Probiotics: Healing the Mind

by Dr Natasha Campbell-McBride

Reprinted from CAM Magazine August 2003

Dr Natasha Campbell-McBride knows about children's health from personal experience. Her son was diagnosed autistic when he was three. At three and a half, he started a program of treatment. Now 15, he attends a mainstream school.

"I remember that traumatic moment of the diagnosis 'Autism', being announced to us by our doctor followed by a statement 'There is nothing that can be done', says Natasha. "Well, being a doctor myself, I have to say 'Your doctor is wrong! There is a lot that can be done'."

Natasha and her partner Peter were founding members of PEACH (Parents for the Early intervention of Autism in Children). PEACH is a parent-led group helping parents of children with autism **Intensive Behavioral Intervention Program**. Also known as **ABA**, this approach is based on highly personalized, one-to-one coaching that teaches children language, play, academic, intellectual, self-help and social skills. An **ABA** program can sometimes achieve miracles, but Natasha's research and experience has shown her that it is still not enough.

"Looking back now, nobody could predict that a little boy without any language, constantly self stimulating, eating very little apart from milk from a baby bottle could undergo such a transformation. On the whole what happened to him can only be described as a miracle. However, his achievements are not due solely to the **ABA** program", says Natasha.

"A huge part of his transformation was in his nutritional management. Being trained as a medical doctor I knew that conventional medicine has nothing to offer children like my son. So I went back to the university and trained as a nutritionist. We have changed his diet and after trying various nutritional supplements we have found the ones that work. An autistic child needs a very special nutritional management, a major part of it being – putting his gut flora right! Gut flora is a living organism very sensitive to the diet, antibiotics, steroids and stress.

"Diet on its own is a very powerful tool in helping an autistic child. But it cannot solve all the problems without nutritional supplements. In order to rebalance the gut flora it is essential to use a strong multi-strain probiotic.

"He showed an excellent response to probiotics. From about two to three months after starting it we saw dramatic improvements in our son – his eye contact became normal and stable, the self-stimulation had almost disappeared, he generally became more aware and with us. Everybody comments on how healthy he looks. He used to be on a milk-free diet. We introduced some milk products back into his diet and found that he tolerates it now without any symptoms."

As a result of their experience, Peter heads up Cambridge Bioceuticals, a UK company founded by a team of doctors, nutritionists and scientists dedicated to advancing the research and use of probiotics. And he has become one of many children able to be helped by a combination of treatments with one thing in common – the use of powerful, multi-strain therapeutic probiotics.

“More than 400 children have gone through my clinic“, says Natasha. “Hyperactive children, children with dyslexia and asthma and eczema and ADHD and other disabilities, and what I see is that what we have in our society is an epidemic of compromised gut flora.“

As a result, she says, we also have an epidemic of poor health in children. “We hardly have any healthy children nowadays. One survey showed that only 10% of school children did not have a diagnosed condition. If you look at a typical school, you hardly see any healthy children. Some are obese, some look malnourished, a lot of them are very pale, a lot of them have eczema, a lot of them have asthma. About 30% of them are on inhalers. The situation is very sad.“

Recent international studies have suggested a relatively strong causal relationship between increased risk of childhood asthma and exposure to antibiotics during childhood, especially during the first year of life.

Prof Julian Crane of Otago University has commented: “Our paper, together with a study published …in Thorax (Farooqi IS, et al. Thorax 1998;53:927-32), raises the possibility that broad-spectrum antibiotics, particularly in the first year of life, may be associated with an increased risk of atopy and asthma. For reasons that have been pointed out in both papers, these results cannot be taken as definitive, but rather as hypothesis-raising.

“On the other hand, the results are plausible. Broad-spectrum antibiotics came into clinical usage in the 1960s, and their increased use coincides with the time trends for the increasing prevalence of asthma. There is a plausible mechanism, namely that broad-spectrum antibiotics may alter and reduce bowel flora and thus switch off the immunological signals that these gut bacteria send to the developing immune system.“ (1) Crane has also showed, with a study of 450 children at six Steiner schools in New Zealand, that even with• parents opposed to the routine use of antibiotics, a staggering 75% of the children had used antibiotics, 36% in the first year of life!

