

## Special Interest Articles:

- Probiotics and the flu
- Anxiety and fatty acids
- SIBO
- Nutrition and asthma
- Thiamin and heart failure
- Physical activity and back pain
- Hydrogen breath test

## Doodling and Memory

People who doodle during meetings are often accused of not paying attention. Recent research appeared in the journal *Applied Cognitive Psychology* (published online February 27, 2009), shows that they may actually retain more of what was said than non-doodlers.

The subjects were asked to listen to a two and a half minute long telephone recording that contained eight names of people who were to attend a party. Half of the subjects were asked to

doodle while listening to the recording, and half did not. The group doing the doodling retained 29% more information than the non-doodling group.

Lead researcher, Professor Jackie Andrade, of the School of Psychology at the University of Plymouth, believes that doodling helps to curtail daydreaming. Performing a simple task, while listening to something boring, helps to keep people from being distracted and stay more focused on the task at hand.

## SIBO and Fibromyalgia

According to research appearing in the *Journal of Musculoskeletal Pain* (2001;9(3):107-113), there may be a connection between fibromyalgia and bacterial overgrowth in the small intestine. There were 815 subjects, of whom 152 were diagnosed as having fibromyalgia. Of the 152 fibromyalgia patients, 29 had inflammatory bowel disease and were excluded from the study. Of the remaining 123 fibromyalgia patients, 96 tested positive for bacterial overgrowth in the small intestine, as diagnosed by the lactulose hydrogen breath test. Also, 107 of the subjects met the criteria for irritable bowel syndrome.

In a follow up test following antibiotic therapy, the 25 subjects returned for testing. Of those 25 patients, 11 had the small intestine bacteria eliminated and 14 had incomplete eradication of the bacteria. Of the 25 patients, 57% had a global improvement in their symptoms.

The article notes a correlation between fibromyalgia symptoms and certain species of bacteria. Certain species of *Chlamydia* and *Borrelia* may produce endotoxins that can cause the systemic symptoms.

## Probiotics and the Flu

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There are a number of studies that show probiotic supplementation to be supportive of the immune system. Research appearing in the journal, *Vaccine* (Volume 24, Issues 44-46, 10 November 2006, Pages 6670-6674) looked at probiotic supplementation and its effect on upper respiratory tract infections (colds and the flu). The double-blind, placebo-controlled study took place during two winter/spring periods. The subjects were 479 healthy adults who were supplemented with a vitamin/mineral supplement containing probiotics (lactobacilli and bifidobacteria) or a placebo that contained only the vitamin/mineral supplement. Taking the probiotic did not reduce the number of upper respiratory infections, but they did significantly shorten the duration of the illness (by nearly two days, compared to the placebo group). Also, the symptoms were less severe in the probiotic group. Taking the probiotics

also increased the number of immune cells (cytotoxic T plus T suppressor cell counts and in T helper cell counts).

Another study appearing in the *International Journal of Sports Nutrition, Exercise and Metabolism* (2011 Feb; 21(1): 55-64) looked at the use of probiotics and their effect on the immune systems of 58 athletes. The 58 subjects of the study were randomly assigned to receive either a probiotic supplement (*Lactobacillus casei Shirota*) for a period of 16 weeks. The placebo group had 36% higher incidence of upper respiratory infections (URTI) compared to the group receiving the supplement. According to the authors, "Regular ingestion of LcS appears to be beneficial in reducing the frequency of URTI in an athletic cohort, which may be related to better maintenance of saliva IgA levels during a winter period of training and competition."

## Anxiety and Fatty Acids

Research appearing in the *Journal of Clinical Psychopharmacology* (2006; 26(6): 661-665) looked at the effect omega-3 fatty acids on anxiety. Twenty-four subjects with a history of substance abuse and anxiety disorders participated in this small, double-blind, placebo-controlled study. Over a period of three months the subjects were

given either a placebo or a supplement containing EPA and DHA. The group receiving the supplementation progressively scored lower on questionnaires evaluating anxiety. The group receiving the placebo enjoyed no such decline.

