

# Protecting & Repairing The Blood Brain Barrier

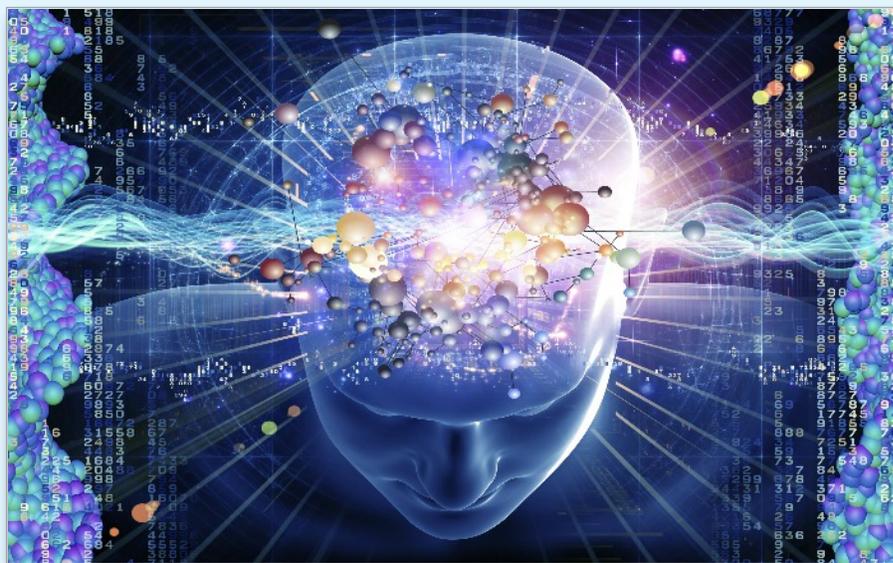
*"The blood brain barrier protects the brain against toxins & infections; if a patient has a "leaky gut", they probably have a leaky blood brain barrier."*

Dr. Court Vreeland in his seminar "Nutrition Perspectives and Neurology" has turned up my "curiosity gene" in respect to protecting and repairing the blood brain barrier.

The blood brain barrier does just what its name suggests; it creates a barrier to protect the brain against toxins and infections. It is a single layer of specialized endothelial cells connected by highly resistant tight junctions which are polarized into luminal (blood-facing) and abluminal (brain-facing) plasma membrane domains."

Conditions that weaken the blood brain barrier are hypertension, diabetes, strokes, head injury, chronic infections, Lyme disease, brain tumors, autism, autoimmune diseases like multiple sclerosis, lupus or RA, Alzheimer's disease certain medications and even aging itself.

Evidence shows excitotoxins, stress and free radicals also weaken the blood brain barrier.



er. The barrier system is also deficient from birth to two or three years of age.

Does the term tight junctions spark your neurons? A previous Tuesday Minute discussed leaky gut and how destructive it can be when bacteria translocate from the bowel into the blood stream. The translocated bacteria initiate an inflammatory response which is one of the postulated theories of autoimmune disorders.

One of the mechanisms that cause "leaky gut" is the deterioration or laxity of the tight

junction between the intestinal cells. Occludin is "part of the main component" of proteins holding together the tight junction. Zonulin is another protein that regulates the permeability of the intestine. Interestingly, occludin and zonulin are the very proteins that maintain the tight junctions in the blood brain barrier.

So here is the mind grenade that Dr. Vreeland dropped at his presentation. If you have a "leaky gut", you probably have a leaky blood brain barrier. We know many nutrients cross the blood brain

barrier like the amino acid taurine, but some things don't cross the membrane like GABA. Dr Vreeland said if someone takes GABA and feels a definite relaxed feeling, chances are they have a leaky blood brain barrier. And if they have gut symptoms their chances are dramatically increased.

So what are the nutrients that will facilitate a healthy blood brain barrier? EFAs are important for every cell membrane in the body. So here's another reason to make sure patients are eating healthy balanced oils like Optimal EFAs or EFA-Sirt Supreme.

Next, vitamin D is essential for healthy endothelial function for the gut to make sure occludin and zonulin work properly. Since occludin and zonulin are present in the blood brain barrier making sure we have adequate vitamin D3 is prudent. According to neurosurgeon, Dr. Russell Blaylock, flavonoids protect the blood brain barrier as well. Blueberries, strawberries and spinach are excellent sources of the flavonoids that protect the brain. However, the nutrient that I am the most excited about is lipoic acid. Dr. Vreeland shared that lipoic acid stabilizes the blood brain barrier in relatively low doses. Lipoic acid is an antioxidant and critical in the regeneration of oxidized vitamins A, C, E, the minerals selenium and zinc and the enzyme glutathione into their reduced or activated forms.

Dr. Blaylock, in his book, "Health and Nutrition Secrets", states that Lipoic acid as well as N-Acetyl-L-Cysteine (NAC) and the ascorbate form of vitamin C increases glutathione levels in cells. Lipoic acid has the ability to carry out its antioxidant functions in the extracellular tissues, within the blood, intracellularly and within the brain." It also works in the cell membranes throughout the body which

is why I think it protects the blood brain barrier.

Lipoic acid is also important for energy production as it increases cellular levels of Coenzyme Q10. It also possesses the capacity to chelate the neurotoxic effects of mercury and other brain toxins. It binds tightly to mercury in the nervous system, neutralizing its toxicity. Lipoic acid easily penetrates the blood brain barrier so it can reach into the brain to remove the destructive metal.

Dr. Blaylock also commented that "Lipoic acid in combination with selenium and milk thistle has demonstrated remarkable success in regenerating liver function in cases of viral hepatitis and alcoholic hepatitis. Lipoic acid is also valuable as an adjunct therapy for diabetes. Severe stress, chronic inflammation and poor nutrition all deplete lipoic acid.

In terms of dosing, the preventative range is 50-100 mg. Lipoic acid can be found in VasculoSirt or the product Lipoic Acid which contains 100 mg per capsule. For healing the blood brain barrier Dr. Vreeland suggests 100 mg twice a day. To assist blood sugar stabilization he uses 300 mg twice a day. For chelating mercury out of the brain Dr. Vreeland uses 100 mg every 3 hours, 5 days on and 2 days off.

Chelating mercury is a multi-product undertaking and a subject we will devote time to in the future. But I hope you are reminded to open up conversations with your patients about their brain and the barrier that protects it. Good oils, vitamin D, flavonoids from real food and Lipoic acid can provide effective preventative actions.

Thanks for reading this week's edition. I'll see you next Tuesday.