

## **THE CHEMISTRY OF INFLAMMATION & ARTHRITIS**

**By Jay D. Foster**

Inflammation seems to be a key in many different diseases we deal with today, especially the # 1 and # 2 killers in this country, cancer and heart disease. Time magazine's cover story of February 23, 2004 called inflammation "The Secret Killer- The Surprising Link Between Inflammation, Heart Attacks, Cancers, Alzheimer's and other diseases". It is not just a link to arthritis any more, it is also linked directly to all the various 'itis' conditions that involve inflammation. The bad news is inflammation seems to be involved in all these deadly conditions. The good news is there are 'natural' ways to deal with inflammation. A review of some classic antioxidants/bioflavonoids and several new-generation natural compounds point the way to new sources of reducing inflammation and helping to deter many of these conditions. Antioxidants and bioflavonoids do reduce inflammation, and they reduce inflammation everywhere in the body. The latest studies at leading research campuses show that certain natural antioxidants reduce inflammation and stave off Alzheimer's disease as well as many inflammatory processes in the heart and arteries.

This research indicates that most who take small amounts of two common, natural antioxidants now could prevent the onset of Alzheimer's disease as one's age progresses. What is the medical source of this research? The Archives of Neurology, published by the American Medical Association in their article "Reduced Risk of Alzheimer's Disease in Users of Antioxidant Vitamin Supplements". The abstract's conclusion is that, "The use of vitamin E and vitamin C supplements in combination, is associated with reduced prevalence and incidence of Alzheimer's disease. Antioxidant supplements merit further study as agents for the primary prevention of Alzheimer's disease". Now, they are not talking about mega doses of vitamin E and vitamin C. No, the researchers are talking about low, easily achievable amounts of vitamins to reduce the chance of getting Alzheimer's disease in the future. They found that people that took as little as 500 mg of vitamin C and 400 units of vitamin E, had a far less chance (78% less chance) of developing Alzheimer's disease in later years. That is very, very significant. Bioflavonoids (polyphenols) from fruit juices have also been shown to have a far reaching effect on Alzheimer's disease prevention. In a study sponsored by the National Institute on Aging and published in The American Journal of Medicine (Aug, 2006), researchers found that people who drank fruit and vegetable juices more than three times a week were 76% less likely to develop Alzheimer's disease than those who drank juice less than once a week. They went on to say that the results suggest a class of antioxidants found in fruit and vegetable juices, called polyphenols (bioflavonoids), may have a protective effect on the brain and help fight dementia and Alzheimer's disease.

What happens if we reduce inflammation in other areas of the body? If we reduce inflammation, can that reduce the incidence of heart disease? We already know, that based on that the previous article, antioxidants can help prevent Alzheimer's. Could we also prevent heart disease by reducing inflammation? Several scientific articles, such as the one appearing in the New England Journal of Medicine, in December of 2004- "Inflammatory Markers and the Risk of Coronary Heart Disease in Men and Women,"

indicate that different markers in the blood indicate inflammation and comparing levels relates directly to the risk of developing heart disease. What these researchers found is that people may have high levels of a blood parameter, called “cardio C-reactive Protein”. . In general, “regular CRP” measures inflammation in the “whole body”, while ‘cardio CRP, also known as ‘highly sensitive CRP, are measures of inflammation in and around the heart. This article states that “High levels of CRP were significantly related to an increased risk of coronary heart disease in both men and women.” Thus, if your ‘cardio CRP’ level is too high, it is an indication of you being at a high risk for heart disease. We like to see that number to be less than 1.0. There is another article in the same journal, New England Journal of Medicine, published on January 6, 2005 entitled: “C-Reactive Protein Levels and Outcomes After StatinTherapy”. We have also found in our last three decades of bio-chemical analysis, that our CRP Formula™, which includes Lemon Bioflavonoids, Turmeric and Ginger, has consistently brought down ‘cardio CRP’, the natural way. The article goes on to say: “Patients who have low CRP levels have better clinical outcomes than those with higher CRP levels” ( the lower the better) ... “regardless of the resultant level of the LDL cholesterol”. So, the study is saying-even if we cannot get the bad cholesterol down, as long as the CRPs come down, we will have a better clinical outcome (less heart disease). The researchers go on to say that “achieving the target levels of the LDL and the CRP was more important than determining the outcomes than was the specific choice of agents.” In other words, as long as we lower both the LDL and the CRP, without turning to statins, wouldn’t that be better? If we, as health-conscious individuals, could get our LDL down with (1) a natural cholesterol lowering supplement, and (2) make a point of avoiding casein (from cow’s milk), while (3) eliminating processed sugars and carbs; wouldn’t that be one of the most important longevity goals we could each accomplish this year? Is it difficult to give up processed sugars? Yes, it is. Is it hard to reduce carbs? Absolutely. Replacing cow-milk products with sheep or goat substitutes takes some getting used to. But a drop in your cholesterol and cardio markers could be dramatic after just one month. And, our CRP Formula™ has within it, the natural components specifically designed to lower cardio CRP’ to safe levels.

