depression
and
nutrition

by Mark Berriman

In the Spring 2003 issue of NVNH Sarah Edelman looked at the nature of depression and strategies for dealing with it. In recent years there has been more research done on the relationship between nutrition and depression, particularly in regard to the lack of certain nutrients – or the inclusion of others – having a profound effect on this debilitating mental dysfunction. While we tend to think of our mood or other psychological state purely as a function of our minds, it is easy to forget that the brain itself is a physical entity requiring certain nutrients in order to function properly.

The brain is a complex organism – a super-computer which requires a good balance of nutrients in order to function at its peak. Its complex structure defines our personality, perception, creativity, self-awareness and pretty well every other aspect which forms our individuality. A 'glitch' in this amazing neural network can lead to dysfunction, but not all of these are necessarily psychologically based. It is the purpose of this article to look at the relationship between certain nutrients and how an imbalance or deficiency may lead to depression.

While depression can be just one manifestation of a brain which is nutrient-deprived, so too are mood swings, Alzheimer's disease, aggression and many learning disabilities. Depression is a rising problem in our society and affects the lives of many people – most tragically in the young where it can lead to devastating consequences such as suicide.

MINERALS

Because of modern farming methods, much of our food is grown in mineral-depleted soil and it is difficult to ensure an adequate supply, short of some form of supplementation. As well as the 'macro' minerals, we need 'micro' (trace) minerals which perform unique functions within our body in spite of the incredibly small amounts required. Without these, our bodies will be out of balance and, in turn, this inevitably affects the functioning of our brain. The number of minerals in a healthy human body is between 75 and 80. In a natural plant-derived colloidal or ionic state, these minerals act as Nature's electrolytes, ensuring a balance of anions and cations which allow the uptake of nutrients and the elimination of wastes from cells by ensuring a proper flow between the cell walls.

Minerals are essential for life. They are needed for the proper composition of body fluids, the maintenance of healthy nerve function, the formation of blood and bone and connective tissue, the regulation of muscle tone and the optimum utilisation of all nutrients. Minerals form the base of every aspect of life. While balancing minerals is, in itself, a key factor to optimum health, when it comes to the brain, people's individual needs may vary. Generally speaking, however, the following minerals are essential for avoiding depression:

Zinc, selenium, manganese, magnesium, calcium, copper, iron, chromium and sodium.

Chromium helps to regulate blood glucose and normalise blood sugar by either raising it or lowering it as needed. Larry Christensen, PhD, of the psychology department, University of South Alabama, says that people with major depression often have disturbances in processing glucose and have exaggerated glucose responses and a marginal chromium deficiency. The lack of chromium is compounded by their eating a lot of sugar in a futile effort to reverse their depression. In turn, this depletes chromium and creates an ongoing cycle. While there is a
temporary burst of good feeling in eating sugar, this is soon followed by a downturn as blood sugar falls.

A brief survey of supermarket shelves reveals the amount of sugar in processed foods such as breakfast cereal (most with more than one-third sugar), chocolates, ice cream, sweets, biscuits, soft drinks and jams. Sugar replaces high vitamin and mineral foods, creating a deficit in vital brain nutrients. High blood sugar stimulates the release of cortisol (see Spring 2003 issue of NVNH) in certain children with ADD and hyperactivity.

Lithium is a frequently prescribed 'drug' for the treatment of depression, but recent studies suggest that it may not be a drug at all but an essential trace mineral. Similar to sodium, lithium is found naturally in water supplies to a varying extent. When the hair lithium content of 2,648 people was examined in a US study, it was found that nearly 20% had a low content. Hair levels of lithium are low in people with certain conditions (including criminal tendencies). Lithium is effective at doses of or above 300mg per day and often allows the reduction of other antidepressant drugs. Low doses of lithium may be of general benefit to everyone as a health measure. Natural sources of lithium are the sea vegetables, kelp and dulse (also excellent sources of iodine for proper thyroid function).

