

A Systematic Review of the Application of the Medicinal Properties of Honey to Burn Wounds

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Abstract

This review thoroughly examines honey's medicinal benefits for treating burn wounds, analyzing 44 relevant studies published between 2014 and 2024. It highlights honey's antimicrobial, anti-inflammatory, and wound-healing properties, promoting faster healing, lower infection rates, and improved pain relief compared to traditional treatments. Despite challenges like standardization and regulation, the evidence supports honey as a promising natural treatment option for burns, advocating for its integration into standard wound care protocols.

Introduction (Background)

In this study, the aim was to comprehensively review sources and scholarly works on honey's medicinal properties and its application in the treatment of burn wounds. The methods employed and the results obtained in these studies were examined to assess the efficacy and potential mechanisms of action of honey in wound healing. Honey has been used for centuries for its therapeutic properties, including its antibacterial, anti-inflammatory, and wound-healing effects. Numerous studies have investigated the use of honey in the treatment of burn wounds, with promising results. However, there has been a need to systematically review and synthesize the existing literature to provide a comprehensive understanding of honey's role in burn wound management. This review involved searching various databases, including PubMed and UTSA library, to identify relevant studies published in peer-reviewed journals. They included randomized controlled trials, observational studies, and systematic reviews that evaluate the efficacy of honey in treating burn wounds. The methods used in these studies were analyzed, including the type of honey used, the mode of application, and the outcome measures assessed. Additionally, we will examine the results obtained, including the effects of honey treatment on wound healing parameters such as wound closure, infection rates, pain relief, and scar formation. By synthesizing the findings from these studies, the aim is to provide insights into the therapeutic potential of honey in burn wound management. This review contributes to the growing body of evidence supporting the use of honey as a natural and effective treatment option for burn wounds. Ultimately, these findings may inform clinical practice guidelines and facilitate the integration of honey-based therapies into standard wound care protocols.

Purpose

The aim of this experiment is to conduct a comprehensive review of existing literature on honey's medicinal properties and its application in treating burn wounds. Through an analysis of prior research evaluating the efficacy and potential of honey in treating burn wounds, valuable insights emerge regarding honey's credibility and utility as a treatment option.

Methods

Keywords such as 'wound', 'honey', 'burn wounds', and 'honey dressings' were used in popular databases such as UTSA Library and PubMed. While there were various results for the use of medical grade honey on wounds, this review will focus specifically on burn wounds. In narrowing down the research scope, focus was placed on sources published between 2014 and 2024. This timeframe ensures access to the most recent and up-to-date reviews, providing the latest insights and advancements in the field. By concentrating on this timeframe, the aim is to capture the most current understanding and findings related to honey's medicinal properties and its application in wound healing. Additionally, it was deliberately chosen not to restrict the search to specific countries. Instead, a wide net was cast to include sources from various regions across the globe. This approach ensures that information is gathered from diverse perspectives and experiences regarding honey's effectiveness in wound management. By encompassing a range of geographical locations, it's aimed to obtain a comprehensive understanding of the global landscape of honey-based wound treatments. While the geographical criteria were flexible, it remained stringent in ensuring the relevance of sources to the research objectives. Each selected study underwent revision and attention to detail to ensure its alignment with the main research focus on honey's effects on wound healing. This meticulous approach guarantees that the sources included in the review contribute directly to the investigation and provide valuable insights into the topic at hand.

Results

In the UTSA Library database, 24 out of 68 articles were found to be relevant to burn wounds and honey treatments. Among these 24, only 2 were studies conducted on animals. In PubMed's database, 20 out of 48 results were related to burn wounds and the therapeutic use of honey. Notably, 4 of these 20 results were animal studies, where researchers utilized burn wounds from various animal models, including rabbits, cats, dogs, and rats, to investigate the effects of honey as a medicinal treatment. Across these studies, various types of honey such as manuka, chestnut honey, acacia honey, and Moroccan thyme honey were employed to treat burns of different severities. Some studies also combined honey with other treatments, including silver ion dressings, hydrogels, herbal ointments, propolis, essential oils, curcumin, plasma membranes, and even milk. The burn wounds evaluated in these studies spanned from the scalp to the feet and included cases involving pediatric patients.

Furthermore, honey was used in some studies to preserve the viability of stem cells, specifically adipose stem cells, or combined with fetal skin extract. Comparative analyses were conducted to evaluate the effectiveness and cost-efficiency of honey dressings against other treatments such as silver sulfadiazine, skin grafts, topical ointments like Teucrium, collagen biosynthesis, povidone iodine, and ethacridine lactate (Rivanol). The majority of these studies reported significant differences in healing times across all burn severities. Additionally, honey was found to be effective in reducing pus and odor from burn wounds and was generally less painful than skin grafts. Importantly, honey emerged as a more cost-effective alternative to expensive procedures such as skin grafts, stem cell synthesis, plasma membranes, and collagen treatments. Furthermore, honey was found to promote healing more effectively than silver dressings or ointments.

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Relevant Articles Found in Two Databases from 2014- Current

Database	PubMed	UTSA Library
Number of Relevant Articles	20	24
Number of Relevant Articles including Animal Studies	4	2
Total Number of Articles from Search	48	68

Table 1: Table Consisting of Articles found from Two Databases using Relevant Keywords Ranging from 2014- Current.

