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#### Schizophrenia

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## Schizophrenia

We have helped many clients with Schizophrenia or Psychosis by working with them to create personalised nutritional programmes based upon their health history, symptoms and test results. If you would like to learn more about how we can help you, please [click here](#).

Read on for more information on how Schizophrenia or Psychosis can be influenced by nutrition.

Schizophrenia is a loaded word, feared by patient and public alike. It conjures up images of dangerous and crazy people. In truth, most members of the public have no real idea what is meant by this word, often believing that sufferers have split personalities, like Jekyll and Hyde. About one in a hundred people have schizophrenia, a diagnosis that is made on the basis of a collection of symptoms including:

- Depression
- Anxiety
- Fears, phobias and paranoia
- Disperceptions and thought disorders
- Illusions and delusions
- Auditory and visual hallucinations
- Anti-social behaviour.

A person labelled schizophrenic may have any or all of these, but at a level of severity that makes either them unable to cope or others unable to cope with them. The lack of firm, objective signs is perhaps the crux of the continuing argument as to whether schizophrenia has any physiological or biochemical basis or is just 'in the mind'. However, more and more evidence is emerging to suggest that most people with this label do have biochemical imbalances, or predispositions, sometimes also triggered by traumatic life events.

### Do you have symptoms of psychosis?

Most of us have, at some time or other, experienced some level of psychosis, a temporary losing touch with reality as we collectively know it. The experiences of schizophrenics are reproduced in certain toxic or feverish states. The normal person recovering from the delusions brought on by a high fever can breathe a great sigh of relief at the thought that his experience was only temporary. The person under the influence of the hallucinogenic drug LSD can at least rely on the clock, since the drug-induced schizophrenia will wear off with time. Some people's experience of so-called schizophrenia can be likened to a nightmare state from which they may awaken intermittently. For some, schizophrenia is like living in a nonstop nightmare.

### What causes schizophrenia?

Although there are cases where people go crazy for purely psychological reasons, there is now overwhelming evidence that in most people so diagnosed, something isn't right in the brain. Researchers from the London Institute of

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### DO YOU NEED HELP?

Come to the **Brain Bio Centre**, our outpatient clinic, specialising in the 'optimum nutrition' approach to mental health problems.

### Find out about nutrition for:

- 🌿 ADHD/hyperactivity
- 🌿 Autism
- 🌿 Bipolar Disorder
- 🌿 Dementia/Alzheimer's
- 🌿 Depression
- 🌿 Dyslexia/Dyspraxia
- 🌿 Schizophrenia

Psychiatry have confirmed that the frontal cortex of the brain is involved in schizophrenia. Using function magnetic resonance imaging (fMRI), they have also been able to show that the deterioration in brain function in schizophrenia is not irreversible.

The best results we've seen in helping those with so-called schizophrenia are achieved by investigating a number of possible avenues. These include:

- Blood sugar problems made worse by excess stimulant and drug use
- Essential fat imbalances
- Too many oxidants and not enough antioxidants
- Niacin (Vitamin B3) therapy
- Methylation problems helped by B12 and folic acid
- Pyroluria and the need for zinc
- Food allergies

Quite apart from these nutritional factors, having good psychological support and a stable home environment make a major impact upon those with mental health problems.

You can find out which of these factors is likely to affect you by completing the [FREE Mental Health Check](#).

To find out more about these factors read on, or click on our [Action Plan to Overcome Schizophrenia](#)

## **DIET & NUTRITION – WHAT WORKS**

### **BALANCE YOUR BLOOD SUGAR AND AVOID STIMULANTS**

Your intake of sugar, refined carbohydrates, caffeine, alcohol and cigarettes, as well as stimulant drugs, all affect the ability to keep one's blood sugar level balances. On top of this common antipsychotic medication may also further disturb blood sugar control. Stimulant drugs, from amphetamines to cocaine, can induce schizophrenia. Excessive smoking<sup>2</sup>, is also linked to an increased risk. The incidence of blood sugar problems and diabetes is also much higher in those with schizophrenia<sup>3</sup>.

Therefore it is strongly advisable to reduce, as much as possible, your intake of sugar, refined carbohydrates, nicotine, caffeine and stimulant drugs and eat a low glycemic load diet.