While magnesium has been gradually supplanted by lithium as a mood stabiliser, a study of nine people found that half of them were stabilised by magnesium as much as would be expected on lithium. It is certainly useful as an anti-spasmodic and mood stabiliser and is commonly deficient in our diets. It is an essential co-factor in about 90 enzymes. Good sources of magnesium are dried figs, nuts (almonds), pulses and green vegetables.

Dr Carl Pfeiffer, of Princeton University's Brain Bio Center, observed that many of his manic depressive patients were low in zinc and vitamin B6. While vanadium is also an essential mineral, sometimes levels can be too high. A study by Graham Naylor from the University of Dundee showed that elevated levels of vanadium were found in the hair of manic patients. When levels returned to normal the patients recovered. Vitamin C turns vanadium into a form which is less likely to disrupt mood. Zinc deficiency symptoms include depression, visual disturbances, glucose intolerance, wound healing impairment, eczematoid dermatitis and reduced cellular immune defences.

The intestinal absorption of zinc is facilitated by picolinic acid, a metabolite of tryptophan, an amino acid found in protein-rich foods and which is not manufactured by our bodies (see later section). Adequate absorption of zinc is indirectly dependent on an adequate supply of vitamin B6 (pyridoxine). Treatment with daily vitamin B6 can reverse depression induced in women who take oral contraceptives. Good food sources of vitamin B6 are bananas, avocados, potatoes and watermelon. Disturbances in the metabolism of tryptophan have been shown to be responsible for such symptoms as depression, anxiety, decrease in libido and impairment of glucose tolerance in some users of oral contraceptives. 40mg of vitamin B6 daily relieves the symptoms in women taking oral contraceptives. Studies carried out in different countries over the last 15 years have provided evidence that supplementation with, or excess, of oestrogen/progesterone hormones may be accompanied by increased urinary excretion of tryptophan metabolites (such as picolinic acid).

Selenium, together with zinc, is the main antioxidant mineral. Unfortunately, our Australian soil is deficient in selenium so it is wise to either take a supplement or simply to eat a Brazil nut (or two) every day (Brazil nuts are grown in selenium-rich soil). Selenium also aids the antioxidant effects of vitamin E. Alcohol use affects selenium status which, in turn, may modify mental function including mood, behaviour and cognition. Abstinence from alcohol tends to normalise selenium levels after a relatively short period. Depression in alcoholics has been observed to improve rapidly after a short period of abstinence from alcohol. Also, alcoholism and depression both coexist separately with a reduction of natural 'killer' cell activity.

Postpartum depression occurs in 50 to 80% of women. Studies have shown that this may be caused by the transfer of her natural antidepressants into breast milk. Lithium should be avoided during this phase.

**VITAMIN B12**

A deficiency in vitamin B12 (cyanocobalamin) levels can be associated with confusion, memory loss, depression and neurological problems (such as pernicious anaemia) and elevated homocysteine levels. Homocysteine may block the synthesis of neurotransmitters such as serotonin, as well as being a key factor in atherosclerosis and thrombo-embolism (travelling blood clots). Contrary to popular belief, people on vegan and vegetarian diets are not the only ones at risk of B12 deficiency. It also occurs in older people (anyone over the age of 50 may have impaired absorption). The most common cause of vitamin B12 deficiency in the elderly is not a poor diet, but degenerative changes in the gut lining which prevent the absorption of dietary B12 by the intestine. However, vitamin B12 is of particular concern with vegan and vegetarian diets because it is generally only available from animal foods. While it used to be thought that the liver contains enough B12 to last those suddenly abstaining from animal products for from two to five years without further dietary intake, recent studies suggest otherwise. Most dietitians now advocate a regular intake (about 3mcg per
day from food, or 10mcg if using a supplement) and much larger doses (about 2,000mcg) if taking a weekly supplement. Vitamin B₁₂ can be absorbed very well in the mouth directly into the bloodstream, so it may be better for older people to use an orally-absorbed form of the vitamin so as not to rely on the intestine.