Comparison of Minor Acute Wounds with and without Honey Dressings

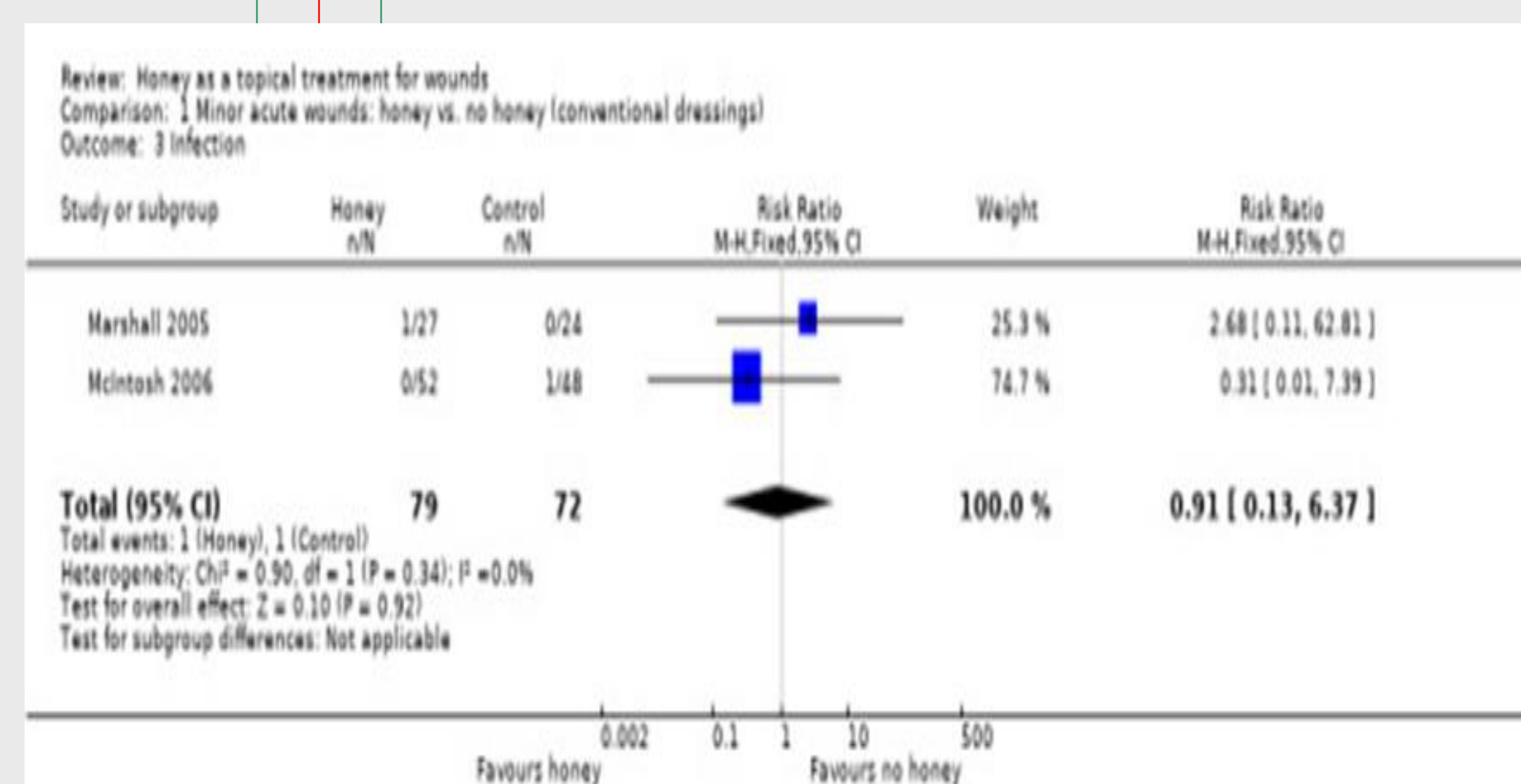


Figure 1: Comparison 1 Minor acute wounds: honey vs. no honey (conventional dressings), Outcome 3 Infection.



Figure 2: Comparison of Two Burn Wounds, One treated with Honey and the other being treated with Silver sulphadiazine

Conclusions

- > **Medical-Grade Honey in Burn Wound Care:**
 - > Renowned for efficacy due to antimicrobial properties.
 - > Attributes healing process acceleration to heightened acidity eradicating bacteria.
- > **Reviewing Hypotheses Accuracy:**
 - > Darker honey hues facilitate burns healing better than untreated wounds due to higher acid concentration.
 - > Application at lower temperature enhances effectiveness by reducing heat retention at wound site.
 - > Some studies lack specificity on honey color and application temperature.
- > **Supportive Evidence:**
 - > Research suggests honey dressings more effective than skin grafts, ointments, and procedures.
 - > Notable study by Andrew B. Jill et al. (2015) shows honey dressing significantly reduces healing time for partial-thickness burns compared to conventional dressings.
- > **Common Issues with Honey Dressings:**
 - > Lack of standardization, regulation, and clinical evidence.
 - > Potential allergic reactions due to difficulty in determining appropriate concentrations.
- > **Overall Objective:**
 - > Assess honey's impact compared to other treatments on burn wound healing.
 - > Synthesize findings to comprehend honey's therapeutic potential in burn wound

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Acknowledgements

We would like to extend our sincere appreciation to the CURES Program for their generous support and funding, which made this research possible. Additionally, We are deeply grateful to Dr. Ferhat Ozturk for his invaluable guidance, expertise, and encouragement throughout this project.