Food Allergy

By Dr Natasha Campbell-McBride

Published in: Journal of Orthomolecular Medicine, First Quarter, 2009, Vol 24, 1, pp.31-41

Food allergies have become very common, and the trend is up. [1] Most medical practitioners find that we have to face this problem more and more on a daily basis. A recent public survey in the UK has shown that almost half the population report that they have an "allergy" to some food or foods. [2] However, the official figures for a "true allergy to food" are around 1% of the population in most developed countries. [1] The reason for this confusion is that majority of food reactions/allergies/intolerances do not produce a typical allergy test profile (raised IgE or IgG with positive prick test and/or positive RAST test). There have been different attempts to classify this group: as type B food allergy, metabolic food intolerance or simply food intolerance, rather than a "true" allergy. [3] In this group a person may react to many different foods or combinations of foods. Quite often the person is not sure what food produces the reaction, because the reaction may be immediate or delayed (a day, a few days or even a week later). As these delayed reactions overlap with each other, the patients can never be sure what exactly they are reacting to on any given day. [1,3] On top of that there is a masking phenomenon, when reactions to a regularly consumed food run into each other (the new reaction begins when the previous has not finished yet), so the connection with that food and symptoms, it triggers, is not apparent. [4] Food allergy or intolerance can produce any symptom under the sun: from migraines, fatigue, PMS, painful joints, itchy skin to depression, hyperactivity, hallucinations, obsessions and other psychiatric and neurological manifestations. However, the most immediate and common symptoms in the vast majority of patients are digestive problems: pain, diarrhoea or constipation, urgency, bloating, indigestion, etc. [3,5,6]
Naturally, many people try to identify, which foods they react to. As a result many forms of testing have appeared on the market: from blood tests to electronic skin tests. Many experienced practitioners get disillusioned with most of these tests, as they produce too many false-positives and false-negatives. [6] On top of that they lead to a simple conclusion, that if you remove the "positive" foods out of the diet, it will solve the problem. In some cases, indeed elimination of a trigger food helps. However, in majority the help in not permanent: the patients find, that as they eliminate some

foods, they start reacting to other foods, to which they did not seem to react before. The whole process leads to a situation where the person finishes up with virtually nothing left to eat, and every new test finds reactions to new foods. Majority of experienced practitioners come to the same conclusion: the simplistic idea of "just don't eat foods, you are allergic to!" does not address the root of the problem. [3,6] We need to look deeper, at what causes these food intolerances. In order to understand it, I would like to share a case history of one of my patients.

Stephanie S, 35 years old asked for my help in "sorting out her food allergies". A very pale malnourished looking lady, (weight 45 kg with height 160cm) with low energy levels, chronic cystitis, abdominal pains, bloating and chronic constipation. She was consistently diagnosed anaemic all her life.

Family background: she was born naturally from a mother with digestive problems and migraines, her sister suffered from severe eczema and her brother from GI problems. She did not have information on her father's health.

She was not breast fed as a baby and at the age of 3 months got her first urinary infection with the first course of antibiotics. Since then the urinary infections became a regular part of her life, usually treated by antibiotics; now she is suffering from chronic interstitial cystitis. Through the childhood she was very thin, always found it difficult to put any weight on, but otherwise she considered her health to be "OK" - she completed school and played sports. At 14 years of age her menstruations stopped, having started a year before. She was put on a contraceptive pill, which seemed to regulate her menstruations. Around 16 she was put on a long course of antibiotics for acne, after which developed lactose intolerance, severe constipation and bloating. Was advised to stop dairy at 18, which helped with constipation for a while, but other symptoms remained. She developed progressively low levels of energy, abdominal cramps, dizzy spells, very low body weight and very dry skin. Following numerous medical consultations and food allergy testing she started removing different foods out of her diet, but was never sure if it made much difference: some symptoms seemed to improve, others did not and new symptoms appeared. She became sensitive to loud sounds and local pollution, her shampoo and make up and some domestic cleaning chemicals. Her cystitis became chronic and was pronounced psychosomatic by her doctor. *Her diet* at the time of the consultation was very limited: she

seemed to tolerate (but was not entirely sure) breakfast cereals, sheep's yoghurt, soy milk, some varieties of cheese, a few vegetables and rarely fish. Following several food allergy tests she has removed all meats, eggs, nuts, all fruit, whole grains and many vegetables.

This example is very common and demonstrates clearly that just removing "offending" foods out of the diet does not solve the problem. We have to look deeper and find the course of the patient's malady. In order to do that we have to examine Stephanie's health history.