About 5% of people admitted to psychiatric hospitals are deficient in vitamin B₁₂. Those with lower B₁₂ levels are more likely to suffer from mood disorders than those with adequate levels. In 1986, researchers at the University of Göttingen and Giessen in Germany compared the blood status of a group of 60 older people (aged 65 to 91) with their scores in a variety of mental tests. Those who had substandard levels of any vitamin (especially thiamine, riboflavin, B₁₂ and C) were much more apt to be emotionally unstable, including being depressed. Those with low vitamin status were two-and-a-half times more likely to be tired and angry, and twice as likely to be excitable and irritable. Research now shows that vitamin B₁₂ influences our health in many ways beyond the prevention of pernicious anaemia and lowering homocysteine levels. It metabolises food, guards against stroke, fine tunes the nervous system and contributes to relief from asthma, bursts, depression, low blood pressure, multiple sclerosis (MS) and a variety of mental disorders. A broad range of cognitive and emotional abilities rely on an optimal amount of vitamin B₁₂. In cognition tests of elderly people, those who had the poorest scores also had the lowest blood measurements of vitamin B₁₂, while people diagnosed with depression had low blood plasma levels of cobalt (the mineral at the centre of the vitamin B₁₂ molecule).

**FOLIC ACID**

Amazingly, folic acid (folate) deficiency is the most common of all vitamin deficiencies and is associated with depression. Ironically, while vegans and vegetarians are often singled out as being at risk of vitamin B₁₂ deficiency, their folic acid intake is generally higher than the average omnivore. Folic acid deficiency is a common occurrence in psychiatric disorders. A Puerto Rico study investigated different kinds of diet and the level of anxiety and depression the subjects presented. The study showed that – of 80 people between the ages of 25 and 70, divided into vegetarians and non-vegetarians – the non-vegetarian group showed more anxiety and depression. Also, diet analysis found greater nutritional antioxidant levels in the vegetarian group compared to the non-vegetarian group. Could the extra folic acid in the vegetarian diet confer some protection from depression? (It should be realised, however, that the higher folic acid intake of vegetarians may mask a vitamin B₁₂ deficiency.)

The dangers of deficiency of folic acid have been recently highlighted as a major concern for pregnant women. Foetuses which do not obtain enough folic acid neural tube development defects, leading to several tragic conditions including spina bifida (where the spinal cord does not close completely) and anencephaly, where a large portion of the brain is missing. Proper supplementation is recommended for all women of child-bearing potential, as the needs of the foetus are critically important in the first few weeks after conception when a woman may not realise that she is pregnant. Dr Robert Atkins, MD, claims that daily doses of 4mg (not mcg) of folic acid can prevent some 75% of these birth defects. While vitamin B₁₂ deficiency may be a concern for vegetarians and vegans, a lack of folic acid for those on omnivorous diets is also a risk. Carotid artery stenosis (a major stroke risk factor) is strongly correlated to high homocysteine levels, and these are significantly higher in Alzheimer’s patients. Cerebrospinal fluid should ideally contain a strong concentration of folic acid because the nutrient is essential to brain health. Dietary sources of folate are legumes, nuts, seeds and green vegetables.

**OMEGA-3 EFAS**

One of the main problems in our modern westernised diet is the abundance of processed foods and the consequent reduced intake of essential fatty acids (EFAs), particularly omega-3. Most commercial vegetable oils are abundant in omega-6 fatty acids, so it is very difficult to obtain a healthy balance if we rely on processed foods to supply them without deliberately choosing foods which are rich in omega-3. Michael Crawford, PhD, an eminent British authority on brain nutrition at the Institute of Brain Chemistry and Human Nutrition at the University of North London, says that the evolution of the hominid brain depended heavily on omega-3 fats in order to grow into that of *homo sapiens*. Basically, it is the most important brain food which, if not supplied regularly in the diet, can lead to brain dysfunction in the form of mental disease, lower IQ, dyslexia, ADD, mood swings and depression. Dr Crawford claims that – instead of growing as it has done over thousands of years – brain capacity is actually decreasing in modern humans, leading to the above-mentioned disorders. According to Dr Richard Lynn of the University of Ulster, the genetic component of intelligence in Britain is declining by about half an IQ point per generation. When we alter the fat composition of brain cell membranes, including those of the sinewy branches called ‘dendrites’ and ‘axons’, then the interconnected activity is also altered. If the fat in the brain is hardened, the membranes are rigid. If soft, the membranes are pliable. Without pliability, communication becomes stilted – especially where the synapses (nerve cell junctions) are concerned. Hence brain dysfunction occurs. We need omega-3 fatty acids both to develop dendrites, axons, synapses and receptors and to ensure that they function at optimum level.