Modern medicine treats inflammation in one of two ways; either with steroids, - (corticosteroid drugs, like prednisone) or through non-steroidal anti-inflammatory drugs or with NSAIDS. NSAIDS and the COX-II inhibitors reduce inflammation without being steroids. Steroids have a lot of side effects: they can reduce your cortisol production from your adrenal glands, cause muscle weakness, destruction of the hip joint, diabetes, high triglycerides, buffalo hump, truncal obesity, salt retention, high blood pressure, weight increase, heart failure, tremor, and glaucoma. Psychological side effects include insomnia, and mood changes. So these prescription drugs are not a wise choice when dealing with inflammation because of all their severe side effects. Cortisone shots seem miraculous because athletes, who cannot walk one minute, get a shot in the knee, and suddenly they can go back on the field. But there are side effects from too many corticosteroids.

Now we have the non-steroidal anti-inflammatory drugs that were brought out to treat inflammation and arthritis and they were heralded because they did not have all the side effects of the corticosteroid drugs. But the bad news is they had other side effects; they

kill a lot of people every year. These NSAIDS, non-steroidal anti-inflammatory drugs actually kill over 16,500 people each and every year through gastrointestinal bleeding. In 1998 there were over 16,700 people in this country who died from AIDS. Almost as many (16,500) died from NSAIDS, (non-steroidal anti-inflammatory drugs) as a result of gastrointestinal bleeding. As many doctors know, these drugs can irritate the lining of the gut and will kill you silently - you just pass out and slowly bleed to death without knowing it. And that's exactly what happened to 16,500 people last year. In addition to gastrointestinal bleeding, it turns out that the same NSAID drugs kill additional 16,500 people every year from another condition known as congestive heart failure. Was this fact written up in a fly by night scientific journal? No, this was in the Archives of Internal Medicine in March of 2000. Entitled, "Consumption of NSAIDS and the Development of Congestive Heart Failure in Elderly Patients; An Under-Recognized Public Health Problem", The abstract of the article says, "The author has concluded that NSAIDS could account for approximately 20% of hospitalizations for congestive heart failure. Heart failure affects approximately 4.6 million Americans and this condition represents the most common hospital discharge diagnosis among patients older than 65 years." They go on to say that "The cardiovascular morbidity or cardiovascular illness due to NSAIDS would surpass the gastrointestinal NSAID related morbidity, which alone is responsible for 16,500 deaths and a minimum of 105,000 hospitalizations." They finally state that, "The economic and health consequences of these findings are staggering." Thus, NSAIDS are very dangerous. The COX-II inhibitors the drug companies brought out after the NSAIDS were supposed to be safer. They have since been shown to also cause terrible gastrointestinal bleeding, as well as heart disease. Because of the whole Merck fiasco with Vioxx, Merck is facing some 13,000 law suits as of this writing. Isn't it interesting after Merck "voluntarily" pulled Vioxx off the market, that the FDA quickly convened a panel of "independent experts" to find out what should be done? If Vioxx was taken off the market because of its dangers, shouldn't Bextra and Celebrex( made by Pfizer) be pulled as well? This panel of independent experts voted basically to keep everything on the market. Well, later that turned out not to be a surprise, because, as the New York Times revealed on February 25, 2005- the pharmaceutical industry had 'planted' their own representatives into this panel. The Times reports that some voters on the panel backing the prescription drug pills had 'industry ties'; They reported that "10 of the 32 government drug advisors who last week endorsed continued marketing of the huge selling pain pills; Celebrex, Bextra and Vioxx have 'consulted' in recent years 'with' the drugs' makers according to disclosures, medical journals, and other public records." They go on to say in the article- what would have happened if these 10 advisors had not been there. It said "If the 10 advisors had not cast their votes, the committee would have voted 12 to 8 that Bextra should be withdrawn, and 14 to 8 that Vioxx should not return to the market." The 10 advisors with company ties voted 9 to 1 to keep Bextra on the market and 9 to 1 for Vioxx's return". Isn't that interesting? Do you think those decisions were made to protect your health and the health of the U. S. public? C-SPAN commented that the panel which was convened said they had to leave 'something' on the market because the poor doctors wouldn't have anything else to treat inflammation with or people who came in with pain.

