Gut And Psychology Syndrome

The GAPS in our Medical Knowledge

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Fifteen or twenty years ago, the majority of doctors never saw an autistic child. It was a rare disorder that most people had never heard of, afflicting about one child in 10,000. Today, on average in this country, one child in 150 is diagnosed with autism. With a 40-fold increase in newly diagnosed cases of autism, we have an absolute epidemic.

Autism is a devastating disorder. It not only ruins the life of the child, it ruins the life of the family. The siblings have to carry this cross for the rest of their lives and the parents and grandparents do also.

Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) is another epidemic. One child in three in every classroom in this country, in Britain, in Australia and in Canada and many other countries is diagnosed with this condition.

If there is a hyperactive child in the classroom, about 80 percent of the teacher's time is spent on that child, meaning the rest of the class is losing out dramatically. These children are disruptive and fidgety; their attention span is short and their memory is poor. Teaching a child like that is very difficult.

Autistic children are unable to function in society, to play sports, to make friends, to fit in.

We also have an epidemic of dyslexia and dyspraxia. Dyslexia is defined as a disorder when the child cannot read or write properly. However, when you start examining a dyslexic child, you find that there is much more to dyslexia than just reading and writing. These children are socially clumsy: they find it very difficult to fit into society, to make friends and to be adequate in various social situations. About 50 percent of children with dyslexia are also dyspraxic. Dyspraxia can be described as a physical clumsiness—poor gross motor skills and fine motor skills. These children are poor at sports: many of them take a long time to learn to catch a ball or to peddle a bike.

When you start looking at the children with so-called mental disorders, you find that they are physically ill. The majority of them suffer from allergies to foods, chemicals, animals, pollen, dust—to anything in the environment. They suffer from digestive disorders, asthma and eczema, frequent ear infections and chest infections. They cannot digest and absorb their food properly and have severe nutritional deficiencies. As a result they are unable to learn, unable to function in society, to play sports, to make friends, to fit in.

GAPS IN MEDICAL KNOWLEDGE

To understand what is going on, let me introduce you to the Gut And Psychology Syndrome or GAP Syndrome. These children fall into the gap in our medical knowledge. They don't receive the correct treatment because the medical profession is not aware of what exactly causes these conditions or what to do with them. The diagnostic labels of ADD, ADHD, autism, dyslexia and dyspraxia are created on a purely descriptive basis; we take a bunch of symptoms, which we describe in the child, we put them in one box and we call it autism. We take another bunch of symptoms and put it in another box and call it ADHD, and so on. In a clinical setting, however, no child fits neatly into any diagnostic box because all these conditions overlap. So now doctors talk about a continuum of disorders. What this means is that we in the medical practice are missing an underlying disorder that causes all these conditions. Having worked with these children for many years, I have named this underlying disorder Gut And Psychology Syndrome.

The trouble with our medicine is that most of our doctors are specialized. We have cardiologists, neurologists, gastroenterologists, all sorts of "ologists" who only look into their particular area and don't examine the whole patient. Have you ever met a psychiatrist or a neurologist who looked at your digestive system?

Yet I have never met an adult or child with so-called mental conditions who did not have digestive problems. In some cases they are so

THE GAPS ADULT

When children with autism and attention deficit problems grow up, unless something seriously is done to help them, they become GAPS adults—the symptoms don't go away. Substance abuse is very common among these children when they grow up, because they have got serious physical, biochemical and physiological reasons for it. They also have psychological reasons: throughout their childhood they were told by their peers they were stupid. They found it difficult to make friends and to fit into any social environment. They saw that they were not doing well academically compared to other children so their self-worth took a battering. When they come to the teenage years, they would do anything to be accepted, to be invited to the parties, to have friends, and substance abuse is usually one of the avenues they take.

