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Alumni Testimonial: Champane Frias, DipCN

I have a full-time job working 45+ hours per week, and a young child and husband at home. On site learning was not an option for me. I combed the internet for days trying to find a program that met my criteria; a quality education that was affordable and accredited! I wanted to ensure that the credits I accumulated would open up a path for continuing my education. I started with the Diploma in Comprehensive Nutrition at Huntington College of Health Sciences. I was so excited to learn that all of the credits could be applied toward an Associate of Science Degree or a Bachelor of Health Science Degree in Nutrition at HCHS. I have a wonderful career in the Nutrition field and still refer to the textbooks and handouts from my diploma program. The staff at Huntington College of Health Sciences was so supportive and continue to be. I would not trade this experience for anything. The knowledge I gained in these courses really helped to form me as a professional and prepare me for my career in nutrition.
Alumni Article

By Karen Hurd
Karen R. Hurd Nutritional Practice, LLC.

Lowering Blood Cholesterol

Heart disease is one of the foremost causes of death. Cholesterol levels that are high are a major contributor to this problem. There are prescription medications that can lower cholesterol; however, the side effects can be formidable. There are safe and effective means of lowering cholesterol without using medications. These natural ways have no side effects, only side benefits. In other words, while you are lowering your cholesterol through natural means, you will experience other benefits such as colon health and cancer prevention.

Cholesterol is a type of fat composed of various weight lipoproteins. These fatty acids travel through our bloodstream. The low density lipoproteins (LDL) are particularly susceptible to oxidation. We call the LDL "bad" cholesterol. Upon oxidation, cholesterol forms a foam cell. These cells are very sticky and will adhere to the inside of a blood vessel wall. Other foam cells will attach to the interior blood vessel wall and to other existing foam cells and over time a soft fatty tissue accumulates. Eventually this soft fatty tissue will harden. Because the buildup of fat is on the interior of the blood vessel walls, this blocks some of the blood flow through the affected area. This is called occlusion. Some vessels may be occluded at 10%, some 60%, and some vessels may be even more occluded. The more obstructed the blood vessel is the more damage to your health. The buildup of the fat on the interior of the blood vessel walls is called atherosclerosis.

I take a four-pronged approach to lowering cholesterol:
1. Lower intake of foods that raise the blood levels of bad cholesterol
2. Remove existing bad cholesterol from the bloodstream
3. Increase the good cholesterol which in turn will reduce the bad cholesterol
4. Prevent oxidation of cholesterol

1. Lower intake of harmful fats
If we put less bad fat in our blood stream, then there is less oxidization of those fats, and subsequently less damage. Do the following to eliminate or lessen the amount of ingested harmful fats.

Consume no or very limited amounts of saturated fats which include fatty meats such as bacon and sausage. Remember that lean meats are not a contributor to cholesterol issues. It’s the fat in the meat that poses potential problems. Also avoid lard, butter, coconut oil, palm oils, and high-fat dairy products.

Consume no or very limited amounts of hydrogenated or partially hydrogenated fats such as shortening, margarine, deep fat fried foods, nut butters made with hydrogenated fats (such as peanut butter). NOTE: Natural nut butters without palm oils are okay. The hydrogenated or partially hydrogenated fats which have been altered from an unsaturated state to a saturated or partially saturated state may raise cholesterol levels as rapidly as the naturally occurring saturated fats.

Eliminate the consumption of sugars-very specifically desserts and sweeteners (such as honey and syrup.) The high sugar content of these substances cause an increase in a form of storage fat called triglycerides. Triglycerides are a major player in the increase of blood cholesterol levels and a major constituent of the core of the LDL (bad) cholesterol molecule.

Do not be afraid to eat eggs! The criminalization of eggs has been a travesty in our dietary world. Eggs for many decades have been regarded as a source of harmful cholesterol. However, it seems that eggs have been wrongfully accused. **Be sure and read Karen’s article, "What is the Story on Eggs?", in our next newsletter in July.**

2. Remove existing cholesterol from the bloodstream

This step is even more critical than reducing your harmful fat intake. Reducing harmful fat intake alone WILL NOT sufficiently lower cholesterol levels. The already existing cholesterol in your blood stream must be reduced. There is a way to do this. Our bodies are designed to use cholesterol in the making of bile. Bile is a digestive enzyme that aids in the breaking down of fats in the intestinal tract. As a person produces a regular supply of bile, cholesterol levels will drop as the raw material is converted into a useful digestive enzyme. However, people recycle their bile, and new bile is not made in amounts sufficient enough to reduce blood cholesterol. Let me explain further.