Autism is also exploding. “In this country one child in 250 is diagnosed as autistic, when 10 years ago we had one child in 10,000“, says Natasha. This is nothing to do with improvements or changes in diagnosis, she says. “The medical establishment and the government are trying to present it that way. But what that would mean is that 10 years ago doctors were so bad at diagnosing our children that they were missing one child in 250. But autism is not a disability that goes away as the child grows up. If they had missed one child in 250 10 years ago, then we would still only have one in 250 teenagers with autism now, which we don’t. Everybody who knows and works with autism is convinced that there is an epidemic going on.“

Although various causative factors have been promoted, Natasha is convinced that disturbed gut flora is at the root of it. She has a well-worked out chain of events that even explains how a compromised flora – and all that goes with it – has been passed on through the generations. Unless it is corrected, future generations are doomed to an ever-increasing level of ill-health, with potentially no one safe from a cycle of infections, allergies, arthritis, digestive disorders, atopy and, for some, hyperactivity, ADHD and autism. I asked her to explain this devastating theory; she started with the basics.

“We really started prescribing antibiotics for everything and anything in the ‘70s and ‘80s“, she says. “That’s when we started to get generations of people with compromised gut flora. Antibiotics wipe out the beneficial bacteria as well as the pathogenic bacteria. Remember, our beneficial bacteria are very vulnerable to antibiotics and get wiped out very quickly. If the course of antibiotics is short and the person has a fairly solid gut flora, then it usually recovers. But if antibiotics are repeated quite often, and particularly when people are prescribed long courses – such as when people with acne are put on tetracycline for 2 years or so – they invariably finish up with digestive disorders like IBS, because their gut flora gets wiped up. When the beneficial bacteria are not there, then all sorts of pathogens and opportunists get a chance to grow to occupy the gut and to populate it. They start digesting food in their own way, breaking it down into inappropriate substances. And they also damage the gut lining, making the gut leaky and allowing this mal digested food to get absorbed. The immune system reacts to this mal digested food as foreign substances and hence you get allergies.“

Now maybe it’s just the fashion, but everybody you meet these days says they have some sort of allergy. It’s either hay fever or permanently runny nose or skin rashes or food intolerances. Practitioners may distinguish between true allergies and “mere“ intolerances or sensitivities, but the public doesn’t. To them, there’s not doubt whatsoever that there’s an epidemic of allergies too.

“Allergies usually happen when the immune system gets out of balance“, says Natasha. “The major balancing agent of the immune system in the body is the gut with its gut flora. The flora can literally be described as the right hand of our immune system. But when the beneficial gut flora is not there, the two major arms of immunity, TH1 immunity and TH2, get out of balance. [*types of helper cells: current wisdom is that TH2 cells stimulate production of IgE, the master of allergic reactions, while Tl cells inhibit].

The end result of abnormal gut flora is a weakening of the TH1 arm; the TH2 gets over-active, and that’s the arm of the immunity that’s responsible for allergic type reactions, atopic type reactions. So instead of reacting to the environment stimuli in a normal, natural way, people start reacting in an allergic type of way.

“The gut flora’s really a huge, huge agent. On average everyone carries two kilograms of bacteria in their gut. There are more cells there than there are in an entire human body. We can’t live without this mass of bacteria and it’s a highly organized microbial world, dominated by beneficial bacteria.

“What I am seeing now are generations of people in this country with compromised gut flora – because I don’t just examine the child, I get a full medical history of the parents and the grandparents.

“A grandmother, for example, perhaps has arthritis, which is another sign of toxicity in the body. When opportunists and pathogenic bacteria occupy the gut, they produce a lot of toxic substances. These toxic substances seep through into the bloodstream and settle in different tissues of the body causing an auto-immune attack on those tissues as the immune system tries to clean the body up. So someone with arthritis usually has some abnormalities with the gut flora;

they are being poisoned by their own gut. There is a certain level of toxicity in the body, which has particular design to settle in the joints. So the grandmother will have arthritis, or rheumatoid arthritis, or allergies or digestive disorders.

“A baby is born with a sterile gut and as the baby goes throughout the birth canal at birth, it swallows its first batches of bacteria. So a major part of the gut flora which would populate the virgin gut of the baby, comes from the mother. So this grandmother gives her compromised gut flora to her daughter. So now the daughter will be prone to PMS perhaps, to migraines, to digestive disorders – that’s what I see in mothers of autistic children. Between 95-100% of mothers of children with autism, hyperactivity, asthma, eczema and other problems, also have conditions that are related to abnormal gut flora. I hardly ever see healthy mothers.

