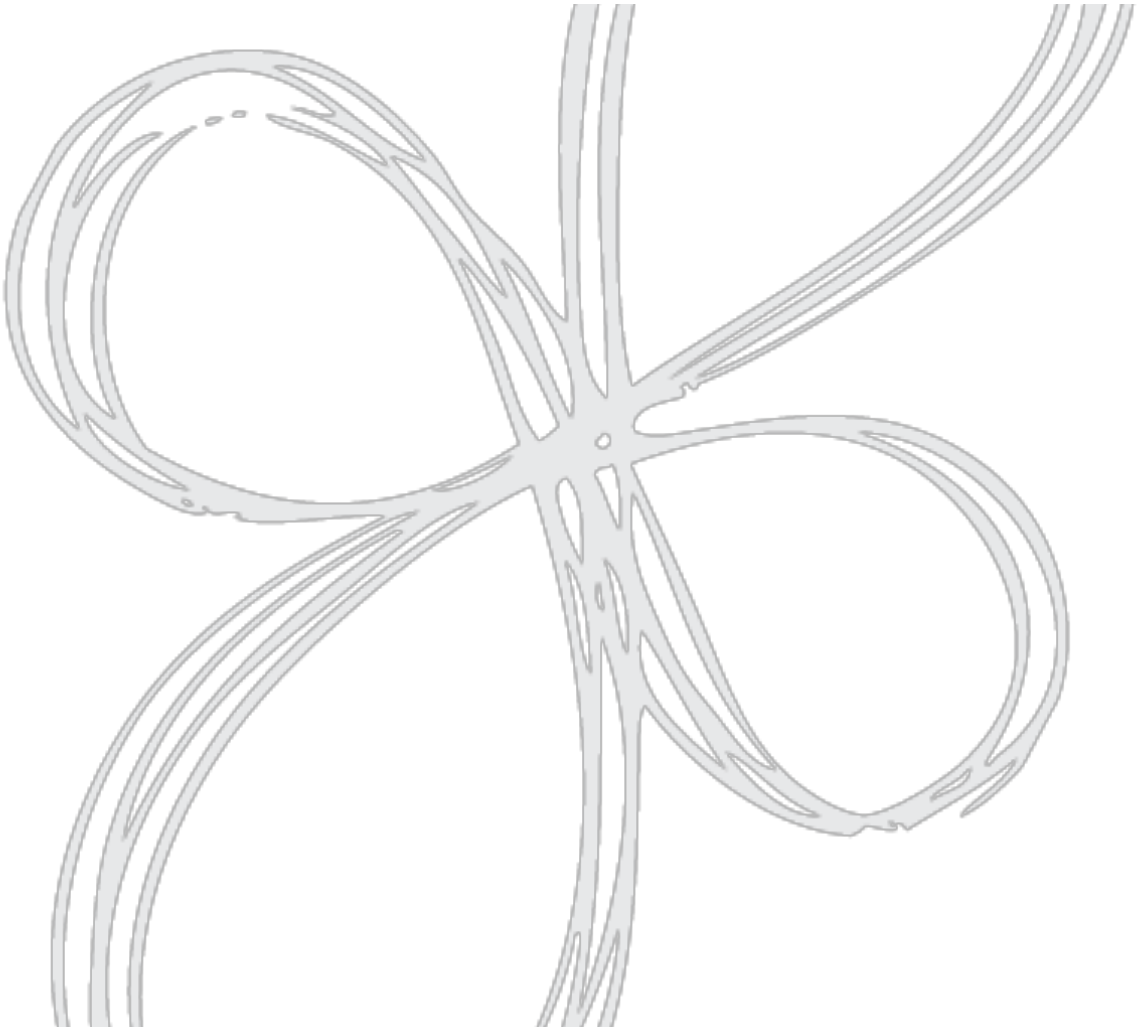

Low Gi Information Sheet

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THE DIGESTIVE-IMMUNOLOGICAL-BEHAVIOURAL CONNECTION

IDENTIFYING BIOCHEMICAL IMBALANCES

As the brain and the body works as an integrated whole, is it of utmost importance to investigate possible biochemical imbalances to explain some of the perplexing behaviour you might observe in your child. The effects of *Candida albicans* is but one of the possible biochemical aspects which might interfere with optimal performance.

