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
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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

Percentage composition of honey

- Fructose: 38.2%
- Glucose: 17.1%
- Water: 7.2%
- Maltose: 4.2%
- Higher carbohydrates: 1.5%
- Sucrose: 0.5%
- Minerals, vitamins, enzymes: 31%
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

2. Van der Weyden (2003)
5. Robson, Dodd, & Thomas (2009)

- **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

- **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)

- **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

- **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 \( (34.0\%) \)

- **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%

- **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 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)

- **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

- **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

- **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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