



# probiotics: healing the mind

The idea that disease starts in the gut is not new, but a Cambridge practitioner has taken it a stage farther by showing how the restoration of gut flora plays a crucial part in the treatment of children with learning and behavioural disorders. **CAM** editor **Simon Martin** talks to **Dr Natasha Campbell-McBride, MD**, of the Cambridge Nutrition Clinic.

**D**r 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 programme of treatment. Now 10, 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 Behavioural Intervention Programmes. Also known as ABA, this approach is based on highly personalised, one-to-one coaching that teaches children language, play, academic, intellectual, self-help and social skills. An ABA programme 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 programme", 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 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

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► 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 maldigested food to get absorbed. The immune system reacts to this maldigested 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 hayfever 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 no 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 TH1 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 organised 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.

## Specific carbohydrate diet – no grains, no lactose, no sucrose

**Elaine Gottschall says:** "Of all dietary components, carbohydrates have the greatest influence on intestinal microbes (yeast and bacteria) which are believed to be involved in intestinal disorders. Most intestinal microbes require carbohydrates for energy. The SCD diet works by severely limiting the availability of carbohydrates to intestinal microbes.

When carbohydrates are not digested, they are not absorbed. They remain in the intestinal tract, thus encouraging microbes to multiply by providing food for them. This can lead to the formation of acids and toxins that can injure the small intestine.

Once bacteria multiply within the small intestine, they can destroy the enzymes on the intestinal cell surface, preventing carbohydrate digestion and absorption. At this point, production of excessive mucus may be triggered as the intestinal tract attempts to "lubricate" itself against the irritation caused by the toxins, acids, and the presence of incompletely digested and unabsorbed carbohydrates.

The SCD is based on the principle that specifically selected carbohydrates, requiring minimal digestion, are well absorbed, leaving virtually nothing for intestinal microbes to feed on. As the microbes decrease due to lack of food, their harmful by-products also diminish. No longer needing protection, the mucus producing cells stop producing excessive mucus and carbohydrate

digestion is improved. The SCD corrects malabsorption, allowing nutrients to enter the bloodstream and be made available to the cells of the body, thereby strengthening the immune system's ability to fight. Further debilitation is prevented, weight can return to normal, and ultimately there is a return to health."

### Disallowed Foods:

■ **Sugars:** Do not eat sugar, molasses, sucrose, high fructose corn syrup, fructose, or any processed sugar.

■ **Veggies:** No canned vegetables are permitted.

■ **Grains:** All grains are not permitted, such as: corn, wheat, wheat germ, barley, oats, rye, rice, buckwheat, soy, spelt, amaranth, and others. Some legumes are not allowed: chick peas, bean sprouts, soybeans, mung beans, faba beans, and garbanzo beans. Starchy foods are not permitted, such as: potatoes, yams, and parsnips. Seaweed and seaweed by-products, such as agar and carrageenan, are not allowed.

■ **Meats:** All canned meats are forbidden. Most processed meats are not permitted. Make sure processed meat doesn't contain any harmful additive such as corn, corn products, starch, and sugars.

■ **Dairy:** All variations of milk are not allowed: whole, skim, 1%, 2%, chocolate, etc. Some cheeses are

high in lactose content and are restricted: ricotta, mozzarella, cottage cheese, cream cheese, feta, and processed cheeses and cheese spreads.

Commercial yogurt contains a high amount of lactose and is not allowed. Heavy cream, buttermilk, and sour cream are not allowed.

■ **Misc:** Other foods that are not permitted include: bread, pasta, other starchy foods, canola oil, commercial mayonnaise (because of additives), ice cream, candy, chocolate, carob, whey powder, margarine, commercial ketchup, stevia, baking powder, commercial nut mixes, balsamic vinegar, and FOS (fructooligosaccharides) products.

**Allowed Foods** – quantities are not restricted if you eat a balanced diet

■ **Sugars:** Honey is the only allowed sugar product. Not everyone can tolerate it, so use with caution.

■ **Veggies:** Most vegetables, fresh or frozen and raw or cooked, are allowed including: asparagus, broccoli, cauliflower, artichokes, beets, Brussels sprouts, cabbage, carrots, celery, cucumbers, eggplant, zucchini, summer squash, rhubarb, peppers, garlic, lettuce, spinach, mushrooms (unless you have candidiasis), onions, turnips, and watercress. Be careful of raw vegetables when diarrhoea is present.



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► 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 coeliac 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 behaviour problems. These included autistic-type hyperactivity as well as hyperactivity, often accompanied by severe and prolonged night terrors. Very often the behaviour 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 behaviour 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 unrecognised 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 diarrhoea, 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 diarrhoea’, ‘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 carers 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 idiosyncracies, 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 – unchlorinated, 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 initial 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 initial 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. Pasture 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 specialises in Nutrition for Children with Learning Disabilities, and Adults with Digestive and Immune System Disorders. She lectures at a BANT-accredited conference in London on October 9.

• Cambridge Bioceuticals Probiotics site: [www.bio-kult.com](http://www.bio-kult.com) Includes case histories and other articles by Dr Natasha Campbell-McBride.

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