Infancy

Stephanie was born from a mother with digestive problems and was not breast fed. What does that tell us? We know that unborn babies have sterile gut. [7] At the time of birth the baby swallows mouthfuls of microbes, which live in the mother's birth canal. [8] These microbes take about 20 days to establish themselves in the baby's virgin digestive system and become the baby's gut flora. [7,8] Where does the vaginal flora come from? The medical science shows that the flora in the vagina largely comes from the gut. What lives in the woman's bowel will live in her vagina. [9,10] Stephanie's mother suffered from digestive problems, which indicates that she had abnormal gut flora, which she passed to her daughter at birth.

Baby Stephanie was not breast fed. Breast milk, particularly colostrum in the first days after birth, is vital for appropriate population of the baby's digestive system with healthy microbial flora. [9,10,11] We know that bottle fed babies develop completely different gut flora to the breast fed babies. [11] That flora later on predisposes bottle-fed babies to asthma, eczema, different other allergies and other health problems. [12] But the most important abnormalities develop in the digestive system of course, as that is where these microbes make their home. Having acquired abnormal gut flora from her mother at birth, Stephanie had it compromised further by bottle feeding.

Chronic cystitis

Apart from the gut, in the first few weeks of life other mucous membranes and baby's skin get populated by their own flora, playing a crucial role in

protecting those surfaces from pathogens and toxins. [13] As baby Stephanie acquired abnormal flora in her gut, her groin and vagina got abnormal flora too (as it normally comes from the gut). [10] At the same time the urethra and the urinary bladder would get similar to vagina flora: in a normal situation it should be predominated by *Lactobacteria*, largely *L. crispatus* and *L. jensenii*. [14] This flora produces hydrogen peroxide, reducing the Ph in the area, which does not allow pathogens to adhere. [15] Unprotected urethra and bladder fall pray to any pathogenic microbes, causing urinary tract infections. The most common pathogens, which cause UTIs, are *E.coli*, *Pseudomonas aeruginosa* and *Staphylococcus saprophyticus*,coming from the bowel and the groin. [15] Urine is one of the venues of toxin elimination from the body. [16] In gut dysbiosis large amounts of various toxins are produced by pathogens in the gut and absorb into the bloodstream through the damaged gut wall. [16,17] Many of these toxins leave the body in urine: accumulating in the bladder, this toxic urine comes into contact with the bladder lining. The beneficial bacteria in the bladder and urethra maintain a GAG layer of the bladder: a protective mucous barrier, largely made from sulphated glucosaminoglycans, produced by the cells of the bladder lining. [17] As the GAG layer gets damaged, toxic substances in urine get through to the bladder wall causing inflammation and leading to chronic cystitis. [18] And that is what happened to Stephanie: at the age of 3 months she got her first urinary infection. As her gut flora, vaginal flora and the flora of urethra and the bladder were not corrected, she suffered from urinary infections all her life and eventually developed chronic cystitis.

Further damage to gut flora

Because of regular urinary tract infections Stephanie had to have regular courses of antibiotics through her entire life, starting from infancy. Every course of antibiotics damages beneficial species of bacteria in the gut, leaving it open to invasion by pathogens, resistant to antibiotics. [10,19] Even when the course of antibiotic is short and the dose is low, it takes different beneficial bacteria in the gut a long time to recover: physiological *E.Coli* takes 1-2 weeks, *Bifidobacteria* and *Veillonelli* take 2-3 weeks, *Lactobacilli*, *Bacteroids*, *Peptostreptococci* take a month. [10,20] If in this period the gut

flora is subjected to another damaging factor(s), then gut dysbiosis may well start in earnest. [21]

After many short courses of antibiotics Stephanie had to take a long course for acne at the age of 16. That is when she got pronounced digestive problems: constipation, bloating, abdominal pain and lactose intolerance, indicating that her gut flora got seriously compromised.