One tragic outcome for these children is that they may react unusually to cannabis (marijuana). I'm sure you all have heard that cannabis can trigger the first episode of schizophrenia. The British government made a mistake a few years ago when it classified cannabis as a less dangerous substance, making it far more available to our teenagers. Now all the psychiatrists are up in arms, reporting on television and in the newspapers and peer reviewed journals about a surge in newly diagnosed cases of schizophrenia in teenagers after smoking cannabis. I'm sure you know lots of teenagers who smoke cannabis at every party and don't become schizophrenic. The children who fall into psychosis after smoking cannabis are GAPS children. They have a predisposition to this condition and cannabis triggers it.

Other psychiatric conditions, such as endogenous depression, obsessive-compulsive disorder, manic-depression or bipolar disorder, and the already mentioned schizophrenia, are typically GAPS conditions. Patients with these conditions do very well on the GAPS nutritional program. These conditions can be curable; in most cases they are caused by our environment and our diet.

severe that this is the problem the patients start talking about first. When parents bring me an autistic child, quite often the first thing they talk about is profuse diarrhea, bloating, reflux, severe constipation, or some other digestive problem.

In a portion of patients the digestive problems are not so severe, not so pronounced, but when you start asking direct questions you find the patient has got a digestive disorder or has suffered from a digestive disorder sometime in his or her life.

Allergies are universally present among these patients, and eczema is extremely common among the infants and babies. Asthma and eczema are two sides of the same coin because they stem from a particular underlying problem in the immune system. If asthma flares up, eczema gets a little bit better; if eczema flares up, then the asthma gets a little bit better.

Malnutrition is also universally present among GAPS patients. The majority of these children and adults look malnourished, pale and pasty. A lot of the children look like those African children—very skinny with those bulging tummies. Some of them may look well-nourished or even be overweight but when we test for nutritional deficiencies, we find they are deficient in the most vital nutrients, in amino acids, essential fats, minerals and vitamins.

BED-WETTING AND THRUSH

Bed-wetting, thrush and chronic cystitis are universally present in GAPS children and adults. These three conditions are connected with each other because the core of GAPS is abnormality in the gut flora. Abnormal gut flora produces a lot of toxins and when these toxins are absorbed into the blood stream, the body has to get rid of them somehow. One of the main venues for getting rid of these toxins is our urine.

When this toxic urine comes into the bladder, it irritates and causes a chronic underlying inflammation in the mucous membranes of the bladder and urethra. As a result, the urge is quite strong to go and empty frequently. GAPS adults have to get up a few times during the night to go and relieve themselves and GAPS children are the ones who wet themselves. If the child is in a deep sleep and this toxic urine accumulates in the bladder, which is already inflamed and sensitive and sore, the bladder wants to get rid of the urine. So the child doesn't wake up, but just wets the bed.

An adult with this condition might be diagnosed with chronic interstitial cystitis. Or, the doctor might do a urine analysis, find no infection and tell the patient there is nothing wrong with her. As the doctors do not recognize the condition, in many patients the problem is pronounced to be psychosomatic.

Thrush is an overgrowth of yeast in the groin area, the vagina and around the sexual organs. A lot of small children suffer from this condition. Their hand is always there scratching, and the area is red and sore. The condition is caused by the lack of normal flora in that area. There are trillions of bacteria living in the groin area and they have to be the right kind of bacteria. If that area is populated by beneficial flora, it will not allow anything else to grow there, including yeast, which causes thrush. These children do not have good beneficial bacteria in the groin area so anything that comes along grows there. As a result they have severe nappy rashes. Girls have red itchy vulvas and boys end up needing circumcision.

When these children become adults they may suffer from chronic cystitis and chronic thrush regardless of how many local preparations they use. These remedies may clear the yeast temporarily but because the beneficial flora is not there, the yeast will come back.

ALL DISEASES BEGIN IN THE GUT

"All diseases begin in the gut." This is a wonderful phrase coined by Hippocrates more than two thousand years ago and the more we learn, the more we realize just how right he was. Every disease begins in the gut and we have to look at the digestive system when we try to treat any degenerative disease no matter how unrelated it may seem to to the condition.