Fish oils have been promoted in the media as the main dietary source of omega-3 fats – particularly because of their EPA (eicosapentanoic acid) and DHA (docosahexaenoic acid) contents. While debate continues, many researchers believe that most adult humans can convert the short-chain fatty acid, alpha-linolenic acid, into the more powerful EPA and DHA, provided that they have a good source such as flaxseed (linseed) oil, walnuts, Brazil nuts, seaweed and algae. In fact, flaxseed oil contains about twice as much alpha-linolenic acid as fish oil. According to Udo Erasmus (author of the seminal text on oils, *Fats that Heal, Fats that Kill*), a person who ingests two tablespoons of flax oil each day (about half of which is alpha-linolenic acid) will convert it into 378mg of EPA, the same as two large capsules of fish oil, and more slowly into DHA. The advantage of the conversion from alpha-linolenic acid over direct fish oils is that the newly-formed DHA and EPA are fresher, reducing any chance of the negative effects of oxidation while being less likely to contain toxic synthetic by-products such as PCBs (polychlorinated biphenyls) and dioxin. Saturated fat, monounsaturates, trans-fatty acids and cholesterol all slow down the rate of conversion. However, commercial fish oils risk being rancid because they are extremely sensitive to oxidation. Also, with the continuing pollution of our oceans, not many fish are free of mercury and other toxins. If you do not want to use fish oil, for optimum conversion of alpha-linolenic acid into DHA and EPA you should also ingest sufficient magnesium, zinc and vitamins C, B₉, B₆ and biotin. Good sources of magnesium are pulses, nuts, sesame seeds, dried fruits (figs) and green vegetables. Good vegetable sources of zinc are Brazil nuts, sunflower seeds and pumpkin seeds. Good sources of vitamin C are citrus fruits, strawberries, kiwi fruit, guavas and capiscums. Ideally, take plenty of vitamin E (about 500 international units per day) to protect the omega-3 oil from oxidation.

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NEUROTRANSMITTERS

Once the 'hardware' of the brain is fortified with EFAs, minerals, vitamin B₁₂ and folic acid, the 'software' needs to be in place in the form of neurotransmitters – brain chemicals (of which there are about 50) which form biochemical highways that carry every thought and feeling through the brain's vast neural network via the synapses.

In the late 1970s a team of researchers from the Massachusetts Institute of Technology, led by Dr Richard Wurtman, demonstrated that nutrients in food could mimic drugs in regulating neurotransmitters, causing changes in brain activity and behaviour. As the brain cells require certain nutrients as building blocks to make neurotransmitters, it must source them from the food we eat. The three food-sourced aromatic amino acids which cross the blood-brain barrier to form the main mood neurotransmitters are tryptophan, tyrosine and phenylalanine. The key neurotransmitter is serotonin which influences all aspects of brain activity, including mood and memory. The more serotonin produced by our brain, the better we feel – it relieves the mind and instills a feeling of well-being. People who are depressed have low blood levels of serotonin, while women tend to suffer from depression more than men because they synthesise brain serotonin at half the rate of men.

Tryptophan

When the dietary intakes of tryptophan by the inhabitants of several countries were compared, a low tryptophan intake was consistently found to be associated with a high rate of suicide. It is a critical nutrient for sound mental health because it is the main precursor of serotonin. Unfortunately, tryptophan is the least abundant aromatic amino acid in foods, hence the importance of nutritional supplementation. To complicate the issue, the presence of carbohydrate is also required in order for tryptophan to enter the brain in order to form serotonin. (This may be another reason why sugar and other carbohydrate cravings are so common when people feel at a 'low ebb'.) An abundant supply of serotonin is essential for sound sleep, so tryptophan makes an excellent 'sleeping pill'. Serotonin is released into the brain in large quantities when we fall asleep, which accounts for the marvellous 'semi-conscious' state we feel at those critical moments before sleep takes hold. Serotonin can also help our memory retention by blocking input when we fall asleep after a period of study.

