Use of Honey for Healing Pressure Ulcers: An Integrative Review

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Faculty Disclosure

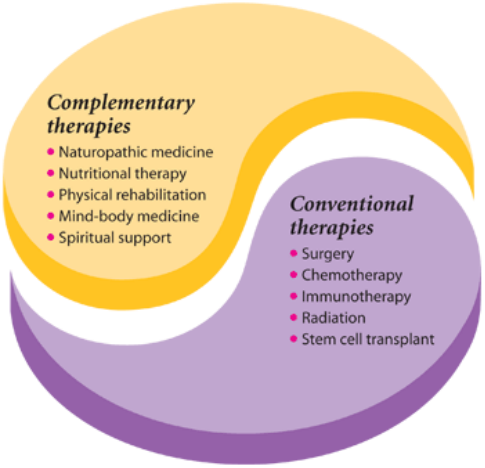
- Katherine Ricossa, RN, MS
- No known or perceived conflicts of interest
- Employer: Kaiser Permanente
- No known sponsorship or commercial support has been obtained

Objectives

At the end of this presentation, the participant will be able to:

1. Understand the action of medical grade honey it's significance to healing pressure ulcers

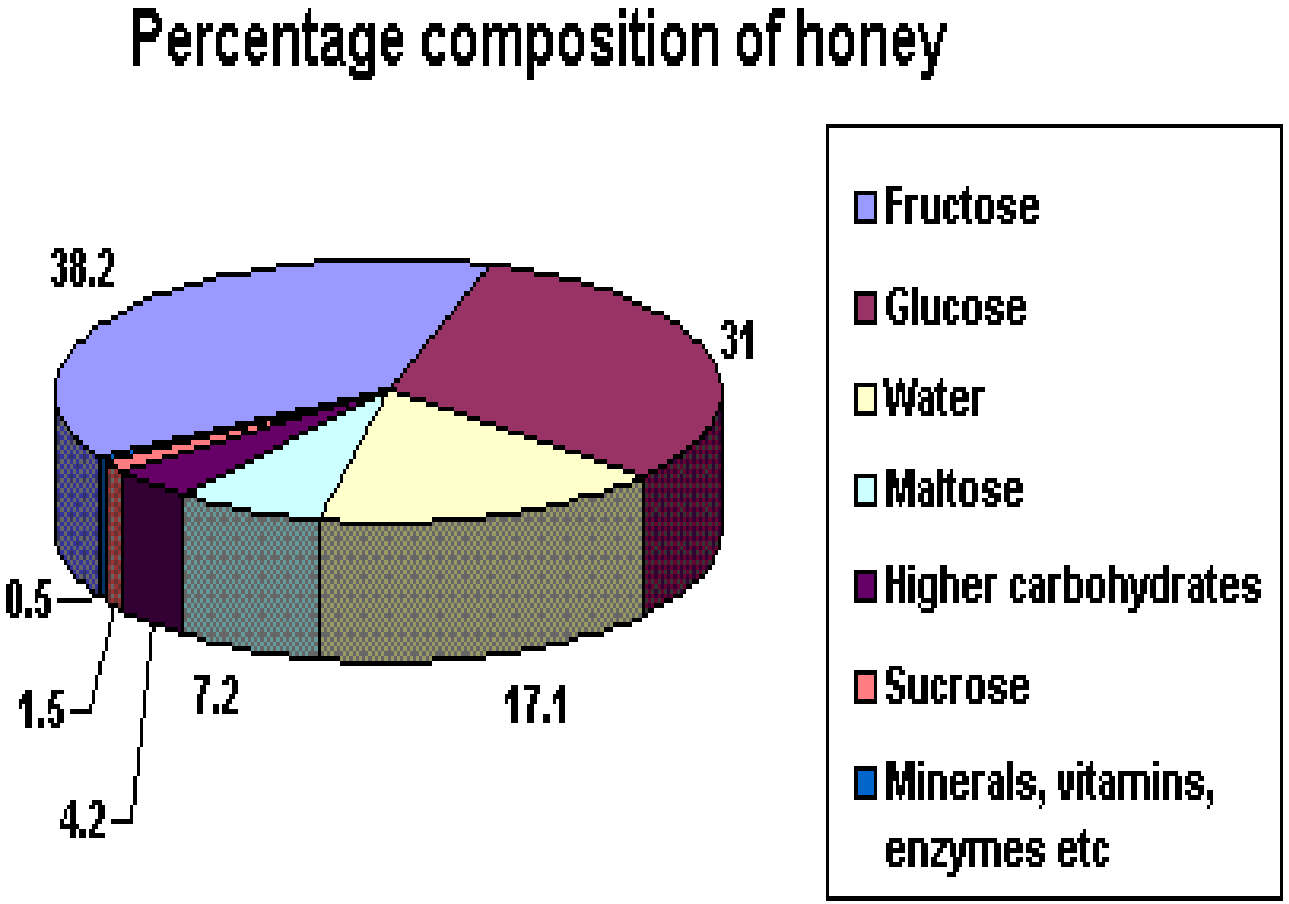
Purpose of the Integrative Review



Using Complementary and Alternative Methods (CAM)

- offers a holistic approach of caring for those with pressure ulcers
- examines a Systematic Integrated Review of 8 randomized clinical trials on the use of honey and the healing of pressure ulcers

Composition of Honey



Significance

- The costs of wound healing continue to escalate
- It is important to explore alternative holistic modalities which are cost effective and achieve the desired outcome of wound healing
- Honey is the ideal substance to provide effective wound healing properties:
  - Antibacterial
  - Antimicrobial
  - Anti inflammatory
  - Wound cleansing
  - Debriding properties

Methods

Several databases were examined:

- Cumulative Index for Nursing & Allied Health
- Natural Standard
- Google Scholar
- PubMed
- Cochrane Library
- Web of Knowledge
- Ovid SP
- Clinical Evidence
- Web of Science

- Key Terms used
  - Honey
  - Pressure ulcers
  - Clinical trials
- Limits
  - Dates from 2002 to 2012
  - English
  - Full Text

Results

- Totally 8 randomized clinical trial
  - Internationally 7 randomized clinical trials were identified using honey for wound healing of mixed etiology of wounds including pressure ulcers from 2002-2012
  - Reviewing one study found
    - 1 clinical trial found from 1991 in the US on pressure ulcers
- Pressure Ulcers were abstracted from each study for this review
- Each sample size was different based on the geographical area where the study was conducted
- Different types of honey were used to determine the effectiveness on wound healing
- Honey was not always effective on all wounds, but the evidence indicates that honey is effective in wound healing