From the age of 14 Stephanie has been taking contraceptive pills for many years. Contraceptives have a serious damaging effect on the composition of gut flora,leading to allergy and other problems, related to gut dysbiosis . [22,23]

Malnutrition- the consequence of abnormal gut flora

Stephanie suffered from malnutrition all her life despite the fact that her family always cooked fresh wholesome meals and Stephanie ate well. She was always pale, very thin and small and could never put any weight on. This is not surprising taking into consideration the state of her gut right from birth. The microbial layer on the absorptive surface of the GI tract not only protects it from invaders and toxins, but maintains its integrity. [20,21] The epithelial cells called enterocytes, which coat the villi are the very cells, which complete the digestive process and absorb the nutrients from food. [24] These cells only live a few days as the cell turnover in the gut wall is very active. These enterocytes are constantly born in the depth of the crypts. Then they slowly travel to the top of the villi, doing their job of digestion and absorption and getting more and more mature on the way. As they reach the top of the villi, they get shed off. This way the epithelium of intestines gets constantly renewed to insure its good ability to do its work well. [24]
Animal experiments with sterilisation of the gut found that when the beneficial bacteria, living on the intestinal epithelium are removed, this process of cell renewal gets completely out of order. [10] The time of cell travel from crypts to the top of the villi becomes a few times longer, which upsets the maturation process of absorptive cells and often turns them cancerous. The mitotic activity in the crypts gets significantly suppressed, which means that much less cells will be born there and much less of them will be born healthy and able to do their job properly. The state of the cells themselves becomes abnormal. [9,25] That is what happens in a laboratory animal with sterilised gut. In a human body the absence of good bacteria always comes with pathogenic bacteria getting out of control, which makes the whole situation much worse. Without the care of beneficial bacteria

while under attack from pathogenic flora, the gut epithelium degenerates and becomes unable to digest and absorb food properly, leading to malabsorption, nutritional deficiencies and food intolerances. [19,21,25] Apart from keeping the gut wall in good shape, the healthy gut flora populating this wall has been designed to take an active part in the very process of digestion and absorption. [19,21] So much so, that the normal digestion and absorption of food is probably impossible without well-balanced gut flora. It has an ability to digest proteins, ferment carbohydrates, break down lipids and fibre. By-products of bacterial activity in the gut are very important in transporting minerals, vitamins, water, gases and many other nutrients through the gut wall into the bloodstream. [10] If the gut flora is damaged, the best foods and supplements in the world may not have a good chance of being broken down and absorbed. A good example is dietary fibre, which is one of the natural habitats for beneficial bacteria in the gut. [25] They feed on it, producing a whole host of good nutrition for the gut wall and the whole body, they engage it in absorbing toxins, they activate it to take part in water and electrolytes metabolism, to recycle bile acids and cholesterol, etc., etc. It is the bacterial action on dietary fibre that allows it to fulfil all those good functions in the body. [20,21] And when these good bacteria are damaged and are not able to "work" the fibre, dietary fibre itself can become dangerous for the digestive system, providing a good habitat for the bad pathogenic bacteria and aggravating the inflammation in the gut wall.This is when gastroenterologists have to recommend a low-fibre diet. [19] Consequently, dietary fibre alone without the beneficial bacteria present in the gut can end up not being all that good for us.

Stephanie also found that she became lactose intolerant after the long course of antibiotics prescribed for her acne. And indeed Lactose is one of those substances, which most of us would not be able to digest without well functioning gut flora. [25] The explanation offered by science so far is that after early childhood majority of us lack an enzyme called Lactase to digest Lactose. [26] If we are not meant to digest Lactose, then why do some people seem to manage it perfectly well? The answer is that these people have the right bacteria in their gut. One of the major Lactose digesting bacteria in the human gut is *E.coli*. [10] It comes as a surprise to many people that physiological strains of *E.coli* are essential inhabitants of a healthy digestive tract. They appear in the gut of a healthy baby in the first days after birth in huge numbers: 10^7 - 10^9 CFU/g and stay in these same numbers throughout life, providing that they do not get destroyed by antibiotics and other environmental influences. [9,19] Apart from digesting Lactose, physiological

strains of *E.coli* produce vitamin K and vitamins B1, B2, B6, B12, produce antibiotic-like substances, called colicins, and control other members of their own family which can cause disease. In fact having your gut populated by the physiological strains of *E.coli* is the best way to protect yourself from pathogenic species of *E.coli*. [21] Unfortunately, this group of beneficial bacteria are very vulnerable to broad spectrum antibiotics, particularly aminoglycosides (Gentamycin, Kanamycin) and macrolides (Erythromycin, etc.). [9,10]

Apart from *E.coli*, other beneficial bacteria in the healthy gut flora (*Bifidobacteria, Lactobacteria,* beneficial yeastsand other*)* will not only ensure appropriate absorption of nutrients from food but also actively synthesise various nutrients: vitamin K, pantothenic acid, folic acid, thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pyridoxine (vitamin B6), cyanocobalamin (vitamin B12), various amino acids and other active substances. [9,10,25] In the process of evolution Nature made sure that when the food supply is sparse, we humans don't die from vitamin and amino acids deficiencies. Nature provided us with our own factory for making these substances - our healthy gut flora. And when this gut flora is damaged despite adequate nutrition we develop vitamin deficiencies. Every tested child or adult with gut dysbiosis shows deficiencies in those very vitamins, which their gut flora is supposed to produce. [25] Restoring the beneficial bacteria in their gut is the best way to deal with those deficiencies, particularly vitamin B deficiencies. [10,19,21]

On testing over the years Stephanie consistently showed deficiencies in most B vitamins, fat soluble vitamins, magnesium, zinc, selenium, manganese, sulphur, iron and some fatty acids.

