



## Special Interest Articles:

- Exercise & depression
- Vitamin A
- B vitamins and depression
- Vitamins instead of meds?
- GAGs and inflammatory bowel disease
- Vitamin C
- Risks for inflammatory bowel disease

## Inflammatory Bowel Disease

Inflammatory bowel disease exists when the intestines become chronically inflamed. Two manifestations of inflammatory bowel disease are Crohn's disease and ulcerative colitis. Symptoms of inflammatory bowel disease include abdominal cramps, pain, diarrhea, weight loss and bleeding from the intestines. About 600,000 Americans have inflammatory bowel disease. Ulcerative colitis affects the interior lining of the colon and rectum. It can result in numerous health complications including rectal bleeding, diarrhea,

dehydration and increased risks of developing cancer. Crohn's disease usually causes ulcers along the length of the small and large intestines.. Complications from Crohn's disease can include obstruction of the intestine due to swelling and the formation of scar tissue, malnutrition, the development of fissures (small cuts or tears in the anal canal), abscesses (localized infection or collection of pus), and fistulas (an abnormal tunnel that forms between two structures of the body).

## B<sub>6</sub> and Inflammatory Bowel Disease

Some of vitamin deficiencies may contribute to the severity of inflammatory bowel disease. The disease creates vitamin deficiency, which in turn makes the disease more severe. A study involving 30 male and 31 female patients with inflammatory bowel disease was published in the *American Journal of Gastroenterology* (2003;98 (1):112-117). It found that vitamin B<sub>6</sub> levels were significantly lower in patients with inflammatory bowel disease than they were in healthy controls. Furthermore,

vitamin B<sub>6</sub> levels were lower in patients who were experiencing a flare up in their symptoms than they were for patients in remission. Low vitamin B<sub>6</sub> levels were also associated with higher levels of what are known as inflammatory markers (these are chemicals that, when present, indicate inflammation) C-reactive protein is an example of an inflammatory marker; it was increased in patients with low B<sub>6</sub> levels.

## Exercise and Depression

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Research published in the May, 2006 issue of *Family Practice News* studied 80 adults with mild to moderate depression. The subjects were placed randomly into one of five groups. Two of the groups did very low levels of exercise; for three days per week or for five days per week (7 kcal/kg/wk). Two other groups exercised aerobically at a higher level (17.5 kcal/kg/wk)—over twice the level of the first two groups. One of these groups exercised three times each week, and the other exercised five times each week. The control group did stretching, but no aerobic activity.

The study lasted 12 weeks. None of the subjects were taking antidepressant medication. Their depression was rated on the Hamilton Rating Scale for Depression (HAM-D). Symptoms dropped by 47% in the groups doing the higher amount of exercise, compared to 30% in the light exercise group. In the control group, depression scores dropped

by 29% at the end of the 12 weeks (although the controls had more subjects drop out of the study than the other four groups combined).

Subjects were considered to have a positive response to treatment if their HAM-D scores reduced by 50% or more. This occurred in 46% of the groups doing the higher levels of exercise, and only 26% of those doing light exercise experienced this level of improvement. Only 15% of the controls had their scores reduced by 50% or more.

Subjects were considered to be in remission if their HAM-D scores were seven or less. In the groups doing the higher level of exercise, 42% were considered to be in remission, compared to 26% in the low level exercise groups and 11% of the controls. The authors found the rate of remission in the high-level exercise group to be comparable to other forms of treatment for depression.

## Vitamin A and Inflammatory Bowel Disease

Vitamin A is among the nutrients that are deficient in patients with inflammatory bowel disease (ulcerative colitis or Crohn's disease). In a study appearing in *Hepato-Gastroenterology* (1991;38:391-395) compared 32 patients with inflammatory bowel disease (17 patients with Crohn's disease and 15 patients with ulcerative colitis) and compared them to healthy controls. The retinol (vitamin A) levels and

retinol-binding protein levels were lower in the patients with inflammatory bowel disease than in healthy controls. Ulcerative colitis patients who were successfully treated had their vitamin A level increase to normal, even without vitamin A supplementation. Similarly, vitamin A levels normalize in patients with Crohn's disease when the disease is inactive.

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## B Vitamins and Depression

A cross-sectional study appearing in *Psychosomatic Medicine* (October 2010 72:763-768 Published online before print August 17, 2010) looked at the dietary intake of B vitamins and their relationship to the incidence of depressive symptoms in 6,517 subjects between the ages of 12 and 15. Dietary intake was assessed by using a diet history questionnaire. Subjects were determined to have depressive symptoms if they had a score greater than 16 on the Center for Epidemiologic Studies Depression Scale. The prevalence of depressive symptoms was 22.5% for boys and 31.2% for girls. Intake of dietary folic acid and vitamin B<sub>6</sub> were both inversely associated with depressive symptoms. Riboflavin (B<sub>2</sub>) intake was inversely associated with depressive symptoms in girls, but not in boys. Increasing B vitamins in the diet may help reduce the prevalence of depressive symptoms in early adolescence.

