Anxiety, Depression, Inflammation and Disease

Psychological Distress Increases Inflammatory Response and Illness

"Stress can kill you" is no longer just an expression; it's a scientific fact.

At one time scientists believed cardiac diseases, specifically atherosclerosis (hardening of the arteries), resulted from sticky plaque adhering to smooth artery walls. The process, however, is more complex, and like many illnesses, the underlying issue stems from chronic inflammation. Researchers also found that people who are depressed have a higher incidence of cardiac disease.

Experts now believe there's a link between the two findings. Studies show that depending on your gender, anxiety, stress or depression can elevate inflammation in your body and subsequently put you at higher risk for inflammatory-related illnesses.

Research Supports Link Between Depression and Inflammation In the Body

Dr. Andrew Miller, a researcher for a 2006 study linking depression to inflammation, highlights the implications of his findings in a *FuturePundit* article titled, "Depression Increases Stress Inflammation Response."

"While inflammation is essential for us to fight bacterial and viral infections, too much inflammation can cause harm," explains Dr. Miller. "Several examples of increased resting inflammation in depressed patients already exist in the literature, but this is the first time anyone has shown evidence to suggest that the inflammatory response to stress may be greater in depressed people."

The study included 28 men, half of whom were diagnosed with major depression. Participants were exposed to two mildly stressful situations during a 20-minute time period. Their blood was collected every 15 minutes starting immediately before and then up to an hour and a half after the test. Researchers measured two inflammatory markers, cytokine (a regulatory protein secreted by the immune system) called interleukin-6, and the activity of a pro-inflammatory signaling molecule in white blood cells called nuclear factor-kB.

Gender Determines the Type of Psychological Stress That Leads to Inflammation

During a 2003 study published in *Psychosomatic Medicine* researchers analyzed data from the Third National Health and Nutrition Examination Survey across 6,149 participants. Analysis showed a strong incidence of *men* who had a lifetime history of a major *depressive* episode having elevated C-Reactive Protein levels, an easy to measure blood marker for inflammation and predictor of coronary heart disease. The same results were *not* however, found in women.

During another study published in the October 2005 issue of the *Journal of Occupational Health Psychology,* researchers separated respondents into two groups of 2,208 men and 1,460 women. Results once again showed that depressed men were more likely than depressed women to have elevated levels of C-reactive protein and fibrinogen (another inflammatory marker for coronary heart disease). Yet women who experienced *burn out* as defined by a chronic emotional exhaustion, physical fatigue, and cognitive weariness, had higher levels of inflammation than men who had burn out.

Scientists believe the gender discrepancy could be the result of different sex hormones in males and females and how these hormones affect stress and immune responses. Another factor could be how men and women answer questions on self-disclosure questionnaires and interviews used to measure depression.

Natural Methods to Reduce Inflammation

While managing anxiety, burn-out and depression can help keep dangerous inflammation at bay, doctors also recommend eating a diet high in fruits and vegetables, reducing refined sugars and carbohydrates, avoiding foods loaded with coloring and additives, decreasing toxins and known allergens from your environment and getting plenty of exercise.

There are a number of effective natural anti-inflammatory supplements available:

- **Essential fatty acids (EFA's).** May ease depression and are proven to lower inflammation. Omega 3's (vs. 6 and 9) are especially important to supplement because most diets are in short supply. Wild salmon, nuts and seeds, particularly walnuts and ground flaxseed, are high in Omega 3's.

- **Anti-inflammatory botanicals.** Bioflavanoids, or plant chemicals are effective to reduce inflammation and include quercetin, and oligomeric proanthocyanidins (OPC's), Pycnogenol and grape seed extract.

- **Boswellia** (Indian frankincense) **Ginger and Turmeric** (curcumin) each have their own anti-inflammatory mechanisms although they all inhibit

inflammation by halting the production of prostaglandins, pro-inflammatory chemicals in the body.