About 70 percent of the children in my clinic have severe digestive problems. In babies, this manifests as colic—a condition considered nearly "normal" by the health officials simply because the majority of our babies have colic. These babies have abnormal gut flora leading to an overproduction of gases in the digestive tract. As a bubble of gas accumulates in a particular

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part of the baby's digestive tract, it stretches the gut wall and at the same time the abnormal flora causes inflammation in the gut wall, so the gut wall is sore. Stretching by gas bubbles creates pain so the baby cries until that gas dissipates or moves on to some other area of the digestive system. That is why a lot of moms say that when they put their baby on the tummy or stroke the tummy gently clockwise, the colic stops and the baby stops crying.

Colic is the result of abnormal gut flora in the baby and it should serve as an alarm bell for parents to take serious steps to normalize the gut flora in the baby—because the problems that might develop down the line are very serious.

Overproduction of gas leading to bloating and flatulence is very common among GAPS children, teenagers and adults. Diarrhea and constipation are usually interchangeable: the patient may have periods of each. Constipated children are far more severely at risk than children with diarrhea. I have seen children who could not pass a stool for a week to 14 days. That is usually followed by something one mom described as child labor as her child tried to pass enormous, compacted feces. This can be very painful and distressing and often tears the anus, adding a psychological component: the child becomes afraid to pass the stool, holding on as long as he or she can, making the whole problem worse.

MALABSORPTION AND OSTEOPOROSIS

Malabsorption is a universal problem in GAPS children and adults. Their digestive systems are not in a fit state to digest or absorb food well. As a result they develop multiple nutritional deficiencies. The brain and immune system cannot function properly without adequate nutrition.

As a result of nutritional deficiencies, these patients often develop osteoporosis. When they go on the GAPS nutritional program, the children begin putting on weight before they start growing. This is because the bones are getting heavier, the bone structure is being rebuilt. The child will first replace the missing nutrients in the body before he begins to grow. The same is true for adults: they are malnourished in spite of the fact that they may look overweight.

THE GUT FLORA

When we talk about the digestive tract we have to talk about what lives in there and what takes care of it; we have to talk about our gut flora.

Gut flora is the mass of bacteria, yeasts, viruses, worms, one-cell structures, all sorts of little critters that live in our digestive tract. This mass of microbes in different adults can be two to three kilograms (four to six pounds), depending on where you live. There is a symbiotic relationship

FEEDING TIME

Feeding difficulties are universally present among autistic children and among siblings of autistic children. They have solid physiological reasons for being finicky eaters. They get stuck in a vicious cycle of cravings and dependency because the abnormal microbes that grow in their digestive systems favor certain foods. These microbes convert the food into hundreds of toxins. Many of these toxins have endorphin-like structures. They give the brain a pleasure signal and the brain then wants more—a process similar to drug addiction.

Finicky eating develops usually in the second year of life. Autistic children tend to limit their diets to the very foods that harm them. They develop cravings for those foods that feed abnormal microbes in the gut and will remove all other foods from their diet. The diet is usually limited to starchy sweet things, breads, breakfast cereals, bananas, cookies, cakes, sugar and perhaps sweet yogurts. I've seen some children who would eat one or two foods and who would not touch anything else.

In *Gut And Psychology Syndrome*, I describe a structured approach for introducing foods into a finicky child's menu. Using this method, you can introduce pretty much everything. I had one patient recently who lived on crackers for most of his life. This three-year-old boy would not put anything else in his mouth and he looked like one of those starving children from Ethiopia. The parents kept taking the child to the hospital, to a clinical nutritionist who told them, "It's okay, he is eating. Give him some crackers, eventually he will change." Following the GAPS method for introducing new foods, in a matter of two months the child was eating everything—meats, fish, eggs, vegetables and fruit. He was on a full menu and began recovering. Obviously you cannot expect a child to be healthy living on crackers.

between these microbes and our body. In fact, there are more cells and more genetic material in your digestive tract than in the rest of your body.