“What happens is that she initially inherited the compromised gut flora from her mum, but she grows up and at the age of 15 or 16, she goes on a contraceptive pill. Many mothers use an oral contraceptive for quite a few years before they’re ready to have children. The contraceptive pill is a steroid and that damages the gut flora even further. It has a devastating effect on the gut flora.

So by the time this woman is ready to have children her gut flora is seriously compromised and that’s what she passes to her child.

“Because the gut flora is the major part of the immune system, when children are born with compromised gut flora they are left immune-compromised as well. With autistic children and hyperactive children, we see that in the first year of life and second year of life they’re very prone to infections, to ear infections in particular, and a lot of chest infections as well. They quite often go through one ear infection after another and eventually they are put on permanent antibiotics, which would wipe out whatever precious little beneficial bacteria they got in there.

“If you thought that grandmother’s breast-feeding may have gone some way to repairing this damage, think again.

“Breast-feeding is the best thing to establish normal gut flora. But breast milk is a two-sided coin. On one hand it’s the best food for the baby, because children who are not breast-fed develop completely different gut flora from those who are. And that sort of gut flora predisposes them later to all sorts of health problems. So breast-feeding is best. On the other hand, a woman whose gut is populated by abnormal flora will have toxins from that gut flora in her blood. And whatever’s in her blood is likely to be in her breast-milk. So she will be passing toxins through her breast-milk to her baby.

“A lot of these children have low stomach acidity. So when they start solids at the age of six months, they usually can’t digest them – particularly dairy milk proteins. This results in toxicity coming from pathogens such as the clostridia and candida families, which grow in abnormal gut environment producing particular kind of toxins that reduce the ability of the stomach to produce acids.“

Vaccinations

Then we have to stir in vaccinations – another assault on the immune system. “Vaccinations are designed for healthy immune systems. But children who are born to mothers with compromised gut flora are already immune-compromised. They can’t take these vaccines. They cannot react to them the way they are supposed to. Vaccines deepen the damage to the immune system in these children. Indeed in certain cases MMR just tips the scale. In some children it’s not MMR that tips the scale it’s DPT, the triple vaccine which is given to children at a very early age – at 1.5 months, 2.5 and 3.5 months. This vaccine also contains thimerosal, a mercury-containing preservative, which is in most DPT vaccinations.“

Because of all these factors, a baby is not going to develop normal gut flora. If the normal bacteria are not there, then the coast is clear for all sorts of pathogens to take hold. On top of that, says Natasha, because the normal gut flora plays a huge role in digestion and absorption of food, these children go on to develop multiple nutritional deficiencies. “In parallel, the pathogenic flora convert the food into a whole host of toxic substances. A lot of these toxins have been well-studied and you can test for them. They have been found routinely in autistic children and in hyperactive children.

“Some of these toxins are well-known to CAM practitioners, such as the acetaldehyde produced by yeasts acting on sugars, and the ethanol that results from that when candida species get going. Others are less familiar, but can be found in the medical literature. Clostridium, for example, one of the opportunistic pathogens unleashed by antibiotics is known to produce a potent tetanus neurotoxin, which has been identified as a possible cause of autism in some case. (2) The suggestion is that this neurotoxin can be transported along the vagus nerve from the intestinal tract to the central nervous system and into the brain, disrupting the release of neurotransmitters. Another form of clostridium produces a botulinic neurotoxin, says Natasha.

Other researchers believe that sulphate-reducing bacteria in a disturbed gut flora may explain why around 95% of autistic children have low serum sulphate – about 15% of that found in controls (3). The resulting reduced sulphation not only increases gut permeability and inflammation but may also inactive neurotransmitters involved in the modulation of mood and behavior. The sulphate research trail was kick-started by the observations of the UK self-help group Allergy Induced Autism. AIA encouraged Dr Rosemary Waring of Birmingham University, whose pioneering research proved that autistic children have problems with detoxification, so that certain foods and used neuro-transmitters are not processed effectively. (4)

One of the most significant findings is that opportunistic fungi in the gut can produce opiate-like substances. Dr Alan Friedman, PhD, a Johnson & Johnson researcher with an interest in autism, has found dermorphin and deltorphin in the urine of autistic children (5). As Reading university’s Dr Max Bingham, PhD, comments, these compounds are “many times more potent than morphine“ and had previously only been found on the skin of “poison dart frogs“ and traditionally used as arrow-tip poisons and hallucinogens.