It is found in cooked dried beans, peas, peanut butter, brewers yeast, nuts and soybeans. If you blend 100g of silken tofu (not hard) with fruit juice (which acts as the carbohydrate buffer), this should supply about 700mg of tryptophan. A standard dosage is about 3mg of tryptophan per 1 kilogram of body weight. However, tryptophan should not be taken by people suffering from adrenal exhaustion or scleroderma.

Tryptophan is a large neutral amino acid (LNAA) which relies on a specific transporter molecule. This is where the carbohydrate helps. If we eat high-protein food alone then other LNAs (such as leucine, isoleucine, valine, tyrosine and phenylalanine) all compete with tryptophan for transport into the brain so that only a fraction manages to get through. The carbohydrate 'neutralises' the other LNAs in the blood – but not tryptophan – allowing it to enter the brain and form serotonin.

“You are today where your thoughts have brought you; you will be tomorrow where your thoughts take you.”

-- James Allen, author

Tyrosine

Another food-sourced neurotransmitter precursor is tyrosine. Tyrosine is normally converted to dopamine by the brain which, in turn, is converted to noradrenaline (also called norepinephrine) – a neurotransmitter which elevates mood and lifts depression. Noradrenaline is also derived from l-phenylalanine, another essential amino acid found in dietary protein. Tyrosine can also normalise blood pressure and stimulate the thyroid and/or blood sugar to become stable. You may have heard that chocolate is so popular because it imbues in some people the feeling of ‘being in love’. Not only is chocolate high in tyrosine, it also boosts serotonin and endorphins in the brain and contains (in the cocoa) phenylethylamine (PEA) – a hormone released in emotional arousal. In a pilot study, 23 people with major depression were found to be low in PEA breakdown products in their urine. In the same study, 31 out of 40 people with major depression seemed to respond to the combination of l-phenylalanine and vitamin B₆ (PEA being formed from l-phenylalanine in the presence of vitamin B₂). Chocolate also contains deprenyl, a libido booster, not to mention the stimulants, theobromine and caffeine. No wonder ‘chocoholics’ are so abundant! Tyrosine is also found in significant amounts in aged cheese, but both chocolate and cheese are high in saturated fat (and, in the case of cheese, sodium) and chocolate is high in refined sugar. Those not wanting the downside of chocolate would do better having a cup of cocoa!

If digestion is impaired (for instance, because of low stomach concentrations of hydrochloric acid) then dietary tyrosine is converted to tyramine which stimulates the adrenal glands, depleting stores of noradrenaline, while depriving glands like the thyroid of essential tyrosine. This results in anxiety rather than a feeling of wellbeing.

Simply eating foods containing tyrosine, however, will not guarantee its conversion to mood-lifting neurotransmitters in the brain. For dopamine to be converted to noradrenaline, the enzyme tyrosine hydroxylase is required at the pre-synaptic nerve ending. The availability of the enzyme is dependent upon the amount of electrical activity along the nerve. This activity is best induced through physical contact such as massage, chiropractic, acupuncture, osteopathy or even simply by caressing. This is why human beings (and many other animals) respond to touch so positively and why benign physical contact is so closely related to feelings of wellbeing. Consider a regular massage!

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THE AGEING BRAIN

As we age, our ability to produce neurotransmitters is progressively impaired - neurons lose receptors needed to activate serotonin. According to one study, the brains of 65-year-olds had 60% fewer serotonin receptors of a specific type than did those of 30-year-olds. As the effect of serotonin lessens with age, so too does susceptibility to depression increase.

