

Resurgence of Honey In treating infections in chronic wounds associated with diabetic foot ulcers



Objectives

Introduction

- ✦ Non-healing, diabetic foot ulcers are a critical problem for health-care systems globally.
 - ✦ Up to 85% of diabetes-related amputations are because of a foot ulcer. And this will continue to grow as the international Diabetes Federation predicts that the number of diabetes sufferers is expected to grow from 366 million in 2011 to a staggering 522 million by 2030.
 - ✦ 4 million people develop a diabetic foot ulcer each year worldwide. Roughly 50% of diabetic foot ulcers become infected, out of which 20% of these will lead to lower-extremity amputation
- Infection is therefore a problem in the healing process and needs to be tackled as it can jeopardise healing of wounds by:
- ✦ Increasing treatment time
 - ✦ Increasing costs
 - ✦ May lead to amputation
 - ✦ or life-threatening condition

- ✦ To research honey in great detail and seek evidence from reliable sources to produce an update on how honey works and collate results from studies undertaken.
- ✦ Secondly to discover the benefits and issues associated with using honey in the management of diabetic foot ulcers and offer possible solutions to these issues.
- ✦ Summarise the information presented and propose ideas for further work that could be carried out.

Aim: To investigate honey anti-bacterial properties and decide if honey is the way forward

METHODOLOGY

Accessed various bibliographical databases: Cochrane, Pubmed, sciencedirect, google scholar. Keywords such as: diabetic foot ulcers, honey, antibacterial activity were used. Data was gathered from published literature in journals.

Results

The characteristics of honey that contribute to wound healing are:

- ✦ Honey displays antibacterial activity due to the production of hydrogen peroxide and non-peroxide activity of manuka honey.
- ✦ Hygroscopic properties allow moisture to be drawn out from the environment maintaining a moisture controlled wound condition
- ✦ Honey can lower the pH within the environment of the wound encouraging the wound to heal.
- ✦ Promotes tissue regrowth through angiogenesis stimulation and the growth of epithelial and fibroblast cells.
- ✦ Have a debriding effect and can remove necrotic tissue and slough painlessly.
- ✦ High viscosity helps to provide a protective barrier to prevent infection.



Discussion

1) More evidence whilst there is some evidence supporting the use of honey in chronic wounds. Specifically for diabetic foot ulcers, more trials and studies are needed because knowledge based on guesswork will not be helpful in the long run

2) Catalase inhibitor the antibacterial activity of honey comes from hydrogen peroxide however the hydrogen peroxide is broken down by catalase enzyme decreasing the antibacterial activity therefore dressings would need to be changed more frequently. The idea of using a catalase inhibitor may help to prolong the antibacterial activity and reduce the number of dressings but more research is needed.

3) Super absorbent dressing too much wound exudate can prevent honey from working as the exudate can cause honey to be washed out and prevent contact with the wound so adding a super absorbent second dressing like foam or alginate or adding a combination of dressings to handle the extra wound exudate be considered.

Figure 1: a table of clinical trials using honey to treat diabetic foot ulcer:

	What was the study?	Outcome
Hammouri (2004)	Two-arm randomised controlled trial comparing the use of honey and saline dressing with povidone iodine and hydrogen peroxide dressing.	Found a significant difference in healing time. The median healing time: Honey= 21 Control= 32 days Ulcers of 90% of patients within the honey groups were completely healed whereas only 70% in control. Honey group showed significantly greater ability to clear antibiotic-resistant bacteria.
Shukrimi et al (2008)	Two-arm clinical controlled trial comparing pure honey with 10% povidone iodine on patients	Not a significant difference The mean time to healing was: Honey= 14.4 days Control= 15.4 days Found no new organism indicating dressings were able to prevent cross infection
Single case study	A 79 year old man with diabetic foot ulcer. Ulcers remained unhealed after 14 months treatment with orthotic device antibiotics and 4 lots of surgery.	After commencing treatment with honey the ulcers were granulating within 2 weeks, and healed within 6 and 12 months. Two years later ulcers had not recurred.

