

It's a Matter of Balance

A couple weeks ago I talked about the complex universe of non-human life living within us – our microbiome. These bacteria, archaea (single-cell life form separate from bacteria), viruses, and fungi that comprise our microbiome mostly live in harmony with us. They do us no harm (mostly), and they help us. They assist us in maintaining our immune system. They help us produce vitamin K. They help crowd-out other species of bacteria or fungi that might do us harm.

Symbiosis

In summary, they live together with us in a harmonious balance – a **Symbiosis**.

Dysbiosis

When this Symbiosis that we share with our microbiome becomes unbalanced, it can result in trouble. The microbiome can become over-run by bad, detrimental microorganisms.

This is called **Dysbiosis**.

Although this is not the intent when we take antibiotics to treat an infection, **any antibiotics** can kill beneficial bacteria along with the bad bacteria that are causing the infection. Even when antibiotics are effective in killing the bacteria causing the original infection, antibiotics can result in yeast or other fungal infections, or secondary overgrowth of other detrimental microorganisms. Dysbiosis.

The symptom of dysbiosis that results from antibiotics killing our beneficial bacteria – the symptom that we are most familiar with after taking a strong antibiotic – is diarrhea. Many people experience diarrhea associated with taking antibiotics. Not as the result of an allergy to the antibiotic (although they often report their symptoms as an allergy to their doc), but as a result of dysbiosis of their GI microbiome.

What To Do About It?

Probiotics

This is where **probiotics** come in.

The goal of probiotics is to replace our beneficial microorganisms, and to displace the bad ones.

In other words, to re-balance the Dysbiosis toward Symbiosis.

Let's look at some definitions, because this is a controversial area in medicine. It is important to understand what the terms mean when you go out and read about probiotics, pre-biotics, or synbiotics, and to make intelligent purchases if you consider using probiotics for your health or the health of your children.

Definitions

Pro-biotic: is derived from the Greek meaning "for life", is a term first used in 1965.

The World Health Organization defines Probiotics as "live microorganisms which when administered in adequate amounts confer a health benefit on the host."

Pre-biotic: is "a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth, activity, or both of one of a limited number of bacterial species already resident in the colon," a notion introduced in 1995 by Gibson and Roberfroid (J Nutrition vol 125: pg. 1401; 1995).

Syn-biotic: is simply the use of probiotics and prebiotics in combination.

You will hear grandiose claims by those who are trying to SELL you probiotics.

The question is: Do probiotics work?

Probiotics: Do They Work?

Do Probiotics help restore a healthy balance in our microbiome?

What we really want to know is this:

- Do probiotics help reduce symptoms of any diseases?
- Do probiotics help reduce respiratory symptoms of allergies, rhinitis, sinusitis, asthma, or viral URI syndrome?
- Do probiotics help reduce symptoms of diarrhea or other GI imbalances?
- Do they help reduce any other diseases – infectious or otherwise?

The short answer is: in some cases, yes; in some cases, no.

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But what does science say about probiotics?

The Hard Data:

Do Probiotics work? For gastro-intestinal imbalances, the answer has generally been “yes”. Probiotics supplements have been shown to be beneficial for treating [antibiotic-associated diarrhea](#), [necrotizing enterocolitis \(NEC\)](#), [H. pylori overgrowth](#), and preliminary evidence suggests that probiotics may perhaps benefit [inflammatory bowel disease](#).

This might make sense – taking a handful of beneficial bacteria by mouth will enter the gastro-intestinal tract. If those beneficial or benign bacteria can survive the stomach acid, they may restore a more beneficial balance in our GI microbiome.

As noted above, there are several well-studied examples where this is indeed the case.

The **surprising benefit** of probiotics has been demonstrated – not in the GI tract – but in the **respiratory tract**.

In a study of children aged 3-5 years, daily consumption of probiotics were found to **significantly** reduce the **incidence** and **duration** of respiratory tract infection symptoms. These results were published in the journal, [Pediatrics in 2008](#).

A study on the affect of probiotics on more than 300 children concluded that probiotic supplements was a safe and effective way to reduce fever, rhinorrhea (runny nose), and cough – both incidence and duration – as well as reduce the need for antibiotics and the number of missed school days due to illness; this study was published in the journal, [Pediatrics in 2009](#).

