

APPENDIX

GUIDELINES FOR THE USE OF HONEY IN WOUND MANAGEMENT

Val Robson

For those readers, who, like the author, underwent nurse training in the early 1970s, the use of honey in wound management will not be a new concept. Two milestones have revolutionised the management of wounds. First, the introduction of antibiotics, and, second the work carried out by Winter in 1962 introducing the concept that a warm moist environment encouraged healing. However, Winter's research took some twenty years to come to a routine clinical fruition with the inception of dressings that would provide an ideal healing environment. It was during the intervening years that honey was regularly used alongside hydrogen peroxide, yoghurt, egg white and oxygen, all used to debride and encourage new cell growth in wounds healing by secondary intention. When one considers that one of the qualities of honey is its weak (dilute), but long-acting and effective hydrogen peroxide content, then maybe its use in wound care management should not be surprising.

In recent years honey has enjoyed a renaissance with considerable amounts of research being performed in New Zealand, Australia and the UK (Molan and Betts, 2004; Cooper and Molan, 1999; Molan 1999; Dunford and Hanano, 2004; Willix *et al*, 1992; Cooper *et al*, 1999) adding to an existing body of evidence. Even though honey has a long history of over 4000 years as a natural remedy in the field of wound care, it is only in comparatively recent years that it has caught media attention. This has catapulted honey into public awareness, resulting in many patients arriving in clinics armed with jars of honey and newspaper cuttings extolling its virtues. This led to the dilemma of patients being keen to

experiment, while nurses felt that they would be stepping outside their role accountability if they were to apply a product to a wound that was not licensed for that purpose. This problem has now been resolved with the introduction to the UK Drug Tariff honey-based wound treatments that are regulated and sterilised by gamma radiation specifically for wound care. This method of sterilisation has no detrimental effects on the antibacterial quality of honey (Molan and Allen, 1996), but renders it safe from clostridial spores, which may cause wound botulism.

Honey provides a moist environment to promote healing and acts as a viscous barrier to minimise microbial invasion and fluid loss which, in turn, limits cross-infection (Molan, 1999). The antimicrobial quality of honey contributes to the rapid clearance of infection, the reduction of bacterial burden, and the elimination of odour (Molan, 1999). Honey is reported to act as a debriding agent, to be an anti-inflammatory and, therefore, prepares the wound bed to hasten healing (Molan, 1999). The constituents of honey and mode of action are covered in *Chapters 1 and 2*.

There will always be some wounds that fail to heal due to some patients' predisposing medical problems. Whilst there are a plethora of dressings designed to manage any wound at any stage of healing, the need for new and innovative ways of managing wounds will be required to aid wound healing. Non-healing wounds have substantial financial and social consequences for national and personal situations.

Wounds that fail to heal present the healthcare professional with a variety of problems that require individual attention, such as copious exudate, malodour and recurrent infections.

Classification of wounds suitable for treatment with honey

Chronic wounds

Chronic wounds fail to heal at predicted rates, and instead of transition from the acute inflammatory phase into the proliferative phase, a transition into chronic inflammation occurs (Cooper, 2001). This type of wound often accommodates areas of non-viable tissue, such as necrosis and slough, along with areas of healthy granulation and epithelialising tissue. Holistic assessment and the correct dressing selection are vital

to remove the non-viable tissue and to encourage the fragile new tissue growth.

The evidence to underpin the ability of honey to deal with characteristics proven to delay healing are well documented (Dunford *et al*, 2000; Efem, 1988; Robson, 2004; Dunford, 2000; see *Chapter 9* for details).

Honey has been used successfully on:

- leg ulceration (Robson, 2003; Natarajan *et al*, 2001; Alcaraz and Kelly, 2002)
- abdominal wound disruption (Phuapradit and Saropala, 1992)
- burns (Subrahmanyam, 1994; Bowler *et al*, 1999)
- infected donor sites*
- chronic inflammation (Robson, 2004; Dunford, 2000)
- preparation of the wound bed for split skin grafting*
- sinus*
- radiation necrosis*

* unpublished work. Clinical observation by author.

Malodorous wounds

Wound odour is commonly due to the presence of both aerobic and anaerobic bacteria within the wound (Bowler *et al*, 1999). The resulting effect is either elevated bioburden of the wound, causing no overt reaction, or clinical infection, causing the host to display the clinical symptoms of infection, ie. pain, swelling, erythema and heat. Once the presence of micro-organisms has started to grow and divide and establish wound infection or colonisation, the wound healing process will be arrested and the risk of cross-infection increased. Wound infection is one of the most significant factors that delay healing, although there is currently no consensus on the impact of specific micro-organisms on the healing process (White *et al*, 2001).

