

# Effect of Topical Honey Treatment on the Healing of Wounds Infected With Multidrug Resistant Bacteria

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## Abstract

The use of Honey in the medical field as a treatment for various illnesses has been in practice in the Islamic world since the revelation of the Quran and specifically the following verse. "There comes forth from their (bees') bellies, a drink of varying color wherein is healing for mankind" (El-Nahl 16:69). The old Islamic scholars and physicians classified illnesses and medications as cold and hot, and they described using the cold medications to treat the hot illnesses (for example cooling the head of a feverish patient or a swollen bruised hand) and using hot medications to treat cold illnesses (like drinking warm water to treat a cough). And Honey was classified as one of the Hot Medications [15]. Many contemporary studies tried to prove the healing properties of some kinds of Honey; some have claimed antibacterial, antioxidant and even Cell-regeneration properties from Honey [4]. Most of these studies were done in Vitro [10]. The study that I have conducted was done on actual patients who suffered from chronic wounds, they have sustained these wounds during the civil war in Libya, after their injuries there they were transported to several hospitals in Tunisia and Italy and finally in Germany. These deferent transportations and deferent hospital stays have made their bodies and wounds invested with a plethora of multidrug resistance organisms, the dominant being methicillin resistant staph aureus (MRSA). During the first 6 months of their stay in the Isolation ward of the Orthopedic department of the Hospital, they were not under my care, there wound healing had shown no much improvement despite daily dressing with the latest wound dressing available in the market and using daily wound disinfectants and body washing. When I was assigned to those patients, I started treating their wounds with Honey, after their consent and the agreement from my Chef. The Results were astounding, in a couple of weeks their wounds were healed. I have documented the process and here are my Methods and Results.

**Keywords:** Honey, wound healing, MRSA, MDRGN.

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## INTRODUCTION

The causes of delayed wound healing can be divided into two categories, systemic and local factors. The systemic factors are Malnutrition, Tissue Hypoxia (Diabetes mellitus, peripheral vascular disease, Anemia, Nicotine abuse), Immunodeficiency, Old age and Medications (Cytostatic, Anticoagulants, Immunosuppressive).

The local factors are Wound infection, a big wound Hematoma, lack of immobilization in the wound area, tension in the wound edges, foreign body, wound seroma, Wound dehiscence after primary suture closure and permanent pressure load on the wound.

To treat this problem first we must remove or manage the cause, after that comes the other principals and methods to treat delayed wound healing like Wound hygiene, Debridement, Vacuum Therapy, Leach

Therapy, Hemoglobin Spray, Antibiotics and Plastic reconstructive procedures.

According to the literature, the Honey has an antibacterial activity plus an anti-inflammatory and antioxidant activities which in turn promotes cell proliferation and regeneration [4, 10, 14].

In this study the effect of Honey on promoting wound healing in MRSA infested wounds was tested clinically on hospitalized patients.

## MATERIALS AND METHODS

This clinical trial was conducted on 10 wounds spread across 6 patients in Nordwest Hospital in Frankfurt Germany in the year 2017. The duration of the trial was 3 to 4 weeks.

All the wounds were infected with MRSA and 3 of the wounds were infected also with Multidrug

resistance gram-negative bacteria (MDRGN) *Proteus mirabilis*.

All the wounds were treated during the first 6 months with aqueous wound and mucous membrane antiseptic solution and daily sterile dressing changes.

All the patients underwent full body wash and nasal wash twice a week.

After the first 6 months, wound dressing with Honey was started.

The Honey used was Langnese German Honey.

The wounds were dressed every two days, the wounds were washed with antiseptic solution then with normal saline, the honey was applied on a sterile wound gauze covered with Petroleum Gauze Dressing to prevent sticking to the wound during the next dressing change.

The wound healing process was documented regularly either with a photo or measuring the wounds size and borders.

The wound area was measured at predetermined intervals, measurements were taken before the honey treatment and then on day 2, 7, 10, and 14 after the honey treatment.

## RESULTS

Table 1 indicates the trend in mean percentage of wound area from day 2 and this trend continued up to day 14 after creation of the wound. There was a decrease in wound area from day 2 and this trend continued up to the last observation of the study. On day 2 the percentage of the wound area was reduced to 94.2% as opposed to 100% on day 0. On day 14 the mean percentage of wound area was 11.3%.

