

# INTERNATIONAL HEALTH NEWS

*Your Gateway to Better Health!*

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## **Editorial**

*In this issue we take a detailed look at the new superstar among supplements, folic acid. Recent estimates suggest that almost 90% of all North Americans do not get enough of this important vitamin in their daily diet and that over 50,000 lives and untold billions in health care costs could be saved every year by rectifying this situation.*

*A deficiency of folic acid has been implicated in Alzheimer's disease, coronary heart disease, heart attacks, strokes, cervical cancer, colon cancer, depression, dementia, neural tube defects, cleft lip, and hearing loss. Health authorities in the USA have recognized the seriousness of the problem and cereals and other foods are now by law fortified with folic acid in order to try to achieve a daily intake of at least 0.4 mg/day. Most experts in the field nevertheless recommend specific supplementation with folic acid preferably accompanied by suitable amounts of vitamins B6 and B12. It is indeed hard to think of a better health insurance than to follow this recommendation.*

*In addition we report on a disturbing British study which concludes that about half of all people diagnosed with Parkinson's disease don't have it, but are nevertheless given levodopa which has bad side effects and is of no benefit unless one suffers from PD. Another study has shown that about half of all people diagnosed with Alzheimer's disease actually suffer from other forms of dementia or just a simple vitamin B12 deficiency. So before you commit yourself or a loved one to a nursing home or a life-long dependency on levopoda please get a second opinion from a specialist.*

*Yours in health,*

*Hans R. Larsen, Editor*

## **July Highlights**

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strong risk factor due to aluminum. Aluminum is not cited in the ingredients of chocolate (both bars and powdered). Have you any other data on this?

Jorge, Brazil

**Editor:** *I would think that the problem with drinks and puddings made from chocolate is due to agents added to improve flow and prevent caking and is not inherent in the chocolate itself. However, I have contacted the author for an explanation and will let you know if there is a different explanation. (Note: Dr. Rogers has confirmed that the high levels of aluminum found*

## **LETTERS TO THE EDITOR**

In the June issue of IHN regarding Alzheimer's disease, it's stated that chocolate is a very

in processed chocolate products is indeed due to aluminum-containing additives).

I am trying to find more information on B12 absorption problems. Can someone have an absorption problem without being anemic?

Jim, Canada

**Editor:** *Many elderly people have a problem absorbing vitamin B12 from their diet because of a lack of intrinsic factor or inadequate stomach acid production. It is estimated that as many as 40% of older people suffer from a vitamin B12 absorption problem without being anemic. A vitamin B12 deficiency has been implicated in the development of Alzheimer's disease and various neuropsychiatric disorders. Supplementation with 1 mg/day of oral (sublingual) vitamin B12 will prevent deficiencies and is considered entirely safe. For people without absorption problems 100-200 micrograms/day would probably be adequate. This amount is included in most multivitamin tablets. You can find more information on our website at <http://vww.com/healthnews/dvit10.html>.*

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Is there some consensus about whether all d-alpha tocopherols or mixed tocopherols (alpha, beta, gamma, delta) are better? Is it established if there is substantial beneficial effect from the beta, gamma, and/or delta forms? Is there some recommended percentage or each one in the mix? Is too much of any of them potentially harmful? If so, which ones? Is there some standard percentage that is most likely in a mixed tocopherols, perhaps because it occurs

naturally? Is there a proven benefit to using naturally derived vitamin E rather than synthesized? Is the water dispersible or dry vitamin E absorbed better than the oil-based kind?

Peter, New Jersey

**Editor:** *I believe mixed tocopherols are best. The alpha and gamma configurations are particularly important with gamma tocopherol exhibiting certain important properties not found in the alpha version. The natural ratio of alpha to gamma in the blood is about 5:1, but may be skewed to 20:1 in people supplementing with pure alpha-tocopherol. So a supplement containing mixed tocopherols is better than one just containing alpha-tocopherol. The natural ratio of the various tocopherols varies; in soy, for example, the majority is gamma-tocopherol with only about 10% being the alpha version. I have not come across any data which suggests that any of the tocopherols are potentially harmful. Alpha-tocopherol is believed to be safe up to at least 3200 IU/day. Vitamin E, however, should always be taken together with vitamin C. Natural vitamin E (d-alpha-tocopherol) has been found to be three times as effective as synthetic vitamin E (dl-alpha-tocopherol) as it is much better absorbed. The water-soluble kind of vitamin E (alpha-tocopherol polyethylene glycol succinate) is not appropriate for normal healthy individuals as it is very poorly absorbed. It may be indicated for people who are unable to absorb fat-soluble vitamin E. Dry forms of vitamin E such as d-alpha-tocopherol succinate are very effective and tend to be more stable than alpha-tocopherol. They are converted to alpha-tocopherol in the body.*