What do they do, why do we have them? They are so vital to life that if somebody tried to sterilize our digestive systems, we probably wouldn't survive. So let's have a look at their functions.

Digestive health cannot happen without healthy well-functioning gut flora, which has to be dominated by specific species of bacteria, yeasts and viruses—what we call the beneficial or probiotic microbes. We have a lot of research on the bacteria of probiotic bacteria. We have not got that much on yeasts yet but it is coming in. We have even less on viruses but I do believe there are beneficial viruses because the most severe damage to the gut flora comes after antiviral medication that people use for herpes and other viral infections.

The surface of the digestive tract would cover a tennis court if it were stretched out flat. It is a perfect gate for anything harmful to get inside your temple. So nature covered every little square millimeter of this tennis court with bacteria, a thick bacterial band covering every little bit of it. These beneficial microbes produce every antibiotic under the sun and every anti-fungal and antiviral substance we know of, thus protecting us from pathogenic microbes coming with food and drink.

Apart from protecting us from infections, healthy gut flora protect us from carcinogenic and toxic substances by neutralizing them or "grabbing them" and holding tight. Our stools are largely—over 90 percent—comprised of bacteria, and as they are eliminated they take these toxins out. One recent study I've seen looked at two groups of animals, one treated with antibiotics, another served as a control. They were given organic mercury in their food and water, huge amounts of mercury. In animals not treated by antibiotics, who had healthy, robust gut flora, only one percent of that mercury managed to get into the body from the digestive tract. In animals treated by antibiotics which wiped out the beneficial flora in these animals, about 95 percent of the mercury got into their bodies and their blood stream and bones and muscles and everywhere else.

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THE BACKLASH

Before recent times, doctors generally didn't look at the digestive system in autism and related conditions. However, now and then we would see case studies published in peer-reviewed journals where the patient went to a gastroenterologist and the doctor performed an inexpensive test involving a barium enema with an X-ray of the bowel. In most cases in these patients they would find a condition called fecal compaction with an overspill syndrome. This is what happens when the old compacted feces are literally glued to the gut wall, in some places almost obstructing the lumen (the space inside) of the digestive tract. Whatever new food would come along would have to slip through a narrow channel, through these compacted feces. In one case, the doctor described the mass of the compacted feces in the child's rectum as the size of a cantaloupe melon. Can you imagine how painful it would be for that child to pass a stool!

Then in 1998 Dr Andrew Wakefield, a consultant gastroenterologist at the Royal Free Hospital in London, and his team published their research, suggesting a connection between chronic inflammatory bowel disease and autism. They performed endoscopy and biopsy on a group of autistic children who were referred to them with gastrointestinal symptoms. Dr. Wakefield called the condition autistic enterocolitis. In addition to inflammation, abscesses filled with pus, ulcers, erosions and lots of fecal compaction, Dr. Wakefield found that the lymph nodes which are present in the wall of the bowel and lower part of the intestines, which normally should be the size of a bean, were swollen, large and painful. In some cases they were so large they almost obstructed the lumen of the digestive tract.

So Dr. Wakefield took samples of these lymph nodes and found measles virus there. He looked further and found that the specific strain was coming from the vaccine. And that was when the whole thing became very political. A huge campaign was launched by the British government to promote the measles vaccination and the medical profession in Britain turned its back on Dr. Andrew Wakefield and his work. Today he is working in this country privately, carrying on with his research.

The problem now is that many gastroenterologists in Britain do not dare examine an autistic child. They are scared the same thing will happen to them. So I see family after family that has to fly to the US or another country and pay huge amounts of money just to have their child examined by a gastroenterologist. This is how politically charged the whole situation is.