- Little statistical data was available to compare each study

The Studies Reviewed

1. Weheida, Nagubib, El-Banna,. & Marzouk, (1991)
2. Van der Weyden (2003)
3. Yapucu & Eser (2007)
4. Gethin, Cowman, & Conroy (2007)
5. Robson, Dodd, & Thomas (2009)
6. Shrivastava (2011)
7. Biglari, Vd Linden, , Simon , Aytac, Gerner, & Moghaddam (2012)
8. Jull, Rodgers, & Walker (2008)

1. Weheida, S.M. Nagubib, H.H., El-Banna, N.M. & Marzouk, S. (1991). Comparing the effects of 2 dressing techniques on healing low grade pressure ulcers. ***Journal of Medical Research Institute, Alexandra University, 12*****(2), 259-278.**

- Design
  - Quasi Experimental
- Study Location
  - Alexandria, Virginia, USA
- Purpose
  - Evaluating the outcome of 2 healing practices: honey and saline for pressure ulcers along with examination of lab values
- Sample
  - n = 40 orthopedic patients
  - male (n =23); female (n = 17)
- Method
  - 20 orthopedic patients were treated with honey dressings and 20 were treated with saline dressings
  - Used honey and saline on pressure ulcers with examination of lab values
    - Hemoglobin, urea, creatinine, glucose, serum proteins, hydroxyproline & hemocrit
- Pressure Ulcer Types

  -Low Grade ulcers
- Results
  - Reduction in size (width, height, depth) of pressure ulcer
  - Serum hydroxyproline returned to normal

2. Van der Weyden, E.A. The use of honey for the treatment of two patients with pressure ulcers. *British Journal of Community Nursing*. 2005;8(12), 1-20.

- Design
  - Prospective Clinical Trial
- Study Location
  - Haberfield, New South Wales, Australia
- Purpose
  - To evaluate the effectiveness of using honey to treat pressure ulcers instead of using current wound management techniques
- Sample
  - n = 2
  - male (n = 2)
- Methods
  - Applied Manuka Honey on pressure ulcers
- Pressure Ulcer Types
  - Sacrum - Unstageable
  - Ankle – Stage 4
- Results
  - Rapid and complete wound healing for both pressure ulcers
    - Sacrum (8 weeks)
    - Ankle (10 weeks)

3. Yapucu, G.U. & Eser. I. Effectiveness of a honey dressing for wound healing. *Journal of Wound Ostomy Continence Nursing.* 2007; 43(2), 1884-190.

