How Bacteria Is Evolving – Should We Be Worried? (the answer is yes!)

Ah, bacteria, the original cockroach. No matter what you use to try and annihilate it, it keeps coming back, stronger than before. Strains of bacteria like listeria, campylobacter, and salmonella caused food poisoning affecting one in six people in the U.S. The bacteria resistant to the "antibiotic of last resort" has arrived in the U.S., and researchers in Canada have discovered a newly evolved, heat-loving strain of E. coli that survives temperatures high enough to cook meat medium-well. If harmful bacteria were to go into business, the stock would be climbing and the future would look terrific.

Dealing With the Usual Suspects

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Chipotle has suffered business setbacks. Blue Bell Creameries are permanently closed. Most recently, General Mills has recalled a full lot of their Gold Medal flour. The common thread? E. coli, listeria, salmonella, and all of those pesky bacteria responsible for over four million pounds of food being recalled in the U.S. in 2015 and food poisoning affecting roughly 48 million people.

The methods for detecting bacteria and pathogens in our food have become more sophisticated, so it's likely there have been many unrecorded outbreaks in the past. But then again, the number of cases attributed to the most well-known bacteria that cause food poisoning (like listeria, salmonella, or E. coli), have remained steady over the years, while campylobacter bacteria and rare Vibrio infections are on the

rise. When increased detection and better food safety standards still do not result in a decline in pathogens, where does that leave us?

Soooo…Fire?

From food safety 101 we know that food is only considered safe when we heat it enough to kill off harmful bacteria. But what do you do when the bacteria has mutated to withstand those temperatures, like the strain of E. coli discovered by Canadian researchers?

Food safety literature recommends heating beef to 160 degrees, although they also note that 140 degrees is a sufficient temperature to kill harmful bacteria in less than a minute. But the new strain of E. coli does not die. In fact, it lived for over an hour at a temperature of 140 degrees. Right now, 16 genes with this mutation are present in about 2% of E. coli strains (good and bad), but with the other evolutionary strides bacteria have been making, who knows what will happen!

Fire's Out. Soooo…Antibiotics?

People in the U.S. can now look forward to the newest shot fired in the bacteria vs. antibiotic war, now that bacteria has been found to be immune to colistin, a long-acknowledged "antibiotic of last resort". Constant use of antibiotics has encouraged bacteria to evolve, to build up an immunity to these drugs.

An entire group of antibiotics – sulphonamides – is being phased out due to bacteria resistance. Gonorrhea is showing signs of resistance to last resort treatment in 10 different countries, and there are no new antibiotics in development to treat it. Stories like these are becoming more and more common as our extensive use of antibiotics continues to breed stronger bacteria. We respond with new antibiotics and the

next generation of the bacteria is more resistant than before. When it ends, do you really think we're going to end up on top?

Can We Actually Control the Bacteria?

If your reaction to hearing all of this bad news about bacteria is to scream something along the lines of, "Kill it with fire!" you're not alone. Solutions like antibiotics, antibacterial soaps, and hand sanitizers came with a price. They became part of the problem.

There are no easy answers here. Ideally, we will stop treating livestock with unneeded antibiotics. We will stop the indiscriminate use of antibiotics to treat infections and seek alternative treatments whenever possible. Maybe we will go so far as to change our diets to build immunity and encourage our natural, protective bacteria to thrive.

Are we past the point that these changes will be enough. Is our microbial world going to end up a cautionary tale a la Jurassic Park? Keep in mind that we can't just seal off the island.

Related Reading:

- *After Taking Antibiotics, This Is What You Need To Do To Restore Healthy Intestinal Flora*
- *Candida, Gut Flora, Allergies, and Disease*
- *The Fascinating Bacteria in our Gut, and How it Affects Our Whole Lives*
- *How to Detoxify From Chemotherapy and Repair the Body*

Sources:

- *Researcher's Warn of New E. Coli Strain That Can 'Survive Cooking'* – grubstreet.com

- *Germ Resistant to Antibiotic of Last Resort Appears in U.S.* – npr.org
- *Antimicrobial Resistance* – World Health Organization
- *Trends in Foodbourne Illness in the United States, 2012* – cdc.gov
- *How Food Recalls Really Work* – eater.com