Figure 2: Trial comparing use of honey and saline dressing with hydrogen peroxide and povidone dressing

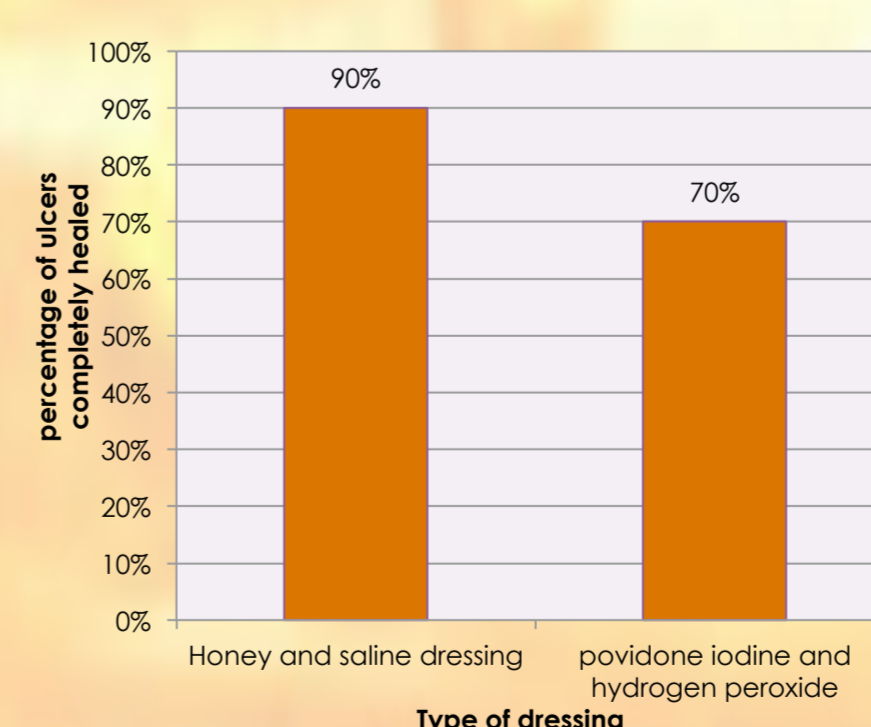
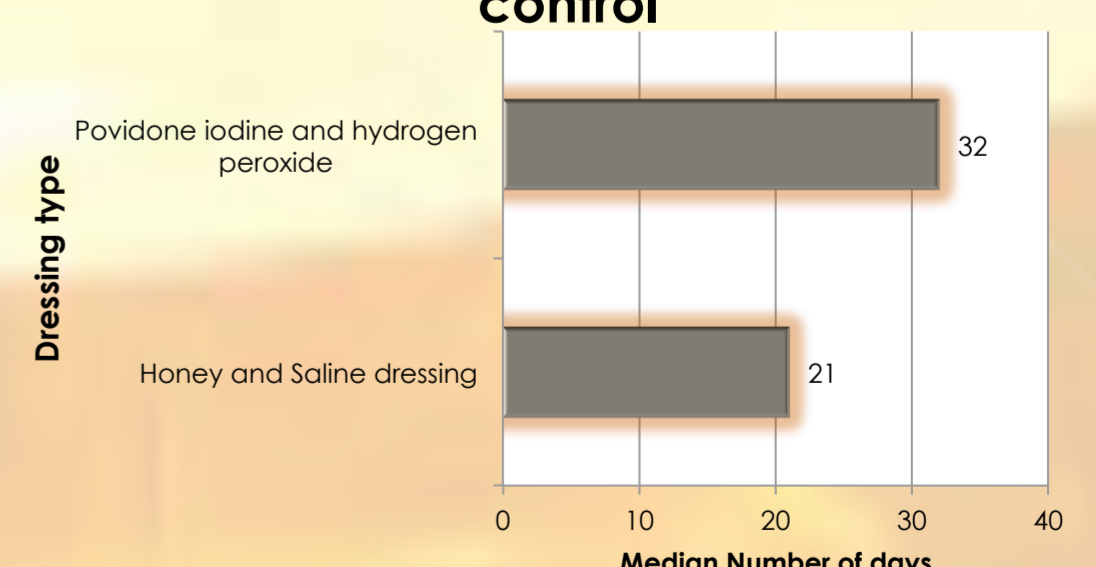


Figure 3: Graph showing the Median number of days for ulcer to heal comparing honey to control



References

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