According to a study appearing in the *Journal of Nutrition* (2010; 140(2): 338-47) there may be a connection between low folate levels and depression. The population-based, cross-sectional study included 1,681 subjects were between the ages of 30 and 64 years. It was found that men with the highest levels of serum folate had a nearly 40% reduced score on the Center of Epidemiologic Studies Depression

scale (indicating a reduction in depression). Folic acid is found in fresh produce; the terms folic acid or folate refer to the word "foliage". It was found that improving the diet to include more folate-rich foods in men, but not in women, reduced depression.

According to a study ("Dietary Folate and Vitamins B<sub>12</sub>, B<sub>6</sub>, and B<sub>2</sub> Intake and the Risk of Postpartum Depression in Japan: The Osaka Maternal and Child Health Study," Miyake Y, Sasaki S, et al, *J Affect Disord.*, 2006 June 29), B vitamin intake may help to prevent postpartum depression. The subjects of this study were 865 Japanese women who filled out dietary data questionnaires during their pregnancy. Of the group, 121 developed depression between two and nine months postpartum (scored 9 or higher on the Edinburgh Postnatal Depression Scale). Women who had diets high in riboflavin (vitamin B<sub>2</sub>) were less likely to suffer from postpartum depression than those who had diets that were low in vitamin B<sub>2</sub>.

One thing that can ensure a deficiency of B vitamins is a diet that is high in refined carbohydrates (white bread, noodles etc.) and sugar. If you struggle with depression or mood issues, you should avoid refined food.

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## Vitamins Instead of Meds?

SSRIs are “selective serotonin re-uptake inhibitors” and SNRIs are “selective norepinephrine reuptake inhibitors”. These are antidepressant medications that work by affecting neurotransmitters. SSRIs and SNRIs slow down the body’s clearing of the particular neurotransmitter—enabling it to do its work for a longer time. This has an effect on mood. The first SSRI was fluoxetine (sold under the brand name Prozac), which first became available in the United States in 1987.

SSRIs and SNRIs are mainly indicated for treating clinical depression, but they are often prescribed for anxiety disorders, panic disorders, obsessive compulsive disorder (OCD) and eating disorders. The use of these drugs has been controversial, with many believing that they are over prescribed. Annual sales of SSRIs in the United States total about \$7 billion.

Side effects of these drugs include headache, nausea, drowsiness, dry mouth, sexual dysfunction, restlessness, weight gain, insomnia, agitation, rash, and diarrhea. In 2004 studies linked the drugs to teen suicide. The FDA now requires a “black box warning” on package inserts of the drug.

The goal of the drugs is to make more of the neurotransmitter available. Maybe we should try to find safer and more natural ways of achieving that goal. Another way to ensure there is adequate neurotransmitter is to supply the body with necessary nutrients.

The chemical reactions that produce serotonin and norepinephrine need certain nutrients to take place. For one thing, you need the amino acid tyrosine to produce

norepinephrine and you need the amino acid tryptophan to produce serotonin. So it is important to have adequate protein in the diet. Proper digestion of protein is also necessary. Vegetarians and people who do not produce enough stomach acid may possibly not have adequate tyrosine or tryptophan.

There are three B vitamins that figure prominently into these pathways, B<sub>6</sub>, niacin and folic acid. Folic acid is found in green, leafy vegetables (the root word is from the word “foliage”). It is a very common deficiency in the US, and suspect it in people who do not like to eat their vegetables. Also, there will be a tendency for the MCV to be above 90, just as it is in patients who need vitamin B<sub>12</sub> (another deficiency that can produce depression).

If an individual is eating a lot of refined foods and is depressed, their problem may simply be due to a deficiency of B vitamins. Before taking a drug with side-effects and a black-box warning, it is a good idea to change their diet and give them some supplementation. One option is a good multiple vitamin. It has all of the vitamins necessary for the chemical reactions to take place. Since B vitamins figure so prominently in these reactions, adding a B complex would not be a bad idea. Of course looking at other possible causes of depression, including digestion, dysbiosis, stress and adrenal function, and especially thyroid function can be very helpful. But since the American diet is so bad, it is not uncommon for basic dietary changes and simple supplementation to produce gratifying results.

## GAGs and Inflammatory Bowel Disease

The term GAGS is a shortened way of saying glycosaminoglycans, which are long molecules composed of sugar molecules (if a sugar molecule is a train car, GAGS are the train). Most of the GAGS in the body are used to form Proteoglycans, which are very important to structure. Proteoglycans are very important for the formation of cartilage. Perhaps the best-know proteoglycan is chondroitin sulfate. These molecules are not only important for joint cartilage, they help give form and structure to all areas of the body--including the intestines. Proteoglycans help form what is known as the basement membrane. The basement membrane acts as an

anchor to the epithelium of the intestine. The epithelium are the cells that provide the functionality of digestion; the basement membrane attaches to cartilage and to the epithelial cells and helps give the intestine form and structure. An article appearing in *The Lancet* (March 20, 1993;341:730- 731) discusses the fact that the glycosaminoglycans are altered in chronic inflammatory bowel disease. Bacteria, viruses, antigens and oxidative stress challenge the structural integrity of the intestine, glycosaminoglycans help protect against these challenges and help reduce intestinal permeability (leaky gut).