Anaemia – another consequence of gut dysbiosis

Stephanie suffered from anaemia all her life, unsuccessfully treated by courses of iron tablets. The majority of patients with gut dysbiosis look pale and pasty and their blood tests often show changes typical for anaemia. [21] It is not surprising. They not only cannot absorb essential for blood vitamins and minerals from food, but their own production of these vitamins is damaged. On top of that people with damaged gut flora often have a particular group of pathogenic bacteria growing in their gut, which are iron-loving bacteria (*Actinomyces spp*., *Mycobacterium spp*., pathogenic strains

of *E.coli*, *Corynebacterium spp*. and many others). [13,25] They consume dietary iron, leaving the person deficient. Unfortunately, supplementing iron makes these bacteria proliferate, bringing unpleasant digestive problems and does not remedy anaemia. To have healthy blood the body needs other minerals, a whole host of vitamins: B1, B2, B3, B6, B12, C, A, D, folic acid, pantothenic acid and some amino acids. [24,10] It has been shown in a large number of studies all over the world, that just supplementing iron does not do much for anaemia. [27]

The pathogens in the gut

The most studied pathogens, that overgrow after numerous antibiotic courses are clostridia and yeasts, which normally belong to the opportunistic group of gut microbes. [28] The opportunistic gut flora is a large group of various microbes, the number and combinations of which can be quite individual. There are so far around 400 different species of them found in the human gut. [25] These are the most common: *Bacteroids, Peptococci, Staphylococci, Streptococci, Bacilli, Clostridia, Yeasts, Enterobacteria (Proteus, Clebsielli, Citrobacteria, etc.), Fuzobacteria, Eubacteria, Spirochaetaceae, Spirillaceae, Catenobacteria*, different viruses and many others. [13] Interestingly, many of these opportunistic bacteria when in small numbers and under control actually fulfil some beneficial functions in the gut, like taking part in the digestion of food, breaking down lipids and bile acids. In a healthy gut their numbers are limited and tightly controlled by the beneficial flora. [20] But when this beneficial flora is weakened and damaged, they get out of control. Each of these microbes is capable of causing various health problems. [29] The best known is the fungus Candida albicans, which causes untold misery to millions of people. [31] There is an abundance of literature published about Candida infection. However, I have to say that a lot of what is described as Candida Syndrome is in effect a result of gut dysbiosis, which would include activity of lots of other opportunistic and pathogenic microbes. Candida albicans is never along in the human body. Its activity and ability to survive and cause disease depends on the state of trillions of its neighbours – different bacteria, viruses, protozoa, other yeasts and many other micro-creatures. [9,19,31] In a healthy body Candida and many other disease causing microbes are very well controlled by the beneficial flora. Unfortunately, the era of antibiotics gave Candida a special opportunity. The usual broad-spectrum antibiotics kill a lot of different microbes in the body – the bad and the good. But they have no effect on Candida. So, after every course of antibiotics, Candida is left without anybody to control it, so it

grows and thrives. [30,31] Stephanie had many symptoms of Candida overgrowth in her body: low energy level, dry skin, recurrent vaginal thrush and cystitis, bloating, constipation, foggy brain and lethargy.

Clostridia family was given a special opportunity by the era of antibiotics too, because Clostridia are also resistant to them. [34] There are about 100 members of this family discovered so far and they all can cause serious disease. Many of them are found as opportunists in a healthy human gut flora. [25,33] As long as they are controlled by the beneficial microbes in the gut, they normally do us no harm. Unfortunately, every course of broad - spectrum antibiotics removes the good bacteria, which leaves Clostridia uncontrolled and allows it to grow. Different species of Clostridia cause severe inflammation of the digestive system and damage its integrity, leading to many digestive problems and food intolerances. [32,33]

