



# Depression

## The Nutrition Connection

by Patrick Holford

The current approach to depression involves drug therapy and/or psychotherapy. These are like 'hardware' and 'software' paradigms. The brain, nervous system and neurotransmitters are all made from nutrients. A lack of essential nutrients affects mood, behaviour and mental performance. Correcting underlying nutritional deficiencies can alleviate depression, reduce side-effects of medication and improve response to psychotherapy, argues Patrick Holford.

At the age of 20 I thought I had it all sussed. I'd read Jung, Freud, studied Gestalt, transactional analysis, transpersonal psychology and was shopping in the spiritual supermarket, from gurus to zen. I was in my final year as an undergraduate in experimental psychology, but didn't give much heed to the biochemical models of mental illness. I was destined for the world of psychotherapy and a career helping people (and myself) unravel the self-imposed limitations of the mind and attain higher levels of consciousness.

Then I changed my diet and, with that, my world changed. I had met two maverick nutritionists who sold me on the idea that 'you are what you eat' and that changing what goes in has a fundamental effect on how you think, feel and function. I didn't really believe it, but the logic was good. So, in 1977 I quit the student diet, became an avid fruit and vegetable eater and swallowed a handful of supplements each day, shipped from the US. Within 30 days I lost 14lbs, my skin, which had looked like a lunar landscape, cleared up, my migraines went, but what really convinced me was a rapid improvement in energy, mental clarity and concentration. All this from a change in nutrition? I wanted to know more.

I headed to the library and soon found studies, including double-blinds, on the effects of large amounts of vitamins and minerals on mental illness. Two names stood out - Dr Carl Pfeiffer, director of the Brain Bio Center in Princeton, and Dr Abram Hoffer, director of psychiatric research in Saskatchewan, Canada. I read everything I could and was astounded by the claims - 80 per cent cure of acute schizophrenia, said Hoffer (whose diagnosis of cure was free of symptoms, able to socialise and paying income tax), dramatic results with depression, said Pfeiffer. Within months I was on a plane to America and arrived in Princeton to find a 10,000 sq ft outpatient facility with over 50 staff and 5,000 patients per year. The essence of their approach was to objectively evaluate if a person had any abnormal biochemistry that would predispose them to, say, depression and then change the body's biochemistry by giving a personalised nutrition programme. "If there's a drug that can alter the brain's biochemistry, there's usually a combination of nutrients that can achieve the same thing without side-effects" said Pfeiffer, who had spent most of his life researching biochemical aspects of mental health, funded by the US government. Now, after thirty years of positive research and good clinical results I believe the time has come for another option, nutrition counselling, to be made available to those with mental health problems.

### **Depression - not all in the mind**

Depression isn't a disease with a one cause, nor one treatment. For some the problem may be purely psychological, for others purely biochemical. Common biochemical imbalances that can induce depression include:

- Deficiencies of nutrients (vitamin B3, B6, folate, B12, C, zinc, magnesium, essential fatty acids)
- Neurotransmitter imbalances (serotonin, dopamine, adrenalin, histamine)
- Blood sugar imbalances (often associated with excessive sugar and stimulants)
- Allergies and sensitivities

The presence of one or more of these factors may worsen a person's ability to cope with stress and thus be an underlying contributor to what might otherwise be considered depression of a psychological origin. Conversely, many depressed people fail to adequately nourish themselves. It's a chicken or egg situation. What is known is that nutritional deficiency is more common in those with mental illness, especially in the elderly population. For example, research at Kings College Hospital found that 33 per cent of those with psychiatric disorders were deficient in folate(1), while a survey of 93 elderly patients found 73 were deficient in iron or B vitamins, especially folic acid (2). There is suggestion that those with mental health problems may need more, or absorb less nutrients. It has been demonstrated, for example, that schizophrenia patients require more vitamin C to attain normal blood levels than controls(3) and more niacin to induce the normal vasodilation response than controls (4).