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## Vitamin C and Inflammatory Bowel Disease

You may have come across terms like “antioxidant”, “free radical” or “oxidative stress”. A free radical is a chemical that readily gives up an electron—it sort of fires the electron like a chemical bullet. Free radicals can damage tissue and produce inflammation; they create oxidation. Antioxidants are vitamins, nutrients and phytochemicals that act like little “bullet-proof vests” and help protect the cells.

One of the roles vitamin C has is as an antioxidant, protecting cells from oxidative stress. According to research

appearing in *Free Radical Research* (1995;22(2):131-143), patients with inflammatory bowel disease (Crohn's disease or ulcerative colitis) have reduced levels of vitamin C in the intestinal lining. Patients with Crohn's disease have levels that are 35% below normal and patients with ulcerative colitis have levels that are 73% below normal. The researchers state that most of the loss of vitamin C is due to oxidative stress from inflammatory cells. The loss of vitamin C makes the cells lining the intestines more vulnerable to oxidative stress.

## Diet and Depression

*If we knew what  
we were doing,  
we wouldn't call it  
"research"--  
Einstein*

We seem pretty clear on the idea that diet can prevent certain diseases, like heart disease and diabetes. Diet can also effect the brain. It can influence mood and cognition. A diet that is high in refined carbohydrates, for example, can create insulin insensitivity. Insulin insensitivity can make a person prone to mood swings or depression.

There have been a number of studies that have looked at the relationship between diet and mental health. A study appearing in the *Archives of General Psychiatry* (2009; 66(10): 1090-8) found that diet can affect the incidence of depression. The study followed the dietary habits of 10,094 subjects for 4.4 years. During the course of the study, 480 were diagnosed with depression. According to the study, the subjects adhering to the Mediterranean diet had a lower incidence of depression. The Mediterranean diet consists of high consumption of fruits, vegetables and nuts. It also recommends a high amount of monounsaturated

oil (olive oil), and low saturated fat consumption, along with low amounts of high-fat meat and dairy, and high amounts of fish and legumes.

Various vitamin deficiencies can lead to depression. A number of studies show the value of omega-3 fatty acids for patients with depression. One such study was published in the *British Journal of Psychiatry* (2006; 188: 46-50 ). It was a 12-week, randomized, double-blind, placebo-controlled study involving 75 individuals with bipolar depression, adjunctive treatment with ethyl-eicosapentaenoic acid (EPA) was found to be well-tolerated and effective in reducing symptoms of depression. In *Acta Psychiatria Scandinavica* (2006; 113(1): 31-5 ) , a study demonstrated that omega-3 supplementation helped with post-partum depression. Another study, published in the *American Journal of Psychiatry* (2006; 163(6): 1098-100), found that omega-3 supplementation was beneficial to children suffering with depression.

*Testimonial:*

*My wife recently gave birth to our first child. He came about 4 weeks early, but didn't seem to have any problems despite that. Immediately after bring him home, he seemed uncomfortable. It didn't matter where we laid him; his bassinet, swing, the floor, he seemed uncomfortable. He would constantly be moving, twisting, tightening muscles, and making moaning noises. The medical doctor said this was normal. After a few weeks, he began having reflux issues. So the medical doctor put him on Zantac. But our little man was still fussy & uncomfortable.*

*A friend of ours recommended taking him to a chiropractor. I thought that was an odd idea, but I was willing to try anything. I had heard about TNHC from my mother who goes there. So we made an appointment. Dr. Thornton gave our 8 week old baby a small adjustment and gave us some probiotics to give him each day. We began seeing immediate improvements. The reflux subsided. He was more comfortable. He slept better at nights. I was impressed. Our little man is now 4 months old and is healthy, happy, and comfortable. Oh, and he's off Zantac already. I couldn't ask for a better baby.*

*Looking back, I now understand the need for a baby to have a small adjustment. Let's face it, we hurt and are uncomfortable when our back is out or our joints are not quite in place. Well think about what a baby goes through during the birth process. There is no doubt that their back and joints are not going to be in perfect alignment. And not all will go back in place on their own. So a little adjustment is just what a little one needs to be comfortable again. In addition, I am so glad Dr. Thornton provided us with the probiotics to help our baby's digestion. I'll take a natural alternative any day over a man-made chemical drug. Man-made drugs have their place; but so do natural alternatives.*

*—Micah Satterlee from Springfield, MO*