FIXING THE MICROBIOME

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Microbiome is a term that is familiar to many autism families. They know that children on the spectrum are genetically predisposed to having imbalanced microbiomes, and that they can benefit from an increase in the diversity of good bacteria in the microbiome. Indeed, a healthy microbiome may positively affect the symptoms of autism.



What is the microbiome?

Microbiomes are ecosystems within the body. Areas of the body that have their own microbiome include the nasal, digestive, blood and brain systems. When it comes to autism, the digestive microbiome is usually the focus. However, more research is being done on the microbiome of the brain in children with autism. Current research indicates that balancing the digestive microbiome has a 'trickle-up' effect on the entire body and other microbiomes.[1]

The digestive microbiome is a collection of bacteria, yeast and fungi that live in the digestive tract. In a healthy microbiome, about one thousand different types of bacteria can be identified.[2] Scientists agree that the more diverse and abundant the bacteria in a digestive tract, the healthier a body will be. However, research also reveals that children with autism have only about 75 percent of the bacterial species found in a healthy microbiome.[3] Are the missing bacterial cultures related to autism symptoms? This is a question scientists continue to study.

All bacteria produce neurochemicals. These neurochemicals enter the bloodstream from the digestive system, and directly influence the brain, muscles, heart and all other systems in the body. In other words, bacteria function like a steering wheel that guides the body's systems. This is why it is important to ensure that the bacteria in a digestive tract are healthy and that the majority of the bacteria are beneficial: they will influence all other aspects of the body.

What are some signs that my child's microbiome might be unbalanced and not diverse?

A state of microbiome imbalance, or microbiota dysbiosis, can have a wide range of symptoms. These include food intolerances, joint pain, headaches, disrupted sleep, behavioral issues, constipation, distension of the belly and irregular bowel movements.[4] It is also important to note that individuals can have an unbalanced microbiome even if no obvious symptoms are present.

How do we fix the microbiome?

To change the microbiome and increase the diversity of bacteria in a child's digestive system, a change in diet is required. It is important to eliminate as many toxins as possible. Food should be organic and free of all dyes, additives, toxins and sugar. Additional research now also supports a gluten-free and casein-free diet in most children with autism. Although this list may seem extensive, fixing the microbiome is not an overnight solution. It can take months or years to develop optimal habits.

Many professionals and experts suggest multiple ways to repair the microbiome. From my extensive experience as a nutritionist, the following are my suggestions.



Take a probiotic supplement

When starting a microbiome repair, it is important to take a probiotic supplement. This probiotic will help balance the good and bad bacteria in the digestive system to keep your gut healthy.



Eat root vegetables

Root vegetables will help to colonize and feed the good bacteria that are present in your child's digestive tract. Root vegetables include rutabagas, turnips, parsnips, radishes, artichokes, carrots and sweet potatoes. For optimal health, the consumption of at least one root vegetable each day is recommended. It is also important to eat a variety of root vegetables, including those of different colors, to ensure a wide range of nutrients and bacterial diversity.



Consume prebiotic foods

Prebiotic bacteria feed the probiotic bacteria, or "good" bacteria, found in our digestive tract. Prebiotics allow the probiotics to flourish in the gut and encourage a more diverse microbiome. This is important for children with autism as their digestive tract often lacks sufficient bacterial diversity.

Prebiotics are also vital for the production of a neurochemical called butyrate (butyric acid). In children with autism, the butyrate level is critical to protect the blood-brain barrier, a protective layer around the brain. This protective layer prevents large, harmful molecules from getting into the brain. Prebiotic foods include bananas, onions, garlic, leeks, asparagus, apples and flax seeds. The consumption of at least two prebiotic foods each day is recommended. Again, it is important to consume a variety of prebiotics in order to feed the different types of probiotics and cultivate diversity.



Take a prebiotic supplement

It is important to take a prebiotic supplement. Since the damage in an unbalanced microbiome can be extensive, it is vital to get plenty of prebiotics to feed the good bacteria. Prebiotic supplements are not a substitute for good nutrition. They are supplemental in supporting positive nutritional change. A prebiotic supplement can be taken at the same time as a probiotic supplement.



Consume fermented vegetables

Fermented vegetables have been shown to promote the growth of probiotics. They produce a wide variety of bacteria families, which increase the diversity and health of the microbiome. Fermented foods can help alleviate diarrhea, bloating, gas and constipation. They are also rich in vitamin C, iron and zinc, all of which are proven to build a strong immune system. Fermented foods can include sauerkraut, tempeh, miso, kimchi, olives and fermented beets. While fermented food may not be a top food choice for children, it is important to have a small amount each day. There are some great ways to hide fermented foods in the foods already eaten by a child. Creativity is key. Start slowly, and gradually increase the amount and types of fermented foods.