There have been numerous reported cases of reduction or elimination of wound odour following the application of honey (Dunford and Hanano, 2004; Robson, 2003; Alcaraz and Kelly, 2002; Kingsley, 2001). Many patients presenting with chronic wounds find the odour from the wound the most difficult symptom to live with (*Chapter 8*). The consequence of this manifestation has adverse effects on their quality of life, social activities and family life. Following the application of honey,

odour control is rapid, and, when combined with a necessary increase in the frequency of dressing renewal, this has a positive effect on both the wound and patient.

Acute wounds

Honey has been used successfully on donor and recipient sites. After harvesting, the honey is applied directly to the donor site with a non-adherent primary dressing. A secondary alginate dressing is applied to manage exudate. This dressing is changed after two days and honey and adhesive foam applied daily thereafter. It has been observed that exudate is quickly reduced and scarring is minimised. The recipient site has the perforated donor skin applied and then covered with Jelonet™ (Smith and Nephew). Jelonet is applied to any cavities within the wound and honey is applied with an alginate dressing to manage any exudate. A Surgipad™ (Johnson and Johnson) is then placed *in situ* with a wool and crepe bandage to secure. This dressing remains in place for five days. A new dressing of honey is applied to a non-adherent silicone dressing which is covered with a pad and secured with a wool and crepe. The procedure is repeated either daily or on alternate days depending on the level of exudate from the wound.

This procedure was developed by the author and Mr RG Ward, Consultant Vascular Surgeon. Aintree Hospitals Trust, Liverpool.

Excoriation

Honey dispensed from a tube can be applied to red, excoriated skin to reduce inflammation, and heal any small breaks in tissue. For dry, cracked and painful skin, honey can be mixed with an emollient or a commercially produced honey with moisturising cream applied to the affected area.

Application of honey

Research shows that the amount of honey required to have a positive

effect on the wound is generally felt to be 30–35 mls on a 10 cm x 10 cm dressing (Dunford, 2000; Molan and Betts, 2000; Molan and Betts, 2004; Molan, 1999). However, there are no hard and fast rules and much is dependent on the amount of exudate produced by the wound. A rule of thumb is to use honey as one would use an amorphous gel. Wound exudate can dilute the antibacterial activity of honey and can lead to it being washed from the wound (Molan and Betts, 2004). Nevertheless, honey with an average level of antibacterial activity can be expected to be effective in preventing bacterial growth even when diluted more than ten-fold by wound exudate (Cooper and Molan, 1999).

The surface area and position of the wound will naturally affect the choice of dressing suitable for the wound. Honey soaked into a calcium alginate dressing is often a practical answer to dressing large areas, or circumferential leg ulceration, simply because of its ease of application. It also prevents the honey leaking into the secondary dressing and prevents exudate washing the honey away from the wound bed by holding the honey in contact with the wound.

'Neat' honey applied directly from a tube is very effective but, on some occasions, once the honey has reached body temperature, it becomes more fluid and can leak around the dressing. A wound gel prepared with wax has a thicker consistency and is less likely to leak. Honey from a tube is also useful for cavities.

The topical use of honey can be considered for any wound healing by secondary intention, or acute wounds where there is tissue loss. In the author's experience, honey does not seem to have a positive effect on wounds completely covered in black eschar. However, other users of honey have reported that in those wounds where eschar is present, if they are scored with a blade to allow the honey to penetrate through this area to the wound bed below, the eschar is debrided from the wound.

Some honey and honey-impregnated dressings are now available on the UK Drug Tariff, giving the practitioner the choice of dressing and application best suited to the position and condition of the wound. At a time when resources, both financial and human, are at a premium, it would seem inappropriate to suggest frequent dressing changes. However, if consideration is given to the amount of resources that have been spent on a wound that may have failed to heal for months or even years, increasing the frequency of dressing changes to kick start wound healing must be viewed as a positive effect. Once wound healing has been established, frequency of dressing changes can be reviewed.

Allergy to honey is rare (Wood *et al*, 1997). Patients should be routinely asked if they have an allergy to bee stings or bee products. It

is prudent to withhold the application of honey should the patient be known to have a positive reaction.