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## SIBO

The entire gastrointestinal tract, including the small intestine, normally contains bacteria. The number of bacteria is greatest in the colon (usually defined as at least 1,000,000,000 bacteria/mL of fluid and much lower in the small intestine (less than 10,000 bacteria/mL of fluid). Moreover, the types of bacteria within the small intestine are different than the types of bacteria within the colon. SIBO is an acronym for "Small Intestine Bacterial Overgrowth". As noted above, normally there are few bacteria in the small intestine. In SIBO abnormally large numbers of bacteria (usually defined as at least 100,000 bacteria/mL of fluid) are present in the small intestine. Also, colonic-type bacteria (resembling bacteria normally found in the colon) proliferate in abnormally large numbers in the small intestine.

The symptoms of SIBO are similar to irritable bowel syndrome; they include abdominal bloating or distension, gas, diarrhea, and abdominal pain. In advanced cases, there may be vitamin and mineral deficiencies and weight loss.

SIBO can be caused by damage to the nerves or muscles in the gut, resulting in leftover bacteria in the small intestine. For example, diabetes mellitus and scleroderma can both affect the muscles in the gut, leaving room for SIBO to develop. Physical obstructions in the gut, like scarring from surgeries or Crohn's disease, can also cause an abnormal buildup of bacteria in the small intestine. Diverticulum, although much less common in the small intestine, can also collect bacteria instead of passing it on

to the colon, where it belongs. There are also medications that influence or disrupt the normal gut flora, such as antibiotics, acid-blocking drugs, and steroids. Another common cause is from a diet high in sugar, refined carbohydrates and alcohol.

The symptoms from SIBO are the result of the fermentation produced by the bacteria in the small intestine. Carbohydrates can feed the bacteria, producing gas and other irritating metabolic byproducts. A variety of dietary carbs can make symptoms of SIBO worse, including fructose and sorbitol in fruits, lactose in dairy, fructans in wheat or onions, and more complex fibers in beans and broccoli. Indeed, the more easily fermentable the carbs, the more suffering they are likely to produce – even if the foods they're found in are objectively "healthy." These families of highly fermentable carbs are sometimes referred to as FODMAPs. The term FODMAP is an acronym, derived from "Fermentable, Oligo, Di, Mono-saccharides And Polyols." These carbohydrates are commonly found in the modern Western diet.

The standard medical treatment for SIBO is an antibiotic called Xifaxan. Because Xifaxan is not well absorbed throughout the body, it mostly stays in the gut and is very effective against SIBO. There are, of course, natural substances that can kill the unwanted bacteria.

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## Nutrition and Asthma

In the decade between 1990 and 2000 the cost of asthma care went up 54%, according to *Family Practice News* (October 1, 2000:5). Perhaps if more focus was placed on diet, lifestyle and supplementation these costs could be reduced. Also, a bit more attention should be paid to drug therapy and efforts should be made to reduce drug intake. Inhaler overuse is an important issue, and can lead to increased hospitalizations and death. An article appearing in *Family Practice News* (April 15, 1993:46) stated that deaths from asthma could be cut by 50% if physicians monitored beta agonist inhaler overuse by patients. An inhaler should last one month, but often prescriptions are given with unlimited refills and the doctor has no idea how often the patient is using the inhaler.

Other medications can contribute to asthma attacks. An article in the *Annals of Allergy* (June 1992;68:453-462) stated that drugs may be responsible for as many as 10% of asthma attacks. NSAIDs (nonsteroidal anti-inflammatory drugs) may be responsible for 2/3 of these drug-induced attacks. Other drugs, like muscle relaxants, beta-blockers, or antibiotics can trigger asthma attacks as well.

Diet plays a role in asthma. Research appearing in the *European Respiratory Journal* (2009; 33:33-41) looked at the dietary habits of 54,672 French women and the association with asthma attacks. Of the subjects, 1,063 currently had asthma with 206 having asthma attacks at least once per week. There was a strong correlation between the frequency of asthma attacks the adherence to a "Western" diet including pizza, cured meats, sweets and other processed foods. Also the types of fats in the diet affect asthma symptoms, according to research appearing in the *European Journal of Clinical Nutrition* (2005; 59(12):

1335-46). It found that omega-3 fatty acids were especially supportive to those experiencing exercise induced bronchospasm. This was supported by a review article appearing in the *Australian New Zealand Journal of Medicine* (1994;24:727), which found that a diet low in omega-3 fatty acids and high in omega-6 fatty acids, and the increased use of margarine may be part of the reason that asthma is on the rise. The article notes that asthma is low in Scandinavia and in Mediterranean countries where there is less omega-6 consumption and more consumption of omega-3 and olive oil.