In recent years our knowledge of the function of the brain has developed enormously. It is now understood that the brain continues to grow and alter after childhood, developing new brain cells, dendrites and synapses. James Joseph, of Tufts University, says that the association with old age and lack of brain performance is not to do with the brain’s ‘hardware’ (the cells), but is caused by the cells functioning less efficiently. There are the same number of messages being relayed, but they cannot all get through as they did in the younger brain. Denham Harman, MD, emeritus professor at the University of Nebraska, blames brain cell ageing on free radical damage, specifically when this damage is to the mitochondria of cells, reducing energy production. We can protect our brain in the same way as other cells in our body by ensuring a regular quality supply of antioxidants.

Long-term chronic stress hormones are bad for the brain. We saw the adverse effects of the stress-induced hormone, cortisol, in the Spring 2003 issue of NNVH. Excessive cortisol in the form of glucocorticoids produced by the adrenal glands can shrink the hippocampus - the memory centre of the brain.

James Joseph, PhD - chief of neuroscience at the US Department of Agriculture’s Human Nutrition Research Center on Ageing at Tufts University - says that the brain may be particularly vulnerable to the damaging effects of free radicals because it is relatively deficient in antioxidants to begin with. Important brain-protecting antioxidants are vitamin E, vitamin C, coenzyme Q10, ubiquinone, ginkgo biloba, glutathione and lipoic acid. Foods that are excellent for the brain include blueberries, strawberries and English spinach as well as other deep-coloured fruits and vegetables. It is these foods which supply the all-important carotenoids (alpha- and beta-carotene, lutein, zeaxanthin, cryptoxanthin and lycopene).

While sources of beta-carotene are generally well-known, carotenoids such as lycopene can be obtained from tomatoes (particularly in concentrated form such as tomato paste). Better absorption of lycopene occurs with a mixture of raw and cooked tomatoes and/or tomato paste with onions/garlic and extra virgin olive oil and/or flaxseed oil. Lycopene is the red pigment that colours tomatoes and watermelon. Some research suggests that lycopene is more important than beta-carotene for cardiovascular health. Lycopene is a strong anti-carcinogen for the male prostate gland, but it is equally beneficial for women. In a study of ageing nuns - done by Dr David Snowdon, MD, at the Sanders-Brown Centre on Aging at the University of Kentucky - it was found that, the more lycopene in their blood, the sharper their mental acuity in old age, and the less help they required in carrying out their daily activities such as dressing and washing. So, don’t forget to serve lashings of tomato paste.

Lutein and zeaxanthin also play a major role in eye health, protecting them from macular degeneration and cataract formation. Both antioxidants are found naturally in concentrated form in the macula, our true centre of sight behind the retina. Because of their yellowish colour, lutein and zeaxanthin are good at absorbing the damaging high-frequency blue rays of the light spectrum. In fact lutein is a more powerful antioxidant than beta-carotene in this respect. Both antioxidants can be found in kale, English spinach and other dark green leafy vegetables.

Histadelia

While folic acid is a key nutrient in mental health, supplementation does not work for everyone. Dr Carl Pfeiffer discovered that certain depressed patients actually felt worse with extra folate in their diet, in particular people who have high blood histamine levels – or ‘histadeliacs’. Histadeliacs are genetically programmed to produce too much histamine, which can lead to depression. Histamine speeds up the body’s metabolism and causes allergic reactions, increased mucous and saliva production, hyperactivity, compulsive behaviour and depression. Histadeliacs often like alcohol because it acts as a sedative for their over-active mind. Unfortunately, this can lead to the steady onset of alcoholism. The histadeliac’s faster metabolism means that they need to readily replace the nutrients they so readily burn up. Without the right nutrients, a histadeliac risks severe depression.

Histadeliacs have certain noticeable symptoms – excess mucous and saliva production (which can lead to less dental caries!), less body hair (men have less chest hair) and generally eat a lot of food and never put on weight. They usually have long fingers and toes (with the second toe longer than the big toe), a higher sex drive and often suffer from severe insomnia. They also have a tendency to use drugs, alcohol and to eat too much sugar.