**Table-1: Reduction in the percentage of the wound area at deferent time intervals (n = 10)**

Time	mean percentage of wound area
Day 0	100%
Day 2	94.2%
Day 7	53.6%
Day 10	31.8%
Day 14	11.3%



**Fig-1, 2: days after honey treatment, 5 mm healthy skin around the edges**



**Fig-2: One week after honey treatment, 2-3 cm of healthy skin around the edges**



**Fig-3: Ten days after honey treatment, the inflamed wound bed is replaced with healthy granulation tissue**



**Fig-4: Two weeks after honey treatment, the wound has shrunk to just two healing crusts**



**Fig-5: Two days after honey treatment, about 1cm of healthy skin around the edges**



**Fig-6: one week after honey treatment, the inflamed wound bed is replaced with healthy granulation tissue, 2-3 cm of healthy skin around the edges**



**Fig-7: 2: Weeks after honey treatment, the wound has shrunk to 1cm x 2cm with healthy wound bed**



**Fig-8: two days after honey treatment, 1-2 cm of healthy skin around the edges**



**Fig-9: One week after honey treatment. 3-5 cm of healthy skin around the edges**



**Fig-10: ten days after honey treatment, good granulation tissue and healthy-looking superficial wound**



**Fig-11: Two days after honey treatment, 0.5 cm to 1 cm of healthy skin around the edges**



**Fig-12: day seven after honey treatment, good granulation tissue and healthy looking superficial wound**



**Fig-13: two weeks after honey treatment, completely healed wound**

## DISCUSSION

The results showed a healing pattern that has been induced with the usage of honey. Wound healing starts with the reduction of the inflammation signs and a little reduction in the wound area after the second day. The rate of reduction of wound area increases rapidly after the formation of healthy granulation tissue, ending with a completely healed wound after 2 to 4 weeks.

## CONCLUSION

The usage of honey in the dressing of MRSA and MDRGN infected wounds is highly recommended, because it will decrease the overall healing time and the hospital stay. Honey has shown to have antibacterial properties and healing induction properties. The usage of honey in wounds caused by autoimmune diseases was not fully tested in this study, and therefore it is not recommended until farther studies.

## REFERENCES

1. Lindberg, T., Andersson, O., Palm, M., & Fagerström, C. (2015). A systematic review and meta-analysis of dressings used for wound healing: the efficiency of honey compared to silver on burns. *Contemporary nurse*, 51(2-3), 121-134.
2. Oryan, A., Alemzadeh, E., & Moshiri, A. (2016). Biological properties and therapeutic activities of honey in wound healing: a narrative review and meta-analysis. *Journal of tissue viability*, 25(2), 98-118.
3. Saikaly, S. K., & Khachemoune, A. (2017). Honey and wound healing: an update. *American journal of clinical dermatology*, 18(2), 237-251.
4. Nooh, H. Z., & Nour-Eldien, N. M. (2016). The dual anti-inflammatory and antioxidant activities of natural honey promote cell proliferation and neural regeneration in a rat model of colitis. *Acta histochemica*, 118(6), 588-595.
5. Jalil, M. A. A., Kasmuri, A. R., & Hadi, H. (2017). Stingless bee honey, the natural wound healer: A review. *Skin pharmacology and physiology*, 30(2), 66-75.
6. Blaser, G., Santos, K., Bode, U., Vetter, H., & Simon, A. (2007). Effect of medical honey on wounds colonised or infected with MRSA. *Journal of wound care*, 16(8), 325-328.
7. Role of honey in modern medicine. Meo SA, Al-Asiri SA, Mahesar AL, Ansari MJ. (2016).

8. Surahio, A. R., Khan, A. A., Farooq, M. U., & Fatima, I. (2014). Role of honey in wound dressing in diabetic foot ulcer. *Journal of Ayub Medical College Abbottabad*, 26(3), 304-306.
9. Goharshenasan, P., Amini, S., Atria, A., Abtahi, H., & Khorasani, G. (2016). Topical application of honey on surgical wounds: a randomized clinical trial. *Complementary Medicine Research*, 23(1), 12-15.
10. Niaz, K., Maqbool, F., Bahadar, H., & Abdollahi, M. (2017). Health Benefits of Manuka Honey as an Essential Constituent for Tissue Regeneration. *Current drug metabolism*, 18(10), 881-892.
11. Al-Waili, N., Salom, K., & Al-Ghamdi, A. A. (2011). Honey for wound healing, ulcers, and burns; data supporting its use in clinical practice. *The scientific world journal*, 11, 766-787.
12. Molan, P. C., & Rhodes, T. (2015). Honey: a biologic wound dressing.
13. Griffiths, C., Barker, J., Bleiker, T., Chalmers, R., & Creamer, D. (Eds.). (2016). *Rook's textbook of dermatology*. John Wiley & Sons.
14. Kwakman, P. H., & Zaat, S. A. (2012). Antibacterial components of honey. *IUBMB life*, 64(1), 48-55.
15. Al-yawziyya, I. Q. (1900). *al-Tibb al-Nabawi*.