### **The Great British vitamin scandal**

The most promising nutrients to date are vitamins B3, B12 and folic acid, then vitamin B6, zinc and magnesium and essential fatty acids (EFAs). The first three are involved in the vital biochemical process known as methylation, which is critical for balancing the neurotransmitters dopamine and adrenalin.

Research on folic acid have shown improvement in both depression and schizophrenia. Giving those with borderline or low folate status 15mg a day alongside standard psychotropic treatment significantly improved clinical and social recovery in patients with depression and schizophrenia in a double-blind controlled trial at Kings College Hospital and the Department of Psychiatry(1).

Vitamin B6 and zinc work together. In fact vitamin B6 (pyridoxine) does nothing in the body until it is converted into pyridoxal phosphate, this conversion depending on adequate zinc levels. About one third of

the psychiatric population show the excessive excretion of 'kryptopyrroles' in the urine, the formation of which robs the body of B6 and zinc. Giving more of these nutrients corrects this biochemical abnormality and the associated symptoms of depression, anxiety, poor socialisation and ability to cope with stress (5). Giving vitamin C or EFAs also enhances recovery.

But don't we get enough of these nutrients from a well balanced diet? Comparison of the average daily intakes of these nutrients, as calculated by MAFF's National Food Survey, with the current EC Recommended Daily Allowances (known in nutritional circles as the Ridiculous Dietary Arbitrarities) reveals a scale of nutritional deficit few health professionals have taken on board.

### **Nutrient Average Intake (EC)RDA SONA**

Niacin (B3) 25mg 18mg 30mg  
Pyridoxine (B6) 1.9mg 2mg 20mg  
Folic acid 239mcg 200mcg 800mcg  
Cyanocobalamine (B12) 4.9mcg 1mcg 3mcg  
Ascorbic acid (C) 55mg 60mg 400mg  
Magnesium 233mg 300mg 400mg  
Zinc 7.6mg 15mg 15mg

The probability that the diet of any one individual meet all these RDAs (being only 7 out of 50 known essential nutrients) is less than 1 in 10. The picture is much worse among the underprivileged. A survey by the Food Commission found that 25 per cent of women claiming income support failed to achieve the Lowest Reference Nutrient Intake (defined as the level at which 95% of people experience overt deficiency symptoms) for 8 out of 13 nutrients analysed. It is, quite simply a myth that today's diet meets all our nutrient needs. As the science of nutrition advances to identify that optimal intakes of nutrients are often ten times higher than RDA levels it becomes clear that most of us are sub-optimally nourished and functioning, both physically, mentally and emotionally below par as a result. Optimal nutrient amounts, known as Suggested Optimal Nutrient Amounts (SONAs) and not infrequently ten times higher than RDA levels and represent the daily intakes of nutrients that are positively associated with the best health and least risk of disease (6).

### **Neuroanalysis or psychoanalysis?**

The major anti-depressants are thought to work by affecting the

balance and function of certain neurotransmitters. These include serotonin re-uptake inhibitors such as Prozac, Lustral, Seroxat which are designed to keep serotonin in circulation; adrenalin reuptake inhibitors such as Edronax, designed to keep adrenalin in circulation; monoamine oxidase inhibitors, which again help maintain adrenalin and dopamine levels and the tricyclic anti-depressants such as amitriptyline which also prevent adrenalin breakdown. Notice that most of these drugs block biochemical pathways. That is, they interfere with the body's normal chemistry. The consequence is frequent side-effects and a need to get the dose just right to balance positive effects and the side effects. For example, Prozac, considered to be among the safest anti-depressants, has 45 known side-effects. The most common are nausea, nervousness, insomnia, headache, tremors, anxiety, drowsiness, dry mouth, excessive sweating and diarrhoea. According to a survey by US psychiatrist David Richman 10 to 25 per cent of people on Prozac experience all of these.

An alternative approach to give the nutrients our bodies have evolved to use to make more of these neurotransmitters. Figure 1 shows the symptoms associated with excess and deficiency of neurotransmitters and the co-factor nutrients involved (7).