### **INCREASE ESSENTIAL FATS**

We build our brain from specialised essential fats. Of course, this isn't a static process. We are always building membranes, then breaking them down, and building new ones. The breaking down, or stripping of essential fats from brain<sup>4</sup>, membranes, is done by an enzyme called phospholipase A2 (PLA2). This is often overactive in people with schizophrenia, and this leads to a greater need for these fats, which are quickly lost from the brain<sup>5,6</sup>. This explains earlier findings that schizophrenic patients have much lower levels of fatty acids in the frontal cortex of the brain. So, what's the evidence that increasing a person's intakes of essential fats makes a difference?

The World Health Organization conducted a survey of the incidence and outcome of schizophrenia in eight countries in Africa, Asia, Europe and the Americas. They found that while the incidence was surprisingly similar in all countries, the outcomes were very different. In some countries schizophrenia seemed to be a relatively mild and self-

limiting disease, whereas in others it was a severe and life-long condition. Of all the factors considered which might explain this, by far the strongest correlation was with the fat content of the diet. Those countries with a high intake of essential fats from fish and vegetables, as opposed to meat, had much less severe outcomes<sup>7</sup>.

Dr Iain Glen from the mental health department of Aberdeen University found that 80 per cent of schizophrenics are essential fat deficient. He gave 50 patients essential fat supplements and reported a dramatic response<sup>8</sup>. A larger placebo-controlled, crossover, 10-month study of the effects of EFA supplementation in schizophrenics, including supplements of zinc, B6, B3 and vitamin C with omega-6 fats, also produced significant improvements in schizophrenic symptoms<sup>9</sup>. Two trials giving omega 3 fish oil high in EPA produced significant improvement<sup>10</sup>. But not all results are positive. A trial using only omega-3 fats versus placebo found no significant improvement in mental health<sup>11</sup>.

To date, the evidence strongly suggests that some people diagnosed with schizophrenia do need, and respond well to, increased amounts of both omega-6 fats, such as evening primrose oil or starflower oil, and omega-3 fats from fish oils, together with the 'co-factor' nutrients (zinc, B6, B3 and vitamin C) that help convert them into vital brain fats.

**Where's the evidence?** Enter 'omegas' and 'schizophrenia' into the search field for a summary of studies that demonstrate the effect of essential fats on schizophrenia.

**Side effects?** None known.

**Contraindications with medication?** None known.

**See action plan for our recommendations.**

### **UP ANTIOXIDANTS**

There's another part to the essential fat story. These fats are also prone to destruction in the brain, and in the diet, by oxidants. Indeed, there is evidence of more oxidation in the frontal cortex of those with schizophrenia. Therefore, as well as increasing the intake of essential fats, it makes sense to follow a diet (and lifestyle) that minimises oxidants from fried or burnt food and maximises intake of antioxidant nutrients such as vitamins A, C and E. These alone have been shown to help. Vitamin C is also an anti-stress vitamin and may counter too much adrenalin, which is often found in those diagnosed with schizophrenia. Smoking is both a source of oxidants and destroys vitamin C.

Vitamin C deficiency is also far more common than realised in people with mental health problems, often because they don't look after themselves properly and eat poorly. Pronounced vitamin C deficiency can make you crazy, as reported by Professor Derri Shtasel from the department of psychiatry at the University of Pennsylvania School of Medicine in Philadelphia. She describes a case of a woman who was confused and hearing voices, as well as having physical symptoms. She was tested for vitamin C status and found to be very deficient. After being given vitamin C she had fewer hallucinations, her speech improved and she became more motivated and sociable<sup>12</sup>. Vitamin C has been shown to reduce the symptoms of schizophrenia in research trials<sup>13</sup>, and a number of studies have shown that people diagnosed with mental illness may have much greater requirements for this vitamin – often ten times

higher – and are frequently deficient<sup>14</sup>.

**Where's the evidence?** Enter 'antioxidants' and 'schizophrenia' into the search field for a summary of studies that demonstrate the effect of antioxidants on schizophrenia.

**Side effects?** None reported.

**Contraindications with medication?** None known.

**See action plan for our recommendations.**

### **CONSIDER NIACIN**

One of the classic vitamin deficiency diseases is pellagra – Niacin (vitamin B3) deficiency. The classic symptoms of this condition are the '3 Ds' – dermatitis, diarrhoea and dementia. A more extensive list of symptoms might include headaches, sleep disturbance, hallucinations, thought disorder, anxiety and depression.

If you have these symptoms you may need a lot more niacin than the basic RDA, sometimes as much as 2,000mg or 100 times the RDA. We call this 'vitamin dependency', but of course we are all vitamin dependent. It's just that some people need more, perhaps for genetic reasons, than others.