When a person consumes a meal, the digestive enzyme bile is released into the duodenum, the part of the intestinal tract where the majority of digestion takes place. This bile is used to break down any fatty foods that were eaten. As bile is composed of fatty acids, it will be absorbed along with the other fats at the terminal part of the ileum (the last part of the small colon). The bile, therefore, is recycled and returned to the liver where the liver will send it to the gall bladder to be stored until the next meal. Again, after performing its digestive function the bile will recycle. This is called the enterohepatic recirculation.

Now enter into the scene, soluble fiber. Soluble fiber binds tightly with bile in the intestinal tract; in fact, so tightly that the bile cannot be reabsorbed through the intestinal tract and thus return to the liver. Because fiber cannot pass the intestinal barrier, the bile
that is bound with the soluble fiber will travel the length of the intestinal tract and be excreted from the body. Now, the liver recognizes that it has no recycled bile to send down to the gastrointestinal tract for the next meal. Therefore, the liver will be forced to make bile (which it is very capable of doing). Bile is made out of cholesterol (very specifically triglycerides) and the liver will pull cholesterol out of the blood stream to make this digestive enzyme. Subsequently, cholesterol levels will begin to fall.

Over the course of time, levels may fall to the point that reversal of atherosclerosis is possible. There are several studies done with aggressive lipid lowering using statin drugs that document the efficacy of a lowered blood cholesterol on the reversal of atherosclerosis. (The American Journal of Cardiology. 2005, 96(5A):61F-68F; JAMA. 2004; 291(9): 1071-1080; The American Journal of Medicine. 2005, 118 Suppl 12A:22-27; J Am Coll Cardiol. 2005;46(1):106-112.) These studies suggest that lowered cholesterol levels can reverse the fatty buildup on blood vessel walls. The studies are specifically done by using medications to lower cholesterol; however, the overall result of a lower cholesterol level reversing the fatty buildup in the arteries is the operative point. There are also studies done with lowering cholesterol through dietary means that result in a reversal of atherosclerosis. (Atherosclerosis. Volume 23, Issue 2, Pages 155-176, March 1976; Circulation. 1989; 79: 1-7; The Journal of Clinical Endocrinology & Metabolism. January 1, 2001 vol. 86 no. 1 355-362; Experimental and Molecular Pathology. Volume 41, Issue 1, August 1984, Pages 96-118.) These studies only represent a small fraction of the studies available for review reference the topic of reversing atherosclerosis by lowering cholesterol.

Can you see the huge importance of this? We have plenty of evidence that if a person's arteries are clogged with fat—they can be unclogged! We can clear the arteries with diet! This is monumental! That means by-pass surgeries and stent placements can be avoided if we will eat in such a manner as to lower blood cholesterol.

So how do we eat to lower cholesterol and reverse the fatty buildup of plaque in the arteries? We must consume soluble fiber. Everyone should be eating soluble fiber every day. The richest source of soluble fiber is found in beans. Eating ½ cup of cooked beans (such as pinto, kidney, garbanzo, Great Northern, navy, lentils, limas, black, brown, white, red, black-eyed peas, yellow-eyed peas, pigeon peas, green split peas, yellow split peas, refried beans, hummus [ground chick peas]) three times daily is what each adult human being should be doing.

If you have a cholesterol problem, increasing this amount to ½ cup six times daily will cause the blood cholesterol to fall more rapidly. Remember, it is the frequency of the servings of beans that is the critical part—not the total amount. Therefore, doubling up on beans (i.e. eating your breakfast beans and noontime beans all at breakfast) will NOT suffice. Each time a person consumes soluble fiber, bile will be carried outside of the human body, forcing the liver to make new bile out of the bad cholesterol. Frequency of soluble fiber consumption is the key.