Serotonin, for example, is made from the protein constituent tryptophan, in the presence of sufficient vitamin B3, B6 and zinc. Tryptophan was shown to be an effective anti-depressant for some patients and tryptophan depletion can induce depression in recovered depressed patients. This has been well demonstrated by research at Oxford University's Department of Psychiatry, in which 15 women with a history of depression were given a diet excluding or including tryptophan under double-blind conditions (8). Ten out of fifteen experienced clinically significant symptoms of depression on the tryptophan-free diet, while none experienced mood changes on the diet including tryptophan. Tryptophan itself is no longer available as a supplement, but one of its metabolites, 5-hydroxytryptophan (5-HTP) is. Tryptophan-rich foods include fish, turkey, chicken, cottage cheese, avocados, bananas and wheatgerm.

Another neurotransmitter deficiency associated with depression is adrenalin. An up and coming class of anti-depressant drugs are adrenalin reuptake inhibitors, such as Edronax. Adrenalin (and

dopamine) is made from the amino acid tyrosine and controlled by niacin, folic acid and B12. Associate Clinical Professor of Psychiatry, Dr Priscilla Slagle, from the University of Southern California cured her own depression with such a combination of nutrients, taking tyrosine in the morning (which is more stimulating) and tryptophan in the evening (which is more calming) plus other nutrients. She found this combination to be helpful for many of her patients and wrote it up in a book, *The Way Up from Down*, published by Random House.

## **HOW TO EAT YOURSELF OUT OF DEPRESSION**

- Reduce stimulants - tea, coffee, sugar, chocolate
- Increase nutrient-rich foods - fruit, vegetables, wholefoods, seeds, nuts and wheatgerm
- Have a serving of fish, chicken, turkey or tofu (from soy beans) a day
- Supplement a high-strength B Complex formula
- Supplement the amino acid L-tyrosine 2,000mg in the morning, available from health food shops
- Supplement 5-HTP, 100mg twice a day

For more information on this subject and for references, read *Mental Health & Illness*.

There's a good rationale for giving a combination of nutrients to help support proper neurotransmitter function as a first line treatment for depression. Of course, not all will respond because not all depression is as a consequence of neurotransmitter dysfunction. No doubt, in the not too distant future, assessment of neurotransmitter status will be measurable before applying either nutrients or drugs.

### **Individual nutritional assessment**

Over the past 13 years we have developed a method for assessing if a person suffering from depression has one of a number of nutritional imbalances that may be contributing to such biochemical dysfunction. This we assess by a questionnaire, backed up by biochemical tests. Approximately two thirds of those who consult us do prove to have such imbalances and improve on specific nutritional strategies involving diet and supplements. For some, this results are dramatic, for others this approach lessens their depression. More often than not we also recommend the client to seek the help of a psychotherapist. There are now 160 nutrition consultants all over Britain trained in this approach.

How do you know when depression has a nutrition connection? One of the dilemmas facing psychotherapists is knowing when a nutritional imbalance is likely to be a contributor to a particular mental health problem. This subject is not on the curriculum of either schools of psychotherapy or psychiatry. To this end we have devised an intensive one-day training which aims to develop awareness of the practitioners to the symptoms that can indicate that the patients' problems aren't all 'in the mind'. This we do by means of the Mental Health Questionnaire, a set of 75 questions, the numbers and pattern of answers indicating the probability of one of eight nutrition-related imbalances.

For psychotherapists the goal is to know when to refer. For psychiatrists we go a step further and train how to augment conventional treatment with tailor-made nutritional support programmes. These trainings are run both at the Institute for Optimum Nutrition and within departments and schools of invitation. We also offer an introductory one hour lecture on this subject to departments and self-help groups to generate awareness of the nutrition connection.