We can only speculate on just HOW probiotics might benefit respiratory infection symptoms, but some studies suggest that our microbiome helps us maintain a healthy immune system:

Preliminary results suggest that probiotics can strongly affect our immune system response. For example, results of a study of 7 different probiotic strains suggested that [probiotics may act to boost our immune response following oral vaccines](#).

How our microbiome affects our health, how our diet affects our microbiome, and how probiotics, pre-biotics, and syn-biotics, may affect our microbiome, all provide intriguing potential for optimizing our health and wellness. Stay tuned for updates as I find them.

The Soft Data:

Let's now do what humans do best – use our intellects to **reason** about whether probiotics might be useful for some of our other ailments. There are many potential reasons that clinical trials may not have demonstrated a clear-cut benefit of probiotics for, say, **asthma**, or **sinusitis**.

On the other hand, we DO know, without a doubt, that both sinusitis and asthma exacerbations increase in the context of increased upper respiratory infections.

And we DO know (see above studies) that probiotics reduce both the incidence and severity of the flu and upper respiratory infections in multiple studies.

Therefore, it seems reasonable to use probiotics to help reduce sinusitis and asthma.

I am confident saying this because:

1. Probiotics have been demonstrated to be **safe** in multiple randomized clinical trials
2. Probiotics have been demonstrated to be **effective** in reducing the incidence and severity of aerodigestive infections (flu and upper respiratory infections)
3. Probiotics have been demonstrated to help **restore** our normal microbiome balance (symbiosis) when it becomes imbalanced (dysbiosis) due to use of antibiotics

As those of you with asthma or sinusitis know (and those who have children with these ailments), you are exposed to many antibiotics in the course of your treatment. Using probiotics will help counteract the detrimental effects of all those antibiotics.

I conclude that, for those with asthma or sinusitis:

- There is little down-side to using probiotics regularly
- Use probiotics especially during and following a course of antibiotics
- There is mounting evidence that probiotics help maintain a healthy immune system

In short, I conclude that there is far greater potential benefit than harm for probiotic use.

If we think through the causes (“pathophysiology”) of other common Ear, Nose, & Throat ailments – ear infections (otitis media), rhinitis, tonsillitis, adenoiditis, etc. – we can find a similar rationale for using probiotics for those as well.

Also see:

On <http://www.boogordoctor.com> :

Our Microbiome - <http://wp.me/pR4iB-Ez>

Our Health and Our Microbiome: A Matter of Balance - <http://wp.me/pR4iB-FH>

Probiotics: Do They Work? <http://wp.me/pR4iB-Gj>

Dr. Greene's Blog, [http://www.drgreene.com /blog](http://www.drgreene.com/blog) :

<http://www.drgreene.com/blog/2010/09/07/probiotics-powerful-prevention>

His site is also a great source for finding good probiotics for children. He recommends these:

- **Garden of Life's Primal Defense for Kids** - a total of 16 billion CFUs of 4 species of beneficial cultures in a teaspoon of powder.
- **iFlora for Kids Multi-Probiotic** - a total of 8 billion CFUs of 7 species per teaspoon of powder.
- **Florastor Kids** - each packet contains 5 billion CFUs of a single probiotic
- **Udo's Choice Children's Probiotic** - each capsule contains a total of 4 billion CFUs of 8 strains
- **Nutraelle Digestive Care** - a total of 10 billion CFUs of two species in a capsule
- **Good Belly** - a tasty juice drink that contains 10 billion CFU's of a single probiotic in a 2.7 ounce shot
- **In-Liven Probiotic Super Food by miessence** - An organic option that contains 13 species of probiotics in a powder, along with Spirulina, Rolled Oats, Brown Rice, Wheat Grain, Pearl Barley, Linseed, Kidney Beans, Mung Beans, Adzuki Beans, Red Lentils, Chick Peas, Wheat Grass, Barley Grass, Alfalfa Grass, Beetroot, Sweet Potato, String Beans, Zucchini, Cabbage, Silverbeet, Spinach, Chinese Cabbage, Asparagus, Broccoli, Malt Liquid, and Molasses.

Read more: <http://www.drgreene.com/blog/2010/09/07/probiotics-powerful-prevention#ixzz1C9jqnAuB>