There is already a well-established “opioid theory of autism“, in which researchers have confirmed that children with autism had many abnormal peptides (small pieces of partially broken down proteins) in their urine. These included casomorphine and gliadomorphin. These

peptides are the breakdown products of casein and gluten, giving a sound biochemical basis for a successful dietary intervention first investigated in Norway and then replicated at the university of Sunderland's Autism Research Unit by Dr Paul Shattock and colleagues (6). Opiates and the gluten/casein sensitivity turn autism into a living nightmare for the afflicted children. "These opiates absorb very well, cross the blood-brain barrier and then block the brain in certain areas", says Natasha. "These children have got normal eyes, normal ears, normal tactile sensitivity, but their brains cannot process the information. So the result is that children don't hear, don't see and don't feel the same way we do. The whole sensory input gets jumbled up in their heads. They don't develop speech because they don't hear properly. The speech that is addressed to them from their parents, from their careers, is jumbled in their heads. They can't make sense out of it. The highly functioning autistic individual they say that quite often they can see one half of the page and can't see the other. They can hear certain vowels and they can't hear others. They can hear certain frequencies but not others.

One child, for example, could clearly hear his mother's voice, but not his father's. The same happens with children with dyslexia; that's why they can't read, because their visual areas of the brain are blocked with toxicity." And this all comes from the gut. Just like the nature cure pioneers always maintained: your gut can poison you. The good news is that the gut can be helped back into balance and the research• clearly supports dietary intervention. – autism is NOT all in the mind.

"Diet is a huge part of the treatment for these children", says Natasha. "They need the kind of diet that heals the digestive tract, stops it leaking and establishes the normal gut flora." Natasha employs the Specific Carbohydrate Diet, a strict grain-free, lactose-free and sucrose-free meal plan that limits the particular carbohydrates needed by harmful yeasts and bacteria. (See panel.) Only mono sugars are allowed: fructose, galactose and some others found in fresh vegetables, fresh fruit and honey.

The original diet was developed in the 1950s by Drs Sidney and Merrill Haas to cure patients with celiac disease and was first published in the Haas's book The Management of Celiac Disease in 1951. It has since been championed by biochemist and cell biologist Elaine Gottschall, MS, author of Breaking the Vicious Cycle: Intestinal Health through Diet (first published in 1987 and still in print). Gottschall's eight-year-old daughter, diagnosed by specialists with incurable ulcerative colitis and with a deteriorating condition, was symptom-free in two years after following the Haas instructions. With more than 40 years experience of the diet, Gottschall says; "Some of the most dramatic and fastest recoveries have occurred in babies and young children with severe constipation and among children who, along with intestinal problems, had serious behavior. problems. These included autistic-type hyperactivity as well as hyperactivity, often accompanied by severe and prolonged night terrors. Very often the behavior. problems and night terrors cleared up within ten days after initiation of the Haas Specific Carbohydrate Diet." (7)

Natasha says, "Autistic disorder is essentially a digestive disorder. So once you put the digestive tract right, you lay the ground for recovery."

Dr Andrew Wakefield is the internationally respected gastroenterologist who was researching

Crohn's and Ulcerative colitis when he found a type of inflammatory bowel disease in autistic children who had received the MMR vaccine. He was sacked when he published his findings in the Lancet. Wakefield has written: "I sit across from you as the parent and you say: 'this is what happened to my child, they were developing normally, they had speech, language, social skills, they received their MMR vaccine and they developed bowel symptoms and their behavior deteriorated, I lost them, the light went out'. You listen to that story, you don't buy into it, but you say: 'is there anything I can do to substantiate this in my job as a physician?' You investigate the symptoms and you find that there is an inflammatory bowel disease that has gone unrecognized in these children. So the parents were right". (8)

According to Natasha, before Wakefield started investigating, the medical profession didn't want to know about digestive abnormalities in autistic children. "How many autistic children that I see have digestive abnormalities!" she says. "All parents talk about it. They have diarrhea, constipation, flatulence, pain, bloating, the whole picture. So the occasional child who actually made it to gastroenterologist and whose gut has been x-rayed, invariably showed faecal compaction. Old compacted rotten faeces glued to the walls of their gut.

