

...in many autistic children, bacterial and fungal overgrowths are etiologically significant in the cascade of events that result in autism or one of the other autism spectrum disorders. --Jaquelyn McCandless, Children with Starving Brains

"...the use of chelation agents that encourage pathogen overgrowth creates an even greater incentive to get the gut as healthy as possible prior to initiating the chelating process... preventing any known sources of inflammation will help the child's health improve and make chelation both more effective and shorter in duration." --Jaquelyn McCandless, Children with Starving Brains

"A sensible and harmless form of warfare on the aberrant population of intestinal microbes is to manipulate their energy (food) supply through diet ...By depriving intestinal microbes of their energy source, their numbers gradually decrease along with the products they produce." --Elaine Gottschall, Breaking the Vicious Cycle

Autism and GI Problems (written by Jody Goddard)

Recent research shows that more than 50% of children with autism have GI symptoms, food allergies, and maldigestion or malabsorption issues (Horvath). It's obvious from talking to parents that GI problems are a major concern in children with autism. Listservs dealing with autism have discussions on GI issues all the time. Antifungal use, both prescription and alternative remedies, is a common topic. Parents have tried "anti-yeast" diets, prescription drugs and natural remedies, but nothing seems to be "the answer" to the chronic microbial problems these kids face. Many parents wish to pursue chelation for their children, but are unable to do so because of their inability to get their children's gut pathogens under control.

Altered intestinal permeability was found in 43% of autistic patients, but not found in any of the controls (Harvard University). Intestinal permeability, commonly called "leaky gut", means that there are larger than normal spaces present between the cells of the gut wall. When these large spaces exist in the small intestine, it allows undigested food and other toxins to enter the blood stream. When incompletely broken down foods enter the body, the immune system mounts an attack against the "foreigner" resulting in food allergies and sensitivities. The release of antibodies triggers inflammatory reactions when the foods are eaten again. The chronic inflammation lowers IgA levels. Sufficient levels of IgA are needed to protect the intestinal tract from clostridia and yeast. The decreasing IgA levels allow for even further microbe proliferation in the intestinal tract. Vitamin and mineral deficiencies are also found due to the leaky gut problem.

An example of the problems created by the vitamin deficiencies that occur within a leaky gut is vitamin B 12 deficiency. B 12 absorption is inhibited early in this process as microbes enter the small intestine because B12 is absorbed in the ileum (last section of the small intestine). Vitamin B 12 is essential for metabolism of fats and carbohydrates and the synthesis of proteins. Vitamin B 12 is involved in the manufacture of the myelin sheath, a fatty layer which insulates nerves in the brain. It is also essential for the formation of neurotransmitters. (The New Encyclopedia of Vitamins, Minerals, Supplements, & Herbs) Another important function of B 12 is repairing damaged, flattened microvilli. With sufficient B12 and folic acid in the bloodstream, the intestinal cells and microvilli can rejuvenate every 3-4 days.

In a healthy intestinal tract the small intestine and stomach are not inhabited by bacteria. When the flora balance in the colon is lost, the microbes can migrate into the small intestine and stomach, which hampers digestion. The microbes compete for nutrients and their waste products overrun the intestinal tract. One of the toxins produced by yeast is actually an enzyme that allows the yeast to bore into the intestinal wall. The yeast also produce other toxins such as organic acids, which can also damage the intestinal wall.

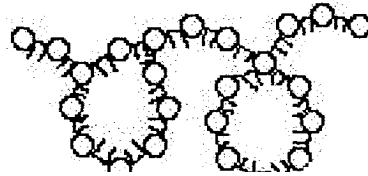
Bacterial growth in the small intestine destroys enzymes on the intestinal cell surface, which prevents carbohydrate digestion and absorption. The last stage of carbohydrate digestion takes place at the minute projections called microvilli. Complex carbohydrates that have been broken down by the enzymes embedded in the microvilli can be absorbed properly and enter the blood stream. But when the microvilli are damaged, the last stage of digestion cannot take place. At this point only monosaccharides can be absorbed because of their single molecule structure.

