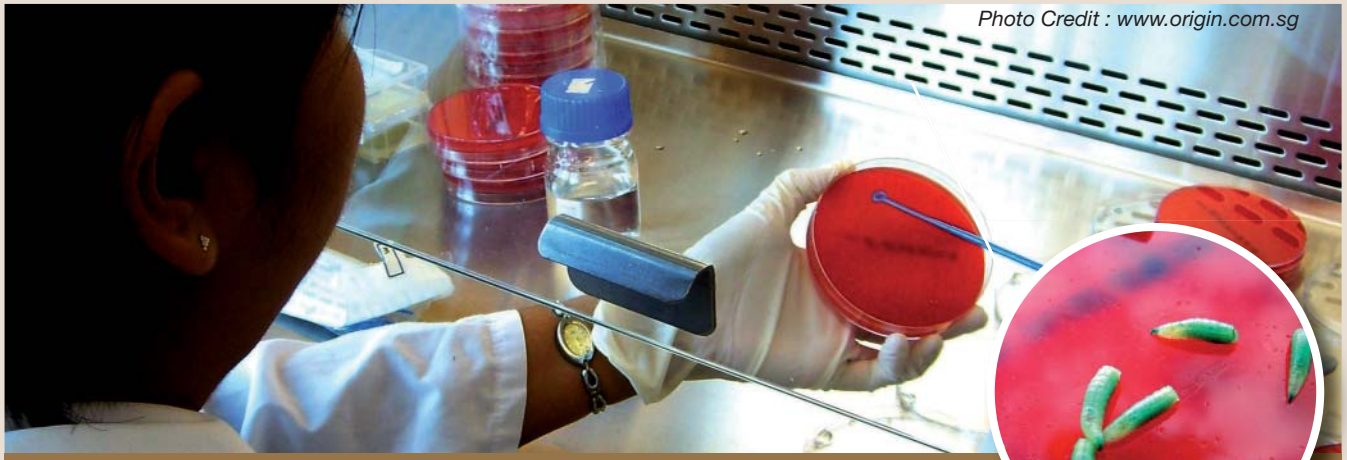

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CHEW ON THIS!

Dr Michael Ong, Medical Director of Hyperbaric Medical Services, opens the door to the amazing world of the tiny maggot and lets you in on the secrets of its healing potential.

1. How long has maggot therapy been in use?

The healing effect of maggots on wounds has been recognised for centuries. Since ancient times, people such as Australian Aborigines and Mayan Indians have used maggots to clean and treat wounds.

Reports from the 1800s have mentioned the beneficial action of maggots. During the Napoleonic Wars and the American Civil War, the mortality rate was lower among soldiers whose wounds were treated with maggots.

The treatment was brought up to date, after World War One, with the pioneering work of Dr William S Baer at John Hopkins University. The successful treatments, known as Maggot Debridement Therapy (MDT), were commonly practised throughout the 1930s and the 1940s.

Following World War Two, however, the use of maggots in wound-care declined rapidly as it was overshadowed by newly discovered antibiotics, such as penicillin, as well as improved surgical techniques.

2. Why the renewed interest in maggot therapy in recent years?

From a position of prominence, MDT became a 'forgotten' technology, seemingly confined to history until its recent rebirth. Its effectiveness and the emergence of antibiotic-resistant bacteria that plagues some patients and hospitals all over the world have resulted in this resurrected recognition.

This ancient healing technique has currently re-surfaced in modern medicine, offering genuine hope to patients and is now another weapon in the arsenal of healthcare professionals.

3. What are maggots?

Maggots are fly larvae, or immature flies that hatch from eggs of female flies. The fly's life cycle is composed of four stages: egg, larva (commonly known as a maggot), pupa and adult. After eight to 20 hours, the egg hatches and the fly enters the maggot stage. The maggot gorges itself with food until it is ready to enter the pupal stage, after which an adult fly emerges.