By the way, if you are concerned about the liver running out of cholesterol raw material, don't be. After blood cholesterol levels fall and all atherosclerosis is reversed, the liver will convert vitamin D2 (made from sunshine) to cholesterol and thus supply itself with the raw ingredient necessary for bile production. For those concerned that they may have higher cholesterol levels because they spend time in the sun, let your fears be allayed. We
have no evidence that the liver converts vitamin D2 into cholesterol unless there is a need for it.

Please note that in eating a high fiber diet intestinal health will be positively affected. In other words, risk of intestinal problems will diminish significantly. However, if you are not accustomed to a high fiber diet, suddenly introducing a large amount of fiber could cause intestinal discomfort. To prevent this, start on the increased fiber diet by working up to the recommended amounts. Your digestive system will acclimate to higher intakes of fiber over a relatively short period of time.

3. **Increase the good cholesterol which in turn will reduce the bad cholesterol.**

When we increase the good cholesterol which is called high density lipo-protein (HDL), we improve our cardiovascular health. The HDL helps transport the LDL (bad cholesterol) to the liver where it will be converted into bile. The higher our HDL, the lower our risk of heart disease. The consumption of the essential fatty acids is the best way to increase the good cholesterol. The essential fatty acids are found in fish, nuts, seeds, oils (NOT palm oils such as coconut), and avocados. Eat oil rich foods daily.

Do not be afraid of the calorie content of the oils-thinking that the oils will make you gain weight. Do not assume that every molecule of oil you consume will be burned for an energy source! Oil molecules are converted into many things that include good cholesterol as well as hormones. Those molecules undergoing a change to a new substance are not burned as energy! Therefore, their caloric content does not come into play.

4. **Prevent oxidation of cholesterol**

By protecting the cholesterol from oxidation, we can prevent fatty buildup in the blood vessels. Eating foods that prevent oxidation will accomplish this. The nutrients in foods that stop the oxidation process are called antioxidants. The antioxidants are found in nuts, seeds, and vegetables. Fruit is also a source of antioxidants, but beware of the sugar content in fruit. Sugar is a major problem in raising cholesterol levels as excess blood glucose is converted into triglycerides. Therefore, the beneficial antioxidants in the fruit can be negated by the sugar content. It is best to use nuts, seeds, and vegetables for your antioxidant source.

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**Faculty Article**  
*By Starkie Sowers CN*  
*Edited by Wayne Grubacich*

**African Mango**  
People wanting to lose weight are always searching for assistance in reaching their goal. African
Mango extract may be just that aid. Featured on Dr. Oz and in the news recently, African mango is becoming very popular.

Irvingia Gabonensis is the botanical name for African Mango. Growing in Africa, the mango has been used in many applications. The bark is used for medicinal drugs, while the seeds are used in food manufacturing and now the seed extract has made its way to the weight loss world.

Just how does African Mango work and how much is needed? It seems that African Mango has some strong actions on the prevention of adipogenesis, or development of fat cells from pre-adipocytes (fat cells)(9,11). African Mango anti-obesity actions include a modulation to four critical metabolic pathways in reduction of body weight and obesity including, PPAR Gama, leptin and adiponectin hormone modulation, and glycerol-3 phosphate dehydrogenase. PPAR is a metabolic pathway involved with liver metabolism of triglycerides (fats), and insulin sensitivity. African Mango seems to have a positive effect on PPAR reducing liver fats and improving insulin sensitivity in the liver. African Mango also seems to modulate leptin and adiponectin levels in the body as well. Neuro-hormone protein leptin acts on the hypothalamus area of the brain regulating hunger and food intake and energy expenditure. Obese individuals ironically have elevated levels of leptin, increasing their desire for foods. Adiponectin on the other hand increases cell oxidation of fatty acids while increasing insulin sensitivity or action. Over weight and obese individuals have lower levels of these fat-burning hormones. These two hormones are manufactured in fat cells and their ratios are considered a link to type II diabetes and obesity related cardiovascular atherosclerosis risk with these individuals. Finally African Mango has actions on glycerol-e phosphate dehydrogenase, simply put this metabolic pathway that converts sugars and starch into body fat. African Mango has a reducing action on this pathway. (8,9,11,12,14)

Study Results:
One study with 102 participants that were overweight or clinically obese used 2 capsules of African Mango extract 1 capsule taken before meals twice daily. The double blind study indicated a significant improvement in body weight reduction, body fat percentage and waist circumference. Additionally improvements were seen in total plasma cholesterol and blood glucose. Adiponectin and leptin levels were observed showing modulation. Other studies have indicated results similar to this study. (2,12)

