

Module 4, Lesson 3 Handout: Bacteria Strains

You're familiar with probiotics from Level 1 and are aware of the foods you may recommend to increase probiotics in clients' diets to improve overall gut health. On top of these recommendations, many clients may also be interested in or could benefit from supplementation. This is where things can get tricky. Probiotics aren't one size fits all and recommendations need to be tailored to the individual's condition, symptoms and health goals because not all bacteria strains do the same thing. For example, if your client is interested in taking a probiotic for bloating, you're not going to make the same recommendation as with a client who's complaining of migraine headaches. Same goes for mood, weight and all other conditions.

Things get even trickier because supplements usually contain a mix of strains versus one single strain. Specific supplement products (containing multiple strains) are generally not studied (versus the strain itself being studied) so this can make it even more difficult for the average consumer to choose a product. The list below will help you understand some of the more common and researched backed strains recommended for specific conditions. The Alliance for Education on Probiotics also has a helpful database where you can search by health condition and find specific strains known to help with those conditions and brand name products that contain those strains (www.usprobioticguide.com). This may be an area where the client is best off consulting their GI doc because it's not so clear cut - consider your scope of practice.

Weight Management & Obesity

Bifidobacterium animalis ssp. lactis, Lactobacillus gasseri & Lactobacillus rhamnosus

Results from research on obesity and probiotics is mixed, but this is a very interesting area of study which we will definitely be seeing a lot more of. The fecal transplant research is discussed in the handout on microbiome research. Here's another interesting study: one 12-week clinical trial, randomized 210 (aged 35 - 60 years old) healthy adults with large amounts of visceral fat to consume particular amounts of CFUs of *Lactobacillus gasseri* versus the control group who received zero. Participants who received the top two amounts of the probiotics experienced significant reductions in visceral fat area, body mass index, waist and hip circumference and body fat mass compared with the control group. Other research published in *The British Journal of Nutrition* studied *Lactobacillus rhamnosus* and its effect on men versus women. Interestingly, women were shown to have significantly more fat mass reduction than men. Another study looking at the effect of *Bifidobacterium animalis ssp. lactis* in adults found that after 12 weeks, visceral fat area was significantly reduced in the group that received probiotic compared with the placebo group.

IBS

Lactobacillus & Bifidobacterium

Research has shown that proinflammatory bacterial species, including *Enterobacteriaceae*, are abundant in patients with IBS. These patients also tend to have corresponding low amounts of *Lactobacillus* and *Bifidobacterium*. Many products contain these strains (*Lactobacillus* and *Bifidobacterium*) and have the potential to improve gut microbiome and improve symptoms of IBS. However, this is where it gets even more specific. *Lactobacillus* and *Bifidobacterium* are two genus of probiotics known to help IBS (and other gut disorders) but depending up on the specific symptom of that disorder a different species of this genus may be appropriate. For example, *Lactobacillus acidophilus* is a specific species (often seen as *L. acidophilus*) that has been shown to help reduce abdominal pain or discomfort in people with IBS. However, a study that tested *Lactobacillus rhamnosus GG* use in children with IBS found this strain to be helpful in reducing abdominal distention but it didn't provide abdominal pain relief. A different study in children found that a mix of three different types of *Bifidobacterium* helped relieve pain but it didn't improve symptoms of indigestion. Long story short, this isn't clear cut and can sometimes require testing out a few different bacterial mixes to get it right for the individual, so consider your scope of practice.

Immune Support

Lactobacillus & *Bifidobacterium*

There is much research supporting gut health and immunity. An overall healthy gut is protective for immunity and an unhealthy gut has also been linked to autoimmune conditions. The tricky part is that the way a probiotic works for one person is going to be different for another. The effects depend on the specific probiotic gene and the function of probiotic genes also depends on the host's microenvironment. In other words, the microbiome. Overall, probiotics have been shown to have potential benefits for certain allergies and viral infections but it may time to figure out which specific one works for the individual. In one lab study, *Bifidobacterium infantis* was shown to help increase the resistance of the intestinal barrier. Other lab work finds *Lactobacillus paracasei* can enhance the immune responses in a mouse model. This area is very complex. The general effects of probiotics on the innate immune system are well established but more research is needed to look into the specific effects of different strains on adaptive immunity.

Brain Function & Mood

Lactobacillus brevis & *Bifidobacterium dentium*

The connection between gut bacteria and our brains is known to be strong. Gut bacteria has been linked to changes in production of neurotransmitters. The two bacteria strains *lactobacillus brevis* and *bifidobacterium dentium* have been shown to increase levels of gamma aminobutyric acid (GABA), the neurotransmitter responsible for providing a sense of calmness and reducing stress, anxiety and fear. *Lactobacillus brevis* is a lactic acid bacteria that can be found in foods such as yogurt, milk, sourdough bread, and fermented foods like pickles and sauerkraut. One specific study on mood tested the effect of a probiotic mixture (*Bifidobacterium bifidum*, *Bifidobacterium lactis*, *Lactobacillus acidophilus*,

Lactobacillus brevis, *Lactobacillus casei*, *Lactobacillus salivarius*, and *Lactococcus lactis*) on mood, finding participants who took the probiotics saw a reduction in reactivity to sad mood, rumination and aggressive thoughts. Another study found participants who took *Lactobacillus helveticus* and *Bifidobacterium longum* for 30 days showed less psychological distress than the placebo group. Another study in students found taking *Lactobacillus casei* Shirota before an exam helped lower stress. There's also evidence that taking probiotics may reduce frequency and severity of migraine headaches. In one study, 67% of participants who took a probiotic containing *Bifidobacterium bifidum*, *Bifidobacterium lactis*, *Lactobacillus acidophilus*, *Lactobacillus brevis*, *Lactobacillus casei*, *Lactobacillus salivarius*, *Lactococcus lactis* and *Lactococcus lactis* showed a decrease in the number of migraine days. Together, the research showing a connection between gut health and brain health is strong.

Skin Health

Lactobacillus, *Bifidobacterium* & *Propionibacterium*

Research shows a link between the gut, brain and skin health. This was noticed all the way back in the '50s in a small study showing *Bacteroides spp* were more commonly seen in people with acne. More recent research shows probiotics may be helpful in treating acne. For example, a study in 56 people with acne found drinking a fermented beverage with *Lactobacillus* 12 weeks to help in reducing acne. Other research finds connections between probiotics and other skin conditions. In a controlled, large cohort study of infants and children between ages 6 months and 9 years, probiotic treatment with single strains or mixtures that included *Lactobacillus*, *Bifidobacterium*, and *Propionibacterium* strains significantly reduced the risk of atopic dermatitis in the probiotic group versus the control group.

Putting it into Practice

Work with your clients to make changes to their diets (discussed in another handout) to support a diverse and healthy gut, and consider supplementation specific to their goals and needs. If your clients are buying products with probiotics, make sure they are checking expiration dates, following proper storage instructions and looking for the words "live and active culture" on the label. But remember - even if the label does say that, it doesn't always necessarily mean those live cultures are probiotics. Their best bet is to find labels that list the specific strains on the bottle or food product. Also, since probiotics must be consumed alive to have health benefits and they can die during their shelf life, suggest that your clients look for products labeled with the number of CFU at the end of the product's shelf life. Take time to review the Gut Health and Probiotics handout from Level 1 to brush up on your probiotics knowledge as well. Now that you have some of the science and research behind specific bacteria strains, you'll be able to help your clients Eat Empowered for gut health and all the associated benefits.