Your Belly Microbiome: Not Yet Ready for Roundup®

by Lisa Sarasohn

I thought I was through writing about your gut microbiome, the population of 100 trillion bacteria that dwell in your belly.

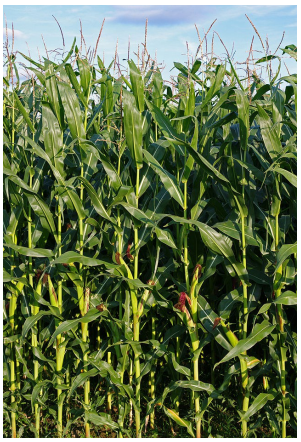
In previous posts I've written extensively about your belly bacteria, how they outnumber the cells in your body that carry your personal brand of DNA by a factor of 10 to 1.

How the diversity of species within your microbiome and their relative numbers shape your physical and mental health, from autism and depression through irritable bowel syndrome and inflammatory bowel disease and on to obesity.

How the ways you move and breathe, how the drugs you take, how the fermented foods you eat can make-or-break your gut microbial well-being.

In short, you need the trillions of beneficial bacteria in your gut to be alive and kicking. They're essential to your welfare. Kill them off and you're in trouble deep.

Trouble Deep



Here's the news: Eat GMO foods — foods made with Genetically Modified Organisms (lifeforms formerly known as "plants") — and their weed-killer residues kill beneficial bacteria in your gut.

How does this happen?

Genetically Modified (GM) wheat, corn, soy, sugar beets, and other crops now grow in fields doused with Roundup®, trade name for the herbicide that delivers the lethal ingredient glyphosate. These genetically engineered crops are "Roundup® Ready," meaning that they're engineered to grow (albeit with reduced nutrient uptake) in the midst of chemical warfare on weeds.

Although these plants survive the herbicide onslaught, they absorb glyphosate as they grow. Eat 'em, and you're delivering glyphosate to your digestive system.

But the beneficial bacteria in your belly are not Roundup® Ready.

Glyphosate eliminates these beneficial bacteria and their capacity to neutralize other microbe types that are up to no good. The glyphosate also interferes with your gut bacteria's ability to produce the four essential amino acids (constituents of vital proteins) that your body, being a mammalian body, is incapable of making.

Your Friend Tryptophan

One of these essential amino acids is tryptophan. Mess with your belly bacteria's production of tryptophan and you're messing with your brain's supply of serotonin, a neurotransmitter crucial to stabilizing both mood and appetite. Lose out on serotonin and you open the door to depression, obsessive-compulsive disorder, overeating, and many other miseries.

> For a dramatic account of what can happen when a person's brain becomes deprived of serotonin, listen to Dr. Vince Gilmer's story on This American Life.

But wait — there's more, much more.

For the details, you can read the paper by Anthony Samsel and Stephanie Seneff enticingly titled Glyphosate's Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome: Pathways to Modern Diseases.

Although I'm a biochemistry aficionado, you may not be. Alternatively, you can turn to Prevention's take on their paper here.

Harmless To Humans?

Samsel and Seneff name "glyphosate's ability to disrupt the gut bacteria" as one of the most important factors contributing to the chronic diseases increasingly common in Western culture:

> Contrary to the current widely-held misconception that glyphosate is relatively harmless to humans, the available evidence shows that glyphosate may rather be the most important factor in the development of multiple chronic diseases and conditions that have become prevalent in Westernized societies. In addition to autism, these include gastrointestinal issues such as inflammatory bowel disease, chronic diarrhea, colitis and Crohn's disease, obesity, cardiovascular disease, depression, cancer, cachexia, Alzheimer's disease, Parkinson's disease, multiple sclerosis, and ALS, among others. (Entropy **2013**, *15*, 1443)


Dr. Stephanie Seneff

Look in on interviews with wisewoman Dr. Stephanie Seneff here and here. Check out conversations with Anthony Samsel here and here.

Monsanto brought glyphosate to the U.S. in the form of Roundup® in 1974. Given the story that the herbicide's safe to use, Americans have applied the weed-killer more and more lavishly. Today, more than 100 million pounds of Roundup® land on American lawns and farms each year. Global use of glyphosate-type herbicides now amounts to more than 900 million pounds annually.

As Samsel and Seneff note:

> The notion that glyphosate has minimal toxicity in humans, widely popularized by

Monsanto, has prevented farmers from using caution in their application of this chemical to their crops. (Entropy **2013**, *15*, 1442)

Further Developments

As might be expected, the extravagant and widespread use of Roundup® has spurred the evolution of mutant ninja — a.k.a. glyphosate-resistant — weeds. Which in turn has incited more intensive use of the herbicide. The chemical companies are developing new products to apply in tandem with the weed-killers already in their inventories.

What to do?

Stay tuned for the next month's post.