Dosage:
One study suggested 3 caps 350mg 3 times a day 30 minutes before meals. A total daily amount of 3.15 grams of African Mango extract. While another study used 150mg of extract 1 cap 30 minutes before lunch and dinner meals with warm water. (2,12)

Adverse Effects
The majority of adverse effects with African Mango extract were gastrointestinal and dry mouth. While individuals noted some unusual effects, most clinical results on Web MD indicated GI upset due to delayed stomach emptying. (2,5,6) Finally a toxicity study with seed extracts and its use in foods at a total of 100, 1000, and 2500 milligrams per kilogram of body weight resulted in no adverse effects. (2,7,12)

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Iron: Benefits & Concerns

Iron is an essential component of hundreds of proteins and enzymes for human beings.[1] [2] The Daily Value for this important nutrient is 18 mg.

Iron and heme
Iron's major contribution to human health is its use in heme, an iron-containing compound. Two heme-containing proteins are hemoglobin and myoglobin. Both are involved in the transport and storage of oxygen. Hemoglobin, found in red blood cells, transports oxygen from the lungs to the rest of the body for use in energy metabolism. Myoglobin transports and stores (short-term) oxygen in muscle cells to supply the demand of working muscles.[3] [4] Additional heme-containing compounds include cytochromes, which play important roles in cellular energy production via mitochondrial electron transport. The antioxidant enzymes catalase and peroxidases are also heme-containing compounds. They protect cells against hydrogen peroxide accumulation, a potentially damaging reactive oxygen species (ROS).[5] [6]

Iron deficiency
Iron deficiency is the most common nutrient deficiency in the U.S. and the world.[7] Most of the symptoms of iron deficiency are a result of the associated anemia, and may include fatigue, rapid heart rate, palpitations, and rapid breathing on exertion. Iron deficiency impairs athletic
The ability to maintain a normal body temperature on exposure to cold is also impaired in iron-deficient individuals. Severe iron deficiency anemia may result in brittle and spoon-shaped nails, sores at the corners of the mouth, taste bud atrophy, and a sore tongue. Pica, a behavioral disturbance characterized by the consumption of non-food items (e.g., clay, chalk, dirt, or sand), may be a symptom and a cause of iron deficiency.

People at greatest risk for an iron deficiency include infants and children between the ages of 6 months and 4 years, adolescents and pregnant women. Also, Individuals with chronic blood loss (especially menstruating women), celiac disease (celiac sprue), H. pylori infection (e.g., ulcers), those who have had gastric bypass surgery, and vegetarians are all at greater risk for iron deficiency. Finally, Individuals who engage in regular intense exercise may have a 30% greater requirement for iron.

So who is not at risk for an iron deficiency? Basically, adult men and postmenopausal women who do not fall into one of the above categories are not likely to experience iron deficiency.

The use of iron supplements in human clinical research
In addition to deficiency concerns, there is a body of research demonstrating specific benefits associated with iron supplementation. Following is a synopsis of that research:

- **Anemia (Iron deficiency):** Not surprisingly, the use of iron supplements is effective for the treatment and prevention of iron deficiency anemia in adults and children.
- **ACE inhibitor-associated cough:** Supplementation with iron has been shown to inhibit coughing associated with angiotensin converting enzyme (ACE) inhibitors.
- **Cognitive function:** Supplementation with iron has been shown to improve cognitive function in iron-deficient children and adolescents, improving verbal learning and memory in non-anemic iron-deficient adolescent girls. It may also reverse developmental and learning deficits in iron-deficient children.
- **Attention deficit-hyperactivity disorder (ADHD):** Supplementation with iron has been shown to improve some measures of attention deficit-hyperactivity disorder (ADHD) in children with iron deficiency after 1-3 months of treatment.
- **Heart failure:** Up to 20% of heart failure patients have iron deficiency. Supplementation with iron has been shown to significantly improve heart failure symptoms, walking distance, and measures of quality of life.
- **Fatigue:** Supplementation with iron has been shown to improve unexplained fatigue in non-anemic women, with borderline or low serum ferritin concentrations.

