

## Healing without the sting

Author(s): Keith Cutting

Key words:

Infection rates,  
Risk assessment,  
Local clinical guidelines

Keith Cutting discusses the renaissance of honey as a therapeutic agent in wound management

Keith F Cutting MN, RN, Dip N, Cert Ed. Principal lecturer Tissue Viability. Buckinghamshire New University

The use of honey in wound care has received increasing attention in recent years, mainly as a result of improved formulations, increased availability, supportive research, clinical efficacy reports and numerous positive reports in the national and international press. These have all contributed to the renaissance of honey as a therapeutic agent, in particular, its use as an antimicrobial agent which neatly confronts the increasing number of reports on the problem of antibiotic resistance.

The therapeutic advantages of honey have been recorded by Molan (2001) and tabulated by Cutting (2007) Table 1.

Good practice dictates that before first application of any honey product the patient should always be assessed for risk of reaction/allergy to bee or honey products and asked about known sensitivities. Adverse effects from application



Melladerm PLUS available in 20g and 50g tubes



**Melladerm Plus® Case Study**

1. Sutured Skin Tear wound, dry and black. At this stage Melladerm® Plus was started.
2. Wound is debrided and granulating in less than 14 days Melladerm® Plus treatment. There is no maceration or damage to the surrounding skin.
3. Healed with Melladerm® Plus two months after initial trauma. Patient reported no pain or other discomfort.

**Key Benefits**

- Offers a more gentle approach than pure honey
- Maintains moist wound healing
- Utilises the antibacterial strengths of honey



**Table 1**

<b>Bioactivity of honey</b>	<b>Rationale</b>
Prevention of x-contamination	Viscosity of honey provides a protective barrier
Provides a moist wound healing environment	Osmolarity draws fluid from underlying tissues
Dressings do not adhere to wound surface Tissue does not grow into dressings	The viscous nature of honey provides an interface between wound bed and dressing
Promotes drainage from wound	Osmotic outflow sluices the wound bed
Removes malodour	Bacterial preferences for sugar instead of protein (amino acids) means lactic acid is produced in place of malodorous compounds
Promotes autolytic debridement	Bioactive effect of honey
Stimulates healing	Stimulation of healing has been observed together with objective measurements in animal wounds
Anti-inflammatory	Reduced number of inflammatory cells (histologically) found in honey treated wounds
Managing infection	Antiseptic properties are effective against a range of microbes including multi-resistant strains

of honey are rare and although Molan (2001) records that patients find honey soothing and non-irritating some clinicians report that a small number of patients may experience a stinging sensation (Vandeputte & Van Waeyenberge 2003). It has been stated that not all honeys are the same and for this reason honey should not be considered a generic term (Molan 2002). Consequently, with the introduction of a new honey product it should not be assumed that painful reactions following application may occasionally be expected.

Melladerm® PLUS is intended for use in all types of wounds, including burns and is derived from Bulgarian (BULGARIA H) mountain flower honey. Bulgaria H has been selected on the basis of its excellent wound healing properties. Melladerm® PLUS is a proprietary wound ointment/gel that contains 45% BULGARIA H and a mixture of ingredients including glycerin and polyethylene glycol 4000 (PEG 4000) to make the honey dressing more user friendly. PEG 4000 is a blend of water soluble polymers and its use as an additive to honey has been assessed by Subrahmanyam (1996).

Clinical evaluation reports prepared as part of a submission for CE marking on Melladerm Plus demonstrate healing without the disadvantage of occasionally incurring pain following application (Vandeputte 2007).

In addition to not inducing pain, a number of clinical advantages to Melladerm PLUS can be found. It has a remarkably rapid debridement capability (Vandeputte 2007). Melladerm PLUS also contains phenolic compounds (most frequently reported for antibacterial and antioxidant activities). Melladerm PLUS has a moisture content of 16.8%, possessing a high osmolarity that promotes a moist environment and permits easy change of dressing. Melladerm PLUS has a low pH (3.4) and it is known that harmful protease are more active when the wound pH is alkaline (Schultz et al 2005).