Food "allergies" and intolerances

Normal gut flora maintains gut wall integrity through protecting it, feeding it and insuring normal cell turnover. When the beneficial bacteria in the gut are greatly reduced, the gut wall degenerates. [9,10,21,25] At the same time various opportunists, when not controlled by damaged good bacteria, get access to the gut wall and damage its integrity, making it porous and "leaky". [6,28,29] For example, microbiologists have observed how common opportunistic gut bacteria from families Spirochaetaceae and Spirillaceae due to their spiral shape have an ability to push apart intestinal cells braking down the integrity of the intestinal wall and allowing through substances which normally should not get through. [13, 25] *Candida albicans* has this ability as well. Its cells attach themselves to the gut lining literally putting "roots" through it and making it "leaky". [31] Many worms and parasites have that ability as well. [9,10,35] Partially digested foods gets through the damaged "leaky" gut wall into the blood stream, where the immune system recognises them as foreign and reacts to them. [36,37.38] This is how food allergies or intolerances develop. So, there is nothing wrong with the food. What is happening is that foods do not get a chance to be digested properly before they are absorbed through the damaged gut wall. So, in order to eliminate food allergies, it in not the foods we need to concentrate on, but the gut wall. In my clinical experience, when the gut wall is healed many food intolerances disappear.

Healing the gut wall – the diet

How do we heal the gut wall? We need to replace the pathogens in the gut with the beneficial bacteria, so effective probiotics are an essential part of

the treatment. However, the most important intervention is the appropriate diet.

There is no need to re-invent a wheel when it comes to designing a diet for digestive disorders. There is a diet already invented, a very effective diet with more than 60 years of an excellent record of helping people with all sorts of digestive disorders, including such devastating ones as Crohn's disease and ulcerative colitis. This diet is called **Specific Carbohydrate Diet** or **SCD** for short.

SCD has been invented by a renowned American paediatrician Dr. Sidney Valentine Haas in the first half of the 20th century. [39] Those were the good old days, when doctors used to treat their patients with diet and natural means. Carrying on with the work of his colleagues Drs. L. Emmett Holt, Cristian Herter and John Howland, Dr. Haas has spent many yeas researching the effects of diet on celiac disease and other digestive disorders. He and his colleagues found that patients with digestive disorders could tolerate dietary proteins and fats fairly well. But complex carbohydrates from grains and starchy vegetables made the problem worse. Sucrose, lactose and other double sugars also had to be excluded from the diet. However, certain fruit and vegetables were not only well tolerated by his patients, but improved their physical status. Dr. Haas treated over 600 patients with excellent results: after following his dietary regimen for at least a year there was "complete recovery with no relapses, no deaths, no crisis, no pulmonary involvement and no stunting of growth". The results of this research were published in a comprehensive medical textbook "The Management of Celiac Disease", written by Dr. Sidney V. Haas and Merrill P. Haas in 1951. The diet, described in the book, was accepted by medical community all over the world as a cure for celiac disease and Dr. Sidney V. Haas was honoured for his pioneer work in the field of paediatrics.
Unfortunately, "happy end" does not happen in human history too often. In those days celiac disease was not very clearly defined. A great number of various conditions of the gut were included into the diagnosis of celiac disease and all those conditions were treatable by the SCD very effectively. In decades that followed something terrible happened. Celiac disease was eventually defined as a gluten intolerance or gluten enteropathy, which excluded a great number of various other gut problems from this diagnosis. As the "gluten free diet" was pronounced to be effective for celiac disease, the SCD diet got forgotten as outdated information. And all those other gut diseases, which fell out of the realms of true celiac disease, got forgotten as

well. The true celiac disease is rare, so the "forgotten" gut conditions would constitute a very large group of patients, which used to be diagnosed as celiac and which do not respond to treatment with gluten free diet. Incidentally, a lot of "true" celiac patients do not get better on the gluten free diet either. All these conditions respond very well to SCD diet, developed by Dr. Haas. [39]

Following the whole controversy about celiac disease, the Specific Carbohydrate Diet would have been completely forgotten if it wasn't for, you guessed it, a parent! Elaine Gottschall, desperate to help her little daughter, who suffered from severe ulcerative colitis and neurological problems, went to see Dr. Haas in 1958. After 2 years on SCD her daughter was completely free of symptoms, an energetic and thriving little girl. Following the success of the SCD with her daughter Elaine Gottschall over the years has helped thousands of people, suffering from Crohn's disease, ulcerative colitis, celiac disease, diverticulitis and various types of chronic diarrhoea. Very dramatic and fast recoveries she has reported in young children, who apart of digestive problems had serious behavioural abnormalities, such as autism, hyperactivity and night terrors. She has devoted years of research into biochemical and biological basis of the diet and has published a book, called "Breaking the Vicious Cycle. Intestinal Health Trough Diet." [39] This book has become a true saviour for thousands of children and adults across the world and has been reprinted many times. Many Web-sites and web-groups have been set up to share SCD recipes and experiences.

