Honey in the treatment of burns: a systematic review and meta-analysis of its efficacy

Wijesinghe M, Weatherall M, Perrin K, Beasley R

CRD summary
The authors concluded that available evidence indicated a greater efficacy of honey compared with alternative dressing treatments for superficial or partial thickness burns. The authors' conclusions reflected the evidence presented, but it should be borne in mind that most studies were conducted in one institution, most studies had small sample sizes and there were weaknesses in the review process.

Authors' objectives
To determine efficacy of honey for burn wound management.

Searching
MEDLINE, EMBASE, CINAHL, Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials (CENTRAL) were searched to February 2007. Search terms were reported. Reference lists of relevant studies were scanned.

Study selection
Randomised controlled trials (RCTs) that compared efficacy of honey with a comparator dressing treatment for management of burns were eligible for inclusion. The primary outcome was proportion of patients with wounds healed at 15 days. Secondary outcomes were proportion of patients with healed wounds at 15 days where silver sulphadiazine was the comparator, number of sterile swabs at seven days, wound healing at 21 days, presence of hypergranulation tissue and formation of contractures.

Most studies used unprocessed honey applied to the wound and covered by sterile gauze that was changed every one or two days. Most studies used silver sulphadiazine-impregnated gauze as a comparator; other studies used either autoclaved potato peel bandages, amniotic membrane or bio-occlusive moisture permeable polyurethane dressing. Types of burns included superficial and partial thickness burns (total body surface area <40%).

Two reviewers independently selected studies for inclusion.

Assessment of study quality
Validity was assessed using the Jadad score to evaluate adequacy of randomisation, blinding and follow-up to maximum score of 5 points.

The authors did not state how many reviewers conducted the validity assessment.

Data extraction
Data were extracted for relevant outcomes and used to calculate odds ratios (ORs) and 95% confidence intervals (CI).

The authors did not state how many reviewers conducted data extraction.

Methods of synthesis
Studies were combined using the inverse variance weighting method. Where a zero cell count was reported 0.5 was added to each cell in the analysis. Heterogeneity was assessed using the \( I^2 \) statistic. A random-effects model was used in the presence of significant heterogeneity and a fixed-effect model was used in the absence of heterogeneity. Publication bias was assessed through visual inspection of funnel plots and formal tests (details not reported).

Results of the review
Eight RCTs (n=624) were included in the review. Methodological quality of included studies was poor. Each RCT
Honey was found to be more effective than comparators for: healing of burns at 15 days (OR 6.7, 95% CI 2.8 to 15.8, I²=66.1%; six RCTs); healing rates at 21 days (OR 12.6, 95% CI 5.1 to 31.4, I²=46.8%; five RCTs); presence of contractures (OR 0.4, 95% CI 0.1 to 1, I²=0%; five RCTs); and number of sterile swabs taken at seven days (OR 1.3, 95% CI 1.0 to 1.7; one RCT).

Honey was found to be more effective when compared to silver sulphadiazine only for 15 day healing rates (OR 8.0, 95% CI 2.6 to 25.0, I²=75.5%; four RCTs). There were no significant differences between groups for hypergranulation tissue formation (two RCTs).

There was no evidence of publication bias for any analyses.

Authors' conclusions
Available evidence indicated a greater efficacy of honey compared with alternative dressing treatments for superficial or partial thickness burns. Limitations in the studies included in the review restricted the clinical application of the findings.

CRD commentary
The review question was clear with clearly defined inclusion criteria for study design, intervention and participants; primary and secondary outcomes were specified. Several relevant sources were searched. It appeared that no efforts were made to reduce publication bias. It was unclear whether steps were taken to reduce potential for language bias. Formal assessment found no evidence of publication bias. Validity was assessed and results were reported. Appropriate methods to reduce reviewer error and bias were used in study selection; it was unclear whether similar steps were taken for validity assessment and data extraction. Appropriate methods were used to combine studies in a meta-analysis. Statistical heterogeneity was assessed, but not explored. Most included studies were undertaken by the same investigator in India; therefore, the generalisability of the results was unclear. The authors’ conclusions reflected the evidence presented, but it should be borne in mind that most studies were conducted in one institution, most studies had small sample sizes and there were weaknesses in the review process.

Implications of the review for practice and research
Practice: The authors stated that the poor quality of the included studies limited the clinical application of the findings.

Research: The authors stated that further methodologically robust research was required to determine the role of honey in management of superficial or partial thickness burns. Future trials should include comparisons with routine treatments and evaluate use in different patient groups.

Funding
Comvita New Zealand Limited (manuka honey producer).

Bibliographic details

PubMedID
19648986

Original Paper URL

Indexing Status
Subject indexing assigned by NLM
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.