The use of 'megadoses' of niacin was first tried by Drs Humphrey Osmond and Abram Hoffer in 1951. So impressed were they with the results in acute schizophrenics that, in 1953, they ran the first double-blind therapeutic trials in the history of psychiatry. Their first two trials showed significant improvement giving at least 3gs (3,000mg) a day, compared to placebos. They also found that chronic schizophrenics, not first-time sufferers but long-term inpatients, showed little improvement. The results of six double blind controlled trials showed that the natural recovery rate was doubled. Later they found that even chronic patients, treated for several years with niacin in combination with other nutrients, often recovered.

Hoffer's discovery was, however, side-lined partly due to some studies which gave niacin to long-term schizophrenic patients who had been on medication for several years and failed to respond to niacin in the short-term.

Since then, Dr Hoffer has published ten-year follow-ups on schizophrenics treated with niacin, compared to those not treated with niacin. In the niacin patients there were substantially fewer admissions, days in hospital and suicides. He continues to treat acute schizophrenics with niacin, plus other nutrients, including vitamin C, folic acid and essential fats, and reports a high recovery rate in acute schizophrenics who follow his nutritional programme. Now in his eighties and still actively practising in Vancouver, Canada, Dr Hoffer has recorded 4,000 cases and published double-blind trials. He is convinced that his approach is a major breakthrough in the treatment of mental illness.

Just how niacin works is still a bit of a mystery. Knowing that people with schizophrenia had hallucinations, Dr Hoffer's explanation is that niacin stops the brain from producing adrenochrome from adrenalin, a chemical known to induce hallucinations. Working together with vitamin B12 and folic acid, niacin helps keep adrenalin and noradrenalin levels in balance, and prevent the abnormal production of adrenochrome in the brain. These nutrients are 'methyl'

donors and acceptors, and act intelligently in the brain to keep everything in check. Once again, some people may simply need more to stay healthy.

Niacin, through its flushing action improves oxygen supply to the brain. Niacin is also needed for the brain to make use of essential fats. The 'happy' neurotransmitter serotonin also needs niacin. Serotonin is made from the amino acid tryptophan, but only in the presence of enough niacin. So there are many possible ways this vitamin could affect brain function.

Hoffer has also found that patients who test positive for pyroluria (see below) are more likely to respond well to increased intakes of niacin. So large doses of niacin are most likely to be effective for acute, not chronic, schizophrenics who are pyroluric and have some of the classic low histamine symptoms of hallucinations, anxiety and thought disorder.

### **Where's the evidence?**

Niacin comes in different forms. Niacin (formerly known as nicotinic acid) causes a harmless blushing sensation, accompanied with an increase in skin temperature and slight itching. This effect can be quite severe, and lasts for up to 30 minutes. However, if 500mg or 1,000mg of niacin are taken twice a day at regular intervals, the blushing stops.

Some supplement companies produce a 'no-flush' niacin by binding niacin with inositol. This works, so it's probably the best form, but it is more expensive. Niacin also comes in the form of niacinamide, which doesn't cause blushing either. It has to be said, however, that both of these forms appear to be slightly less effective than niacin. This may be because the blushing effect of niacin improves blood flow, and hence nutrient supply to the brain.

**Contraindications with medication?** None known.

**Side effects?** The amount of niacin that's needed is around 1 to 6g a day. A minimum therapeutic level is 1g a day. These levels are in the order of 100 times the RDA. Levels of niacin much higher than these, particularly in sustained-release tablets, can be liver toxic. Out of perhaps 100,000 people taking megadoses of niacin at levels of several grams over the past 40 years, there have been two deaths due to liver failure. In a third case, jaundice resulted from a slow-release preparation. When the same patient was placed back on standard niacin, he no longer got jaundice. In any event, anything over 1g is best taken under the supervision of a qualified practitioner. If you become nauseated, that is an indication to stop supplementation and resume three days later, with a lower amount.

**See action plan for our recommendations.**

### **METHYLATION, B12, FOLIC ACID AND B6**

Methylation is a critical process in the brain that helps maintain the right chemical balance. An indicator of faulty methylation is having a high level of a toxic protein in the blood called homocysteine. The body makes homocysteine from dietary protein and, provided you are getting enough of certain vitamins<sup>15</sup>, especially folic acid, B12 and B6, homocysteine levels decrease. Many people with schizophrenia, especially young males, tend to have a high level of the toxic protein called homocysteine, despite no obvious dietary lack of these vitamins. High levels c

homocysteine and low blood levels of folic acid have been reported by many research groups<sup>16,17</sup>. These unusually high levels don't appear to relate to diet or lifestyle factors, such as smoking<sup>18</sup>. People diagnosed with schizophrenia are more likely to have inherited a genetic variation of a key homocysteine lowering enzyme<sup>19,20</sup>, which may make them need more of these and other nutrients.