In *Clinical and Experimental Allergy* (2000;30:615-627) reviewed research about nutrients that may affect asthma. Magnesium supplementation was found to reduce bronchial reactivity; magnesium is also a mild bronchodilator. Vitamin C intake has been shown to reduce exercise induced asthma. Vitamin C levels tend to be low in asthmatics. Research in the journal *Thorax* (2009; 64(7): 610-9) also reviewed nutritional studies related to asthma and the intake of antioxidants, namely vitamins A, C and E. The authors concluded that "Relatively low dietary intake of vitamins A and C is associated with statistically significant increased odds of asthma and wheeze." This was echoed in the *American Journal of Clinical Nutrition* (1995;61(Suppl.):625S-630S). A study appearing in the journal *Thorax* (May 2006; 61: 388 - 393) looked at 1,030 subjects and found that dietary vitamin C and manganese intake were inversely associated with asthma symptoms.

Diet is a simple and inexpensive way to improve asthma symptoms. Omega-3 fatty acids, magnesium, manganese and antioxidant supplementation can be of value to these patients. Unfortunately diet and supplementation are seldom recommended in medical offices.

## Thiamin and Congestive Heart Failure

Patients on the diuretic furosemide (sold under the brand name Lasix) tend to be deficient in thiamin. A study appearing in *The American Journal of Medicine* (1991;151-155) measured thiamin status in 23 patients with congestive heart failure, and who were taking furosemide. A high thiamin pyrophosphate effect, which indicates thiamin deficiency, was found in 21 of the 23 subjects. Thiamin deficiency was only found in two out of 16 controls. This result was confirmed by other research appearing in the *Journal of the American College of Cardiology* (2006; 47: 354-61), which found that 33% of 100 hospitalized patients with congestive heart failure were thiamin deficient. Only 12% of healthy controls were found to be thiamin deficient.

Beriberi is the disease of thiamin deficiency. Wet beriberi affects the cardiovascular system and is characterized by an enlarged heart,

and congestive heart failure. There is some research that indicates supplementation with thiamin may be of benefit to patients with congestive heart failure.

A study appearing in *The American Journal of Medicine* (May 1995;98:485-490) looked at 30 patients with severe congestive heart failure who were also taking furosemide. In the double-blind study, the patients were given either IV thiamin (200 milligrams per day) or a placebo. The thiamin group experienced improvement in left ventricular ejection fraction--increasing by 22% in 27 patients who completed the full seven-week therapy. The authors of the study concluded that thiamin supplementation would be a beneficial addition to conventional therapy for congestive heart failure.

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## Physical Activity and Back Pain

We hear a lot about core strengthening and the importance of doing specific low back exercises to help prevent back pain. It turns out that general physical activity may be just as beneficial.

A study published in the *American Journal of Public Health* (2005; 95(10): 1817-24), looked at 681 subjects with

low back pain. The researchers found that recreation involving physical activity, like participating in sports, had a positive effect on back pain. The more a subject participated in sports, the less likely it was to have back pain. Specific back exercises actually did not perform as well as general physical activity.

## Hydrogen Breath Test

*"Education is what remains after one has forgotten everything he learned in school."*

Einstein

Bacteria do not belong in the small intestine in any appreciable levels. If they are present in the small intestine, gas, bloating and other digestive symptoms may ensue. When certain anaerobic bacteria are fed certain sugars, they produce hydrogen. If there are a lot of bacteria in the small intestine, a lot of hydrogen is produced. If you give a fixed amount of a sugar, like lactulose, and measure the amount of hydrogen produced, you can get an idea of how much bacteria is present in the small intestine.

Generally the patient fasts for 12 hours before the test, which begins by breathing into a balloon. The patient then eats a

measured dose of a specific sugar (which will cause bacteria to produce hydrogen). Breath samples are then taken every 15 minutes for three to five hours. The test is interpreted by how much hydrogen is produced in the breath and when it is produced. It is not a perfect test; some bacteria do not produce hydrogen. The test can also be misinterpreted, but in many instances it can show if there are bacteria present in the small intestine.