"Wakefield was the first gastroenterologist to seriously look at it; he found the same thing – an autistic child's gut is chock a block. He also found inflammation, which in some features was similar to ulcerative colitis, in others was similar to Crohn's disease and others were unique to autistic children. He found abscesses filled with pus. He found ulcers, he found compaction, he found erosions, he found the whole length was inflamed. And because these children cannot communicate, they cannot tell you that they're in pain, cannot tell you that their tummy is hurting, the parents don't know about it. But many do go to doctors and say 'My child has diarrhea', 'My child has constipation'. Some of these children have horrendous constipation. They don't go to the toilet for a week to ten days and then they have an enormous, extremely painful hard stool, which cracks their anus and the anus bleeds. This sort of experience is very painful for the child, so they end up holding on for as long as they can, until they just can't hold any longer – and they have another hard stool."

Remember, these are children who are also unable to communicate to their parents and care givers the pain they are in.

Along with diet, Natasha says supplementation is very important. Probiotics are the absolute foundation – but they must be the right sort. And that means a multi-strain product containing soil bacteria, not just lactobacilli and bifidobacteria. These are what she calls "therapeutic" probiotics as opposed to the milder, prophylactic products. "You need soil bacteria to break down the putrefaction and clear out the pathogenic flora because they are aggressive, they actually use them in industry because they have great ability to clear out putrefied waste. They work in a clinical setting far more effectively."

Even so, a child is typically kept on the strict diet and taking probiotics for at least two years. "Nothing works that fast in nature", she says. **The good news is that autistic children are born with normal brains and recovery is possible.** "The majority of them are developing normally until the scales are tipped and toxicity starts affecting their brain development. It usually happens in the second year of life. If you catch them early and you teach them appropriately, they become

perfectly normal, they finish up in mainstream schools. Obviously they're all different, some of them would have some idiosyncrasies, or they'll be a little bit eccentric, but they're within normal range."

Apart from fish oils, she doesn't include many other supplements. "I do believe in providing most things through the diet with children. Once the diet is put right, the gut starts healing and the child starts absorbing nutrients from food."

Similarly, she finds that once the gut flora is right a lot of food intolerances disappear and the major source of toxicity is removed, easing the load on the liver and detoxification systems. However, some children will need to be actively detoxified using combinations of juices. "We all have a so-called detoxification system. When the system is overloaded with toxicity, overloaded with work", she explains, "then the more you store it in various tissues in order to deal with it later. But in children which are highly toxic, autistic children, the time never comes for the toxins which are stored in tissues." They also tend to store a lot of heavy metals – even so, she prefers the gentle effectiveness of juices to chelation. "The child has a couple of 8oz glasses a day of freshly pressed juice. Therapeutic kinds of juices are generally vegetable juices, particularly green juices, which taste ghastly! So I suggest 50% of something tasty, like pineapple or orange or apple or mango, to disguise the taste of the other 50%. Of that about 40% will be carrot juice, 10% beetroot. You have to be careful with beetroot because it is extremely powerful and can really make you sick. So other juices we use are celery, lettuce and then greens like spinach, parsley, dill, fresh nettles, dandelion leaves, those sort of things."

The children use the juices while on the Specific Carbohydrate Diet. The only other thing they drink is water – un chlorinated, bottled or filtered, and lots of it.

To check progress, Natasha may use a Great Smokies stool test. "It is useful when we have been through the intial stages of the programme and if we are struggling with something and what to know what's going on. I don't do the test before we have done the intial baseline treatment."

The only other test she is liable to use is the organic acid test (OAT) developed by Dr William Shaw of the Great Plains Laboratory. A non-invasive urine test, it measures around 70 different biochemical compounds, picking up abnormal urinary metabolites that are the "signatures" that can reveal what specific overgrowth a child has. It also reveals some nutritional deficiencies. We'll give Shaw the last word: "The last half of this century could be termed the era of antibiotics.

The next century will be involved in developing new antimicrobial treatments (probiotics or beneficial bacteria) or other therapies that have less potential for harming young children. Pasteur and others found that lethal strains of bacteria could be rendered harmless if animals were given other benign bacteria simultaneously." (9)

· Dr Campbell-McBride holds a Degree in Medicine and a Postgraduate Degree in Neurology. She also holds a second Postgraduate Degree in Human Nutrition from Sheffield University. In her Cambridge Clinic she specializes in Nutrition for Children with Learning Disabilities, and Adults with Digestive and Immune System Disorders.

· Cambridge Bioceuticals Probiotics site:www.bio-kult.com Includes case histories and other articles by Dr Natasha Campbell-McBride.

· Reprinted from CAM Magazine August 2003.

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