



GET DIRTY, AND GET HAPPY?

“Harmless Bug Works as well as Antidepressant Drugs” was the headline of an article I recently came across. As co-author of a book on the soil food web, this is the kind of story I like to find (not because I take antidepressants; I don’t, but I’ve been accused of needing them from time to time.). It’s just one more example of the many new things that keep coming out of the research box.

The story outlined research wherein mice were exposed to bacteria called mycobacteria, a type of Actinobacteria that includes several pathogens impacting humans, the most important being the causative agents of tuberculosis and leprosy. In this case the bacteria being used in the experiment is known as *M. vaccae*. “Vacca” is Latin for cow. This name was chosen because the bacterium was first discovered in cow dung.

Anyhow, these mice were then placed in beakers of water for a few minutes. The idea was to see how long they would swim around looking for a way out before giving up, and as it turned out mice exposed to mycobacteria swam for a long time. Apparently, depressed mice give up quicker than those in a good mental state.

Now, it’s one thing to say that mice exposed to soil microbes swim longer than those not so exposed before giving up. But to claim that working with soil containing mycobacteria serves as an antidepressant seems like a big stretch to me. Then I learned the same mycobacterium was



studied to see if it could cure some forms of cancer. It didn’t, but people exposed to mycobacteria reported increases in quality of life—“vitality and cognitive function and decreases in pain.” OK, now I’m listening.

The explanation put forth for this positive response gets complicated. It has something to do with touching or smelling the bacteria influencing immune cells to produce cytokines that stimulate release of serotonin, which impacts moods in a positive way.

Of course, we’ve discovered that soil-dwelling microbes have much to offer us. After all, the term “antibiotic” was coined by a soil microbiologist who discovered actinomycin as well as more than 20 other antibiotics, including neomycin, streptomycin, tetracycline, erythromycin, nystatin, and vancomycin. These antibiotics were all derived from what are now classified as soil bacteria, Actinomycetes, the same organisms that give compost and

soil their characteristic earthy smell. These and other soil microbes are also responsible for immunosuppressive drugs like FK506 and rapamycin, and anticancer agents like mitomycin C and actinomycin D.

One of the downsides when looking at soil microbes for antibiotics and other useful drugs is that one kind of bacteria look like their close relatives, who might be prone to producing different chemicals. So scientists have to run

through one culture of microorganism after another when looking for a potential new drug. Ninety-nine percent of the new discoveries are actually just rediscoveries of already known substances. Until DNA-identification techniques are perfected to aid in the search, discovering antibiotics from soil microbes will continue to be slow going.

Whatever the answers, the idea that one day you may be able to order a handful of soil to help fight depression is an intriguing thought. Maybe hydroponic growers should keep a little bag of soil around the place, just to keep their spirits up! 🍀

Jeff Lowenfels is an avid gardener with a special interest in soil biology and sustainable gardening. You can buy the book “Teaming With Microbes: A Gardener’s Guide to The Soil Food Web” from the Growing Edge online bookstore (www.growingedge.com/store/books_multimedia.php).