To determine if you are a histadeliac you can take a blood test to work out your histamine status. If your ‘basophil count’ is high then you have high blood histamine status. Running in the face of the popular high-protein diets, histadeliacs do better on high complex carbohydrate, low-protein diets with plenty of fresh fruit and vegetables. Meat contains amino acids which tend to increase blood histamine levels. As vitamin C is a natural antihistamine, supplementation with about 2g per day (2,000mg) together with adequate zinc, manganese and at least 50mg of vitamin B6 is recommended for histadeliacs by Patrick Holford, author of Optimum Nutrition for the Mind. Calcium supplementation releases some of the body’s stores of histamine, while increasing methionine (an amino acid) in the diet also helps to detoxify histamine. Methionine, itself, is a natural antidepressant and the precursor of the SAM-e metabolite (see later section). Methionine is essential because it contains sulphur which is as vital a nutrient as any single vitamin, allowing us to better utilise many of the antioxidants we ingest while being one of the main methyl donors crucial to myriad biochemical conversions throughout the body. Because the use of drugs interferes with liver function, normal liver production of natural SAM-e is diminished, thus adding to the histadeliac’s tendency towards depression.
OTHER ANTIDEPRESSANTS
Of the popular natural antidepressant treatments available, St John’s Wort is the most widely used. Its main active ingredient, hypericin, helps with mild to moderate depression. In Germany, St John’s Wort is an approved treatment and outsells the drug Prozac by 20 to 1. Several clinical studies have proved both its efficacy and its safety. It is an aromatic perennial herb native to Europe but now found growing throughout the southern states of Australia. As well as depression, it is also used for the treatment of dysthymia, a milder but chronic form of depression. Dysthymia usually starts in childhood or adolescence and is often manifested as a saturnine personality which persists into adulthood. It is a bit like a ‘dark cloud’ which never stops hanging over the head of the sufferer, sapping their enthusiasm and promoting pessimism. It can also be manifested as low self-esteem and general ongoing irritability.

St John’s Wort, however, has not proved very effective for more severe types of depression such as bipolar disorder (there have been cases where it has induced mania). It should not be taken by pregnant women, children or nursing mothers with postnatal depression. Also, people with fair skin should minimise their exposure to sunlight if taking St John’s Wort as the hypericin can cause photosensitivity reactions. A dosage of 300mg taken three times per day is the generally recommended amount. It should not be taken with monoamine oxidase inhibitors (MAOIs) as it may work as a selected serotonin reuptake inhibitor (SSRI) – see next section. Leave a gap of 14 days between stopping MAOI drugs and commencing St John’s Wort. Fewer than 10% of people taking St John’s Wort experience side-effects, and these are only mild.

MAOIs
Monoamine oxidase inhibitors (MAOIs) are synthetic drugs which prevent the enzyme, monoamine oxidase, from breaking down the three dominant mood neurotransmitters - noradrenaline (norepinephrine), serotonin and dopamine - thus causing their levels to increase in the brain synapses. Side-effects of MAOIs include rapid heartbeat, sedation, dizziness, insomnia, constipation and agitation. Monoamine oxidase plays another beneficial role of breaking down tyramine to prevent its being released into the bloodstream. If a MAOI antidepressant is eaten with a food rich in tyramine (such as chocolate or aged cheese), it allows tyramine to reach the bloodstream releasing noradrenaline and raising blood pressure.

SAM-e
A relatively recent addition to the alternatives to prescription antidepressants is SAM-e (S-adenosylmethionine) which relieves depression in many people, as well as being a useful treatment for osteoarthritis. Several studies have shown that SAM-e relieves depression in about 70% of cases - about the same rate as conventional drug therapy. A major study in Italy involving more than 1,000 patients showed that SAM-e always relieved depression better than a placebo and was just as effective as tricyclic antidepressants – those prescribed before the advent of the modern SSRI (selected serotonin reuptake inhibitor) drugs ('tricyclic' refers to their molecular structure). More interestingly, in some cases SAM-e even surpassed the efficacy of many modern SSRI prescription drugs.