I have been using SCD for many years in my clinic and have to say that it is the diet for food allergies. As I work largely with children with learning disabilities, such as autism, ADHD, dyslexia, dyspraxia, etc, I have grouped these patients under the name Gut And Psychology Syndrome or GAPS. [40] I had to adopt some aspects of SCD for these patients and they have named their diet – the GAPS diet. Over the years I have developed a **GAPS Introduction Diet** for the more severe end of the spectrum (www.gapsdiet.com). I find that the Introduction Diet is particularly effective in food allergies, as it allows the gut wall heal quicker. The Introduction Diet is structured in stages. Unless there is a dangerous (anaphylactic type) allergy to a particular food, I recommend my patients to ignore the results of their food intolerance testing and follow the stages one by one. The Introduction Diet in its first stages serves the gut lining in three ways:

1. It removes fibre. With damaged gut wall fibre irritates the gut lining and provides food for the pathogenic microbes in the gut. This means: no nuts, no beans, no fruit and no raw vegetables. Only well-cooked vegetables (soups and stews) are allowed with particularly fibrous parts of the vegetable removed. No starch is allowed on the GAPS diet, which means no grains and no starchy vegetables.

2. It provides nourishment for the gut lining: amino acids, minerals, gelatine, glucosamines, collagens, fat soluble vitamins, etc. These substances come from homemade meat and fish stocks, gelatinous parts of meats well-cooked in water, organ meats, egg yolks and plenty of natural animal fats on meats.

3. It provides probiotic bacteria in the form of fermented foods. The patients are taught to ferment their own yoghurt, kefir, vegetables and other foods at home. These foods are introduced gradually in order to avoid a "die-off reaction".

   On the first two stages of the Introduction Diet most severe digestive symptoms, such as diarrhoea and abdominal pain disappear quite quickly. At that point the patient can move through the next stages, when other foods are gradually introduced. As the gut wall starts healing, the patients find that they can gradually introduce foods, which they could not tolerate before. When the Introduction GAPS Diet is completed, the patient moves to the Full GAPS Diet. I recommend adhering to the Full Diet for 2 year on average in order to restore normal gut flora and GI function. Depending on the severity of the condition, different people take different time to recover. Children usually recover quicker than adults.

   Stephanie had to follow the Introduction Diet for 7 months before she started putting weight on and feeling stronger. By the time she moved to the Full GAPS Diet she had normal stools, no bloating and no cystitis symptoms; her energy levels were much improved, though she still looked slightly pale. In about a year from the start of the treatment she disappeared for 18 months, then emailed me with an update: she was doing well, her energy level was good, she had no symptoms of cystitis and her GI function was good. She put weight on: though she was still quite slim, but within the normal range.

In the last two months she started eating some foods not allowed on the diet and found that she can tolerate them on an occasional basis, including pasta, chocolate and some goods from the local bakery.

Healing the gut wall - probiotics

In order to heal the gut wall apart from the appropriate diet we need to replace the pathogenic microbes in the gut with the beneficial ones. The fermented foods in the diet will provide some probiotic microbes. However, an effective probiotic supplement is essential in most cases. There is a plethora of studies accumulated about benefits of probiotic supplementation for most digestive disorders, as well as many other health problems. [41-47] The market is full of probiotics in the form of drinks, foods, powders, capsules and tablets. Majority of them are prophylactic, which means that they are designed for the fairly healthy people, they are not designed to make a real difference in a person with a digestive disorder and a "leaky gut". These people need a therapeutic strength probiotic with well-chosen powerful species of probiotic bacteria. A therapeutic probiotic will produce a so-called "die-off reaction": the probiotic bacteria kill the pathogens in the gut, when these pathogens die, they release toxins. As these are the toxins which give the patient his or her unique symptoms, their release makes these symptoms worse, which is called the "die-off reaction". This reaction can be quite serious and must be controlled. That is why I recommend to start the therapeutic probiotic from a very small dose, then build the dose very gradually up to the therapeutic level. Once on that level, the patient needs to stay on it for a few months: how long - depends on the severity of the condition. Once the symptoms of the disease are largely gone, the patient can start gradually reducing the daily dose to the maintenance level or can stop altogether.