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Monosaccharide



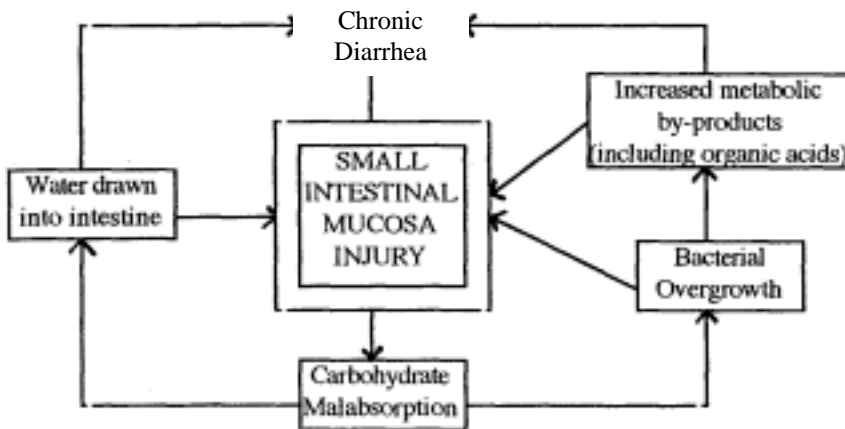
Disaccharide

Polysaccharide

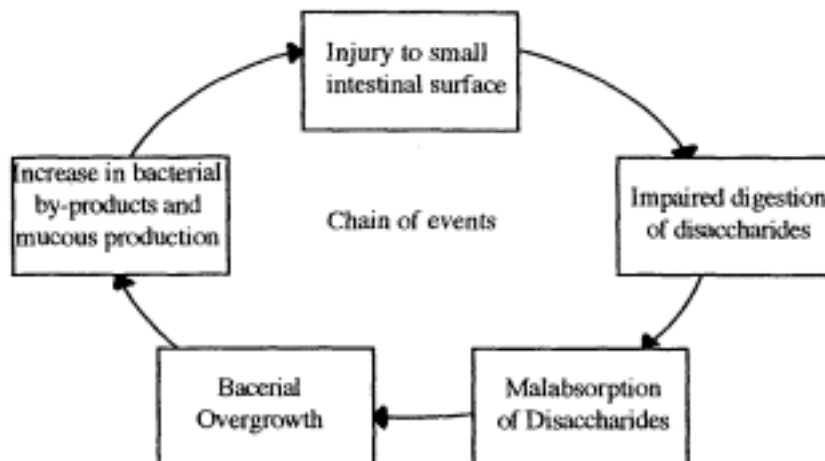


All diagrams from *Breakine the Vicious Cycle*

In the small intestine, the body should absorb the nutrients needed from what is eaten. But in the case of malabsorption, the undigested carbohydrates left in the small intestine cause the body to draw water into the intestinal tract. This pushes the undigested carbohydrates into the colon where the microbes can feast on it. This allows for even more proliferation of the unwanted microbes and continued increase in malabsorption problems.



Low intestinal carbohydrate digestive enzyme activity was found in 43% of patients with autism. (Horvath) Recent studies point out that ongoing carbohydrate malabsorption keeps the digestive system constantly weakened, leading to systemic disorders. Suspected carbohydrate malabsorption should be treated to ward off further damage to the body's digestive system. (GDSL)



PROTEINS

ALLOWED: All fresh or frozen beef, lamb, pork, poultry, fish, and shellfish, eggs, natural cheeses (see appendix of BTVC for full list of allowed cheeses), homemade yogurt (recipe in BTVC) and dry curd cottage cheese.

NOT ALLOWED: Processed meats such as hot dogs, bologna, turkey loaf, spiced ham, breaded fish, canned meat if they contain starches such as whey powder, lactose, sucrose, etc. Processed cheeses and cheeses not listed in appendix.

VEGETABLES

ALLOWED: Fresh or frozen (with no added sugar or starch). Artichoke (not Jerusalem type), asparagus, beets, dried white navy beans, lentils, split peas, broccoli, brussel sprouts, cabbage, cauliflower, carrots, celery, cucumbers and dill pickles, eggplant, garlic, kale, lettuce of all kinds, lima beans, mushrooms, mustard, olives, onions, parsley, peas, pumpkin, spinach, winter and summer squash, string beans, tomatoes, turnips, watercress.

NOT ALLOWED: No canned vegetables allowed. Grains such as: arrowroot, barley, buckwheat, bulgur, corn, millet, oats, rice, rye, triticale, or wheat No flour, germ, pasta, starch, or cereal products from these. Potatoes (white or sweet), yams or parsnips. Beans (sprouts, soybeans, mung, fava and garbanzo). Amaranth :flour, Jerusalem artichoke flour or powder, quinoa flour, or other grain substitutes such as cottonseed, tapioca, sago, seaweed.