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SAM-e is a natural constituent of all cells and is synthesised in the body from the essential amino acid, L-methionine, and ATP (adenosine triphosphate), the cellular energy chemical. SAM-e transfers its methyl group with the aid of folic acid and vitamin B12. This methyl transfer stimulates 35 vital chemical reactions in our cells, including production of the good-mood neurotransmitters, serotonin and dopamine. It also acts as a raw material in the synthesis of glutathione, a major antioxidant amino acid which neutralises brain toxins and free radicals in brain tissue. Once again, as we age, the brain produces less SAM-e and glutathione. However, taking straight glutathione supplements does not increase cellular or blood levels, but taking SAM-e does. SAM-e appears to have no side-effects except that it may exacerbate the manic phase of people with bipolar disorder (as may St John’s Wort). It should also not be taken with MAOI antidepressants. A standard dosage is 400mg per day.

Methylation

Methylation is a biological chemical process which turns one neurotransmitter into another. Noradrenaline turns into adrenaline by having a methyl group added. Folic acid and SAM-e both help to donate methyl groups, which may benefit some people. A methyl group consists of a single carbon atom with three tightly-connected hydrogen atoms and is responsible for numerous chemical reactions throughout our body and brain. Those who do not ‘methylate’ properly (donate and receive methyl groups) can be prone to severe depression and even schizophrenia. Once again, the amino acid, methionine, is the key nutrient leading to methylation. Methionine is not as abundant as other amino acids in vegetarian diets, but good sources are Brazil nuts, sesame seeds and unhuiled tahini.

Kava

Kava is a natural tranquilliser, reducing anxiety without causing drowsiness. It also enhances one’s ability to think and elevates mood. It is a muscle relaxant and painkiller. It should not be used with benzodiazepine tranquillisers such as Valium.

While the above represents only a fraction of the knowledge of how nutrition affects our brain and our resultant mental state, I hope it offers some insight into the beneficial effects of sound nutrition on our psychological, as well as our physical, well-being.

WEBSITES FOR MORE INFORMATION

www.beyondblue.org.au
www.depressionnet.com.au

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It is my pleasure as a young chiropractor to be part of the WLP organisation. WLP chiropractors throughout Australia and around the world are building enormous family-based practices, all with the same vision and purpose—"To educate and adjust as many families as possible toward optimal health through natural chiropractic care.”

An Australian website for corrective chiropractic and locating local corrective chiropractors is currently under construction and should be operating soon. This website is www.wca-aust.com

Until the Australian website is completed, WLP chiropractors can be located by logging onto the WLP website at www.teamwlp.com

Under the menu called ‘Client Finder’, select the Australian state you require.

Dr Rob Hutchings grew up in Newfoundland, Canada, and became a triathlete at age 13. Triathlon became an obsession and he trained in excess of 30 hours per week. At age 16 he woke up with a stabbing pain between his shoulder blades and was unable to lift his arms above his head. Consequently, he was unable to continue training. Within days, his heartbeat started racing out of control for no obvious reasons. He was placed on medications, injected with cortisone and underwent seemingly endless therapy, all with no improvement. After many months he visited the local chiropractor out of desperation. While the chiropractor explained things to him, he remembers thinking, “The guy is a quack! How could my spine be related to my heart?” After a few adjustments, however, he came off all medications and resumed training. He went on to qualify for the Canadian National triathlon team in 1997 and competed at the world championships, in Perth. He fell in love with Australia and credited his return to triathlon and health to chiropractic. He studied chiropractic in England and moved to Australia with his wife, Lisa. Because so many people are suffering needlessly and taking so many invasive drugs and surgery, his goal is to build the largest patient-education-centred chiropractic clinic in the country. He aspires to become a chiropractic writer and speaker in the years to come. His vision is to make subluxation a household word, and for it to become the norm for people around the world to become chiropractic patients.

Dr Rob Hutchings practises in Geelong, Victoria. He is always happy to talk to current and future patients for the chiropractic profession and to other chiropractors. His clinic, Belmont Family Chiropractic Centre, is located at 48 Torquay Road, Belmont VIC 3216. Tel: 03 5243 0233. Email: tri_chiropractic@yahoo.ca

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