## ABSTRACTS

### Is our average vitamin D intake woefully inadequate?

TORONTO, CANADA. Dr. Reinhold Vieth, MD of the University of Toronto provides convincing evidence that vitamin D deficiency is widespread particularly in northern countries. He is also adamant that currently accepted RDAs (Recommended Daily Allowances) are totally

inadequate to prevent osteoporosis and osteomalacia. He points out that total-body sun exposure easily provides the equivalent of 10,000 IU of vitamin D a day and that this amount is what the human race originating in Africa was originally accustomed to. With our

current, officially-sanctioned phobia about sun exposure most people expose only their face and hands to the sun on a regular basis and as a result become woefully deficient. The use of sunscreens prevents the formation of any vitamin D at all and makes matters even worse. A vitamin D deficiency is not only heavily implicated in osteoporosis, but has also been linked to breast cancer, ovarian cancer, prostate cancer, and colon cancer. Recent research has shown that a vitamin D intake of 1300 to 3800 IU/day helps prevent multiple sclerosis and that MS is more prevalent among people deficient in vitamin D. Dr. Vieth recommends a minimum vitamin D intake from supplements of 800-1000 IU/day and feels that a more optimum intake from sunlight and diet would be 4000 IU/day.

He also states that numerous studies have shown that daily intakes as high as 10,000 IU are safe (in the absence of sunshine). Dr. Vieth also points out that the RDA for vitamin D (400 IU/day) used until 1997 was based on the amount of vitamin D found in a teaspoon of cod liver oil. The rationale being that one teaspoon of cod liver oil a day had been found over the years to protect children from rickets! (135 references)

*Vieth, Reinhold. Vitamin D supplementation, 25-hydroxyvitamin D concentrations, and safety. American Journal of Clinical Nutrition, Vol. 69, May 1999, pp. 842-56*

*Heaney, Robert P. Lessons for nutritional science from vitamin D. American Journal of Clinical Nutrition, Vol. 69, May 1999, p. 825 (editorial)*

## Diet and prostate cancer

MONTEVIDEO, URUGUAY. Prostate cancer is the second most common cancer in Uruguay and mortality rate has increased by 77 per cent between 1953 and 1991. Researchers at the National Cancer Institute in Montevideo believe that diet and other environmental factors may be linked to prostate cancer risk and have just released the results of a study that strongly supports this contention. Their study involved 175 patients with prostate cancer and 233 controls. Both patients and controls had face-to-face interviews with researchers and also filled out detailed questionnaires which covered family history of cancer, sociodemographic variables, height and weight, alcohol and tobacco consumption, and usual diet. Analysis of the collected data showed that a high total energy

intake, and a high intake of total fat, red meat (beef and lamb) and desserts (rice pudding, custard, cake, marmalade and jam) were associated with an increased risk of prostate cancer. A high intake of vegetables, fruits, and vitamins C and E was found to significantly decrease the risk. After adjusting for other risk factors the researchers conclude that men with a high intake of vitamin C (greater than 162 mg/day) reduce their risk of prostate cancer by 60 per cent as compared to men with a low intake (less than 86 mg/day).

*Deneo-Pellegrini, H., et al. Foods, nutrients and prostate cancer: a case-control study in Uruguay. British Journal of Cancer, Vol. 80, No. 3/4, May 1999, pp. 591-97*

## Write your way to better health

FARGO, NORTH DAKOTA. There is a growing consensus among the medical community that the mind and the body should not be treated as two separate entities. There is now ample evidence that stress has negative health consequences while good social relations have a beneficial effect on health. It is also clear that suppression of negative emotion reduces the ability to feel any emotion, positive or negative. Researchers at the North Dakota State University have just reported the results of a

fascinating experiment which clearly supports the idea that the mind, if properly directed, is indeed a powerful healer. The study involved 58 asthma patients and 49 patients with rheumatoid arthritis (RA). The patients were randomly assigned to one of two groups - the treatment group and the control group. The patients in the treatment group (39 in the asthma group and 32 in the RA group) were told to write for 20 minutes on three consecutive days about the most stressful event that they had ever

experienced; the control group was told to write about their plans for the day. Among the stressful events cited by the patients were divorce, death of a close friend or family member or being recently unemployed. Disease severity was evaluated one week before the writing and two weeks, two months, and four months after writing. Four months after the writing experience asthma patients in the treatment group showed a marked improvement in lung function (a 20 per cent average increase in forced expiratory volume in one second). RA patients in the treatment group showed a 28 per cent decline in the severity of their disease as evaluated by a rheumatologist. No significant

changes were observed within the control group. The researchers conclude that writing about emotionally stressful experiences reduces the severity of symptoms in asthma and RA. They urge further research into the benefits of structured writing in other illnesses.