Iron bisglycinate: the preferred form of iron
Various iron supplements may cause gastrointestinal irritation, nausea, vomiting, diarrhea, or constipation. Sometimes taking iron supplements with food instead of on an empty stomach may relieve gastrointestinal effects, but not always. Perhaps the best way to minimize gastrointestinal side effects and assure good absorption is to use a supplement providing iron as iron bisglycinate.

First and foremost, toxicology tests have shown that iron bisglycinate is a particularly safe form of iron. In addition, research on pregnant women, iron bisglycinate was found to have the fewest
gastrointestinal side effects of various iron supplements used.[32] In another study[33] on pregnant women, daily supplementation with iron bisglycinate was significantly more effective in improving measures of iron status, in spite of a lower dose, than supplementation with iron sulfate.

Furthermore, iron bisglycinate was found to be more effective than another form of iron tested in increasing hemoglobin and other measures of iron status in children.[34] Research has shown that iron bisglycinate was effective in reducing the prevalence of anemia in children and adolescents.[35] In a study of infants and young children with iron-deficiency anemia, iron bisglycinate was deemed to the "iron of choice" due to its high bioavailability and good regulation.[36]

In food enrichment, iron bisglycinate was shown to have 4 times higher absorption than iron sulfate.[37] This improvement in absorption from iron bisglycinate over iron sulfate has been seen even when combined with milk, wheat, whole corn flour, and precooked corn flour.[38]

Fear of iron
A discussion about iron would be incomplete without addressing the fear of iron. In the early 1990s we first heard reports that researchers found a correlation between ferritin (a protein that stores iron) and coronary heart disease in the men studied. As a result, the media published articles stating that men should stop taking iron supplements since it might lead to heart attacks. Thus began the fear of iron.

What the actual research shows
When you set the fear aside, however, it is enlightening to look at the complete body of research on this subject. First of all, population studies of iron nutritional status and cardiovascular diseases in humans have yielded conflicting results. Secondly, good evidence to support the existence of strong associations between a number of different measures of iron status and coronary heart disease (CHD) was not found in a review of 12 observational studies including 7,800 cases of CHD.[39] Furthermore, while serum ferritin concentration is the measure of iron status thought to best reflect iron stores, the same review found no difference in the risk of CHD between individuals with serum ferritin concentrations in the 5 prospective studies that measured serum ferritin.

Hemeiron and non-heme iron
So what is the basis for the hubbub about iron and CHD? Two large prospective studies found increased dietary heme iron (i.e., iron from meat sources), but not total dietary iron, to be associated with increased risk of heart attack.[40] [41] The significance of this is that when iron stores are high (i.e., when you already have plenty of iron in your body), the body is able to effectively inhibit more nonheme iron from being absorbed. However, it is not able to effectively inhibit the absorption of heme iron, which suggests that iron from animal sources may play a more important role than total iron intake in CHD risk.[42]

To review:

1. There is no data to suggest that nonheme iron supplements in any way contribute toward CHD.
2. There is no data to suggest that nonheme iron from dietary sources (e.g., kidney beans, blackstrap molasses, baked beans, spinach, etc.[43]).
3. There is data to suggest that hemeiron from dietary sources may increase the risk of CHD.
So based upon the current research, avoiding nonheme iron from supplements is not likely to reduce your risk of CHD. However, reducing your intake of red meat may reduce your risk of CHD.

**Final advice regarding iron supplementation**

If you are a child, adolescent or adult woman, taking a supplement that includes iron is a good idea. If you’re an adult man of any age, or if you’re a postmenopausal woman, you probably don’t need a supplement with iron as long as you eat a diet with foods that provide iron (high iron foods: beef, liver, and lamb; medium iron foods: pork, ham, chicken, fish, and beans.[44] If, on the other hand, you engage in regular intense exercise, then you may want to consider a supplement with iron. For adolescents, adult women and those engaging in regular intense exercise, 18 mg daily of nonheme iron is recommended. Sources of nonheme iron include, but are not limited to, iron bisglycinate (the best choice) fumerate and gluconate. For children, 10 mg of iron daily is a good amount.

**References**


The mission of Huntington College of Health Sciences is to transform lives through education by offering accessible, convenient, affordable and comprehensive distance education in nutrition and the health sciences enabling adults to capitalize on their professional and personal potential within the communities in which they live.

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