Stephanie took a particular therapeutic probiotic. She took one capsule per day (2 billion live cells) for a week, then increased to 2 capsules per day. On this dose her skin became itchy, she got loose stool and her cystitis symptoms got slightly worse. She understood it to be a "die-off", so stayed on this dose for as long as it took for these symptoms to subside – 2,5 weeks. Then she increased her dose to 3 capsules a day. This increase produced

another “die-off reaction”, so she had to stay on the 3 capsules per day for a month before she could move on. In this manner she gradually got up to 8 capsules a day – her therapeutic dose. I recommended her to stay on this dose for 6 months. In this period of time all her main symptoms subsided and some started going. After 6 months, she decided to stay on the therapeutic dose for longer, as she felt well on it. After another 4 months on 8 capsules per day, she felt strong enough to start reducing the dose. She gradually reduced it to 4 capsules a day – her maintenance dose. After about 2 years on this dose she found that she could discontinue the probiotic (as it is expensive) and only take it occasionally, when she was under particular stress.

References

1. US Census Bureau, International Data Base, 2004 (online) available at: http://www.wrongdiagnosis.com/f/food_allergies/stats.htm

2. http://www.foodintoleranceuk.com/allergy_vs_intolerance.htm

3. Anthony H, Birtwistle S, Eaton K, Maberly J. *Environmental Medicine in Clinical Practice*. BSAENM Publications 1997:106-115.

4. Anthony H, Birtwistle S, Eaton K, Maberly J. *Environmental Medicine in Clinical Practice*. BSAENM Publications 1997: 109.

5. Haynes AJ. *The effect of food intolerances and allergy on mood and behaviour. In: Nutrition and mental health: a handbook*. 2008. Pavillion Publishing (Brighton).

6. Haynes AJ. *The food intolerance bible*. 2005. London: Harper Collins.

7. Dai D, Walker WA. Protective nutrients and bacterial colonization in the immature human gut. *Adv Pediatr* 1999;46:353-82.

8. Gr”onlund MM, Lehtonen OP, Eerola E, Kero P. Fecal microflora in healthy infants born by different methods of delivery: permanent changes in intestinal flora after cesarean delivery. J Pediatr Gastroenterol Nutr, 1999 Jan, 28(1):19-25.

9. Krasnogolovez VN. *Colonic disbacteriosis*. - M.: Medicina (Russian), 1989.

10. Baranovski A, Kondrashina E. *Colonic dysbacteriosis and dysbiosis*. Saint Petersburg Press (Russian). 2002.

11. Harmsen HJ, Wideboer-Veloo AC, Raangs GC, Wagendorp AA et al. Analysis of intestinal flora development in breast-fed and formula-fed infants by using molecular identification and detection methods. J Pediatr Gastoenterol Nutr, 2000 Jan, 30(1):61-7.

12. Lucas A, Brooke OG, Morley R et al. Early diet of preterm infants and development of allergic or atopic disease: randomised prospective study. Brit Med J 1990;300:837-40.

13. LA Shimeld, AT Rodgers. *Essentials of Diagnostic Microbiology*. 1999. Cengage Learning, pp.405-406.

14. Tori Hudson. *Women's Encyclopedia of Natural Medicine*. Second edition. 2007. McGRaw-Hill Professional, pp.67-69.

15. H L T Mobley, J W Warren. *Urinary Tract Infections: Molecular Pathogenesis and Clinical Management*. 1996, ASM Press, pp.67-70.

16. Shaw W. Metabolic disease testing: the history of organic acid testing. In: *Biological Treatments for Autism and PDD*. 2002:25-28. ISBN 0-9661238-0-6.

17. L Gillespie. *You Don't Have to Live with Cystitis*. 1996. Avon Books, pp.62-63.

18. JR Dalton, EJ Bergquist. *Urinary Tract Infections*. 1987. Taylor & Francis, pp.88-95.

19. Vorobiev AA, Pak SG et al. *Dysbacteriosis in children. A textbook for doctors and medical students* (Russian), M, "KMK Lt", 1998, ISBN 5-87317-049-5.

20. Cummings JH, Macfarlane GT (1997). Colonic Microflora: Nutrition and Health. Nutrition. 1997;vol.13, No.5, 476-478.

21. Finegold SM, Sutter VL, Mathisen GE (1983). Normal indigenous intestinal flora in "Human intestinal flora in health and disease". (Hentges DJ, ed), pp3-31. Academic press, London, UK.