They misrepresented the fact that there were no other ways to block the COX II enzyme to block inflammation. Well, as it turns out, there are ‘natural’ COX-II inhibitors. You do not need the Celebrex, the Bextra and the Vioxx in most cases because you can inhibit that COX-II enzyme the natural way. By understanding a little about the bio-chemistry of inflammation, we come to comprehend how nature has provided us with a means of modulating inflammation through our body’s chemical compounds called prostaglandins, leukotrienes, and eicosapentaenoic acid from fish oil. These prostaglandin chemicals that modulate inflammation come from dietary fats and oils and anti-inflammatory compounds come from GLA which you can find in primrose oil, borage oil, and black currant seed oil. EPAs, come from fish oil to form natural anti-inflammatory prostaglandins. We also have enough natural GLA supplements which are derived from primrose oil. Similarly, fish oil EPA that can block arachidonic acid, thereby blocking the production of the prostaglandins and leukotrienes which cause inflammation. What happens within our bodies is that in order to turn arachidonic acid into the inflammatory chemicals you have to have two enzymes- LOX (lipoxygenase) and COX cyclooxygenase II. When we can inhibit the enzyme (the LOX enzyme) the natural way; and we can do this, it works very effectively, from what we have seen clinically. They are all together, in a couple of products you can get from us or at health food stores. Leukotriene (lipoxygenase) inhibitors include: Boswellia serrata (a natural anti-inflammatory) that comes from ayurvedic medicine, also called Frankincense. Ginger, (widely used in oriental medicine), Quercetin and other bioflavonoids that are Leukotriene inhibitors- all natural. What about COX-II inhibitors? TV commercials make you think of Celebrex® and Vioxx® and Bextra® first when inflammation is mentioned. But, natural COX II inhibitors include: Curcumin from turmeric- the yellow spice, ginger, rosemary, green tea, and the Amazon palm berry, Acai. They are all natural COX-II inhibitors. Why in the world would anyone turn to those dangerous, Darth Vader prescription drugs, when there are so many healthy compounds waiting in Nature’s medicine cabinet?

The latest medical research indicates many natural remedies have been tested for reducing inflammatory diseases. The Journal of Nutrition (March, 2006) summarizes, “In conclusion, we provide molecular evidence for the presence of characteristic inhibition patterns of these polyphenolic compounds (bioflavonoids) to inhibit pro-inflammatory gene expression.” Today, we are able to work at the genetic level and the DNA level in our advanced nutraceutical formulation labs. By modulating the production of inflammatory compounds, we can now influence bioflavonoid inhibition of NF kappa b within the cell. From the same Journal article, “Oxidative stress which produces oxygen free radicals also contributes to inflammation. Therefore, antioxidants will block inflammation. The Journal Shock (6/06) states, "Oxidative stress results from an oxidant/antioxidant imbalance, or an excess of oxidants, or depletion of antioxidants". If you have an excess of oxidants, and not enough antioxidants, then you will have oxidative stress. With all of these free radicals in the brain, we need more vitamin C and vitamin E as antioxidants at work to prevent Alzheimer’s disease since they clean up free radicals. Try to imagine millions of tiny free radicals as if they were tiny, spinning, three dimensional razor blades that rip up the matrices inside your cells. “Protection against these oxygen radicals, the Reactive Oxygen Species (ROS), comes through eating foods

with high oxygen radical absorbance capacity, the ability to absorb these oxygen radicals.” In fact, the government has a term for that; it is called ORAC, which stands for Oxygen Radical Absorbance Capacity. That is why they tell us to eat five servings of fruits and vegetables every day to get enough ORAC. Go to the website [www.ars.usda.gov](http://www.ars.usda.gov) agricultural research service. That’s the department of agriculture website. There is an article there,- “Can Antioxidant Foods Forestall Aging and in there they say that “Foods that score high in antioxidant assay called ORAC, may protect cells and their components from damage by oxygen radicals according to studies of animals and human blood.” This is ORAC. ORAC, they say, “measures the total antioxidant power of foods and other chemical substances. “Early findings indicate that eating plenty of high ORAC fruits and vegetables such a spinach and blueberries may help slow the processes associated with ageing in both body and brain.” That is why they are telling us that we have to eat five to seven servings of fruits and vegetable every day- which no one does. Let’s look at the different ORAC values for different foods. Carrots have an ORAC of 50- think of beta-carotene. Tomatoes have an ORAC of 60, broccoli has an ORAC of 130, green peppers 160, wolfberry about 220, while wild blueberries are up at 260. A berry from the Amazon has been discovered that has the highest ORAC value- The Acai berry (OptiAcai) scored over 1000! – higher than any other food ever tested. Alexander Schauss, Ph.D. has published studies to this fact in the Journal of Agriculture and Food Chemistry in 2006, and has recently written a book on the subject.

Time magazine has called inflammation ‘the secret killer’ because it is linked to heart disease, cancer, and Alzheimer’s disease. Antioxidants protect your DNA. By taking natural supplements such as vitamin E, vitamin C, alpha-lipoic acid, beta-carotene, and other high ORAC foods and nutrients, we can protect against developing some of the most debilitating diseases of our ‘golden years’. This is something we must address now to insure our health in the future.

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