We have established a base line probability that your child might be suffering from *Candida albicans.* Additional research and medical confirmation is always advised. Herewith, a short list of what would be best in terms of continued assessment and confirmation as well as a beneficial food-list.

DIGESTION

The expression, "to have a gut feeling," means to know something. This knowledge is not far-fetched because the gut is composed of some neurotransmitters and other chemicals that are identical to those found in the brain. In fact, the gust is considered to be a second brain by those who understand this connection. Gastrointestinal disturbances coincide with mental acuity and emotional stability. This has certainly been shown to be the case among children along the autistic spectrum. It is hard to say what comes first: gastrointestinal problems caused by immune dysfunction, which then result in mental and behavioural reactions, or immune dysfunction that causes gastrointestinal problems, which results in mental and behavioural reactions. To determine whether one problem sets off another is individually assessed, based on a given child and his particular situation. Immune dysfunction and gastrointestinal problems are interrelated, and the treatments that have been shown to be the greatest successes are those that address these two biological systems.

The body functions by properly utilising what it needs and eliminating what it doesn't need. Survival is dependent on the body's recognition of what is of value for growth and development and what is not. All the biological systems, down to the cellular level, the nutrients found in the foods that we eat will be properly assimilated and the ingredients that are not nutritious will be excreted. It is also our assumption that toxins that invade our bodies from the air we breathe to the water we drink will be eliminated as well. For even relatively healthy adults, however, there are many ways in which assimilation and elimination can be compromised, including by the ageing process.

We may experience stomach upset, diarrhoea or constipation, a general lack of energy, and other signs depending on the severity of intestinal disturbance and toxic buildup. Children experience the same discomforts, but because they are still growing, their brains can be affected by nutritional deficits, by food allergies and sensitivities, and by toxicity, resulting in cognitive and behavioural problems.

It is extremely important to assess the digestive function of children along the autistic spectrum. Improper digestion leads to immune suppression, making the body more susceptible to infections, and to immune dysfunction, which lead to adverse or allergic reactions to foods and the environment. One type of digestive disorder that is often found among children with autistic behaviours and learning problems is increased intestinal permeability, otherwise coined "the leaky gut syndrome."[1]

LEAKY GUT SYNDROME

The gut, or small intestine, is the longest part of the digestive track (twenty-three feet). It is responsible for absorbing essential nutrients and preventing undesirable substances from entering through the intestinal lining into the bloodstream. The intestinal lining can be damaged by a number of factors including chronic bacterial, viral, and fungal infections; and by the repeated use of antibiotics and non-steroidal anti-inflammatory drugs such as aspirin and ibuprofen. It can also be damaged by an incompetent "disposal" system for toxic waste that is accumulated daily by the body. This damage results in tears in the lining, which enable otherwise impassable substances to reach the bloodstream.
An increase in damage and tears allows undigested food particles to pass through the intestinal lining, which creates an immune reaction. The body responds as if being attacked by antigens. This immune response in growing children manifests as allergies to foods, which then take a behavioural form. Chronic allergic reactions tax all the biological systems, keep the immune system in alert status, create bodily discomforts, and ultimately affect behaviour, sleep, mood, and ability to concentrate and learn. If left untreated, leaky gut syndrome will overburden the liver's ability to clean out toxins.

ANTIBIOTICS

As has been mentioned before, many children who develop symptoms and behaviours that place them within the autistic spectrum have had a history of ear and upper respiratory infections that have been previously treated by rounds of antibiotics. However, antibiotics do not treat the underlying reasons for a child's immune system to be so weak that it cannot fight the infection in the first place. Sometimes, it's just a matter of giving the child's natural defence system time to kick in. Most paediatricians, however, prescribe antibiotics for ear infections rather than

[1] (Alecson 1999, p.29).

alternative treatments that activate immune response. Antibiotics kill harmful bacteria as well as helpful bacteria that should coexist in the gut. When intestinal bacteria are unbalanced, a condition known as *dysbiosis* occurs: an imbalance of intestinal bacteria resulting in an overgrowth of harmful bacteria and other microbes like *Candida albicans*. A vicious cycle comes into being: bacteria leads to ear infections, which lead to antibiotic use, which cause dysbiosis resulting in immune dysfunction, which leads to bacterial invasion, ear infections, and more antibiotics use until the intestinal lining is damaged.