FRUITS

ALLOWED: Fresh raw, cooked, frozen, or dried apples, avocados, apricots, ripe bananas, berries of all kinds, cherries, fresh or unsweetened shredded coconut, loose dates that do not stick together, grapefruit, grapes, kiwi, kumquats, lemons, limes, mangoes, melons, nectannes, oranges, papayas, peaches, pears, pineapples, prunes, dark raisins, rhubarb, and tangerines.

NOT ALLOWED: Canned fruits. Dried fruit that has been glazed with corn syrup or sugar such as many brands of banana chips. Molasses, ketchup (unless homemade), agar-agar, carrageenan, jams, jellies.

NUTS

ALLOWED: Almonds, pecans, Brazil nuts, filberts, hazelnuts, walnuts, unroasted cashews and chestnuts. Peanut butter and other nut butters without any additives.

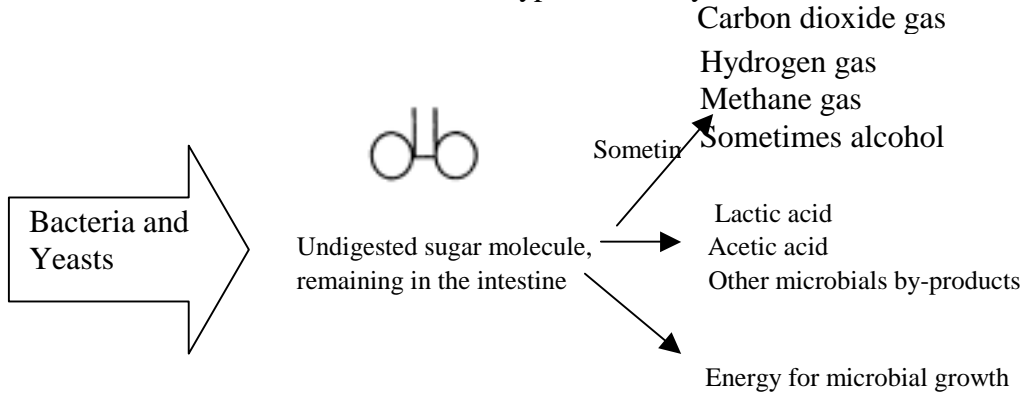
NOT ALLOWED: Roasted nuts or peanuts in salted mixtures. Beer nuts, glazed nuts, etc.

BEVERAGES

ALLOWED: Tomato and vegetable juices. Tropicana 100% orange juice, Welch's grape juice, pineapple juice, some brands of apple juice, weak tea or coffee, herbal teas (peppermint and spearmint only). Milkshakes made with homemade yogurt, fruits and sweetened to taste with honey. Freshly squeezed vegetable or fruit juices made from the list of allowed foods.

NOT ALLOWED: Cow's milk, goat's milk, soy milk, rice milk, canned coconut milk. Instant coffee or tea, postum, coffee substitutes, soft drinks.

Most intestinal microbes require carbohydrates for energy. The Specific Carbohydrate Diet limits the availability of carbohydrates. By depriving these microbes of their food source, they gradually decrease in number. As the number of microbes decreases so do the toxic byproducts they create.



The Specific Carbohydrate Diet (SCD) is intended to stop the vicious cycle of malabsorption and microbe overgrowth by removing the source of energy from the microbes. The SCD allows simple monosaccharides that do not need to be broken down in order to be absorbed.

By following the SCD, malabsorption is replaced with proper absorption. Inflammation is decreased and the immune system can return to normal. Once the immune system is returned to adequate levels, it can begin to keep in the intestines microbes in proper balance.

The SCD allows simple carbohydrates, but prohibits complex carbohydrates. For the most severely afflicted all carbohydrates should be eliminated for a period of time to allow the intestinal tract time to heal. For the rest, the beginning stage of the diet requires that all fruits and vegetables be peeled, seeded and cooked in order to make them even more easily digested. Raw fruits, vegetables, nuts and seeds are added to the diet later.