*Smyth, Joshua M., et al. Effects of writing about stressful experiences on symptom reduction in patients with asthma and rheumatoid arthritis. Journal of the American Medical Association, Vol. 281, April 14, 1999, pp. 1304-09*

*Spiegel, David. Healing words: emotional expression and disease outcome. Journal of the American Medical Association, Vol. 281, April 14, 1999, pp. 1328-29 (editorial)*

## DHEA and diabetes

ADELAIDE, AUSTRALIA. Dehydro-epiandrosterone (DHEA) and its sulfate ester (DHEAS) are the most abundant steroid hormones in humans. Their concentration varies significantly with age; it is very high in the fetus and just prior to puberty, but drops about two per cent per year after the end of young adulthood. By age 80 to 90 years it is only 10-20 per cent of peak levels. Low concentrations of DHEAS have been associated with physical frailty, decline in muscle mass, impaired immune function, sleep problems, and increased mortality. Low DHEAS levels are also a common feature in cancer, atherosclerosis, hypertension, diabetes, Alzheimer's disease, and osteoporosis. Oral supplementation with DHEA may prevent or reverse some age-related conditions without adverse effects. Experiments (mainly in animals) have shown that DHEA supplementation may benefit cancer patients and diabetics and protect against osteoporosis and atherosclerosis. Now researchers at the Royal Adelaide Hospital provide convincing evidence that low DHEA levels may be a precursor of diabetes in humans. Their study

involved 169 healthy men (age 20 to 83 years). The men were tested for plasma glucose and serum level of DHEAS after an overnight fast. The researchers found a clear correlation between age and DHEAS levels. DHEAS levels varied from a high of 20 mmol/L in a 20-year-old to a low of 1 mmol/L in an 80-year-old. It was also clear that there was a significant inverse correlation between plasma glucose levels and DHEAS levels. High fasting plasma glucose levels have been linked to the development of diabetes. The researchers suggest that low levels of DHEAS may predict the onset of diabetes and recommend that clinical trials be carried out to determine if DHEAS supplementation can prevent the disease.

*Thomas, Nihal, et al. Relationships between age, dehydro-epiandrosterone sulphate and plasma glucose in healthy men. Age and Ageing, Vol. 28, March 1999, pp. 217-20*

*Steel, Nigel. Dehydro-epiandrosterone and ageing. Age and Ageing, Vol. 28, March 1999, pp. 89-91 (editorial)*

## Parkinson's disease often misdiagnosed

RHYL, UNITED KINGDOM. British doctors at the Glan Clwyd Hospital have just issued a report which concludes that Parkinson's disease is often misdiagnosed. Their study involved 402 patients who had been diagnosed with Parkinson's disease in 74 general medical

practices across Wales. The patients were examined by specialists who concluded that only about half of them (213) actually had true Parkinson's disease. Although most of the patients (74 per cent) had some form of parkinsonism, no parkinsonism was detected in

103 (26 per cent) of the patients. Half of these patients actually suffered from essential tremor (which requires quite different medication) while 16 per cent actually had Alzheimer's rather than Parkinson's disease. Nevertheless, all 402 patients had been prescribed medications for Parkinson's disease (mainly levodopa). The doctors point out that only about half of these patients would have derived any benefit from their medication (as only half of them actually

had Parkinson's disease); the other half would merely have been stuck with the side effects of the medications which can be quite severe. The doctors strongly urge general practitioners to refer patients with suspected Parkinson's disease to specialists before initiating drug therapy.

