

## Blood-Brain Barrier Response to Terrahydrite® and Intestinal Gluten Injury

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Dr. John Gildea, PhD - lead scientist at ION\* - has produced the following extraordinary science to show the relationship between the microbiome communication network and the barrier systems of the gut and blood-brain barrier. In this experiment he has demonstrated that Terrahydrite® (ION\* Gut Support) improves the integrity of the blood-brain barrier in every scenario - from control to blood-brain barrier exposed to gliadin (a potentially harmful metabolite of gluten), and then exposed to the peptides produced by gliadin-injured small intestine. The improvement in the integrity across the board is the stunning take-home message perhaps, but the data is extraordinary also in the way in which it shows that gliadin does no direct harm to the blood-brain barrier (3rd bar in the graph compared to control, 1st bar). Instead, it is the gliadin injury at the small intestine that produces the peptides (i.e. zonulin) that go on to damage the blood-brain barrier (5th bar in the graph). As such, the experiment demonstrates that gut injury is the root cause of blood-brain barrier damage; the gut-brain continuum is revealed in both the pathology and the return to health.

While our lab results concerning soil extract supplementation and the support of healthy intestinal and blood-brain barriers in the human body are exciting, it is the human stories that have emerged from our experience with these ancient soil sources of microbiome intelligence that are the most extraordinary to witness. How fascinating it is that a massive ecosystem of bacteria and fungi in the soils of the jungles and rainforests of 60 million years ago passed down to us a molecular communication system that would support human health in the most toxic and desperate moments of our short history on this planet. Even as we destroy the soils of the earth with global chemical farming, Mother Earth delivers this ancient gift. We can hope that this gift is not just for our physical health, but also to reveal a deeper truth about the interconnectedness and collaborative capacity of the nature that we have been born into.

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Blood Brain Barrier Integrity

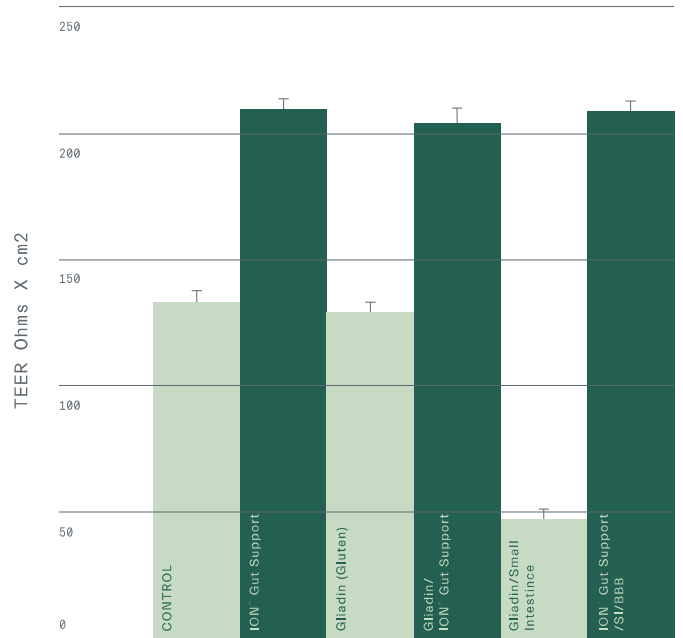


Figure 1.

This data is the result of measuring trans-endothelial electrical-resistance (TEER) of the blood-brain barrier (BBB) under control setting, then an increase with the addition of Terrahydrite (ION\* Dietary Supplement), then gliadin on the blood-brain barrier showing no direct damage, then Terrahydrite again increasing the TEER despite the presence of the gliadin, then the most eloquent data point in the second to last bar showing the impact of the signaling of the small intestine after exposure to gliadin sending out response peptide hormones (i.e. zonulin) which then damages the blood-brain barrier markedly, then finally the last bar showing the same response to Terrahydrite as TEER is again improved despite the presence of the damaging peptides from the gliadin injured small intestine.

