New Science Shows How Maggots Heal Wounds

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By Carrie Arnold

From ancient times until the advent of antibiotics, physicians used maggots to help clean injuries and prevent infection. Because the maggots feed solely on dead flesh, doctors did not have to worry about bugs feasting on healthy tissue. The arrival of antibiotics relegated medical maggots to an artifact of an earlier era.

Widespread antibiotic resistance, however, rekindled interest in the use of medical maggots, and in 2004 the fda approved them as a valid “medical device.” Today maggot providers raise the larvae from sterilized fly eggs and place them in tea bag–like packages that physicians apply directly to wounds. (The packages prevent the maggots from crawling off and completing their maturation into adult flies.) As more physicians have turned to the insects to treat wounds, scientists have uncovered the two-pronged process by which maggots work their magic.

One study published last year in the *Archives of Dermatology* showed that maggots placed on surgical incisions helped to clear more dead tissue from the sites than surgical debridement, the current standard of care in which doctors use a scalpel or scissors. “Maggot debridement takes out all the dead and infected tissue, which is necessary for the wound to close,” says lead author Anne Dompmartin-Blanchère, a dermatologist at the University Hospital Center of Caen in France. Surgical debridement is often lengthy and painful, something that maggot therapy eliminates, she adds.

A separate study published late last year in *Wound Regeneration and Repair* by Gwendolyn Cazander of Leiden University Medical Center in the Netherlands and her colleagues found that secretions from the maggots modulate the complement response, a part of the immune system that reacts to invading pathogens and is crucial to clearing infections. Some complement activation is necessary, but too much complement leads to chronic inflammation, which can keep injuries open and vulnerable to infection. Maggot secretions turned down complement activity in blood samples from healthy adults by inhibiting the production of several important complement proteins, and, the researchers found, reducing this overactive immune response speeds up healing. “About 50 to 80 percent of the wounds we see can be healed with maggots,” Cazander concludes.

Maggot therapy might sound medieval, but modern medicine seems to show that it works.