CANDIDIASIS

Candida albicans is one of many fungi that are present in most people's intestinal tracts, and other places, where it is kept in check and causes no harm. If the intestinal balance is disrupted and healthy bacteria killed, *Candida albicans* will flourish and release toxic chemicals into the bloodstream. Continual antibiotic use is not the only cause of candidiasis, or yeast overgrowth, in children. An infant born vaginally to a mother who has a vaginal yeast infection can become similarly infected. Severe diaper rash and thrush, which looks like a whitish coating on the tongue and mouth, are signs of candidiasis in babies.

It has been found that children along the autistic spectrum are at greater risk of developing candidiasis. There are several reasons why yeast overgrowth is found among these children. Antibiotic use is certainly one of the factors. Antibiotics kill bad bacteria as well as good bacteria – lactobacillus and bifidus – that are necessary to keep candida from overpopulating the gut. The affected children may lack something in their immune function that is needed to keep yeast from proliferating. Furthermore, according to Robert S. Ivker, D.O., "Anything that weakens the immune system can contribute to yeast overgrowth." Included are environmental toxins and chemicals, such as pesticides, and exposure to lead and other heavy metals. It may be that children along the autistic spectrum are more sensitive to candida itself of an allergic response. Finally, parasites aid in yeast production, and a child may have intestinal parasites that his body has not been able to eliminate.

WHY YEAST OVERGROWTH IS A PROBLEM

Everyone has yeast organisms in and on their bodies. The problem arises when yeast, fungi, or candida overpopulates the intestinal tract. Elizabeth Lipski, author of *Leaky Gut Syndrome*, says, "Candida are like bullies that push their way into the intestinal lining, destroying cells and brush borders. This damage allows macromolecules of partially digested food to pass through the lining. The macromolecules are the perfect size for antibodies to respond to. Your immune system then goes on alert for these specific foods so the next time you

eat them, your antibodies will be waiting! The net result is increased sensitivity to foods and other food substances and the environment.

An overgrowth of yeast causes leaky gut syndrome and allows food particles to enter the bloodstream. William Shaw, Ph.D., a biochemist and the director of The Great Plains Laboratory, has done extensive research into yeast overgrowth in children along the autistic spectrum. He has found abnormal metabolites, organic compounds produced by metabolism, in the urine of these children. The nature of the metabolites suggests to him that yeast byproducts, which are toxic, are also passing through the intestinal wall.

Dr. Ivker writes, "One of the major toxins produced by yeast is acetaldehyde. Its multiple effects can be devastating. It is converted by the liver into alcohol, depleting the body of magnesium and potassium, reducing cell energy, and causing symptoms of intoxication – disorientation, dizziness, or mental confusion. The "spaciness" or "mental fog", as often described by patients, is one of the most frequent symptoms of candidas. Patients related a detached state of mind, poor concentration, faulty memory, and difficulty making decisions." Adults are capable of describing their symptoms; children are not. Children along the autistic spectrum have behaviours that strongly resemble the symptoms listed above. They may also have physical signs of yeast overgrowth that include a distinct "yeasty" smell, and cravings for foods that yeast thrives on, such as sugars and carbohydrates, as well as whitish coating of the tongue, diaper rash, and/or itching around the anus.

DIET AND YEAST CONTROL

Yeast feeds on certain foods. At the top of the list is sugar, found in cakes, pastries, cookies, candies, breads, cereals, sodas, juices, condiments, and in just about everything sold in regular grocery store. Fruit an fruit juices are also high in fructose, a form of sugar, and should be decreased or avoided. Products that use yeast, like certain breads, and barley malt found in many crackers and cereals, should be eliminated. I recommend that you read the chapter in Dr. William Shaw's *Biological Treatments for Autism and PDD* titled "Treating Yeast in Children With Autism: Typical Results of Anti-Yeast Therapy," by Bruce Sermon, M.D., Ph.D. Dr Semon is a psychiatrist and nutritionist and provides a schedule of foods to be eliminated so that the process is gradual and thorough. He also includes a schedule of dosages for nystatin, the anti-fungal medication.