Consume pectin

Pectin is a naturally occurring substance found in the skin and core of raw fruit. When ingested, it helps to colonize the good bacteria in the gut. It also feeds an important enzyme in the digestive tract known as intestinal alkaline phosphatase (IAP). IAP has been shown to reduce inflammation and boost the immune system. Although pectin can be purchased as a dietary supplement, the best way to consume pectin is through homemade applesauce. When apples are boiled for 10 to 12 minutes, a shine will appear on the skin of the apple. This is the pectin. Once released from the fruit skin, pectin is easily digested and adds to the vitally important aspects of repairing the microbiome. Eating at least one tablespoon of homemade applesauce each day is recommended.

Implementing these six suggestions will undoubtedly improve the microbiome. When the microbiome is repaired, this will help a child with autism to perform at optimal capacity. This is one step in the journey to unlock the potential of our children.

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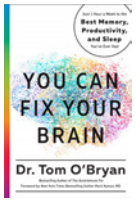
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Dr. Tom's Pectin Apple Sauce

Ingredients:

- 5-10 medium organic apples
- 1 tablespoon cinnamon, or 1 cinnamon stick
- Ginger, allspice, ground cloves, nutmeg, raisins (if desired)
- Honey or maple syrup (if desired)

Directions:

1. Wash apples.
2. Cut up apples, leaving the skin on.
3. Put the apple pieces in a pot and fill the pot with water 1/3 the height of the apples.
4. Add cinnamon and other desired spices. Mix.
5. Boil apples on medium-high heat for 10-12 minutes. When you see a shine on the skin of the apple, your apples are ready. The shine on the skin is the pectin
6. Blend the apples with an immersion blender. You can blend the apples cold, or warm. Eat immediately or store in fridge/freezer for later.





Root Vegetables

Experts recommend the consumption of at least one root vegetable every day to ensure optimal health. Children can be selective and are not always eager to eat their vegetables. That's why parents should start introducing vegetables early in life, continually expose children to different vegetables — even if they don't eat them — and have children assist in food preparation. I know what you're thinking – we've done **all** of that and my child will still not eat any veggies! Hang in there, keep trying and try the following tips.

Roast your vegetables – roasting vegetables in a little bit of extra virgin olive oil will give the vegetable a crisp outside and a tender and soft inside. Roasting vegetables brings out the sweetness of a vegetable and makes them a great finger food for children.

Salt your vegetables – adding a bit of salt to vegetables is a great way to make them more appealing to children. Try salting root vegetables with a pinch of sea salt.

Add natural sweeteners to your vegetables – add naturally sweet ingredients to any root vegetable. Try putting brown sugar on carrots, or maple syrup on potatoes, parsnips and beets. You can also add a honey glaze to any root vegetable. Just remember to not overdo it. Moderation is key.

Fry your vegetables – Dip your vegetables in gluten-free batter and deep-fry them to bring out a natural sweetness. Eating fried food every day isn't recommended, but it can be a nice treat and a creative way to get your child to eat some extra veggies.

Carrot Fries

Ingredients

- 8 medium carrots
- 1 tablespoon of extra virgin olive oil
- ½ teaspoon salt
- optional — parsley, paprika, pepper, cinnamon, sesame seeds, cumin

Instructions

1. Peel and cut carrots into pieces about the size of a French fry
2. Toss the carrot pieces in a bowl with the olive oil, salt and optional ingredients.
3. Spread the carrot pieces on a baking sheet. Make sure they are not touching each other.
4. Bake at 375°F for 20 to 25 minutes.
5. Serve as a snack or side dish with a favorite dipping sauce

*This recipe can also be used to make sweet potato fries. Substitute carrots with 8 medium sweet potatoes and follow the same instructions.

Roasted Root Vegetables

Ingredients

- 4 carrots
- 1 large sweet potato
- 2 parsnips/rutabaga
- 1 beet
- 1 tablespoon of olive oil
- ½ cup of honey
- ½ tsp sea salt
- ½ tsp dried thyme

Instructions

1. Peel and cut each vegetable into cubes, approximately 1" x 1" x 1".
2. Toss the cubed vegetables into a large bowl with the oil, honey, salt and thyme.
3. Spread the vegetables evenly on a non-stick baking sheet.
4. Bake at 425°F for 30-45 minutes (depending on the size of your cubes), until your vegetables are golden brown and crispy on the outside.
5. Serve immediately as a side dish.

*You can add or eliminate any root vegetable, according to your family's preferences.