase leg ulcer healing at 12 weeks though the possibility of a modest effect cannot be ruled out”.

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Clinical Perspective-Bolton

- Larger VUs with longer duration take longer to heal.
- The larger, longer duration of the VUs, the more difference MH makes.
- In Gethin's study the wounds were more recalcitrant, larger, more slough-covered, with mean duration (29-39 weeks) compared to 16-20 week duration VUs studied by Jull et al (the second study reviewed in the Cochrane Systematic Review)

Bolton (2008). Evidence Corner: Topical Honey and Wounds. WOUNDS, 20(12).

Clinical Perspective-Bolton

- The control group in Jull et al. had large variability in the group that received “usual care”. (This may explain lack of consistency of the reported favorable MH healing effect).
- Cochrane reviewers state, “A possible healing effect of MH as an adjuvant to compression cannot be ruled out”
- Adverse events should be clear in future studies with consistent reporting of both severity and frequency of adverse events.

Bolton (2008). Evidence Corner: Topical Honey and Wounds. WOUNDS, 20(12).

A Significant Randomized Controlled Trial – Gethin Study

A Large 108 Patient Randomized Controlled Trial

- A multicentre, open label prospective randomised controlled trial*
- Venous Leg Ulcers, at least 6 months in duration, not progressing after standard compression therapy
- Key inclusion: must have > 50% of wound area covered in slough. Must not be taking antibiotics.

*Gethin, G., & Cowman, S. (2008) Manuka honey vs. hydrogel a prospective open label randomized controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. Journal of Clinical Nursing, June

Gethin Study

Primary and Secondary Outcomes

- To determine the ability of active *Leptospermum* honey to deslough venous leg ulcers in comparison to a standard hydrogel, both arms under standard compression therapy
- To determine the effect on healing after 4 and 12 weeks

*Gethin, G., & Cowman, S. (2008) Manuka honey vs. hydrogel a prospective open label randomized controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. Journal of Clinical Nursing, June

Gethin Study

Results at the end of week 4

- Honey had a mean 67% reduction of slough versus mean 53% in gel group ($p = 0.054$).
- New epithelial tissue was visible earlier in honey then gel wounds ($p = 0.042$).
- The median reduction in wound size was 34% in honey group versus 13% in gel group ($p = 0.00$).

*Gethin, G., & Cowman, S. (2008) Manuka honey vs. hydrogel a prospective open label randomized controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. Journal of Clinical Nursing, June

Gethin Study

Results at the end of week 12

- Healing rate at 12 weeks was significantly better in honey group versus gel (p = 0.037)
- 44% healed in honey arm; Approaching 50% rate of “typical” venous leg ulcer healing under compression. 33% in control arm healed.

*Gethin, G., & Cowman, S. (2008) Manuka honey vs. hydrogel a prospective open label randomized controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. Journal of Clinical Nursing, June

Bacteriological Changes

As a secondary outcome of the RCT:

- Wound swabs were taken at the start of treatment and at four weeks.
- Eighteen patients were withdrawn (17%) due to wound infection.
- Of those withdrawn: 6 were in the honey group; 12 were in the hydrogel group.

Gethin, G., & Cowman, S. (2008) Bacteriological changes in sloughy venous leg ulcers treated with manuka honey or hydrogel: an RCT. Journal of Wound Care (2008), 17(6).

Bacteriological Changes

Baseline swab results:

- Staphylococcus aureus most common (41 wounds (38%).
- MRSA was identified in 16 wounds (10 honey vs. 6 hydrogel).
- Psueudomonas aeruginosa was present in 14% (n=16)

Gethin, G., & Cowman, S. (2008) Bacteriological changes in sloughy venous leg ulcers treated with manuka honey or hydrogel: an RCT. Journal of Wound Care (2008), 17(6).

Bacteriological Changes

Results at the end of week 4

- 70% (n=7) of the honey treated wounds vs. 16% (n=1) of the hydrogel treated wounds had MRSA eradicated.
- 33% (n=2)of the honey treated wounds vs. 50% (n=5) of the hydrogel had Pseudomonas aeruginosa eliminated.
- Conclusion: Manuka (*Leptospermum*) honey was effective in eradicating MRSA form 70% of chronic venous ulcers.

Gethin, G., & Cowman, S. (2008) Bacteriological changes in sloughy venous leg ulcers treated with manuka honey or hydrogel: an RCT. Journal of Wound Care (2008), 17(6).

Bacteriological Changes

Conclusions

- Manuka (*Leptospermum*) honey was effective in eradicating MRSA from 70% of chronic venous ulcers.
- When wounds are desloughed and MRSA is eliminated there is increased potential to prevent cross contamination.

Gethin, G., & Cowman, S. (2008) Bacteriological changes in sloughy venous leg ulcers treated with manuka honey or hydrogel: an RCT. Journal of Wound Care (2008), 17(6).

Venous Ulcer

- CVI, non-healing ulcer, friable granulation, edema, fibrosis and exudate.
- HONEY applied under compression bandage.
- Granulation tissue appearance improved.
- Exudate and pain were resolved.
- Healed by week 4.

11/02/07

11/30/07

An abstract presented at the World Union of Wound Healing Societies conference in Toronto, June 2008 (Dr. Matthew Regulski, DPM, CWS, FAPWCA, WHS).

Rheumatoid / Diabetic Foot Ulceration

Rheumatoid Ulceration

Chronic wound of 3-years duration

MEDIHONEY after 8 weeks

Diabetic Foot Ulcer Ulceration

Plantar aspect forefoot

MEDIHONEY after 12 weeks

*As presented at the 2008 APWCA conference, Dr. Steven Kavros, DPM, Gonda Vascular Wound Healing Center, Mayo Clinic.

Traumatic Wound with MRSA

- 51 y/o female with painful, heavily exuding, non-healing, five-year old traumatic, MRSA-contaminated wound.
- Debridement, topical and systemic antibiotic therapy ineffective.
- HONEY applied twice weekly.
- At 6 wks cultures negative, at 8 wks 92.6% closure, improved granulation, zero pain; bilayer skin substitute applied for final closure.

11/06/2007

1/08/08

Strilko, Barkauskas, Mcintosh, & Reaney. (2008). Use of new active leptospermum honey dressings in non-healing wounds. WUWHS: Toronto. Poster.

Painful Leg Ulcers

- Six elderly patients with painful, chronic wounds unable to tolerate silver dressings (burning).
- HONEY initiated. Decreased inflammation, improved pain levels, and dressing tolerance was noted.
- Evidence of healing was noted (average of 96% decrease in area; 97% decrease in volume).

11/26/2007

2/05/2008

An abstract presented at the World Union of Wound Healing Societies conference in Toronto, June 2008 (Loren Hayes, ARNP, GNP-BC, MS, CWCN, CWS, FACCWS, DAPWCA).

Limb at Risk-Diabetic with an Infected Foot Wound and Cellulitis

- 72 y/o female, Type II DM, cellulitis. Sharp debridement performed (Fig 1).
- HONEY initiated. Rapid reduction in edema, erythema, warmth, and necrotic slough noted within six days (Fig. 2)
- Low frequency, non-contact ultrsound and VAC used for one month (Fig. 3) then MEDIHONEY used until closure (Fig. 4).

1/18/2008

1/24/2008

2/20/2008

4/23/2008

*As presented at the 2008 CSAWC conference, Dr. Paul Ligouri & Kim Peters, CWS, Haverhill Rehabilitation, Massachusetts.

Q&A

Questions?