FOOD SENSITIVITIES / ALLERGIES

Food sensitivities are usually considered to be different from food allergies, through Doris Rapp, M.D., a paediatric allergist and author on the subject includes sensitivities in the term "allergy." Allergies have been viewed as

intense, sometimes life-threatening, reactions to foods and environmental substances. An example of this is an asthmatic attack that is so severe that the throat closes up and the person can't breathe. Sensitivities manifest as subtler, yet constant, irritations to bodily function and behaviour. However, sensitivities can cause reactions that become quite debilitating over the course of time. Sensitivity to gluten, a protein found in wheat, is not life-threatening in the short term. However, if a child who is sensitive to gluten continues to eat wheat, he will overburden his digestive and immune system, which will in turn affect his behaviour.

Gluten found in wheat, rye, oats, barley, and other grains; and casein, a protein found in milk and dairy products, are the two most problematic substances for proper digestion for many children along the autistic spectrum. These children are either lacking the necessary enzymes to break down gluten and casein, or the enzymes, for whatever reason, are not doing their job. Gluten and casein are similar in molecular structure, and if they are not broken down into peptides, which then break down into amino acids, they can pass through the intestinal wall if it is not intact (leaky gut) and enter the bloodstream. Gluten and casein peptides in the bloodstream cause an autoimmune reaction.

Furthermore, it is believed that gluten and casein peptides affect the brain in ways similar to opiates, disrupting the normal function of the central nervous system. Like opium, gluten and casein appear to be addictive in nature. This explains the craving children have for foods like pizza, macaroni and cheese, cereal, and milk, among others. Once gluten and casein are removed, children can suffer from withdrawal symptoms that affect their behaviour, sleep, and attentiveness. This may last for a week or two at the most. It may take a year before the child experiences the full benefits of a gluten- and casein-free diet.

Many children along the autistic spectrum also have allergies to environmental substances such as pollen, mould, dust, mites, and animal dander, as well as to certain foods. Other common foods and ingredients that some children are sensitive or allergic to are peanuts, chocolate, soy, eggs, corn, additives, preservatives, colour dyes, citrus fruits, apples and apple products, nitrates, and sugar in varying forms. The list can be quite overwhelming. Physical signs of allergy include rashes, hives, eczema, red ears, dark rings under the eyes, wrinkles under the eyes, headaches, and respiratory reactions such as sneezing, stuffed nose, and itchy eyes.

BENECIFICAL FOODLIST

FOODS TO AVOID	ALTERNATIVES
All grain products: flour pasta, breakfast cereals, cakes, tarts, biscuits, etc.	Oats, mielie products, barley, brown rice, lentils, rice flour, potato flour, rye flour, mieliemeal
All products containing yeast, e.g. bread, bread rolls	Yeast free breads, rye bread, ryvita, rice cakes
Processed and aged cheese, e.g. cheddar, gouda, etc.	Fresh cottage cheese, ricotta cheese, goat's milk cheese, yogurt (made with A & I cultures, without added fruit or sugar).
All processed meats and fish, including tinned, pickled, smoked. No sausages.	Fresh meat, chicken and fish Eggs
Fruit and vegetables that are bruised or are mouldy. Fruit: No grapes, spaanspek, watermelon, pineapple and citrus No dried fruits (containing mould and carbohydrates)	Only 3 portions of fresh fruit per day: pawpaws, bananas, apples, pears and peaches. Avocado
No vegetables that grow under the ground	All other fresh vegetables
Peanuts and pistachios that naturally contain mould	All other nuts that are really fresh and have no signs of mouldiness
Fungus: No mushrooms	
No marmite or similar products containing yeast	
No spices	Use herbs for flavouring
No products containing vinegar, salad dressing or pickled vegetables	
No tea, coffee or cocoa	Rooibos tea and herbal teas
No bought fruit juices, cooldrinks or alcohol	Freshly squeezed fruits, appletiser, 100% apple juice, soda water and mineral water
Margarine	Butter and olive oil
No honey, sugar, syrup or molasses	Use xylitol for baking or sweetening, or Huletts Equisweet (with sucralose)