In the author's experience, patients are eager to consent to the use of honey on their wound. There are no reported adverse effects to the application of honey to wounds. There have been reports of patients experiencing pain (Dunford and Hanano, 2004; Wood *et al*, 1997): some transient, and some necessitating the cessation of treatment.

For patients burdened with a chronic wound for weeks, months or years, whose lives and those of their families are frequently disrupted, honey may be considered as a first line management to a problem wound.

The reader should be aware that the only honey recommended for wound management is that which is specially prepared for this use, and is gamma irradiated to render it sterile. Processed honey prepared for consumption is not sterile and may contain botulism spores.

As with any wound care product, honey presented in tubes or dressings should be kept for single patient use only to avoid cross-infection.

Public involvement in health care is correctly increasing, and is often focused on 'natural' and complementary therapies. The practitioner should be mindful of what is available both in these fields and the more traditional or conventional treatments. However, with the long history honey has enjoyed, the question must be posed as to where it sits in this spectrum.

As honey continues to enjoy a revival and the evidence for its use in wound care continues to expand, it is rightfully taking its place alongside its counterparts in modern wound management.

References

- Alcaraz A, Kelly J (2002) Treatment of an infected venous leg ulcer with honey dressings. *Br J Nurs* **11**(13): 859–60, 862, 864–6
- Bowler PG, Davies BJ, Jones SA (1999) Microbial involvement in chronic wound malodour. *J Wound Care* **8**(5): 216–859–66
- Cooper R, Molan PC (1999) The use of honey as an antiseptic in managing *Pseudomonas* infection. *J Wound Care* **8**(4): 161–3
- Cooper RA, Molan PC, Harding KG (1999) Antibacterial activity of honey against strains of *Staphylococcus aureus* from infected wounds. *J R Soc Med* **92**: 283–5

- Cooper R (2001) How does honey heal wounds? In: Munn P, Jones R, eds. *Honey and Healing*. International Bee Research Association: 26–34
- Dunford C (2000) Using honey as a dressing for infected skin lesions. *Nurs Times Plus* **96**(14): 7–9
- Dunford C, Cooper RA, Molan PC (2000) The use of honey in wound management. *Nurs Standard* **15**(11): 63–8
- Dunford C, Hanano R (2004) Acceptability to patients of a honey dressing for non-healing venous leg ulcers. *J Wound Care* **13**(5): 193–7
- Efem SE (1988) Clinical observations on the wound healing properties of honey. *Br J Surg* **75**: 679–81
- Kingsley A (2001) The use of honey in the treatment of infected wounds: case studies. *Br J Nurs* (supplement) **10**(22): s13–s20
- Molan PC (1999) The role of honey in the management of wounds. *J Wound Care* **8**(8): 415–8
- Molan PC, Allen KL (1996) The effect of gamma-irradiation on the antibacterial activity of honey. *J Pharm Pharmacol* **48**: 1206–09
- Molan PC, Betts J (2000) Using honey dressings: the practical considerations. *Nurs Times* **96**(49): 36–7
- Molan PC, Betts JA (2004) Clinical usage of honey as a wound dressing: an update. *J Wound Care* **13**(9): 353–7
- Natarajan S, Williamson D, Grey J, Harding KG, Cooper RA (2001) Healing of an MRSA-colonized, hydroxyurea-induced leg ulcer with honey. *J Dermatol Treatment* **12**: 33–6
- Phuapradit W, Saropala N (1992) Topical application of honey in treatment of abdominal wound disruption. *Aust N Z J Obstet Gynaecol* **32**: 381–4
- Robson V (2003) Leptospermum honey used as a debriding agent. *Nurse* **2**(11): 66–8
- Robson V (2004) Use of Leptospermum honey in chronic wound management. *J Community Nurs* **18**(9): 24–8
- Subrahmanyam M (1994) Honey-impregnated gauze versus amniotic membrane in the treatment of burns. *Burns* **4**: 331–3
- Willix DJ, Molan PC, Harfoot CG (1992) A comparison of wound-infecting species of bacteria to the antibacterial activity of manuka honey and other honey. *J Appl Bacteriol* **73**: 388–94
- Winter GD (1962) Formation of the scab and the rate of epithelialization of superficial wounds in the skin of the young domestic pig. *Nature* **193**: 293–4
- Wood B, Rademaker M, Molan PC (1997) Manuka Honey, a low cost leg ulcer dressing. *N Z Med J* **110**: 107