The major barrier for anything toxic in this world is your own gut flora.

So the major and number one barrier for anything toxic in this world—and we do live in a polluted world, eating polluted food, drinking polluted water, breathing polluted air and taking all sorts of toxins willingly into our systems—the first and most important barrier is your own gut flora. If you have solid, healthy gut flora you can eat plenty of fish and will be protected to a large degree from the mercury and other pollutants in fish. You can be exposed to all sorts of things and be protected. If the bacteria cannot destroy the toxic substances, they will grab hold of them and not let go until they are excreted. They take the toxins out of your body.

If you have healthy, strong gut flora you will never develop cancer in your digestive system. The gut flora will not allow that to happen. So the basis for any cancer in your digestive system is the damage to your gut flora that begins many years prior to developing a tumor in that area.

Appropriate digestion and absorption simply cannot happen without participation of these healthy bacteria and other microbes. They produce every enzyme under the sun, they break down proteins, they break down carbohydrates, they break down fats, they break down fiber, they release minerals, vitamins and other nutrients and ensure that these substances get transported through your gut wall. They produce a lot of transporting molecules.

Healthy gut flora produces one particular group of substances known as humic acids, which are also produced by soil bacteria. These are the acids that give all the ground water a slightly brownish tinge. These acids have an ability to grab hold of inorganic minerals and transport them through the gut wall and make them available to the body. Your own gut flora produces these substances. Normal absorption relies on the presence of these beneficial microbes in your gut.

As if these functions were not enough, our gut flora actively synthesizes a whole host of nutritious substances for us. Why? Because a lot of vitamins that we require every second are water-soluble. They do not stay in the body for long, so in spite of eating a diet that is very rich in these vitamins there will be periods during the day when you will be deficient. But Mother Nature has a perfect solution to this problem. She provided us with our own little factories inside the digestive tract, factories that are constantly producing these nutrients and then releasing them in just the right amounts into our blood stream through our gut lining, making sure we are never deficient in the nutrients we need. These are all our B vitamins—B_1, B_2, B_3, B_6, B_{12}, folic acid, pantothenic acid, biotin and many other active substances without which we cannot live. The main source of vitamin K_2 is our own gut flora.

When we lose our gut flora through a course of antibiotics, or a prolonged course of other modern medications or other influences, the first thing that happens is the person becomes pale and pasty. The energy levels go down as the person becomes deficient in all these vitamins. And no matter how many supplements of these B vitamins we might give to the person, they'll still stay pale and pasty and be deficient until we restore their gut flora. The first thing you have to do for B vitamin deficiencies is to restore gut flora. And if a patient has B vitamin deficiencies, it is a clear indication that the gut flora is abnormal.

GUT FLORA AND THE IMMUNE SYSTEM

There is a tight connection between immunity and our gut flora. In fact, about 84 percent of our immunity is located in the gut wall.

Our gut flora is the right hand of our immune system. Without it, our immune system simply cannot function. Without beneficial gut flora, the two major arms of the immune system get out of balance—the Th_1 immunity and Th_2 immunity. These two arms have to work in the right balance. The Th_1 is responsible for normal reactions to anything in the environment. You may have seen photographs of magnified pollen in the spring, ghastly looking things. If your Th_1 works well, you will breathe in millions of particles of the pollen and you will not even know about it because your Th_1 immunity will deal with it.

Th_1 is present everywhere in your body that gets in contact with the environment—on your skin, in your eyes, tears, saliva, mucous secretions, digestive system and in your sexual organs. However, when the gut flora is disabled, this arm of the immune system cannot function. So the second arm of immunity, which is responsible for allergic type reactions, becomes hyperactive

as it tries to compensate for the disabled Th_1 arm. That's when the person starts to react to everything in the environment, to dogs, to makeup, to different foods. People who never had allergies often become allergic after having sustained damage to the gut flora. They had a course of antibiotics or something else has happened to disrupt the gut flora and that is where it all starts. All allergies and auto-immune conditions stem from abnormalities in the gut flora. Other physical conditions connected to abnormalities in the gut flora include multiple sclerosis, fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, lupus and type-1 diabetes.