- Design
  - Randomized Clinical Trials
- Study Location
  - Izmar, Turkey
- Purpose
  - To compare the effect of honey to ethoxydiaminoacridine plus nitrofuazone (EDN) dressings on pressure ulcers
- Sample
  - n = 26
  - male (n = 17); female (n = 9)
- Methods
  - 2 Groups randomly selected; either had unprocessed honey or EDN applied on wounds
  - PUSH Method for Measurements
- Pressure Ulcer Types
  - Pressure Ulcers with multiple pressure ulcers totally 68 with Stage II & Stage III
- Results
  - Wound differed: venous ulcers, mixed etiology, arterial and pressure ulcers.
  - After 2 weeks of applying Manuka honey dressings, the pH was significantly significant ($p<0.0001$)
  - Those wounds with a pH lower than 7.6 had a 30% decrease in size.
  - Surface pH may contribute to improved wound healing.
  - Wound healing with honey was 4 times greater than those who were treated with EDN dressings

4. Gethin, G.T., Cowman, S, & Conroy, R.M. The impact of Manuka honey dressing on the surface pH of chronic wounds. *International Wound Journal*. 2008; 5(2), 185-194.

- Design
  - Open Label Non Randomized Prospective
- Study Setting
  - Dublin, Ireland
- Study Location
- Purpose
  - The goal of this study is to evaluate the changes in pH on wounds after the application of honey over a 2 week period.
- Sample
  - Sample Size: n = 17
  - males (n = 8); Females (n = 9)
- Methods
  - Manuka Honey with calcium alginate fiber dressing (Apinate Dressing) applied to Chronic Wounds of different etiologies
- Pressure Ulcer Types
  - Chronic Wounds: Venous Ulcers (10 wounds; Mixed Etiology; 7 wounds; not identified; Arterial Ulcers (2); Pressure ulcers (1)
- Results
  - 2 Weeks study: Improvements noted in wound healing:
  - Wound size reduction;
  - Decrease with wound pH; wound size
    1. Venous Ulcers (77.8%)
    2. Mixed Etiology (43.8%)
    3. Arterial Ulcers (100%)
    4. Pressure Ulcers (100%)

5. Robson, V., Dodd, S. & Thomas, S. Standardized antibacterial honey (Medihoney) with standard therapy in wound care: Randomized Clinical Trial. *Journal for Advances in Nursing*, 2009; 65(3), 565-575

- Design
  - Open Label Randomized Clinical Trial
- Study Location
  - Liverpool, United Kingdom
- Purpose
  - To compare honey used in medical treatment with standard treatments for wound healing.
- Sample n = 105
  - Male (n = 69) Female (n = 36)
  - Only 1 Pressure Ulcer
- Methods
  - District General Hospital) single location (inpatient or outpatient) either receiving medical grade honey or traditional therapies for wound healing.
- Wound Types
  - Leg Ulcer (39); Breast Wound (7); Eczema (1); Ears Nose Throat Wound (6); Foot Ulcer (1); Stump (2); Varicose Eczema (1); Abdominal Wound (1); Heal Pressure Sore (1); Hernia Incision Wound (1); Neck Wound (1)
- Results
  - Healing Time within 12 weeks:
  - Honey (46.2%)
  - Conventional Wound Healing (34.0%)

6. Shrivastava, R. (2011).Clinical evidence to demonstrate that simultaneous growth of epithelial and fibroblast cells is essential for deep wound healing. *Diabetes Research Clinical Practice*. 92(1), 92-99.

- Design
  - Randomized Clinical Research Trial
- Study Location
  - Issoire, France
- Purpose
  - To evaluate chronic wound healing using tannin rich plant extracts: glycerol and honey
- Sample n = 93
  - Male (n=77) Female (n= 16)
- Methods
  - Applied glycerol & honey to wounds
- Pressure Ulcer Types
  - Diabetic Wounds (65%); Pressure Ulcers (17%); Venous Insufficiency (18%)

Results

- Wound surface improved by 33.37%
- Wound volume decreased by 29.45%.
- Treatment product reduced the wound surface area 97.87
- Wound volume decreased by 94.17%.
- The treatment product promoted a reduction in wound surface by 64.5%
- Reduction in wound volume by 64.72%