The best results are achieved, not by supplementing only niacin, but by combining niacin with folic acid, B12 and B6. Both folic acid and vitamin B12 are often relatively deficient in people diagnosed with schizophrenia have been proven to help reduce the symptoms – but only at high doses<sup>21</sup>. Research at Kings College Hospital psychiatry department in London has found high doses of folic acid to be highly effective in schizophrenic patients<sup>22</sup>. They used 15mg a day, which is 75 times the RDA! Folic acid is not toxic at this level. We recommend starting with 1mg a day, increasing the dose only under supervision of your health care provider.

Vitamin B12, which like folic acid is involved in methylation, has also been shown to help schizophrenic patients<sup>23</sup>. Vitamin B12 is difficult to absorb, especially in large amounts, and some doctors have reported good results giving weekly, or twice-weekly, injections of 1mg of vitamin B12. A form of B12, methyl B12, is more easily absorbed.

A combination of folic acid, B12 and vitamin B6 has been shown to most effective in improving the mental health, and lowering the homocysteine levels of schizophrenia patients with high homocysteine levels<sup>24</sup>.

**Where's the evidence?** Enter 'folate' or 'folic acid' and 'schizophrenia' into the search field for a summary of studies that demonstrate the effect of folic acid on schizophrenia.

**Side effects?** Folic acid supplementation can mask the symptoms of an underlying B12 deficiency, so we don't recommend supplementing folic acid on its own.

**Contraindications with medication?**

**See [action plan](#) for our recommendations.**

### **ARE YOU PYROLURIC? THE ZINC LINK**

Possibly one of the most significant 'undiscovered' discoveries in the nutritional treatment of mental illness is that many mentally ill people are deficient in vitamin B6 and zinc. But this deficiency is no ordinary deficiency: you can't correct it by simply eating more foods that are rich in zinc and B6. It is connected with the abnormal production of a group of chemicals called 'pyrroles'. A person with a high level of pyrroles in the urine needs more B6 and zinc than usual, since they rob the body of these essential nutrients, increasing a person's requirements to stay healthy. More than 50 per cent of people diagnosed with schizophrenia have 'pyroluria'.

The test for pyroluria is remarkably simple and very inexpensive. When you add a chemical known as Ehrlich's reagent to urine, it will turn mauve if there are kryptopyrroles present. Dubbed 'mauve factor' in the 1960s, this was found in 11 per cent of normal people, 24 per cent of disturbed children, 42 per cent of psychiatric patients and 52 per cent of schizophrenics<sup>25</sup>. Dr Carl Pfeiffer and Dr Arthur Sohler at Princeton's Brain Bio Center worked out

that these abnormal chemicals would bind to B6 and zinc, inducing deficiency. With this knowledge, effective therapy was at hand. Since 1971, thanks to Dr Pfeiffer's pioneering work, thousands of pyroluric patients have been successfully treated with B6 and zinc, both at the Brain Bio Center and more recently at the Institute for Optimum Nutrition in London.

**The Signs and Symptoms of Pyroluria:** Pyroluria is often a stress-related condition, with symptoms usually beginning in the teenage years after a stressful event such as exams or the split-up of a relationship. Those with pyroluria often become reclusive and socially withdrawn, depending on the family and avoiding any stressful situations.

Pyrolurics often have weak immune systems and may suffer from frequent ear infections as a child, colds, fevers and chills. Other symptoms include fatigue, nervous exhaustion, insomnia, poor memory, hyperactivity, seizures, poor learning ability, confusion, an inability to think clearly, depression and mood swings. In girls there can be irregular periods and in boys relative impotence. The pyroluric patient can have bad breath and a strange body odour, a poor tolerance of alcohol or drugs, may wake up with nausea, and have cold hands and feet and abdominal pain.

A lack of dream recall is very common. It is normal to remember dreams, and many people, whether or not they have mental health problems, report better dream recall once they start supplementing optimal amounts of vitamin B6 and zinc. Other tell-tale signs include pale skin, white marks on the nails and, in extreme cases, poor hair growth and loss of hair colour. Often a person with pyroluria also has skin problems such as acne or eczema.