The Specific Carbohydrate Diet is the only diet that targets the malabsorption issues that are so prevalent in children with Autism. By removing the foods that cannot be properly broken down, the energy source for the unwanted gut pathogens is eliminated. With their food source taken away, the microbes die off and the proper gut flora balance can be restored. The vicious cycle of malabsorption, inflammation and food allergies seen in children with autism is broken and healthy digestion can begin.

The SCD allows simple carbohydrates, but prohibits complex carbohydrates. The diet is started by following an introductory diet, which consists of a limited selection of foods. After the introductory diet, the next stage of the diet allows many more foods, but requires that all fruits and vegetables be peeled, seeded and cooked in order to make them more easily digested. Raw fruits, vegetables, nuts and seeds are added to the diet later. To properly follow this diet, it is imperative to read Breaking the Vicious Cycle by Elaine Gottschall. The book details the progression of allowed foods as well as providing many delicious recipes.

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SOURCES

Books:

Breaking the Vicious Cycle, by Elaine Gottschall, M.Sc.

Children with Starvin2 Brains, by Jaquelyn McCandless, M.D.

The New Encyclopedia of Vitamins. Minerals. Supplements. & Herbs by Nicola Reavley

Articles:

“Altered Immunity & The Leaky Gut Syndrome”, Zoltan P Rona, M.D., M.Sc.

“Lactose Intolerance Breath Test-Application Guide”-Great Smokies Diagnostic Lab “Gastrointestinal Microflora Studies in Late-Onset Autism”, Finegold, et al.

“Preliminary Findings in Gastrointestinal Investigation of Autistic Patients, 2002”, Harvard University “Gastrointestinal Abnormalities in Children with Autistic Disorder”, Horvath, et al

“Abnormal Intestinal Permeability in Children with Autism”, D’Eufemia, et al

Internet Support Groups:

PecanBread

<http://groups.yahoo.com/pecanbread/>

Elaine’s Children

To read the messages:

<http://lyris.dundee.net/readl/?forum=elaineschildren>

To join send an e-mail to:

join-elaineschildren@lyris.dundee.net

Internet Information Sources:

Elaine Gottschall’s Website--Breaking the Vicious Cycle

<http://www.breakingtheviciouscycle.info/>

Pecanbread.com --Deals specifically with SCD and Autism

<http://www.pecanbread.com>

SCD Web Library

<http://www.scdiet.org>

Specific Carbohydrate Diet

<http://www.scdiet.info/>

SCD Recipe

<http://www.scdrecipe.com>

“Whatever Happened to the Cure for Coeliac Disease?”, Elaine Gottschall http://www.scdiet.org/archives/scdceli_1.html

Websites where SCD products are sold:

Lucy’s Kitchen Shop

<http://www.lucyskitchenshop.com>

Digestive Wellness

<http://www.digestivewellness.com>

Disclaimer: This is presented for informational purposes only.

This information can be found online at

Medical advice should be sought from a qualified medical professional. <http://www.geocities.com/momtobandi/SCD-autism-summary.html>

A few changes to consider....

Most probiotics are in a plant based complex carbohydrate base called inulin, which is not allowed on the diet. Yes, all of our favorites like Culturelle, Pro Bio and Pro Culture Gold all contain inulin. Also, Pro Bio Gold contains bifidobacterium which is not allowed on the diet (I don't know the reason for this yet, but I will research it). The probiotics that are recommended on www.pecanbread.com are L. Acidophilus powder (not capsules) and Nature's Life Milk Free Acidophilus. The source for the L Acidophilus powder is www.customprobiotics.com. Wild Oats carries the Nature's Life Milk Free Acidophilus or their website is www.natlife.com.

Also, most of the Kirkman enzymes are allowed on the diet. Houston enzymes are in a rice bran base so they are not allowed (I think that SCD Houston enzymes are in the works). I found a great website called www.enzymestuff.com. They recommended Ultra-Zyme Plus from Thropp's Nutrition for the SCD. I ordered these a couple of months ago and really like them. The website is www.throppsnutrition.com.

A few resources....

If you decide to make the goat yogurt, the only local resource I have found so far is Drake Family Farms in West Jordan. The address is 1856 W. Drake Lane (7400 S.). Their milk can be used to make the yogurt but their yogurt can't be used as a starter for the homemade yogurt because it contains bifidobacterium. The website is www.drakefamilyfarms.com. They sell pasteurized and raw milk. The raw milk worries me. I would use the pasteurized. Don't use the Yogourmet brand yogurt starter from the health food store because it is in a cow milk base.

