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## **Attention Deficit and Hyperactivity: What's The Gut Got To Do With It?**

Sleep  
Focus  
Emotional regulation  
Mood  
Aggression  
Hyperactivity  
Learning  
Behaviour

What do these things have in common? All can be challenges associated with ADD or ADHD. Moreover, they all potentially start in the gut.

### **What Does the Science Say?**

A recent study showed that children with ADHD have about a 3 fold increased occurrence of constipation, 6 fold occurrence of bowel incontinence, and bowel concerns leading to doctor visits were dramatically higher in children with ADHD.

### **Inflammation: The Unifying Factor in the Brain Gut Connection**

Not all inflammation is bad. In fact, it is how the body responds to injury and illness to heal in the moment. Chronic inflammation is generally referred to as the "bad" inflammation and occurs because of many factors.

### **Vagus Nerve Basics**

The main nerve that allows the gut and the brain to communicate is the Vagus nerve. It is responsible for regulating gut motility, muscle tone, secretions and more. Part of the Vagus nerve's function is to allow the brain to signal the gut, but in fact the majority of its fibres, about 80%, are afferent fibres, meaning it allows the gut to signal and impact the brain.

Furthermore, the Vagus nerve also enters the brain through an area where the blood brain barrier is at its most permeable and therefore where the brain is at its most vulnerable. This means that an inflammatory response in the gut can lead to inflammatory signals reaching the brain. Such signals can disrupt sleep, mood, learning, behaviour and focus.

### **Immunity and the Brain**

Chronic inflammation generally originates in the gut. The reason this is the case is 70-80% of our immune system is contained in and around the gut in the form of

MALT (mucosa associated lymph tissue) and GALT (gut associated lymph tissue). When the gut encounters something like a food allergen, refined sugar, or toxin, the immune response is almost immediate. This immune or inflammatory response is the body's attempt to protect and adapt. When this happens long term and inappropriately in response to the things we take in everyday, this inflammation becomes systemic and impacts the whole body, especially the areas that are the most vulnerable, like the brain. Some seemingly unrelated signs of systemic inflammation that could be affecting your child's brain are eczema, asthma and allergies.

### **The Nervous Gut, Survival Mode**

Part of the vicious cycle of chronic inflammation is that anything inflammatory causes the body to go into a sympathetic state, or fight or flight mode, much like the excitable state a child might exhibit after consuming refined sugar or food dyes. Because the body is working hard to cool the inflammation, the body needs stress hormones to be produced, and this, in turn, impairs the function of the gut including stomach acid production, motility, digestive enzyme production and secretion and tone. This survival response is helpful to prioritize functions in the body that would allow us to freeze, fight or flee from a threat, but, long term, this response prevents healing in the body, nutrient absorption, and impairs many bodily functions.

### **The Gut Ecosystem, a Fine Balance**

Scientists are slowly deciphering just how the microbes in our gut impact everything in the body. When the body is stressed from exposures to toxins or inflammatory foods, the healthy microbes and balance of this ecosystem is disrupted, and opportunistic microbes can, in fact, overgrow in their place. The gut can become a pretty hostile environment to even the best probiotic supplements if we don't first eliminate the cause of the inflammation. Some of the main culprits that can overgrow in the gut and cause many symptoms of ADD/ADHD are Candida and Clostridia species. Restoring balance, by clearing overgrowth and seeding healthy microbial growth is an important element of treating the whole child.

### **What to do?**

A holistic approach to treating ADD/ADHD in your child is imperative. Many tools can be used to compliment, decrease, or eliminate the use of medications.

### **Food**

Because the gut responds to information from the environment, in the form of food, it is important for healthy brain development, that we feed the ecosystem of the gut with the right pre-biotics. This means whole and nutrient dense foods, while avoiding food dyes, refined sugars and processed, food-like items. Focusing on good fats in the diet, vegetables and proteins are a good guideline.

### **Support**

We can help the gut absorb nutrients by eating slowly and mindfully, reducing stress, and supplementing with guidance when needed with targeted antimicrobials,

agents that heal the gut lining, probiotics, digestive enzymes and stomach acid boosting agents; calming the nervous system and improving sleep with things like herbs, children's yoga and breath work, so as to encourage the body to rest and digest in a parasympathetic state; getting good circulation to the vital organs with exercise and gentle detoxing baths.

### **Testing and Treatment**

One of the most comprehensive tests to understand your child's unique gut ecosystem and how this may be impacting neurotransmitters and many other markers of health in the body is the Organic Acids Test. Interpreting these results and working with a holistically trained medical practitioner can be very helpful for your child's brain health and development.

Dr. Natalie Rahr is a Naturopathic Doctor practicing in Vancouver, Canada. She has a long history working in special education and mental health support in schools. She has extensive training through the Medical Academy for Pediatric Special Needs and Great Plains Laboratory and has a strong focus on the biomedical treatment of complex pediatric conditions such as ADD/ADHD, Autism Spectrum, mental health and other neurodevelopmental concerns. Read more about her at [www.drnatalierahr.com](http://www.drnatalierahr.com) or contact [info@drnatalierahr.com](mailto:info@drnatalierahr.com).