22. Falliers C. Oral contraceptives and allergy. *Lancet* 1974; part 2: 515.

23. Grant E. The contraceptive pill: its relation to allergy and illness. *Nutrition and Health* 1983;2: 33-40.

24. Seeley, Stephens, Tate. *Anatomy and Physiology*. 1992. Second edition. Mosby Year Book.

25. Kalidas Shetty, Gopinadhan Paliyath, Anthony Pometto, Robert E. Levin. Human gut microflora in health and disease. In: *Food Biotechnology*, 2nd Edition, 2006, CRC Press, pp 1133-1200.

26. Anthony H, Birtwistle S, Eaton K, Maberly J. *Environmental Medicine in Clinical Practice*. BSAENM Publications 1997: 142.

27. Garrow JS, James WPT, Ralph A. *Human nutrition and dietetics*. 2000. 10th edition. Churchill Livingstone: 249-267.

28. Wilson K, Moore L, Patel M, Permoad P. Suppression of potential pathogens by a defined colonic microflora. Microbial Ecology in Health and Disease. 1988; 1:237-43.

29. McLaren Howard J. Intestinal dysbiosis. Complementary Therapies in Med 1993;1:153.

30. Gibson GR, Roberfroid MB (1999). *Colonic Microbiota, Nutrition and Health*. Kluwer Academic Publishers, Dodrecht.

31. Howard J. The "autobrewery" syndrome. *J Nutr Med* 1991;2:97-8.

32. Gibson GR, Roberfroid MB (1999). *Colonic Microbiota, Nutrition and Health*. Kluwer Academic Publishers, Dodrecht.

33. Kikuchi, E., Y. Miyamoto, S. Narushima, and K. Itoh. 2002. Design of species-specific primers to identify 13 species of *Clostridium* harbored in human intestinal tracts. Microbiol. Immunol. 46:353-358.

34. Hecht, D. W. 2004. Prevalence of antibiotic resistance in anaerobic bacteria: worrisome developments. Clin. Infect. Dis. 39:92-97.

35. Di Prisco MC et al. Possible relationship between allergic disease and infection by Giardia Lamblii. Ann Allergy 1993;70:210-3.

36. Bjarnason I et al. Intestinal permeability, an overview. (review). Gastroenterology 1995;108:1566-81.

37. Eaton KK, Howard M, McLaren Howard J. Gut permeability measured by polyethylene glycol absorption in abnormal gut fermentation as compared with food intolerance. J Roy Soc Med 1995;88:63-6.

38. Gardner MLG (1994). Absorption of intact proteins and peptides. In: *Physiology of the Gastrointestinal Tract*, 3rd edn. Chapter 53, pp 1795-1820. NY:Raven Press.

39. Gottschall E. *Breaking the vicious cycle. Intestinal health through diet*. 1996. The Kirkton Press.

40. Campbell-McBride N. *Gut and Psychology Syndrome*. *Natural treatment for autism, dyspraxia, dyslexia, ADHD, depression and schizophrenia.* 2004. Medinform Publishing.

41. Kirjavainen PV, Apostolon E, Salminen SS, Isolauri E. New aspects of probiotics – a novel approach in the management of food allergy. 1999(Revew), *Allergy* 54(9):909-15.

42. Furrie E. Probiotics and allergy. Proc Nutr Soc. 2005 Nov;64(4):465-9.

43. Abrahamsson, , Thomas R., *et al.* "Probiotics in Prevention of IgE-Associated Eczema: A Double-Blind, Randomized, Placebo-Controlled Trial." *Journal of Allergy and Clinical Immunology.* May 2007 119(5): 1174-80. 18 Aug. 2008.

44. Cabana MD, Shane AL, Chao C, et al. Probiotics in primary care pediatrics. *Clinical Pediatrics*. 2006;45(5):405–410.

45. Drisko JA, Giles CK, Bischoff BJ. Probiotics in health maintenance and disease prevention. Altern Med Rev. 2003 May;8(2):143-55.

46. Doron S, Gorbach SL. Probiotics: their role in the treatment and prevention of disease. *Expert Review of Anti-Infective Therapy*. 2006;4(2):261–275.

47. Dunne C, Murphy L, Flynn S, O'Mahony L, O'Halloran S, Feeney M, Morissey D, Thornton G, Fitzerald G, Daly C, Kiely B, Quigley EM, O'Sullivan GC, Shanahan F, Collins JK 1999. Probiotics: from myth to reality. Demonstration of functionality in animal models of disease and in human clinical trials. (Review)(79 refs) Antonie van Leenwenhoek. 76(104):279-92, 1999 Jul-Nov.