When we test the GAPS patients, we always find that they do not have normal gut flora. The beneficial bacteria in these patients have been replaced by all sorts of pathogens. In a healthy individual with normal gut flora, we find about 500 different species of downright disease-causing, bad pathogenic bacteria and fungi happily existing next door to our beneficial bacteria. As long as the beneficial bacteria predominate, they control those creatures; they do not allow them to do us any harm. However, when we wipe out the beneficial bacteria—and they are extremely vulnerable to broad spectrum antibiotics, to the contraceptive pill, to steroid medications prescribed on a long term basis, in fact to the majority of modern drugs that are used on a repeat prescription basis—we end up with what is called gut dysbiosis (damaged gut flora).

Drug-induced dysbiosis is the most difficult to treat. However, there are other factors in our modern world that can damage gut flora including the modern junk food diet, prolonged periods of stress, infections, travel diarrhea, salmonella, typhoid, cholera, radiation and other environmental influences. In all those situations it is very important to take good quality probiotics in order to replace the beneficial bacteria in the digestive tract.

WHEN GUT BACTERIA GO BAD

In patients with gut dysbiosis, the most commonly present pathogenic type of microbes is the ubiquitous candida species. This is a large family of yeast with about 200 different species known to science so far. As long as your body is protected by beneficial microbes, candida and other yeasts remain in the single-cell form and cannot cause harm. But if your body is not protected by beneficial flora, these yeasts can settle on your mucous membranes and transform into their secondary state, which is a long stringy micelle. These can be literally several feet long, growing through any tissue and organ in the body and causing absolute havoc and devastation.

What is the principal thing these yeasts do? They produce alcohol. They like eating glucose and carbohydrates. The only thing they know what to do with a piece of bread or a spoonful of sugar is engage in alcoholic fermentation. Candida converts sugars into alcohol. And this can happen in babies and children, with devastating consequences for the child's development.

The clostridia species is another pathogen found in the gut of GAPS patients. It is a large family of bacteria, with about 100 species known. The most commonly known member in this family is *Clostridium tetani* which causes tetanus. Clostridia are spore-forming bacteria that are pretty much impossible to eradicate because the spores can survive almost anything—freezing, boiling, pasteurizing. They are strict anaerobes. They are difficult to test for because you need specific equipment to detect them. Clostridia produce important neurotoxins, substances that are toxic to our nervous systems. All the soils on our planet test positive for *Clostridium tetani*. If you get a wound or a scratch contaminated by soil, and the clostridia proliferate and start producing this neurotoxin, it can cause death in a matter of hours.

Clostridia produce important neurotoxins, substances that are toxic to our nervous systems.

Yet we all have them in our digestive systems. Healthy people have plenty of clostridia living in their digestive tracts, but as long as they are kept in check by the beneficial flora, they do us no harm. Only when the beneficial flora get wiped out do these creatures start causing trouble, damaging the digestive tract and producing their neurotoxins.

Sulfate-reducing bacteria comprise another very large group of bacteria. These bacteria like to eat sulfur, a ubiquitous mineral in our bodies. Sulfur is essential for hundreds and hundreds of biochemical reactions, the most important of which is detoxification. In order for your liver to deal with any toxin that gets in your body, it needs lots of sulfur. However, an overgrowth of sulfate-

reducing bacteria will eat all the sulfur and leave the body deficient.