### **RECOMMENDED READING**

Mental Illness - Not All in the Mind, ION Press, £1.95

Mental Health & Illness - The Nutrition Connection, Dr Carl Pfeiffer & Patrick Holford, ION Press, £7.95

These books can be ordered from the ION by calling 0181-871-4576

### **FURTHER DETAILS**

For further details and dates on trainings send an A5 SAE to the Mental Health Project, ION, Blades Court, Deodar Road, London SW15 2NU.

If you are interested in sponsoring a lecture or one day training please call Jan Shephard on 0181-971-2949.

### **REFERENCES**

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#### QUOTES

"The definition of insanity is to keep doing the same things and expect different results."

#### CASE HISTORIES

Liz started suffering from depression at the age of 14. By the time she was 17 she had become extremely anxious, fearful and depressed and was hearing voices. She was put on three drugs - Sulpiride and Depixol injections, plus Kemadrin to offset the side-effects of the other drugs. The drugs somewhat sedated her but she continued to suffer from extreme depression and anxiety and continued to hear voices in her head. She also had psychotherapy but neither this, nor the drugs made any real difference.

She consulted a nutrition counsellor who identified chronic nutritional deficiencies and an excessive level of histamine, a neurotransmitter that affects the brain. Within six months she was no longer depressed, and rarely heard voices or became anxious. She came off all medication and continued to improve. She is now perfectly healthy and happy and recently gave birth to a baby girl. She experienced no post-natal depression.

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Since she was 11, Sara's life had been a nightmare of mental and physical suffering. Her history included chronic insomnia, episodic loss of reality, attempted suicide by hanging, amnesia, partial seizures, nausea, vomiting and loss of periods. Her knees were so painful (X-rays showed poor cartilages) and her mind so disperceptive that she walked slowly with her feet wide apart like a peasant following a hand plough drawn by tired oxen. Psychiatrists at three different hospitals gave the dubious waste-basket labels of 'schizophrenia', 'paranoid schizophrenia' and 'schizophrenia with convulsive disorder'. At times her left side went into spasms with foot clawed and fist doubled up. Both arm and leg had a wild flaying motion. Restraints were needed at these times. Psychotherapy was ineffective and most tranquillisers

accentuated the muscle symptoms. She tested positive for pyroluria and was given B6 and zinc.

Urinary kryptopyrrole was at times as high as 1000mcg%, the normal range being less than 15. She was diagnosed as B6 and zinc deficient and treatment was started. Over three months her knees became normal, the depression subsided, as did the seizures, her periods returned, the nausea vanished and so did the abdominal pain. She has had no recurrence of her grave illness, finished college and now works in New York. She takes zinc and B6 daily. When under stress of any kind, she increases her intake of vitamin B6.

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David swas diagnosed as suffering from chizophrenia at the age of 20, having suffered from acute depression, paranoia and extreme mental confusion. He was also seeing and hearing things. He was put on the drug Stelazine which calmed him down, but he felt disoriented and couldn't go back to college or relate with friends and family in a normal way. He went to see a nutrition counsellor who identified that he was chronically deficient in vitamin B6 and zinc and had glucose intolerance. Within days of adding B6 and zinc supplements, changing his diet and avoiding sugar, coffee and alcohol he became symptom free. He was able to stop taking Stelazine and is now doing very well at University without any recurrence of his previous mental health problems.

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Janet was diagnosed with manic depression at the age of 15. At times she would become completely hyperactive and manic, and at other times become completely depressed. She was put on three drugs - Lithium, Tegretol and Zirtek. These helped control the severity of her manic phases, but she was still frequently depressed and anxious. Two years later she consulted a nutrition counsellor who found she was deficient in many nutrients, especially zinc, and allergic to wheat. As soon as her nutrient deficiencies were corrected and she stopped eating wheat her health rapidly improved. She was able to stop all medication and, provided she stays off wheat, no longer gets depressed. She is now doing her final degree exams and continues to feel good and achieve well. However, if she has any wheat, even inadvertently in a sauce, she becomes depressed, confused, forgetful and anxious for 3 to 4 days. Her manic phases, however, have never returned.