8. Biglari, B., Vd Linden, P.H., Simon A., Aytac, S, Gerner, H.J., and Moghaddam, A. Use of Medihoney as a non-surgical therapy for chronic pressure ulcers in patients with spinal cord injury. *Spinal Cord.* 2012;50(2): 165-169. doi: 10.1038/sc.2011.87

- Design
  - Randomized Clinical Research Trial
- Study Location
  - Ludwigshafen, Germany
- Purpose
  - To determine the effects of Medi- honey on bacterial growth on pressure ulcers for patients with spinal cord injury.
- Sample n = 20
  - Male (n=13) Female (n=7)

- Methods
  - MediHoney applied on the pressure ulcers with the octenidin-hydrochloride 0.1%, phenoxyethanole 3%, Schülke, norferstedt, Germany (Octenispect)
  - octenidinehydrochloride 0.1 Vol%, 1-propanol 30 Vol%, 2-propanol 45 Vol%, Schülke (Octeniderm) to disinfect outside the P\pressure ulcer
- Pressure Ulcers Locations

  Sacrum (9); Ischium (3); Heel (2); Leg (2); Ankle (1); Abdomen (1); Thigh (1); Groin (1)Staging or Grading based on the National Pressure Ulcer Advisory Panel: Grade IV (5) & Grade III (15)
- Results
  - Absence of bacterial growth (1 week)
  - 90% Wounds were completely healing

  (4 weeks)

8. Jull, A.B., Rodgers, A., & Walker, N. Honey as a topical treatment for wounds (Review). *The Cochrane Collaboration.* 2008; 8(4)1-47.

- Design
  - Randomized and Quasi Randomized Trials
- Study Location
  - Auckland, New Zealand
- Purpose
  - To determine if honey has healing properties for both chronic and acute wounds.
- Sample
  - Total of 19 trials
  - (n = 2,554)
- Methods
  - Literature review of 3/19 Clinical Trials using honey for wound healing
  - Study 1: Honey versus Sugar Dressing
  - Study 2: Healing mixed wounds including pressure ulcers with Honey or saline soaked gauze dressing
  - Study 3: Mixed wounds both acute and chronic using honey for wound healing

8. Jull, A.B., Rodgers, A., & Walker, N. Honey as a topical treatment for wounds (Review). *The Cochrane Collaboration.* 2008; 8(4)1-47.

- Wound Types
  - -Acute Wounds
    - Burns
    - Lacerations
    - Traumatic Wounds
  - - Chronic Wounds
    - Venous Ulcers
    - Arterial Ulcers
    - Diabetic Ulcers
    - Pressure Ulcers
    - Infected Surgical Wounds

- Results
  - Study I: Honey versus Sugar Dressing. Healing with honey was 31.5 days; with Sugar dressing 56 days.
  - Study 2: Honey was more effective than saline soaked gauze.
  - Study 3: Inconclusive results since the wound types were so different. This study was not generalizable since only one trial on one pressure ulcer was tested.
  - In general; lacked healing based on the mixed etiology of wounds

Beitz, J. & Bolton, L. (2013). A Scientific Review of the Cochrane Review: Honey as a Topical Treatment. Jull et al. *Cochrane Database of Systematic Reviews 2013* Article No CDC005083.

- Studies performed with Honey
  - Statistical Significance
  - No statistical significance
- Critique of Systematic Review
  - Many red flags in abstracting data
  - Lacks clarity when describing studies
  - Several studies omitted which identified other conventional treatments not considered (grafting or excision)
  - Mixed etiology of wounds made it difficult to understand the studies

Identified Errors

- Focused on specific data with omission of others
- Lack of clarity of effects on treatments
- Adverse effect are unclear
- Studies with burn, venous ulcers

- Concluded
  - Lack of evidence in the effect of honey on wound healing
  - Recommendation to avoid the use of honey
  - US FDA took 100% pure honey off the market and is to be used for ingestion as a food product not for wound healing

Conclusion

- Few studies have been conducted on the effectiveness of wound healing with honey internationally
- It is suggested that honey is nature's perfect substance for wound healing for pressure ulcers
- It is difficult to generalize on the effectiveness of honey based on these randomized clinical trials with heterogeneous samples and wound types
- Based on these studies, honey is effective on healing pressure ulcers
- Additional research must be conducted using homogenous samples and pressure ulcer types to establish a basis for practice

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