The only resource I know of so far for freeze goat yogurt starter is again, www.customprobiotics.com. They list a 50 gram size on the website for \$80, but will sell you a 25 gram size for \$40 if you ask for it.

A local resource for nut flour is The Nutty Guys (www.nuttyguys.com or (801) 974-9834. More information is in this handout.

I have also bought nut flour from www.lucvskitchenshop.com and www.nuts4you.com. Nuts 4 You has more specialty products like coconut, chestnut and cashew flours.

The Yogourmet yogurt maker seems to be the most popular and can be purchased at www.lucyskitchenshop.com.

A few recipes....

Monster cookies

5 C. almond
½ C. walnut flour
1 C. flaked, unsweetened coconut (sulfite free)
¼ C. Spectrum shortening
1C. honey
2 eggs, beaten
1 t. baking soda
1/8 t. salt

Mix all ingredients. Drop by tablespoonfuls onto a greased cookie sheet. Press flat with a greased fork. Bake at 350 for 8 to 10 min.

Peanut Butter Cookies

¼ C. Spectrum shortening
1 C. peanut butter (no additives)
½ C. honey
1 C. almond flour
2 eggs
¼ t. baking soda
1 t. vanilla

Cream shortening and peanut butter together. Add remaining ingredients. Drop on greased cookie sheet and bake at 350 for 8-10 mm.

(These recipes were adapted from “Breaking the Vicious Cycle” by Elaine Gottschall)

Midasgold pancakes/waffles

1 C. almond flour

4 eggs

2 T. honey

1 t. vanilla

¼ t. salt

¼ t. baking soda

Mix together and cook according to waffle instructions, or cook as pancakes.

Banana bread loaf

3 C. almond flour

½ C. honey

3 eggs

2 ripe, mashed bananas

½ t. baking soda

¼ t. salt

½ C. raisins or chopped walnuts (optional)

Mix ingredients. Bake in a greased pan for an hour or 3 5-40 mm. for mini loaves.

(These recipes were adapted from www.scdrecipe.com)

Legal **SCD** (Specific Carbohydrate Diet) Supplements available from



Activated Charcoal	Idebenone
Arctic Omega	L-Carnosine
Balanced Omega Combination	L-Glutamine
B-Complex Pro-Support CAPSULES	Magnesium Glycinate
Buffered Magnesium Citrate Soluble Powder	Magnesium Sulfate Cream
Buffered Magnesium Glycinate CAPSULES	Melatonin Plus Magnesium
Buffered Magnesium Oxide	Molybdenum
Calcium with Vitamin D Bio-Max Capsules	Multi-Enzyme Formula
Calcium with Vitamin D Powder	Multiple Mineral Complex Pro-Support
UNFLAVORED	Multiple Vitamin Pro-Support
Cod Liver Oil GELCAPS	Nu-Thera Condensed with 50 mg P5P CAPSULES
Cod Liver Oil Liquid UNFLAVORED	Nu-Thera Condensed with 50 mg P5P w/o
Cod Liver Oil UNFLAVORED	Vitamins A & D CAPSULES
Colostrum Gold UNFLAVORED	P5P Magnesium Glycinate
CoQ10 CAPSULES	Peptidase Complete
Cranberry Extract CAPSULES	Perry Prenatal Vitamins
DMG CAPSULES	Phenol Assist
DPP IV Forte	Pro-EFA Omega 3-6-9 & Borage Oil
EnZymAid	Pro-EPA Omega-3
Enzym-Complete/DPP IV	Pro-Omega Hi Concentrate EPA/DHA
Everyday Children's Multi-Vitamin	Pyridoxal-5-Phosphate (P5P)
Folic Acid with B12 CAPSULES	Reduced L-Glutathione Lotion
Folinic Acid with B12 CAPSULES	Selenium
Folinic Acid with Vitamin B-12	Super Nu-Thera CAPLETS
GABA	Super Nu-Thera Hypoallergenic CAPSULES
Gingko Biloba	Super Nu-Thera with 25 mg P5P CAPLETS
Glycine	Vitamin C CAPSULES
Grapefruit Seed Extract	Vitamin E 100 IU
Yeast-Aid CAPSULES	Zinc CAPSULES
Taurine	Zinc Sulfate Cream