

# Dietary Issues in Autism

## Worth considering?

Historically autism spectrum disorder (ASD) had been seen and treated as a “mysterious” brain disorder, implying that it is all brain related. Research is now indicating that ASD is a “whole body disorder”, in that the brain is affected by the biochemistry generated by the body. The imbalanced biochemistry of the whole body can affect the brain and symptoms of ASD in many ways. Not having optimal nutrients due to self-restricted diets or “picky eating” only exacerbates the problems and symptoms. Picky eating habits are a separate issue (see Picky-eating sheet). Here we discuss how dietary choices can affect behaviour, not only in ASD children but in all children.

**“When diet is wrong medicine is of no use. When diet is right, medicine is of no need.”  
- Ancient Ayurvedic Proverb**

### Hyper Additives

The idea that food additives, flavourings and colours can cause hyperactivity and a wide range of clinical presentations was put forward by Dr Ben Feingold almost 40 years ago. Since that time, there have been sufficient studies that confirm Dr Feingold’s observations. Indeed many of these studies have looked at single chemicals rather than the cocktail of chemicals that children are exposed to.

To quote from one study, “the present findings, in combination with the replicated evidence for food colours and other food additives exacerbate hyperactive behaviours (inattention, impulsivity and overactivity) in children at least up to middle childhood.” Furthermore the study also showed significantly adverse affects were observed such as tantrums, poor concentration and slow progress at school.

Food additives and hyperactive behaviour in 3 year old and 8/9 year old children in the community: a randomised, double blinded’ placebo controlled trial. McCann D, Barrett A, Cooper A, Crumpler D, Dalen L, Grimshaw K, Kitchin E, Lok K, Porteous L, Prince E, et al. Lancet 2007. Volume 370, issue 9598, pages 1560 - 1567.

Some of the common additives in the above study that are still permitted in Australia: sodium benzoate (E211), tartrazine (E102), sunset yellow (E110), carmoisine (E122), ponceau red (E124).

### Salicylates and Phenols

Salicylates and phenols are chemicals found naturally in plants and are a major ingredient of aspirin and other pain-relieving medications. They are also found in many fruits and vegetables (apples, tomatoes, strawberries, broccoli, etc), as well as many common health and beauty products. When the body’s biochemical processes of methylation, transsulfuration or sulfation are not functioning well, ingesting more of these foods that the body can cope with can create a variety of behavioural, emotional and physical symptoms. It is a simple process of eliminating foods high in salicylates and phenols for at least a week, and follow with a challenge of high salicylates and phenolic foods to see if there is a reaction. **When parents, extended family, and therapists or teachers see the change in children’s behaviour, they do not need any more convincing of the need to regulate their child’s intake of certain foods.** Long-term the underlying biochemical weaknesses causing this issue can be supported so they can tolerate more of these foods.

**Changing the  
way we think  
about treating  
autism.**

**John Pietryka**  
Biomedical Naturopath  
55 Marianne Way  
MT WAVERLEY 3149  
[www.allnaturaladvantage.com.au](http://www.allnaturaladvantage.com.au)  
Phone: (03) 8802 7687  
E-mail: [pietryka@optusnet.com.au](mailto:pietryka@optusnet.com.au)

