

Webinar 4 Handout:
GUT HEALTH & PROBIOTICS

By now most people have at least heard of probiotics, a type of “friendly” bacteria found in fermented foods like yogurt and kefir. These little guys have gotten a lot of hype in recent years and we’re beginning to learn more and more about the beneficial effects they can have in the body. We know that eating probiotics helps support a healthy gut, and the gut is one of the hottest new topics in nutrition research because it is connected to so many other facets of health. We also know you need prebiotics to help keep your gut bacteria happy and fed. Here’s the skinny on the gut and what you need to know about probiotics and prebiotics: what they are, how they work, where you can find them, and why you should eat them.

The Gut

Okay, let’s start with a quick anatomy review. When we talk about the gut, we mean the gastrointestinal tract, a loooong tube that starts at the mouth and ends in the anus. The path includes the esophagus, stomach, small intestine, large intestine, and rectum. The gut is responsible for breaking down and processing food. It’s also home to nearly 100 trillion bacteria (seriously!) that are essential for health. The bacteria in your gut are referred to as microbiota and they make up your microbiome. Eating probiotics and prebiotics is the best way to maintain a healthy microbiome. As we’ll talk about below, a healthy gut is important for overall health and wellness.

What are Probiotics?

Probiotics are defined by the World Health Organization (WHO) as “live microorganisms, which, when consumed in adequate amounts, confer a health benefit on the host.” Basically, they are live microbes that are often called “good” or “friendly” bacteria because they’re beneficial to the body when we chow down on enough of ‘em. They’re commonly found in yogurt but they can be found in other foods too (we’ll get into that later). There isn’t just one kind of probiotic and not all probiotics are the same. There are many strains of friendly bacteria that can act as probiotics, and the benefits imparted are unique to each strain. The strain is the specific name for the bacteria. These invisible to the naked eye microbes have long and complicated names, which are written in italics with the genus capitalized, followed by the species - for example, *Lactobacillus acidophilus*. Potential benefits include regulating the digestive system, supporting the immune system, and maintaining oral health.

What are Prebiotics?

Prebiotics are food for probiotics. They aren't alive; they're compounds in food that aren't digested. As they go through the GI, they promote growth and activity of friendly bacteria in the intestine. They also have benefits that go beyond feeding probiotics (more below). The official definition is "a selectively fermented ingredient that allows specific changes, both in the composition and/or activity in the gastrointestinal microflora, that confer benefits." All prebiotics are fiber, but not all fiber are prebiotics. Common prebiotics are inulin and oligosaccharides. Prebiotic-rich foods include artichokes, asparagus, bananas, chicory, garlic, leeks, oats, onions, soybeans and wheat.

How Probiotics Work

The intestinal tract is made up of a complex ecosystem of bacteria, known as the "intestinal microbiota." The intestinal microbiota contains both "good" and "bad" bacteria. Lack of sleep, stress, or other triggers can tip the balance towards "bad" bacteria which can negatively affect digestive health and overall well-being. Each strain of "bad" bacteria does different things in the body, but possible effects include ulcers, diarrhea, stomach pain, nausea, vomiting, or even alterations in mood. Eating foods with probiotics is a way to deliver some friendly bacteria to the intestinal tract, keep the balance of bacteria in check, and improve the functioning of the intestinal system and entire body. Eating foods with prebiotics (think fiber-rich foods) helps keep the good bacteria alive and well.

Benefits of a Healthy Gut

Different types of probiotic bacterial strains have different beneficial effects on the body and the benefits of a healthy microbiome go way beyond intestinal health. Possible benefits of probiotics include:

- Aiding digestion
- Detoxifying carcinogens (chemicals that cause cancer)
- Easing inflammation
- Enhancing immunity
- Improving symptoms of inflammatory bowel disease and irritable bowel syndrome
- Increasing absorption of nutrients
- Lowering blood pressure
- Lowering LDL (bad) cholesterol and raising HDL (good) cholesterol
- Maintaining a healthy weight
- Reducing *H. pylori* (bacteria that causes ulcers)

Aside from feeding probiotics, benefits of prebiotics include:

- Reducing prevalence and duration of diarrhea
- Reducing inflammation and symptoms of inflammatory bowel disease
- Helping to prevent colon cancer
- Enhancing absorption of minerals, including calcium, magnesium, and iron
- Lowering risk factors for cardiovascular disease
- Promoting satiety and weight loss
- Preventing obesity

Scientists have also discovered a powerful gut-brain connection. Your gut has its very own nervous system, called the Enteric Nervous System (ENS), that acts like a “second brain.” The ENS’ main job is to regulate digestion, but it also sends regular signals to the brain via the vagus nerve.

Microbes control those signals, so you can imagine you want the friendly guys in control. If the microbiota of your gut is in favor of bad bacteria, signals can get out of whack and influence your moods in negative ways. Studies have shown changing the makeup of gut microbiota actually change how mice behave, affecting anxiety and cognition, for instance. Mice raised without beneficial microbes also have been shown to be less capable of managing stress. Eating enough probiotics can improve your mood, reduce anxiety and possibly help treat depression.

Where To Find Probiotics

Probiotics can be found in both food and supplements. Although it might be easier to get the beneficial amount of probiotics by consuming them in supplement form, food sources are still the better way to deliver these bugs to the belly. Nutrients in the food work together with the probiotics. For example, probiotics can increase the amounts of folate, niacin and riboflavin in yogurt. They can also help increase the absorption of protein, fat and other nutrients. There is even evidence that certain probiotics can alleviate symptoms of lactose intolerance - studies show that people with lactose intolerance better tolerate lactose in yogurt than in milk because certain probiotics like *Lactobacillus acidophilus* actually produce the lactase enzyme, making it easy for people to digest and absorb lactose. Additionally, food can help buffer the acidity of the stomach, which enhances the stability of probiotics in the body.

The most common source of probiotics in the American diet is yogurt, but they can be found in other types of fermented foods too, including cheese, kefir, sauerkraut, sour pickles, tempeh, wine, beer and miso soup. Most often when foods are fermented, bacteria (or yeast) are introduced to the food (in the form of starter cultures) to break sugars down into simpler molecules such as alcohols

and acids. Starter cultures will be different depending on the probiotic-laden food. For example, when you make yogurt, dried cultured yogurt is added to the milk at a certain point and acts as the starter. Some foods don't even need added cultures; when sauerkraut is made, fermentation is introduced naturally as there is bacteria present on raw cabbage leaves.

Some foods like yogurt are often labeled as having "live and active cultures." While probiotics are a type of live and active culture, not all live and active cultures are probiotics, so a product that says it contains live and active cultures might not necessarily have probiotics. Live and active cultures are microbes used to ferment foods and don't necessarily have the same beneficial effects in the body as probiotics. (Think of it like this: there are lots of different types of shoes out there, but only some are specifically designed for running.) Since there is no set formula for listing probiotics on labels, the most trustworthy products with probiotics will clearly state that probiotics are present (and what strains), and may even list what the benefits are and the amount of food you need to eat in order to reap the benefits.

Our food supply has become more and more sterile over the years -- we irradiate produce (unless it is organic), add stabilizers and otherwise "preserve" our foods to prevent spoilage. In doing so, we often kill off many of the probiotics that were happily thriving on our foods. We also face a problem of over-prescribing antibiotics, which can wipe out lots of good bacteria too. Our digestive tracts have been missing these little critters, thanks to the modern day way of shopping, eating and medicating. Reintroducing probiotics keeps us well, so make sure probiotic rich foods are in your Nutritious Life meal plan every day.