An additional factor related to low wound pH is the faster release of oxygen from oxyhaemoglobin. Ischaemia is a feature of many chronic wounds and the release of oxygen and subsequent availability assists cellular metabolism and healing (Wilson et al 1979).

*- end of page 22 -*

The Bulgarian Honey used in Melladerm PLUS is not heat processed. It is filtered to remove contaminants such as pollen that may cause allergic reactions. In order to kill possible anaerobic bacteria in the honey a novel patented process using ozone gas to sterilize the honey is used. This process also destroys fungi and yeasts. This processing does not result in loss of activity of glucose oxidase, an enzyme that is naturally present in honey and is very sensitive to heating. Compared to other types of honey, Bulgarian Honey has a high amount of glucose oxidase and is a rich source of phenolic antioxidants. Phenolics are known to possess antibacterial activity (Schramm et al 2003, Taormina et al 2001).

In order to illustrate the positive benefits of Melladerm PLUS a community tissue viability nurse has recorded the following "Medical honey is an effective wound dressing agent being particularly useful for patients with infected wounds. Unfortunately, some patients experience pain when the honey is initially applied

and for some the pain can be so severe that treatment has to be discontinued. With this in mind and with patient consent Melladerm PLUS was applied to a patient with a large chronic leg ulcer. The patient reported no pain on application or during the initial post dressing period." This account perhaps understates the personal experience of the patient, which, with permission is reported here, "I have never been able to tolerate the pain of any honey based dressing and before now it was so bad I looked like I was dancing out of the door. My wound needed cleaning up and Sister suggested this new Melladerm dressing. I didn't notice it had been applied, there was no sting and no pain afterwards."

### **References**

- Cutting KF. (2007) Honey and contemporary wound care: an overview. OWM 53,11:49-54
- Molan, P. (2001) Honey as a topical antibacterial agent for treatment of infected wounds. World Wide Wounds. Available at: [www.worldwidewounds.com/2001/november/Molan/honey-as-topical-agent.html](http://www.worldwidewounds.com/2001/november/Molan/honey-as-topical-agent.html) Accessed May 1st 2008.
- Molan P. (2002) Not all honeys are the same for wound healing. European Tissue Repair Society Bulletin 9,1
- Molan PC. (2001) Why honey is effective as a medicine 2. The scientific explanation of its effects. Bee World 82(1):22-40.
- Schramm DD, Karim M, Schrader HR. (2003) Honey with high levels of antioxidants can provide protection to healthy human subjects. J Agric Food Chem 51: 1732-35
- Schultz G, Ladwig G, Wysocki A. (2005) Extracellular matrix: review of its roles in acute and chronic wounds. World Wide Wounds available at [www.worldwidewounds.com/2005/august/Schultz/Extrace-Matric-Acute-Chronic-Wounds.html](http://www.worldwidewounds.com/2005/august/Schultz/Extrace-Matric-Acute-Chronic-Wounds.html) accessed 20 May 2008.
- Subrahmanyam N. (1996) Addition of antioxidants and polyethylene glycol 4000 enhances the healing property of honey in burns. Annals of Burns and Fire Disasters 9(2):93-95.
- Taormina PJ, Niemira BA, Beuchat LR. (2001) Inhibitory activity of honey against foodborne pathogens as influenced by the presence of hydrogen peroxide and level of antioxidant power. Int J Food Microbiol 69: 217-25
- Vandeputte J, Van Waeyenberge PH (2003) Clinical evaluation of L-Mesitran®, a honey-based wound ointment. European Wound

Management Association Journal. 3, 2, 8-11.

Vandeputte JAJ (2007) Clinical evaluation of Melladerm Plus,  
Technical file for CE marking.

Wilson I.A.I et al (1979) The pH of varicose ulcer surfaces and its  
relationship to healing, Vasa (Bern) 8, 339-342.

*- end of page 23 -*