Autistic children are commonly severely deficient in sulfur, not only because the sulfate-reducing bacteria consume it but also because the body overuses it in dealing with all the toxins. The first thing we see in these patients is that neurotransmitters, the chemicals the body uses between brain cells—serotonin, dopamine and others—cannot be properly destroyed. After they complete their function, these brain chemicals are transported to the liver to be destroyed or recycled. That process requires lots of sulfur and if the body is deficient, it cannot do this. So the body fills up with debris of these neurotransmitters, partially damaged neurotransmitters. They still react with the brain cells and cause a lot of neurological and mental symptoms.

Viruses have been found in autistic patients. Andrew Wakefield found measles virus. Another is herpes virus, and there is a proliferation of many other viruses as well. As long as your gut is populated by beneficial viruses, these pathogenic viruses should not take hold.

Nature likes to fight like with like. In order to deal with bad bacteria, you have to have good bacteria; in order to deal with bad yeast you have to populate the gut with good yeast; in order to deal with bad viruses, you have to populate the gut with good viruses.

TOXIC BRAINS

What happens when these pathogenic species of bacteria, yeast, viruses and other microbes overgrow in the digestive tract? They transform the gut from a source of nourishment to a source of toxicity. The food that comes along gets digested by this abnormal mass of microbes, they convert it into hundreds of toxins that flow into the blood stream through the damaged gut wall.

What happens in autistic children or children with other learning disabilities? These toxins get into their brains. Depending on the type, these toxins attach to particular brain structures, particular proteins, particular fats, particular lipoproteins, and as a result they will cause different symptoms depending on which part of the brain is clogged with these toxins.

The brains of autistic children are loaded with toxins. These children are born with normal brains and they have normal eyes, ears and other sensory organs. These sensory organs collect information from the environment. Little babies stare at you, they touch everything, they are like little sponges, they collect information and then the information is sent to the brain to be processed. When the brain processes the sensory information, the child learns: this is mommy, this is daddy, this is a spoon, this is a toy. I play with this toy like that and not any other way—I don't eat it or destroy it, but play with it.

If the brain of the child is clogged with toxicity, all this sensory information cannot be processed properly, it turns into a noise, a mush. Highly functioning autistic individuals tell us they can hear some frequencies but not others. Some people's voices sound to them like they are under water. Some of these sounds hurt. Or, they

TOXINS PRODUCED BY YEASTS

ALCOHOL: The production of alcohol by candida and other yeasts results in what is called auto-brewery syndrome, first described by a Japanese doctor in the 1970s. Today, this phenomenon is well known. Gut dysbiosis can result in a chronic state of semi-drunkenness, which is particularly devastating to young children.

ACETALDEHYDE: The liver converts alcohol into acetaldehyde, an extremely toxic substance. Anyone who has experienced a hangover knows what acetaldehyde does. It causes hundreds of devastating effects on the body. Acetaldehyde attaches itself to various proteins in the body and changes that protein's structure. Then the immune system comes along and looks at the protein and says, "You are foreign, you are not mine" and starts attacking it and producing antibodies. So acetaldehyde in the body creates auto-immunity. And because acetaldehyde attaches itself to a lot of proteins that are the working sites for various nutrients in the body, these nutrients cannot fulfill their functions. The most common deficiency that can result is vitamin B_6 deficiency. Tests show that B_6 is present in the bloodstream, but the receptors for it do not work. Vitamin B_6 deficiency is linked to the problems we see in autistic children—learning disabilities, hyperactivity and dyslexia—and in schizophrenics as well.

DERMORPHIN AND DELTORPHIN: A New York biochemist named Alan Freedman found these two frightening substances in the urine and blood of autistic children. These are identical to the toxins found on the skin of those colorful Amazonian frogs. The local tribes dip the end of their darts on the skin of these frogs in order to paralyze their enemies—these are extremely potent neurotoxins that cause paralysis. The interesting thing is that it is not the frog that produces the toxin but a fungus that grows on the skin of the frogs. The suspicion is that the autistic child grows that fungus in his digestive system and the fungus produces the toxin. This may account for some characteristic muscle tone abnormalities seen in many autistic children.