4. Why are maggots being used in chronic wounds and as an aid to wound-healing?

Not all species of flies are safe and effective as medicinal maggots. There are thousands of species of flies, each with its own habits and life cycle. Those flies whose larvae feed on dead animals will sometimes lay their eggs on the dead parts (necrotic or gangrenous tissue) of living animals.

When maggots are feeding on live animals, the condition is called myiasis. Some maggots will feed only on dead tissue, some only on live tissue, while some on a combination of live and dead tissue.

Maggots used in MDT have been specially selected and will only feed on dead, necrotic tissue. MDT is, therefore, a carefully controlled, artificially induced benign myiasis. Maggots are oxygen-breathing creatures and we need to keep this in mind when treating wounds.

5. What is debridement?

Debridement is a medical term referring to the removal of dead, damaged or infected tissue to improve the healing potential of the remaining healthy tissue. The debridement of necrotic tissue is a pre-requisite for successful wound care. If debridement does not take place, wound repair is significantly impaired. Debridement can be conducted in a number of ways, with the most common being surgical. However, other methods exist such as mechanical, chemical and autolytic (self-digestion).

Where maggot debridement really excels is in its precise removal of only dead (necrotic) and not healthy tissue (surgeons simply cannot be as precise in debriding dead tissue when there is presence of live tissue). Maggot debridement is also able to help disinfect and heal the wound through their unique characteristics and mode of operation.

6. How does MDT work?

There are three principle actions of MDT: Debridement, disinfection and healing stimulation.

Healthcare specialists apply sterile maggots to the wound and a dressing is used to secure the larvae in place to prevent them from spilling out or escaping. The maggots successfully debride the wound during their feeding process. They do this by secreting a broad spectrum of proteolytic (tissue dissolving) enzymes that liquefy necrotic tissue, which they are then able to digest. Maggots used in MDT will not damage healthy tissue, nor will they feed on it. Indeed, their small size and mode of action make them more accurate in removing only necrotic tissue, compared to traditional surgical procedures.

Maggot secretions also possess potent anti-microbial properties that help to disinfect the wound, and any bacteria not killed by these secretions are subsequently ingested back by the maggots. The maggots help to flush the wound by increasing fluid production at the location.

Studies have shown that maggots can inhibit and destroy a wide range of pathogenic bacteria including methicillin-resistant Staphylococcus aureus (MSRA), group A and B streptococci, gram-positive aerobic and anaerobic strains. Because of this amazing ability, maggot therapy has become an extremely potent tool against antibiotic-resistant bacteria.

Finally, MDT has established that the medicinal properties of maggot secretions and the action of 'micromassage' (mechanically stimulating tissue), certainly hasten the healing of wounds. The secretions contain allantoin and ammonium bicarbonate which promote wound-healing.

7. How effective and safe is MDT?

MDT has been shown to not only speed up the accurate removal of dead tissue but also to reduce the bacterial load within the wound, leading to faster healing, smaller scars and, most importantly, less pain for the patient.

MDT is a safe, effective, low cost method for the treatment of non-healing wounds and the removal of necrotic tissue. Whilst the use of live maggots in a medical procedure may appear repulsive to some people, its benefits far outweigh this drawback.

8. How would MDT benefit people with diabetes?

People with diabetic wounds that are slow to heal and which contain a lot of necrotic tissues or slough will benefit from MDT.

It is important for a diabetic wound to heal quickly even after a small amputation in order to prevent further amputations. In many cases of below- or above-knee amputations, the trouble begins with a small wound or after a small amputation where the wound simply would not heal.

As a guide, the wound should reveal reddish or pinkish growth of new tissues. It should also diminish to about to half its original size within six weeks or so. If the wound shows no improvement within that period, it suggests that wound healing is unlikely to take place.

However, it must be noted that not all wounds will heal after MDT. Maggot therapy is an adjunctive treatment. Other forms of treatments such as antibiotics, surgery, vascular pass, angioplasty and proper off-loading and hyperbaric oxygen therapy may still be required.

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