  
**Helping Children Achieve Their Full Potential**

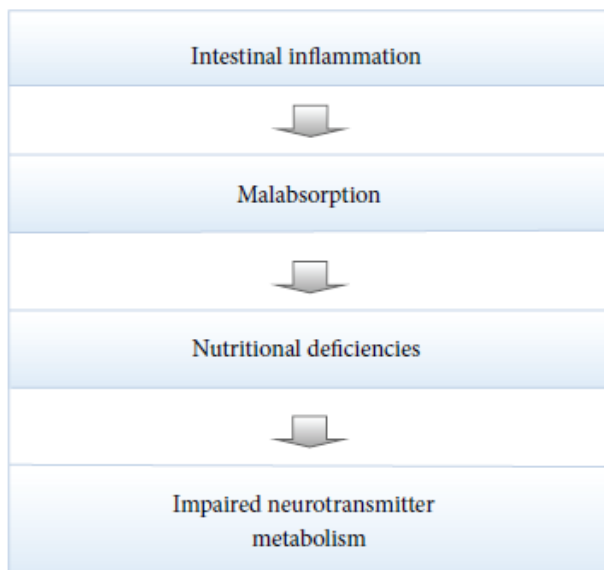
## Amines and Glutamates

**Biogenic amines** are formed by the breakdown of proteins in foods. They can affect mental functioning, blood pressure, body temperature, and other bodily processes. There are many different amines, including: tyramine (e.g. in cheese), histamine (e.g. in wine), phenylethylamine (e.g. in chocolate), and others. Biogenic amines are normally quickly broken down in the body with the help of enzymes such as **MAO (monoamine oxidase-A)** which render them harmless. Polymorphisms of the gene for this enzyme, known as MAOA-L, which seems to occur in about one third of the population, making them susceptible to amines in their diet. Many mothers have reported that their child becomes silly and hyperactive on salicylates whereas **amines make them aggressive**.

Most people have heard of "monosodium glutamate" (MSG), but ask them what it is, and most will say "a preservative?" Unfortunately "MSG" is not a preservative, but an "excitotoxin." **Glutamate** is naturally used in the body to produce the calming neurotransmitter GABA. If excess glutamate from the diet cannot be utilised rapidly enough it acts as an excitotoxin in the brain. In ASD children, too much **glutamate causes excitation leading to stimulatory behaviour, referred to as stimms**, and excess nerve firing. To keep glutamate levels balanced, it's best to avoid all foods (and nutritional supplements) that contain (or prompt the body to create) glutamate. Once you begin to read labels, you'll be surprised how widespread these ingredients are.

## What about gluten and dairy?

In clinic an interesting observation that we see, is that that children often crave a lot of the foods that they react to. Gluten and dairy are no exception.



It is becoming apparent that gluten induces systemic effects through **inflammation of the intestinal tract**. This is believed to cause **malabsorption** of various nutrients, leading to **systemic nutritional deficiencies**. For example, in the case of psychiatric illness, it is thought that there is perhaps impaired absorption of tryptophan, a precursor to serotonin, leading to serotonin deficiency and the presentation of mental illness. Ongoing scientific studies are identifying a link between gluten ingestion and adverse systemic symptoms, often **in the absence of classic histological findings of celiac disease on intestinal biopsy**. It has been hypothesized for quite some time that gluten sensitivity may also impair central nervous system functioning. A study In 1996 found a significant difference in the prevalence of patients with positive anti-gliadin

antibodies amongst those with neurological symptoms of unknown cause (57%) compared to a control group of healthy patients (12%). Amid the 57% who did have positive antibody titres, the majority did not demonstrate histological evidence diagnostic of celiac disease. An article published in *Lancet Neurology* in 2010 suggested additional support for the link between gluten sensitivity and neurological manifestations, including ataxia, neuropathy, encephalopathy, epilepsy, myopathy, and myelopathy is emerging. As the evidence continues to accumulate, there is an increasing acceptance of this diagnosis. A 2012 poll of nearly 1000 medical professionals reported that greater than 60% accepted the existence of **non-celiac gluten sensitivity (NCGS)**.

Does cryptic gluten sensitivity play a part in neurological illness? M. Hadjivassiliou, et al. *The Lancet*, vol. 347, no. 8998, pp. 369–371, 1996.

Gluten Sensitivity Presenting as a Neuropsychiatric Disorder. Stephen J. Genuis and Rebecca A. Lobo. *Gastroenterology Research and Practice* Volume 2014, Article ID 293206, 6 pages. <http://dx.doi.org/10.1155/2014/293206>.

Gluten sensitivity: from gut to brain. M. Hadjivassiliou, et al. *The Lancet Neurology*, vol. 9, no. 3, pp. 318–330, 2010.

When an ASD child or any child presents in clinic with behavioural issues it is imperative that they be assessed properly for underlying food and chemical sensitivities. **Elimination of the suspected food or chemical is the "gold standard" for confirmation and should be incorporated as part of the clinical assessment and potential management.**

## What About Gluten and Dairy Free Diets in ASD?

Julie Matthews is a trained Nutritionist, who is very passionate about improving the lives of ASD children and has written widely on the subject of proper nutrition as the essential building block for growing ASD children. This is best summarised by Julie Mathews in her June 22, 2013 Newsletter as shown in the following extract:

I'm surprised to still hear people say, "there is no research to support diet for autism." **Of course there is, if anyone would simply *read* the literature, they would know there's plenty of research on diet and nutrition for autism, including:**

- Research on gluten and casein and opioids in autism <sup>1, 2, 3, 4</sup>
- Digestive problems with gluten & casein in autism <sup>5</sup>
- And reduced autistic symptoms with gluten-free and casein-free diet, <sup>6, 7, 8</sup> as well as other areas of research on the subject (see "Nourishing Hope for Autism").