*Meara, Jolyon, et al. Accuracy of diagnosis in patients with presumed Parkinson's disease. Age and Ageing, Vol. 28, March 1999, pp. 99-102*

## Chest pain doesn't necessarily mean heart disease

OEGSTGEEST, THE NETHERLANDS. It is estimated that only about half of all patients who visit their doctor complaining of chest pain actually have a heart problem. The other half believe they have and often report considerable distress which in turn may lead to persistent functional and occupational disability and a significantly greater utilization of health care resources. Researchers at the Leiden University Medical Center say that many patients with non-cardiac chest pain suffer from anxiety or panic disorder and can be helped through cognitive-behavioral therapy. They recently completed a test of their hypothesis with very encouraging results. Sixty-five patients (36 women and 29 men) with an average age of 49 years participated in the 12-month trial. Thirty-three of the patients were assigned to receive usual care while 32 were assigned to a special cognitive-behavioral therapy program consisting of 4 to 12 weekly sessions of 45-60 minutes each. The maximum duration of therapy was six months. The therapy program emphasized that the pain and complaints were real, but that this did not

necessarily mean that they were linked to a serious disorder. Patients were taught breathing and relaxation exercises and were encouraged to identify and challenge their irrational beliefs about the cause of their non-cardiac chest pain. They were also challenged to exert themselves to prove that a high pulse rate would not lead to heart failure. After six months 50 per cent of the patients in the therapy group were free of non-cardiac chest pain as compared to only six per cent in the control group. Although therapy was stopped after six months its benefits were still apparent after 12 months. At this point 48 per cent in the therapy group were still free of chest pain as compared to only 13 per cent of the patients in the control group. The researchers conclude that anxiety plays a central role in non-cardiac chest pain and that cognitive-behavioral therapy can go a long way towards curing the condition.

*van Peski-Oosterbaan, Anke S., et al. Cognitive-behavioral therapy for noncardiac chest pain: a randomized trial. American Journal of Medicine, Vol. 106, April 1999, pp. 424-29*

## Homocysteine and cardiovascular disease

HOUSTON, TEXAS. It is becoming increasingly apparent that a high blood level of homocysteine is a potent risk factor for heart disease. The normal level is about 10-12 micromol/L and extensive research has shown that heart disease and stroke patients often have levels that are 50 to 100 per cent higher (15-21 micromol/L). Patients with intermittent claudication, hypothyroidism, lupus erythematosus, psoriasis or venous thrombosis

also tend to have higher levels. Homocysteine levels increase with age and are usually higher in men than in women. High homocysteine levels are believed to be caused by low levels of folic acid and vitamin B12, but can also be induced by renal disease and certain medications like methotrexate, levodopa, niacin, phenytoin (Dilantin), carbamazepine, and theophylline. High homocysteine levels can be normalized by supplementation with vitamins

B6, B12, and folic acid. Clinical trials have shown that intramuscular injections of 1 mg folic acid, 1.1 mg vitamin B12, and 5 mg vitamin B6 are effective in normalizing homocysteine levels in older patients. Daily oral supplementation is

also effective at levels as low as 0.4 mg/day of folic acid and 0.5 mg/day of vitamin B12.

*Moustapha, Ali and Robinson, Killian. Homocysteine: an emerging age-related cardiovascular risk factor. Geriatrics, Vol. 54, April 1999, pp. 41-51*

## NEWSBRIEFS

**Marijuana is gaining medical respect.** A report just released by the Institute of Medicine, a branch of the U.S. National Academy of Sciences, concludes that marijuana is effective in the treatment of nausea, pain and the wasting caused by AIDS. The Institute found no evidence that marijuana use leads to the use of more powerful illicit drugs like heroin and does not believe that letting sick people smoke it would lead to an increase in the use among the general public. In a related development, researchers at the University of California believe they have discovered how marijuana works and why it may help ease the symptoms of Parkinson's disease.

The Canadian government has just approved the use of marijuana for medical purposes. Health Minister Allan Rock announced that the government will fund several clinical trials and is looking for a Canadian producer of high-grade marijuana. The Health Department is also negotiating with a British firm to test a non-smoked form of marijuana which is ingested using an inhaler.

The British House of Lords last November called for a change in the law covering marijuana to allow doctors to prescribe the herb to sick people. So far, this proposal has been rejected by the government.

**Genetic engineering controversy continues.** Dutch researchers report that DNA from genetically modified foods linger long enough in the large intestine to transfer some of its properties such as antibiotics resistance to human gut bacteria. The transfer problem is vastly exacerbated in people whose normal bowel flora is disturbed by treatment with antibiotics. Other researchers have discovered that pollen from genetically engineered corn (maize) is highly toxic to butterflies and caterpillars. A plan to market canola and bean

seeds modified with a gene from Brazil nuts was hastily shelved when it was discovered that the new protein developed was highly allergenic. A major dispute is developing between the European Union and the United States. The EU wants to label GM foods; the US does not.

