

Localisation of an occult impalpable insulinoma by intra-operative ultrasonography. *J R Soc Med* 1988;81:663-4

9 Goode PN, Farndon JR, Anderson J, Johnston IDA, Monte JA. Diazoxide in the management of patients with insulinoma. *World J Surg* 1986;10:586-92

10 Wood SM, Kraenzlin ME, Adrian TE, Bloom SR. Treatment of patients with pancreatic endocrine tumours using a new long acting somatostatin analogue, symptomatic and peptide responses. *Gut* 1985;26:438-44

## Honey - a remedy rediscovered

Honey has had a valued place in traditional medicine for centuries. The prescription for a standard wound salve discovered in the Smith papyrus (an Egyptian text dating from between 2600 and 2200 BC) calls for a mixture of mrht (grease), byt (honey) and fit (lint/fibre) as transliterated from hieroglyphic symbols<sup>1,2</sup>. The ancient Egyptians, Assyrians, Chinese, Greeks and Romans employed honey for wounds and diseases of the gut. Honey was the most popular Egyptian drug being mentioned 500 times in 900 remedies<sup>1</sup>. Whilst Hippocrates (3rd and 4th centuries BC) made little use of drugs in treatment he prescribed a simple diet, favouring honey given as oxymel (vinegar and honey) for pain, hydromel (water and honey) for 'thirst'<sup>3,4</sup>, and a mixture of honey, water and various medicinal substances for acute fevers<sup>5</sup>. During the Biblical era honey received religious endorsement by both Christianity and Islam. When the Children of Israel were in Egypt or were journeying through the desert, the promise was made that their destination was to be 'a land flowing with milk and honey'<sup>6</sup>. The holy Qur'an vividly illustrates the potential therapeutic value of honey<sup>7,8</sup>.

Thy Lord has inspired the Bees,  
to build their hives in hills,  
on trees and in man's habitations,  
From within their bodies comes  
a drink of varying colours,  
wherein is healing for mankind,  
Verily in this is a Sign,  
for those who give thought.

Although a vast number of papers and articles have been published on the subject, most have concentrated on the biochemical analysis and food and non-food commercial uses<sup>9,10</sup>. In the past, scientific opinions on honey's nutritive and medical uses have differed and clashed with folklore. Controversies within the scientific community<sup>5</sup> have re-kindled interest in the therapeutic uses of honey in modern medicine. Recently, scientific support has emerged with a proliferation in publications on the successful therapeutic use of honey in several general medical and surgical conditions.

The antibacterial<sup>11-13</sup> and antifungal<sup>14</sup> properties of honey have been well documented, with growth of organisms such as *Staphylococcus aureus*, Enteropathogens and *Candida albicans* inhibited in undiluted honey. Jeddar *et al.*<sup>12</sup> have shown that honey at a concentration of 40% was bactericidal to various gram-negative and gram-positive bacteria. In particular, *Salmonella shigella*, enteropathogenic *Escherichia coli* and *Vibrio cholera* - all of which are major causes of morbidity and mortality worldwide. Used at concentrations of between 30% to 50% honey

was found to be superior to cephaloridine, ampicillin, gentamycin, nitrofurantoin, nalidixic acid and cotrimoxazole in inhibiting growth of nine types of pathogenic organisms isolated from the urine samples of 149 patients with confirmed urinary tract infection<sup>13</sup>. The mechanism of the antibacterial effect of honey remains speculative. Shrinkage disruption of the bacterial cell wall due to the osmotic effect, low pH, and the presence of bactericidal substances collectively called inhibine may contribute.

Honey has been of proven value in treating infected surgical wounds, burns and decubitus ulcers<sup>15-18</sup>. Cavanagh *et al.*<sup>11</sup> successfully used local application of honey in the postoperative management of patients who had undergone radical vulvectomy for vulval carcinoma. Wound healing was accelerated and less bacterial colonization noted by local application of honey in patients who developed postoperative wound breakdown. A recent study from West Africa<sup>19</sup> showed that skin grafting, surgical debridement and even amputation were avoided when local application of honey to wounds promoted healing whereas conventional treatment had failed. These observations have been borne out by an animal model in which pure commercially available honey applied on 12 mice healed wounds significantly faster than those of controls<sup>20</sup>. Honey is extremely viscous<sup>21</sup>, hygroscopic, contains enzymes such as catalase<sup>10</sup> and together with its antibiotic properties, this enables it to absorb water from surrounding oedematous tissue, clean the wound and protect it from further infection. Slough and necrotic tissue is gradually separated as a consequence, leaving healthy granulation tissue behind.

A clinical study involving 169 infants and children with gastroenteritis demonstrated that honey, given with oral rehydration fluid, shortens the duration of bacterial diarrhoea<sup>22</sup>. It was concluded that honey can safely be used as a substitute for glucose in solution with electrolytes and is just as efficient as glucose in promoting sodium and water absorption from the gut. Reports of supplementation of infant diets with unprocessed honey contaminated with spores of *Clostridium botulinum* resulting in botulism has put honey's traditional role in infant feeding rather severely into disrepute<sup>23</sup>.