This latest study,<sup>9</sup> out last week, is even further support that a gluten-free diet makes sense and benefits.

### References:

1. Jinsmaa Y, Yoshikawa M. (1999) Enzymatic release of neocasomorphin and beta-casomorphin from bovine beta-casein. *Peptides*, 20:957-962.
2. Reichelt KL, Knivsberg AM, Lihnd G, Nodland M: Probable etiology and possible treatment of childhood autism. *Brain Dysfunction* (1991); 4: 308-319.
3. Kamiński S, Cieslińska A, Kostyra E. (2007) Polymorphism of bovine beta-casein and its potential effect on human health. *The Journal of Applied Genetics*, 48(3):189-198.
4. Shattock P, Whiteley P. (2002) Biochemical aspects in autism spectrum disorders: updating the opioid-excess theory and presenting new opportunities for biomedical intervention. *Expert Opin Ther Targets*. Apr;6(2):175-83
5. Jyonouchi H, Geng L, Ruby A, Reddy C, Zimmerman-Bier B. (2005) Evaluation of an association between gastrointestinal symptoms and cytokine production against common dietary proteins in children with autism spectrum disorders. *J Pediatr*. May;146(5):582-4.
6. Knivsberg AM, Reichelt KL, Nodland M. (2001) Reports on dietary intervention in autistic disorders. *Nutritional Neuroscience*, 4(1):25-37.
7. Knivsberg AM, Reichelt KL, Høien T, Nodland M. (2002) A randomised, controlled study of dietary intervention in autistic syndromes. *Nutritional Neuroscience*, 5(4):251-61
8. Whiteley P, Haracopos D, Knivsberg AM, Reichelt KL, Parlar S, Jacobsen J et al. The ScanBrit randomised, controlled, single-blind study of a gluten- and casein-free dietary intervention for children with autism spectrum disorders. *Nutr Neurosci* (2010); 13(2): 87-100.
9. Lau, Nga M., Peter HR Green, Annette K. Taylor, Dan Hellberg, Mary Ajamian, Caroline Z. Tan, Barry E. Kosofsky, Joseph J. Higgins, Anjali M. Rajadhyaksha, and Armin Alaedini. "Markers of Celiac Disease and Gluten Sensitivity in Children with Autism." *PLOS ONE* 8, no. 6 (2013): e66155.



Some parents hesitate to try ASD diets because they don't know if special diets work, why they may work or how they work. When parents correctly implement specific ASD diets, improvements in gastrointestinal problems (including diarrhoea and constipation), language, learning, focus, attention, eye contact, behaviour, sleep difficulties, toilet training and eczema have been observed. Parents are told that gluten and dairy free diets are dangerous and children will be missing out on essential nutrients.

**There is no one diet that suits every child. It is a matter of picking the diet to suit the child. What do parents report when they make dietary changes?**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Improved digestion                        | <input checked="" type="checkbox"/> More language              |
| <input checked="" type="checkbox"/> Reduced gastrointestinal pain             | <input checked="" type="checkbox"/> Ability to focus           |
| <input checked="" type="checkbox"/> Less rash or eczema                       | <input checked="" type="checkbox"/> Sleeping through the night |
| <input checked="" type="checkbox"/> Physical pain relief                      | <input checked="" type="checkbox"/> Making eye contact         |
| <input checked="" type="checkbox"/> Aggressive behaviour ceases or is reduced | <input checked="" type="checkbox"/> Easier toilet training     |