Not all these symptoms are present in all pyrolurics, but if you are experiencing a number of them, it is well worth testing for. A simple urine test measures the level of kryptopyrroles in the urine, which should not be above 0.08 units.

Many of these symptoms are now recognised as classic signs of zinc deficiency, but this possibility is rarely tested for or corrected with zinc supplements. It amounts to a tremendous oversight within psychiatry: zinc is, after all, probably the most commonly deficient mineral. The average intake in Britain less than a day, while the RDA is 15mg, so almost half the population gets less than half the RDA of zinc. Seeds, nuts, meat, fish and wholefoods are all rich in it.

There's more to the story, however. People with pyroluria often come from families with a history of mental health problems. Dr Pfeiffer also noted that it was more common in all-girl families. Although nothing is proven at this stage, it is likely that pyroluria is a genetic predisposition that makes an individual need more vitamin B6 and zinc to feel well. Like so many imbalances discussed in this book, it illustrates how we are all biochemically unique and need to discover our own optimum nutrition to stay healthy and mentally well.

For people with pyroluria, this means both eating a healthy diet and supplementing relatively large amounts of zinc, starting with 25mg and going up to 50mg a day, as well as vitamin B6, starting at 100mg and going up to 500mg. Those with pyroluria seem to do better on relatively low protein diets, or, at least, not high protein diets. Some pyroluric patients react badly to high protein foods such as

meat. This may be because you need adequate amounts of B6 and zinc to digest, absorb and use protein.

### **CHECK FOR ALLERGY**

Some people with mental health problems are sensitive to gluten, especially wheat gluten, which can bring on all sorts of symptoms of mental illness. This has been known since the 1950s, when Dr Laretta Bender noted that schizophrenic children were extraordinarily subject to coeliac disease (severe gluten allergy)<sup>26</sup>. By 1966 she had recorded 20 such cases from among around 2,000 schizophrenic children. In 1961 Drs Graff and Handford published data showing that four out of 37 adult male schizophrenics admitted to the University of Pennsylvania Hospital in Philadelphia had a history of coeliac disease in childhood<sup>27</sup>.

**Side effects?** None reported.

These early observations greatly interested Dr Curtis Dohan at the University of Pennsylvania. He suspected that the two were linked and decided to test his theory by randomly placed all men admitted to a locked psychiatric ward in a Veterans Administration Hospital in Coatsville, Pennsylvania, either on a diet containing no milk or cereals, or on one that was relatively high in cereals. (Milk was eliminated from the diet because some people do not benefit when only glutens are removed.) All other treatment continued as normal. Midway through the experiment, 62 per cent of the group on no milk and cereals were released to a 'full privileges' ward. Only 36 per cent of those patients receiving a diet including cereal were able to leave the locked ward. When the wheat gluten was secretly placed back into the diet, the improved patients once again relapsed<sup>28</sup>.

These results have since been confirmed by other double-blind placebo-controlled trials. In one, published in the Journal of Biological Psychiatry, 30 patients suffering from anxiety, depression, confusion or difficulty in concentration were tested, using a placebo-controlled trial, as to whether individual food allergies could really produce mental symptoms in these individuals. The results showed the allergies alone, not placebos, were able to produce the following symptoms: severe depression, nervousness, feeling of anger without a particular object, loss of motivation and severe mental blankness. 7 foods/chemicals that produced most severe mental reactions were wheat, milk, cane sugar, tobacco smoke and eggs<sup>29</sup>.

In another study Dr William Philpott followed up Dr Dohan's theory by testing 53 patients diagnosed with schizophrenia. Sixty-four per cent reacted adversely to wheat, 50 per cent to cow's milk, 75 per cent to tobacco and 30 per cent to petrochemical hydrocarbons. The emotional symptoms caused by allergic intolerance ranged from dizziness, blurred vision, anxiety, depression, tension, hyper-activity and speech difficulties to gross psychotic symptoms. At the same time, the individuals also experienced various adverse physical symptoms such as headaches, feeling of unsteadiness, weakness, palpitations and muscle pains<sup>30</sup>.

However, more recent research hasn't found that coeliacs disease is more prevalent among those with schizophrenia or vice versa<sup>31</sup>. However, the possibility of allergy to other

foods may be worth investigating, especially if allergic symptoms, including eczema, asthma, digestive problems, ear infections, sinusitis or rhinitis are also present.

**Where's the evidence?** Enter 'allergies' and 'schizophrenia' into the search field for a summary of studies that demonstrate the effect of allergies on schizophrenia.

**See action plan for our recommendations.**

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