Although honey has been used for commercial and domestic uses for thousands of years, much of the literature is only descriptive. Further evaluation and application of the healing properties of honey in other clinical and laboratory situations is warranted. For example, use of it could be made in the field of leprosy. The foul smelling, chronic ulcers contribute to the social degradation and isolation of the patient. Could these be treated with this simple, acceptable and readily available remedy? Deoxyfructose serotonin, a substance derived from coffee-wax, has an anti-*Mycobacterium leprae* action and has been shown in preliminary studies to be of benefit in patients with

active lepromatous leprosy<sup>24</sup>. Honey obtained from beeswax contains fructose in its different forms<sup>25</sup>, and may possess an anti-leprosy effect. Effects of various components of honey on cell-mediated immunity needs evaluation.

The therapeutic potential of uncontaminated, pure honey is grossly underutilized. It is widely available in most communities and although the mechanism of action of several of its properties remains obscure and needs further investigation, the time has now come for conventional medicine to lift the blinds off this 'traditional remedy' and give it its due recognition.

#### A Zumla

Department of Medicine  
Royal Postgraduate Medical School  
Hammersmith Hospital, London W12 0HS

#### A Lulat

Department of Medical Parasitology  
London School of Hygiene and Tropical Medicine  
London WC1E 7HT

#### References

- Grossman R. *The other medicines: the penicillin of bees*. Pan Books, 1986:177
- Majno G. *The healing hand: Man and wound in the Ancient world*. Cambridge: Harvard University Press, 1975
- Guthrie D. *A history of medicine*. Thomas Nelson 1958:57-8
- Adams F. *The genuine works of Hippocrates*. Baltimore: Williams & Wilkins, 1939
- Leading article. Honey: sweet and dangerous or panacea? *SAMJ* 1974;56:2300
- Taylor K. *The living Bible*. London: Hodder and Stoughton, 1971
- The Bee (Nahl), surah XVI, verse 69. In: *The Holy Qur'an* (text, translation and commentary by Abdullah Yusuf Ali), 2nd edn. American Trust Publications, 1987
- Irving TB, Ahmad K, Ahsan MM. The story of creation. In: *The Qur'an-basic teachings*, ch 5. Bath: Pitman Press, 1987:79
- Crane E. (ed.) *Honey: a comprehensive survey*. London: Heineman, 1975:157-206
- White JW Jnr. Honey. *Adv Food Res* 1978;24:287-375
- Cavanagh D, Beazly J, Ostapowicz F. Radical operation for carcinoma of the vulva: a new approach to wound healing. *J Obstet Gynaecol Br Cwllth* 1970;77:1037-40
- Jeddar A, Kharsany A, Ramsaroop UG, Bhamjee A, Haffjee IE, Moosa A. The antibacterial action of honey. An *in vitro* study. *SAMJ* 1985;67:257-8
- Ibrahim AS. Antibacterial action of honey. Proceedings of the First International Conference on Islamic Medicine, Kuwait, January, 1981. *Bull Islamic Med* 2nd edn, vol. 1. Kuwait: Ministry of Health, 1981:363-5
- Obaseiki-Ebor EE, Ofonya TCA. In vitro evaluation of the anti-candidiasis activity of honey distillate (HY-1) compared with that of some antimycotic agents. *J Pharm Pharmacol* 1984;34:283-4
- Blomfield R. Honey for decubitus ulcers. *JAMA* 1973;224:905
- Bulman MW. Honey as a surgical dressing. *Middx Hosp J* 1955;55:188-9
- Temnov VA. Bactericidal properties of honey and utilisation of honey and other beekeeping products for healing of wounds. *Bee World* 1944;25:86-7
- Armon PJ. The use of honey in the treatment of infected wounds. *Trop Doct* 1980;10:91
- Efem SE. Clinical observations on the wound healing properties of honey. *Br J Surg* 1988;75:679-81
- Bergman A, Yanai J, Weiss J, Bell D, David MP. Acceleration of wound healing by topical application of honey An animal model. *Am J Surg* 1983;145:374-6
- Lothrop RE. The composition of honey and its utilisation-relation of composition and viscosity. *Am Bee J* 1939;79:130-3
- Haffjee IE, Moosa A. Honey in the treatment of infantile gastroenteritis. *Br Med J* 1985;290:1866-7
- Arnon SS, Damus K, Wood RM. Honey and other environmental risk factors for infant botulism. *J Paediatr* 1979;94:331-6
- Antia NH, Ambrose EJ, Upleker MW, Mahadevan PR, Mester L. Effects of Deoxyfructosteronin (DFS) on lepromatous leprosy. *Lancet* 1988;i:619-21
- Siddiqui IR. The sugars of honey. *Adv Carboh Chem Biochem* 1970;25:285-309