**Scientists comment on genetically engineered foods.** There is widespread disagreement among scientists about the safety of genetically engineered foods. Dr. Robert McKinney of the US National Institutes of Health echoes the official government position "I don't see any problems at all for genetically modified plants in terms of human health." Hans-Jorg Buhk of the Robert Koch Institute in Berlin is not so sure. He says "There is interaction going on at the RNA level that we do not understand." Suzanne Wuerthele of the US Environmental Protection Agency is even more blunt "It took us 60 years to realize that DDT might have oestrogenic activities and affect humans, but we are now being asked to believe that everything is OK with GM foods because we haven't seen any dead bodies yet."

**UK introduces test for GM foods.** Starting late last year retailers within the European Union have had to label products containing genetically engineered soya or corn (maize). As of April 1999 British restaurant menus must also specify whether foods served contain genetically engineered materials. The most likely ingredients to harbour engineered soya are lecithin, soy oil, soy flour, hydrolyzed vegetable protein, and textured vegetable protein. Engineered corn could be found in maltodextrin, starch, modified starches, and corn syrups. The UK government will rely on a newly developed, highly sophisticated test which can detect minute traces of genetically modified soya and corn even in highly processed foods to enforce the new regulations.

# RESEARCH REPORT

## Folic Acid: Don't be Without it!

Health starts with the individual cells of our body. If our cells are healthy so are we. Healthy cells, in turn, depend on the continued, faultless replication of our DNA. DNA can be seriously damaged through attacks by free radicals so an adequate antioxidant status is essential to cell health. It is now becoming clear though that antioxidants alone are not enough to protect our DNA; more and more research points to the B vitamin folic acid as being equally or perhaps even more important in ensuring proper DNA replication. It is not surprising that a folic acid deficiency has been implicated in a wide variety of disorders from Alzheimer's disease to atherosclerosis, heart attack, stroke, osteoporosis, cervical and colon cancer, depression, dementia, cleft lip, hearing loss, and of course, neural tube defects. The list of conditions involving a folic acid deficiency is growing day-by-day as is clinical evidence that most of these conditions can be reversed by supplementation.

Folic acid (folinic acid, folacin, pteroylglutamic acid) was first isolated from spinach leaves (its name derives from the Latin *folium* meaning "leaf") in 1964 and early on was found to be essential in the prevention of anemia in animals. Later it was discovered that neural tube defects in human babies could be prevented by ensuring that mothers had adequate folic acid levels.

Folic acid is essential for the synthesis of adenine and thymine, two of the four nucleic acids which make up our genes, DNA and chromosomes. It is now also clear that folic acid is required for the proper metabolism of the essential amino acid methionine which is found primarily in animal proteins. Methionine is converted to homocysteine in the body. Homocysteine, in turn, may be converted back to methionine in a process requiring folic acid (tetrahydrofolate) and vitamin B12 (cobalamin) as a catalyst or it may be metabolized into cysteine in a process catalyzed by vitamin B6 (pyridoxine). Cysteine is a vital link in the synthesis of glutathione, one of our most important antioxidants. A high blood level of homocysteine has been found to be highly detrimental to health and is invariably accompanied by a low level of folic acid.

### Homocysteine and heart disease

The idea that homocysteine may be a potent risk factor for coronary heart disease (CAD) was first advanced in 1986. Since then numerous studies have confirmed that high homocysteine levels not only increase the risk of CAD, but also increase the risk of heart attacks, strokes, and peripheral vascular disease (eg. intermittent claudication). The average blood level of homocysteine in adults is about 10 micromol/L. Men with a level of 15 micromol/L increase their risk for CAD by 60 per cent and women by 80 per cent. The risk of a stroke at the 15 micromol/L level is two to five times higher than at the 10 micromol/L level in both men and women and the risk of peripheral vascular disease is seven times higher among people with elevated levels. Researchers at the Harvard Medical School report that a homocysteine level of more than 11.2 micromol/L confers a five-fold increase in heart attack risk as compared to the risk at 7.2 micromol/L or less.

There is rare, unanimous consent within the medical community that homocysteine levels in North America are too high. One study estimates that 56,000 lives could be saved every year if average levels could be lowered by just 5 micromol/L. Fortunately, lowering your homocysteine level is simple by supplementing with folic acid and vitamins B12 and B6. Although most research into the harmful effects of homocysteine has centered around heart disease there is growing evidence that high homocysteine levels (or low folate levels) are involved in many other disorders.

