

How to Eat Your Way to a Healthy Heart

**Rachel C Pearce, BPS; Karen D Doll, CVNP-BC, ANP-BC, MSN, RN;
Benjamin W Pearce, BS, CALA, CRCFA**

Introduction

Medicine is not healthcare, its sick care. Food is healthcare. What we put into our bodies each day by the choices we make can either strengthen or weaken us. The human body is a complex network of different systems, all intricate in their design and function. What each system has in common is its need for nourishment, mostly in the form of nutrients, to operate properly. Antioxidants, vitamins and minerals work synergistically to help the body reach optimal health. Deficiencies in these nutrients can have serious consequences. The immune system, bones, vision, metabolic function and energy are just a few of the health areas influenced by a deficiency in one or more vitamins and minerals. Nine out of ten of the leading causes of death in this country are related to lifestyle. Five of the ten are associated with diet choices: heart disease, cancer, cerebral vascular disease (stroke), diabetes and atherosclerosis¹.

As adults grow older, they have a greater chance of developing certain diet-related diseases, such as hypertension (high blood pressure), heart disease and cancer. Older adults are more likely to require diet modification to control disease than younger adults, but the diet should still reflect the preferences of the older adult.

Hypertension

It is estimated that 40 - 50% of adults in the United States are at risk of developing high blood pressure. Untreated hypertension can lead to heart disease, stroke, congestive heart failure, and kidney disease. A high sodium intake is believed to increase the risk of having high blood pressure, but hypertension is also known to be linked to obesity, stress, excess alcohol use, and even your genetic make-up as it often runs in families. Weight loss is the best way to lower blood pressure as it reduces the workload of the heart. According to the American Heart Association you may experience health benefits from losing as few as 10 pounds. Some people are able to lower their blood pressure just by restricting sodium intake. There are healthy alternatives to adding flavor to food that do not include picking up the saltshaker, as you will learn in Chapter **.

Certain drug-nutrient interactions may result in vitamin or mineral deficits in older adults. Some people need to control their hypertension with medication, which is normally a diuretic (water pill) that unfortunately flushes potassium from the body, which is an important regulator of fluid balance and muscle contraction. The safest

Eat To Your Heart's Content

way to protect the body's potassium, without supplying more sodium than the diet of a hypertensive patient would allow, is to include plenty of fruit in their diet. Fruits are the only foods, which can be rich in potassium and usually prepared and eaten without added sodium.

Heart Disease

Most people who die in the United States are the victim of a heart attack. Major risk factors include high levels of blood cholesterol, type 2 diabetes, hypertension (high blood pressure), overweight and obesity, physical inactivity, and tobacco use. Heart attacks are generally caused when one or more of your coronary arteries become blocked. The arteries in the body can narrow over time from a buildup of various substances, including cholesterol, fatty deposits (atherosclerosis), which restricts the flow of oxygen and nutrient rich blood to the heart. Known as coronary artery disease, this can result in death or damage to parts of the heart muscle. Damaged heart muscle often leads to heart failure over time. While heredity, lack of exercise and stress contribute, the three highest risk factors include smoking, high blood pressure, and high blood cholesterol.

Cholesterol

Cholesterol is not necessarily a bad thing, in fact it is needed by the body to build strong cell membranes, mold sheaths that protect nerve fibers and is a building block for hormones. Our liver also uses cholesterol to manufacture bile acids to aid in the digestion of fats. Each day the liver produces 1,000 milligrams of cholesterol, which is more than enough to meet these needs. This means that people do not need to eat sources of dietary cholesterol. Cholesterol is only found in animal foods and dairy products. According to the US Department of Health and Human Services *Dietary Guidelines for Americans*, evidence suggests that one egg (i.e., egg yolk) per day does not result in increased blood cholesterol levels, nor does it increase the risk of cardiovascular disease in healthy people. Knowing which fats raise your bad (LDL) cholesterol and which ones won't is the first step in lowering your risk of heart disease and stroke. Because your body produces it's own LDL cholesterol, eating saturated fat and trans-fat raises your blood cholesterol level even further. Look for polyunsaturated and monounsaturated fats, which may help *improve* your blood cholesterol when you use them in place of saturated and trans fats.

