

CHAPTER
7

FUTURE OF PROBIOTICS

A CONVERSATION ABOUT BACTERIA WITH most people has a typical beginning: “Oh yuck, I’m afraid of bacteria!” After explaining that not all bacteria are bad and mentioning the term probiotic, many will respond, “Oh, you mean acidophilus?” Well, not quite, but it’s a step in the right direction.

We’ve seen an important shift. Mainstream news sources are beginning to tell people that not all bacteria are bad. We are finally getting past the fear-based mentality that surrounds our view of bacteria.

Scientific research to date has confirmed that we can successfully join forces with the good bugs in our bodies to help alleviate illness and enhance our overall vitality and wellbeing. But is that the end of the story? Actually, that’s just the beginning.

To gain a more comprehensive perspective of this topic, we’ve searched out some of the leading bacteria experts throughout the world. Our quest for knowledge begins in Japan.

Interview with Iichiroh Ohhira, PhD

For nearly three decades distinguished professor and Japanese research scientist Iichiroh Ohhira, PhD, has been analyzing bacteria. Dr. Ohhira is an award-winning scientist who holds three

different doctorate degrees. He is a member of the prestigious New York Academy of Science and serves as the technical advisor on agricultural and environmental issues to the Government of Chengdu, Sichuan Province, China. He has authored or co-authored more than 20 published scientific studies on lactic acid bacteria. His discovery of the proprietary strain *E. aecalis* TH10 has been proven to be more than six times stronger than any other naturally-occurring lactic acid bacteria. He is the first person in the world to successfully encapsulate 12 strains of live friendly bacteria in one capsule. We had the rare opportunity to have an in-depth interview with Dr. Ohhira.

Q. What are the main focus areas of your research?

A. I have three main areas of research including anti-allergy; the promotion of chemical-free organic farming and fruit cultivation, including the prevention of continuous cropping-related problems; and research into chemical-free golf courses. All of our research includes the exploration of lactic acid bacteria and how we can more effectively utilize these useful microorganisms.

Q. It seems as though you have a strong interest in the environment and natural health. Does this influence your research direction?

A. Yes. I have always been interested in agriculture and natural sciences. I studied microbiology, specifically lactic acid bacteria, at Okayama University in Japan with Professor Nakae, a world authority. I am interested in learning new things and teaching others. I have always known that we should have respect for our environment and that the source of the foods we eat is as important as the foods themselves. My interest in the environment and agriculture led me to lactic acid bacteria. I soon discovered that these useful microorganisms are essential to health.

Q. What are some of the significant discoveries you and your research team have made?

A. Certainly the discovery of *Enterococcus faecalis* TH10 was significant and our research on its antimicrobial activity against MRSA. More broadly, in the 1980s, we discovered that more lactic acid bacteria are not necessarily better. Most research in other countries has focused on inundating the body with large numbers of colony forming units of one or two strains. Our research showed us that flooding the body in this way can activate the body's T and B cells to fight what they perceive as invading bad bacteria. In other words, this strategy was causing the opposite effect of what we wanted from lactic acid bacteria.

Q. When you found this out, what did you do?

A. We focused on ways to support the individual strains in the human body. Of course, we don't know exactly what strains are in each individual, so we needed to find a way to enhance the body's capabilities to produce its own unique strains of lactic acid bacteria and then help those bacteria become strong and repopulate.

Q. How did you do this?

A. We began by researching the best way to encourage the growth of live and viable strains of lactic acid bacteria. We found that we needed several strains, not just one or two, and we knew we needed to encourage their growth in a natural setting. So, after much experimenting, we came up with a proprietary blend of wild-crafted fruits, herbs, and seaweeds. We found that the most effective recipe includes a blend of 92 natural crops including herbs, fruits, roots, vegetables, and mushrooms. We also add the *E faecalis* TH10 bacteria from tempeh, which is a traditional fermented delicacy from Malaysia.

We discovered that a multi-year, normal temperature, natural fermentation process is necessary. We don't just take all 92 crops and throw them in a vat to ferment. We introduce each ingredient when it is seasonally ripe. This assures productive fermentation. We found that certain ingredients should be introduced only in a specific season—fall, winter, spring, or summer.

Q. Why is it important to ferment for such a long time?

- A. The longer the fermentation, the more powerful and viable the lactic acid bacteria will become. This process allows the weaker bacteria to die off and the stronger bacteria to become even stronger. Through natural selection, the bacteria gain strength with each generation through each season. Only time can provide this benefit.

Q. Why is this important?

- A. If the bacteria are not strong when they are packaged, there is less of a chance they will survive. They need to survive packaging and shipping, but they also need to survive once they are ingested. We have found that after ingestion, the TH10 strain resides in the gastrointestinal tract for an extended period of time where it flourishes and co-exists with the individual's colonizing bacteria, like the *lactobacillus* and *bifidobacteria* strains that already inhabit the intestinal walls.

Q. How does this compare to other methods of probiotic preparation, such as freeze drying, centrifuging, or ultrafiltration?

- A. Friendly bacteria grow in a cultured medium, which is a solution that contains all of the nutrients that the bacteria need to grow. As the bacteria grow, they transform the culturing medium into a different substance. This is a completely new compound that contains everything necessary for the bacteria to thrive. The

processing methods you mention separate this new substance and destroy the best condition for the friendly bacteria to survive and provide health benefits. The addition of stabilizers, preservatives, and pasteurization will further weaken the lactic acid bacteria. The fermentation process that I have developed maintains the integrity of the whole versus isolating the bacterial parts. Lactic acid bacteria must be viable in order to be effective. In addition, they need organic acids, micronutrients, and natural prebiotics in order to thrive.

Q. Why are organic acids, micronutrients, and natural prebiotics important?

A. Because it provides food for the lactic acid bacteria. Just as we require food to live, so do bacteria. The recipe we have chosen, which ferments for at least three years, is specifically designed to keep the lactic acid bacteria viable for a longer period of time. These prebiotics feed the probiotics.

Q. It sounds like an arduous task?

A. It is, but it is the only way. We must be vigilant about the addition of the natural ingredients and the bacterial strains. We must be patient if we are to achieve the results we desire.

Let's continue our quest for bacterial information in Ireland.

Interview with Eamonn Quigley, MD

Gastroenterology is an important sub-specialty in medicine. As digestive disorders become increasingly common, it is the role of the gastroenterologist to stay abreast of scientific advancements in the areas of diagnosis and treatment. Because bacteria are the main “residents” of the gastrointestinal system, this is becoming a key area of focus for this important medical specialty.