## A Closer Look at Gluten and Dairy in ASD

"Based on reports from caregivers, case studies, and *observation of patients with schizophrenia and children with severe behavioural disorders*, Dr. FC Dohan hypothesized, in 1960s and 70s, that gluten and dairy foods might worsen these behaviours. He noted that in many cases, a restricted diet could lead to significant improvement or recovery from these disorders. For several years, the biochemical explanation for this phenomenon remained unclear. However, several other studies seemed to bear out this observation, and in 1981, using more advanced laboratory technology, Dr. Karl Reichelt, Director of Clinical Chemistry for the Department of Pediatric Research at the Rikshospitalet (National Hospital) in Oslo, Norway, found and reported abnormal peptides in the urine of schizophrenics and autistics. Peptides are pieces of proteins that are not completely broken down into individual amino acids. Dr. Reichelt has observed that these peptides, which are 4 or 5 or 6 amino acids long, have sequences that match those of opioid peptides (casomorphin and gliadomorphin). The known dietary sources of these opiate peptides are casein (from milk) and gliadin or gluten (from cereal grains). He has since conducted several studies examining this finding, as have several other researchers, including Paul Shattock at the University of Sunderland in England, Dr. Robert Cade at the University of Florida, Gainesville, and Dr. Alan Friedman, of Johnson and Johnson Ortho Clinical Diagnostics. The best evidence for this correlation lies in the thousands of case reports of improvement or recovery of children with autism on this diet. However, responsible physicians who have taken the time to review these studies must agree that there is, indeed, significant scientific evidence to support a trial period of careful elimination of these proteins from the diet of children on the autistic spectrum."

Source: Autism Network For Dietary Intervention

### ASD Adult's Reported Reactions

<b><u>Dairy:</u></b>	Like on LSD Weird visual disturbances Memory dropped out Destroyed language	<b><u>Gluten:</u></b>	Dark, broody, rage Obsessive Bowel issues Cramping	<b><u>Salicylates:</u></b>	Like on cocaine Tics Run-down-adrenals
----------------------	--	-----------------------	---	----------------------------	--

Source: Overview; Integrative Treatments for Childhood Disorders & Disease. Dr Frank Golik. MINDD International Forum on Children 2011.

### Case study report: A case history of a 23-year-old female is presented as an example of what can be clinically achieved in gluten sensitive individuals following elimination of a food trigger.

Around age 4 or 5, this girl began to experience recurrent gastrointestinal problems, as well as the onset of frequent visual and auditory hallucinations. She recalls that she would often "see beings and, at times, entire scenes, that no one else would see." Some of her hallucinations were recurrent and many involved interaction. These experiences occurred on a nearly daily basis and were "just a part of (her) life." The patient relates that these hallucinations were indistinguishable from reality, and at times she would physically reach out to touch the different characters without realizing they were not real. The hallucinations as well as the gastrointestinal symptoms continued through her childhood and teen years, causing her to miss considerable amounts of school. After disclosing her abdominal symptoms, she was diagnosed by a physician with irritable bowel syndrome and was started on a daily regimen of high dose psyllium. On her own initiative, she began to experiment with elimination diets. She progressively eliminated soy, corn, and dairy but reported no change in any of her symptoms. She began university and states it was a "miracle (she) never failed out of school" and maintained a C average. After attending nutrition lectures with her partner, the patient was introduced to the idea of gluten sensitivity and decided to abstain from gluten exposure. After eliminating gluten in September 2009, her gastrointestinal symptoms and hallucinations completely abated, and she felt an improvement in her ability to concentrate at school. Given the dramatic resolution of her symptoms, the patient chose to subsequently continue to remain entirely gluten-free. Despite her efforts, however, she occasionally experienced inadvertent gluten exposures, which triggered a clear reproduction of her previous symptoms including vivid hallucinations and severe abdominal pain. Exposure to gluten in each case involved traces contained in contaminated food rather than a wilful transgression with copious ingestion of gluten. The patient reports that this pattern was predictable. When re-exposed to gluten, relapse consistently occurred within 3–5 hours and would result in significant disorientation and departure from reality. The episodes spontaneously resolved within 48–72 hours as long as she maintained a gluten-free diet.

[Read the full case study here:](#)

Gluten Sensitivity Presenting as a Neuropsychiatric Disorder. Stephen J. Genuis and Rebecca A. Lobo. Gastroenterology Research and Practice Volume 2014, [Article ID 293206](#), 6 pages

***We can keep going around the same merry-go round or we can make the tough decisions (dietary) because of our love for the child. Dr Frank Golik. MINDD International Forum on Children. 2011***