

Berberine Promotes a Health Microbiome

The following is from an email sent by Dr. Michael Murray

Berberine is the current superstar in botanical medicine research and may someday supplant curcumin as the most important commercially available plant-based dietary supplement. The research on berberine is mind blowing for a number of reasons. First, it reflects a pharmacological complexity and effectiveness in dealing with many modern health issues that is unequaled. A new review by Dr. Francesco Di Pierro on the benefits of berberine on the gut microbiome highlights that much of its actions in improving health, including promoting weight loss, lowering blood lipids and blood pressure, and improving blood sugar control are mediated not only by direct effects, but also through berberine's influence on the gut microbiome.

Berberine, an age-old natural medicine, is becoming the prototype of an entirely new way of improving health via influencing the microbiome.

Background Data:

Berberine is a yellow alkaloid found in goldenseal root, barberry bark, Oregon grape root, and coptis (goldthread) root. As I previously wrote a newsletter back in 2015 titled "[Berberine: An Ancient Remedy for Modern Humans](#)," I think berberine is poised to be the biggest thing in the natural product industry – EVER. The reason is obvious, berberine has been shown to:

- Exert significant beneficial effects on digestive health and the microbiome.
- Produce results in clinical trials in improving type 2 diabetes on par or better than conventional drugs including metformin.
- Improve blood lipid levels better than statins.
- Lower blood pressure in many subjects as well as any class of anti-hypertensive medication.
- Improve liver function and promote anti-obesity effects.
- Produce very encouraging experimental data in a wide range of modern health issues including cancer, Alzheimer's disease, Parkinson's disease, and others.

Berberine clearly affects the microbiome as it has been found effective against diarrheas caused by a number of different types of parasites and infectious organisms including *E. coli* (traveler's diarrhea), *Shigella dysenteriae* (shigellosis), *Salmonella paratyphi* (food poisoning), *B. Klebsiella*, *Giardia lamblia* (giardiasis), *Entamoeba histolytica* (amebiasis), and *Vibrio cholerae* (cholera). The results indicate berberine appears to be effective in treating the majority of common gastrointestinal infections with results comparable to standard antibiotics in most cases. In fact, results were better in several studies. The advantage of berberine over conventional antibiotics is that it exerts selective antimicrobial action as it targets a wide range of disease causing organisms including *Candida albicans*, yet exerts no action against health promoting bacterial species such as *Lactobacilli* and *Bifidobacter* species.

New Data:

The data presented by Dr. Di Pierro is quite convincing that berberine's health benefits in weight loss, insulin resistance, and inflammation may largely be the result of modulating the gut microbiota. One of the easy links to this line of thought is that berberine has a very low oral bioavailability. The gut absorption rate of berberine is about 9% and systemic oral bioavailability is only about 1% of an administered dosage. So, with such a bevy of double-blind studies showing clinical effects, how is it working if it is not being absorbed? Via the microbiome.

One of the big changes seen with berberine supplementation on the microbiome is that it increases the quantity in the gut of the beneficial bacteria *Akkermansia muciniphila*. This bacteria plays a critical role in gut health because it works closely with intestinal cells to create the mucin layer that protects the intestinal lining from damage. This bacteria is a key factor responsible for mucin thickness in the adult gut. A thinning or absent mucin layer is associated with increased intestinal permeability (leaky gut) and inflammation. *Akkermansia muciniphila* colonization in the gut is inversely associated with obesity, diabetes, metabolic syndrome, and low-grade chronic inflammation. In other words, when the levels and activity of this bacteria are low, these disorders seem to take root. The assumption is that these disorders are associated with altered gut barrier function due to reduced mucin protection, which leads to the absorption of many gut-derived toxins that trigger a cascade of different systems that promote chronic inflammation and insulin resistance.

Berberine would help reverse this situation by promoting the growth of *Akkermansia muciniphila* leading to an improved intestinal barrier, reduced circulating levels of gut-derived toxins, and a significant reduction in inflammation.

Berberine also increases the levels of *Bifidobacterium*, which also promotes intestinal health, reduces absorption of gut-derived toxins, and reduces gut and systemic inflammation.

Dr. Di Pierro concludes his review by pointing out that we are discovering a new way of thinking about drugs and botanicals which interact with the microbiota before they affect the human metabolism.

Commentary:

A revolution is taking place within medicine. It is exciting to see it. And, I appreciate the opportunity to play a role in it. There is no question that the microbiome is a key factor in determining our health. So, it makes great sense to determine the health of your microbiome including your level of *Akkermansia muciniphila*. The only viable test that I know of to do that is Viome. It is by far the most accurate and meaningful microbiome test on the market. It not only measures the trillions of microbes in your gut microbiome, it measures their biochemical activity. I refer to it as the Hubble telescope for looking at the microbiome. I had my own Viome test and found it very enlightening and reassuring.

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It was valuable feedback. One of the things that I really like is that the results appear on the Viome App—an easy-to-use mobile app that’s basically like having a health coach or nutritionist in your pocket. To get \$100 off an annual at-home test kit from Viome, [Click Here](#)

Be well,

To Your Health,

Dr. Michael Murray

Reference:

Di Pierro F. Impact of berberine on human gut bacteria. *Nutrafoods* (2018) 17:5-8.