Honey is one of the eldest nutritional products. The honey found in Tutankhamen’s tomb and was still edible, because honey does not spoil. Honey’s revival is due to many positive publications about its use in wound management and the revival of natural products in general. Honey’s antibacterial activity is proven and it can also reduce inflammation and swelling of the wound.

Antibacterial properties of honey

Honey has a clear antibacterial activity against more than 50 different bacteriae, including the antibiotic resistant MRSA (4). Honey has almost no adverse effects (5). It is important to use medical grade honey for consistent antibacterial results and to reduce the risk of residues and possible Clostridium botulinum contamination by honey. A type of honey used is Manuka (6). The minimum percentage of honey needed to reduce bacterial burden is 5% (7).

The antibacterial activity of honey is contributed to hydrogen peroxide, generated by the enzyme glucose oxidase which bees add to the honey. Not only the hydrogen peroxide is responsible; when this is broken down by catalase, the reduction of bacteriae continues (8). The high sugar content in honey (osmosis) and the antioxidant properties can explain the antibacterial activity (9). The speeding up of wound healing can be explained by the stimulation of certain white blood cells (monocytes), cells that play an important role in tissue regeneration (10).

Small amounts of bacteriae help

A small amount of bacteriae present in the wound has an important part in the healing process. These microorganisms are important for a low level of inflammation and the wound healing process (11). Inflammation is a normal part of any wound healing. But when inflammation leads to infection, wound healing is delayed or in worst case sepsis occurs. It is important for the clinician to distinguish the different phases of colonization of a wound. Typical signs of out-of-control inflammation are: pain, purulent exudates, malodour and an unhealthy appearance. In certain diseases, like diabetes mellitus, wounds are unable to heal properly, not even when the typical inflammation is present.

Chronic non healing wounds have an elevated alkaline environment, a high pH. Honey reduces that pH, making it more acidic, which improves wound healing. In an open label, non randomised prospective study with 17 patients presenting consecutively non healing (chronic) superficial ulcers, honey decreased the wound pH and reduced wound size (12). This study showed that if the wound pH was acidified, the wound would not heal. A lowering of the pH with 0.1 was associated with 8.1% reduction of wound size in two weeks time.

Moist wound environment stimulates healing

Another property of honey is that it keeps the wound moist, which accelerates healing. When the wound is too moist it can macerate. Due to the high sugar content in honey (80%), honey can absorb the abundance of fluids and prevent maceration, but still keep a balanced moist wound environment (13). Because honey induces fluid extraction from deeper layers of tissue, the wound climate becomes unfavourable for bacteriae. The honey will also create a barrier against bacteriae because of its viscosity.

Honey as a deodorant

When large numbers of bacteriae or fungi are present in a wound, a foul odour can be produced. Honey can neutralize this odour by reducing the amount of bacteriae (14).

Honey for chronic leg ulcers

In a prospective, open label, multicentre, randomised controlled trial 108 patients with venous leg ulcers were divided in two groups. The first group was treated with the New Zealand Manuka honey, the other group with a hydrogel (Intrasite gel). The wounds had more than 50% necrotic tissue. After 4 weeks the wounds in the honey group were app. 3 times smaller than in the control group. The honey clearly reduced the necrosis in two weeks time.

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Honey for ulcers with a lot of necrotic tissue; honey possibly heals faster than hydrogel.

In pressure sores and blisters honey is better than conventional therapy(17). Honey: pure liquid gold!(18)

A small study in 2007 showed good results in dermal transplants. The study concluded that honey showed to be an effective agent for split thickness skin graft fixations(19).

Cost effective?

A South African study compared the effect of medical honey with Intrasite gel in wounds from gold miners. Intrasite gel is a product consisting of primarily water and a substance to bind the water, to keep the wound moist. The study was double blind randomized and 87 patients were divided in two groups. There was a difference in wound healing. The honey was 24 times cheaper than Intrasite gel. The conclusion of this study was that honey was safe and extremely cost effective. All the more reason for further research(20).

Adverse effects

Honey on wounds has no adverse effects in humans. In maximum 5% of the patients the application of honey can induce pain(21). Patients with many allergies against a variety of substances might be allergic to honey, which means patients with serious atopic dermatitis.

Honey for burns

Honey’s efficacy has been by far studied the most in the treatment of burns. In 2008 the Cochrane group did a meta analysis to investigate honey’s wound healing value. One of their conclusions was that honey significantly speeds up wound healing in superficial to partial thickness wounds compared to other dressings like silver sulphadiazine and polyurethane films(22, 23). The Cochrane group pointed out however that all studies were done by one research group.

Practical tips

- Use only medical grade honey, irradiated and CE certified, because of the risk of infection with clostridium.
- The honey must cover the whole wound bed and may be applied on the wound edges.
- At the start of the treatment change the dressing once per day, when the wound has less exudate, the dressing changes can be every other day or once per three days.
- The honey can be used on its own, or covered with a secondary dressing when the honey becomes too liquid.
- There are no known adverse effects for diabetes patients to use honey on wounds.

In the Netherlands there are a number of medical grade honey products available. The liquid form: Manuka medical honey and MediHoney. But there are also products that have medical honey impregnated on a dressing.

Mesitran: honey ointment

Mesitran is an ointment that consists of: honey, lanolin, sunflower oil, cod liver oil, Calendula Officinalis, Aloe Barbadensis, vitamin C & E and zinc oxide. When the ointment is in contact with the wound, fluids will be extracted from the surrounding tissue. This creates a moist wound healing environment. The ointment promotes the debridement of necrosis and stimulates the migration of epithelia. Due to the strong osmotic action, Mesitran is antibacterial. The ointment will dilute gradually and can be removed with a wound cleanser. Mesitran is a primary dressing which can be covered with most secondary dressings.

Assessment

The IOCOB classifies honey as green-orange light(*) for burns. Honey seems to work well and often better than conventional dressings. The research in burns is conducted by one research group. We would like to see that other research groups provided similar results. In any case; honey fits really well in the portfolio of wound dressings.

References


Honey for Wounds !

Prof. Dr. Jan M. Keppel Hesselink (M.D) & Drs. David J. Kopsky (M.D.)

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