Cancer

The same high-fat diet associated with an increased risk of heart disease may also be linked to promoting the growth of certain types of cancers in the body. The two primary cancers with links to diet include breast cancer and colon cancer.

Among the Japanese, who are known for their longevity, consume very little fat in their diets, and consequently the incidence of breast and colon cancers in their culture is uncommon. Studies have shown that diets containing large amounts of cholesterol and fat, bacteria in the small intestine break down these elements into substances, which are known carcinogens or promote the action of other cancer

Eat To Your Heart's Content

causing chemicals. Foods high in fat and cholesterol content tend to digest slower than bulky, fibrous foods and the waste tends to stay in the gastrointestinal tract longer thereby exposing the body to more harmful carcinogens.

Physiology - Why Eating Right can Help you Heal

How your body processes and converts food into nutrition

Annually the U.S Department of Agriculture and the U.S. Department of Health and Human Services produce Dietary Guidelines for Americans,ⁱⁱ which offers advice to promote health and to reduce the risk of chronic diseases through diet and physical activity. One of the basic messages of the Dietary Guidelines is that nutrient needs should be met primarily through consuming foods. In certain cases, fortified foods and dietary supplements may be necessary to provide one or more nutrients that otherwise might be consumed in less than recommended amounts. Foods that provide an array of nutrients and other compounds, within calorie needs, that have beneficial effects on health. This is of particular importance for the older adult with set food habits, who with aging, tends to reduce the amount of calories consumed. Older adults require a high quality diet with nutrient-dense foods and beverages. This translates into food choices with sufficient calories and concentrated nutrients. All vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, lean meats and poultry, eggs, beans and peas (legumes), and nuts and seeds that are prepared without added solid fats, sugars, starches, and sodium are nutrient-dense. We are often feeding smaller appetites that require additional nutrients due to the physiological changes of aging that can impair nutrient absorption and utilization.

Important Nutrient Needsⁱⁱⁱ for Older Adults

Protein—Protein is the foundation upon which every living organism is built. The body does not store amino acids (the building blocks of proteins), so an adequate daily intake of protein is needed to supply your body with all the 20 major amino acids. Adequate intake of dietary protein is extremely important for tissue repair and healing, especially in the older adult. Illness, surgery, and inadequate food intake can result in protein energy malnutrition that can impair immune function, increase susceptibility to infections, slow wound healing and increase skin breakdown.

New evidence indicates that eating peanuts and certain tree nuts (i.e., walnuts, almonds, and pistachios), which are high in protein, reduces risk factors for cardiovascular disease when consumed as part of a diet that is nutritionally adequate and within calorie needs. Because nuts and seeds are also high in calories, they should be eaten in small portions and used to replace other protein foods. They are so energy dense and tasty that it can be easy to eat excessive amounts. Choose unsalted nuts and seeds to help reduce sodium intake.

Eat To Your Heart's Content

In 2003, FDA allowed the first qualified health claim for nuts, suggesting that scientific evidence supports that eating 1.5 ounces per day of most nuts as part of a diet low in saturated fats and cholesterol may reduce the risk for heart disease. Clinical trials with tree nuts have reported favorable reduction in cholesterol levels, particularly the bad LDL cholesterol that elevates heart disease risk. This effect has been demonstrated consistently in different population groups using different study designs and methods.^{iv}

Carbohydrates and Fiber — Sufficient carbohydrates are needed to protect protein from being used as an energy source, however it is recommended that carbohydrate intake is limited to whole-grain high fiber unprocessed foods. The refining of whole grains involves a process that results in the loss of vitamins, minerals, and dietary fiber. There are three types of carbohydrates - sugar, starch and fiber. Both sugar and starch are turned into sugar and since the body lacks the enzymes needed to digest fiber, it is the only carbohydrate that doesn't convert to sugar.