### **Folic acid protects the brain**

A low or deficient blood level of folate (folic acid) has been detected in 15 to 38 per cent of adults suffering from depression. There is now increasing evidence that supplementation with therapeutic amounts of folate can significantly improve the condition of depressed patients. In a recent trial involving 20 elderly patients with depressive disorders, treatment with 50 mg/day of methylfolate was associated with an 81 per cent response rate within six weeks. Folate supplementation (15 mg/day of methylfolate) has also been found to markedly improve the effect of treatment with standard antidepressants. Researchers at the Harvard Medical School point out that chronic diseases (eg. rheumatoid arthritis), certain cancer treatments, alcoholism, and a poor diet can all lead to a folate deficiency and the potential for depression.

Research has also shown that many drugs such as methotrexate, levopoda, niacin, phenytoin (Dilantin), carbamazepine, and theophylline can markedly reduce folate levels. Researchers at Oxford University recently reported that Alzheimer's patients have substantially lower levels of folic acid and vitamin B12 than do normal people of the same age. They also found that a high homocysteine level is a potent risk factor for AD; study participants with a level above 14 micromol/L had an almost five times higher risk than participants with levels below 11 micromol/L. Participants with low folate and vitamin B12 levels had a three to four times higher risk of AD than did people with normal levels.

### **Folic acid is especially important for women**

It is now firmly established that women can reduce their risk of giving birth to a baby with neural tube defects (eg. spina bifida) by supplementing with folic acid prior to conception and during pregnancy. Perhaps less well known is the finding that women can also markedly reduce their risk of giving birth to a child with a cleft lip or palate by supplementing daily with a multivitamin containing 0.4 to 0.8 mg of folic acid. These findings are particularly important in view of the fact that oral contraceptives reduce folate levels significantly. Women who have been "on the pill" need to boost their folate status if they are planning a pregnancy.

Low folate levels are also heavily implicated in the development of cervical cancer. Cervical dysplasia is the precursor of cervical cancer and is usually first detected through a routine Pap smear. Fortunately, folate supplementation (0.8-3.0 mg/day) is very effective in reversing cervical dysplasia and preventing the cancer. Researchers at the Harvard Medical School recently reported that women who supplemented with folic acid (0.4 mg/day or more for at least 15 years) had a four times lower risk of developing colon cancer than did women with a daily intake of 0.2 mg/day or less (the daily contribution of a typical North American diet). Many postmenopausal women have increased homocysteine levels which are believed to contribute to the risk of osteoporosis; folate supplementation can reverse these high levels.

### **And the list goes on**

There is no question that folic acid is extremely important to health and wellbeing. Not only is it important for heart health, mental health and women's health, but it is now also clear that it affects many other facets of health and disease. Researchers at the Cleveland Clinic Foundation have found that patients with end-stage renal disease have extremely high homocysteine levels and can be protected from cardiovascular events by supplementing with folic acid, vitamins B6 and B12. Diabetes patients tend to have high homocysteine levels and folate is especially important for them. Recent research has also shown that low folate levels (high homocysteine levels) are implicated in age-related hearing loss, psoriasis, and restless leg syndrome.

It is indeed astounding that one single vitamin, folic acid, can have such a profound effect on our health and yet perhaps it is not so surprising when one considers its vital role in DNA synthesis and homocysteine metabolism.

### **So how much is enough**

It is estimated that 88 per cent of all North Americans suffer from a folate deficiency. Obviously, the standard diet is not supplying what we need. This has led to the fortification of cereals and other food stuffs with folic acid to try to ensure a minimum daily intake of 0.4 mg/day. Although beans and green vegetables like spinach and kale are good sources of folates, relatively few people eat lots of vegetables and cooking destroys most of the folate anyway. Realizing the poor availability from the diet many medical researchers now advocate daily supplementation with folic acid. Because folic acid needs the catalysts vitamins B12 and B6 to carry out its functions effectively it is usual to supplement with a combination of the three. Dosage recommendations for folic acid vary between 0.4 mg/day and 10 mg/day or more depending on the severity of the deficiency and the health problem to be overcome. The RDA for adults is now 0.4 mg/day and 0.6 mg/day for pregnant women. Recommendations for vitamin B12 generally range from 0.5 to 1.0 mg/day and for vitamin B6 from 10 to 250 mg/day.

Supplementation with folic acid and vitamins B6 and B12 costs only pennies a day and yet it is indeed hard to imagine a better investment in protecting your health.

### **LITERATURE REFERENCES AVAILABLE UPON REQUEST**

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