By limiting your daily intake of low fiber highly refined carbohydrates, you also limit your sugar intake. About 78 million Americans—35 percent of the U.S. adult population over age 18 —have pre-diabetes, which means that blood glucose (sugar) levels are higher than normal, but not high enough to be called diabetes.^v Carbohydrates in the form of fiber can be found in a variety of fruits, vegetables, and whole grain foods. Avoid highly refined grains, as these also can be high in solid fats and added sugars (e.g., cookies and cakes).

Calcium — As people age, a decrease in calcium absorption occurs. When the body does not get enough calcium per day, it draws calcium from your bones. Bone loss also occurs as part of the normal aging process, particularly in postmenopausal women due to decreased amounts of estrogen. The elderly population is especially susceptible to osteoporosis (bone loss) and bone fractures. One out of every two women and one in four men over age 50 will have an osteoporosis-related fracture in their lifetime.^{vi} Many factors increase the risk of developing osteoporosis, including being female, thin, inactive, or of advanced age; smoking cigarettes; drinking excessive amounts of alcohol; and having a family history of osteoporosis. Supplementation with calcium plus vitamin D has been shown to be effective in reducing fractures and falls (which can cause fractures) in institutionalized older adults. Some good sources of calcium include yogurt, milk, cheese, firm tofu, canned salmon with bones, spinach, and rhubarb.

Vitamin D — Vitamin D is generally referred to as 'the sunshine vitamin' as it is created by our bodies with sun exposure. However, recent findings of low Vitamin D levels in many patients lead some to believe that despite getting at least 20 minutes of sunshine daily and adequate intake of foods high in Vitamin D, a daily supplementation is necessary to reach optimum levels. Additionally, if your body doesn't have sufficient precursors in your skin to convert to Vitamin D, no amount of sunshine will help and supplementation will be required. Recent research has shown a possible link between Vitamin D supplementation and lowered risk of

Eat To Your Heart's Content

dementia, heart failure, diabetic neuropathy, and even cancer. Adequate vitamin D also can help reduce the risk of bone fractures, especially when taken with calcium supplementation. Some sources of Vitamin D are vitamin D milk, egg yolk, salmon, tuna fish, and sardines. You can ask for a simple blood test from your healthcare provider to determine your risk for Vitamin D deficiency.

Water — Aging adults are more susceptible to dehydration due to inadequate daily intake of fluids. The ability to sense ‘thirst’ is reduced and can significantly decrease optimum fluid intake to cause dehydration. By the time one senses they are thirsty, the body is already dehydrated to a slight degree so that sensing a feeling of thirstiness is actually a symptom of dehydration. Because our bodies need water to function normally, when you’re dehydrated you may feel tired, have trouble concentrating or wind up eating more than usual since our bodies often misinterpret thirst as hunger. Beverages that contain caffeine or alcohol can be dehydrating, so be sure you drink plenty of water to offset your coffee or alcohol consumption. A minimum of 1500 cc’s / day is recommended for most adults, but there can be lesser requirements for some patients with certain medical conditions (like kidney disease). Be sure to consult your healthcare professional for the amount of fluid you are allowed to consume daily.

How to Read the Label

The Food and Drug Administration (FDA) is responsible for assuring that foods sold in the United States are safe, wholesome, and properly labeled. This applies to foods produced domestically, as well as foods imported from foreign countries. The Nutrition Labeling and Education Act (NLEA), which amended the FD&C Act requires most foods to bear nutrition labeling and requires food labels that they are nutrient content claims and certain help messages to comply with specific requirements. It is the responsibility for the food industry to remain current with the legal requirements for food labeling.

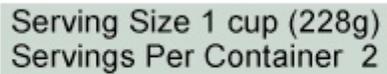
The **Nutrition Facts** panel on any packaged item is the best way to understand exactly what is in the product you are buying. The front of the package can be very misleading and tells you only what the manufacturer wants you to know about the health claims. Terms used on packaging, such as “multigrain”, “reduced-fat”, “no additives” and even “natural” can be misleading, as these terms aren’t tightly regulated so manufacturers will use words that make you think you are buying healthy products. Knowing how to read the Nutrition Facts Panel will guide you to better choices for a healthy lifestyle.

When deciding what is best to buy, compare nutrients and calories in one food to those in another. The information may surprise you. For your heart health, make sure you aren’t eating foods high in carbohydrates, saturated and *trans* fats, and sodium.

Eat To Your Heart's Content

These steps may help simplify what can be a confusing Nutrition Fact label.

1. Check Serving Size and Servings Per Container



Serving Size 1 cup (228g)
Servings Per Container 2

This will tell you what is a standardized serving for this product and the nutritional information listed below relates only to this size serving. It can surprise you to find out that a small package that seems like one serving can be labeled as two servings. This would mean if you ate the entire container, you would have to double the calories, carbohydrates, fat, sodium and everything else on that label to get an accurate measurement of you are eating.

2. Carbohydrates count more than calories!

The Total Carbohydrates listed on the label will include sugar, starch, and fiber – all various forms of carbohydrates. This number can be even more important than the calories, as limiting the carbohydrates you take in will naturally also limit the amount of calories, especially those ‘empty calories’ in the form of sugar and high fructose corn syrup that is commonly added when fat is removed. For instance, you will be surprised to see that regular plain Greek yogurt will have approximately 8 carbohydrates per serving, while ‘low fat’ plain Greek yogurt will have approximately 12 carbohydrates! What?!? Manufacturers know that when you take the fat out of a product, it doesn’t taste as good therefore ‘fat-free’ high calorie sugar is added to make it taste better! Even worse, when ‘fruit’ is added, it is generally a sugar-based fruit and the carbohydrate count jumps to 25+grams per serving! Best to get regular plain yogurt, cottage cheese, etc. and add your own fresh or frozen berries or fruit.

Higher carbohydrate foods that should be limited include most white bread, pasta, rice, and potatoes. Even the higher fiber breads and pastas, brown rice and sweet potatoes are only slightly better than the white form due to the additional fiber they contain. They still have a higher amount of carbohydrates that should be limited daily. The higher the fiber count, the better it is to eat. Carbohydrates in food are digested and converted into glucose, or sugar, to provide the cells of the body with energy. Excess carbohydrates in your body can lead to weight gain and diabetes.

Most fruits and vegetables are generally low in carbohydrates, with the exception of apples and bananas. You would be astonished to know that one medium apple or one medium banana has approximately 25 grams of carbohydrates! Best to eat fresh melons, berries, peaches, oranges, and pears, etc. and watch the canned fruit as there can be added syrups and juices that add sugary carbohydrates. Limit the starchy vegetables like peas and corn (read the labels) but don’t hesitate to eat most other vegetables freely. Did you know that one orange has only 8 grams

Eat To Your Heart's Content

carbohydrates, yet that small 4 oz. glass of orange juice has nearly 25 grams? Avoid most juices in general as they generally have significant amounts of added sugar (aka carbohydrates). If you want juice, it would be best to use just a splash for flavor into a glass of water.

In general, when looking at the label and the carbohydrate content, if it has more than 20-30 grams of carbohydrates per serving, then use it in very limited quantities. Moderation is always best. As a guideline, keeping your total daily carbohydrate 'count' under 100 grams per day will result in controlling the amount of 'empty' sugar calories you take in. Counting your daily carbohydrate intake is much easier than counting thousands of calories, and as long as you choose a variety of colorful fruits and vegetables to eat with your meals and snacks, you will get a well rounded and balanced intake of nutrients.

For those who wish to count the carbohydrates most effectively, you are able to reduce the number of carbs counted by whatever fiber count is shown on the label. For instance, a label showing 10 grams carbohydrates that also has 3 grams fiber, you need to count only 7 carbs per serving ($10-3=7$). Fiber is the only carbohydrate that is not changed by the body to sugar and is eliminated without affecting insulin levels. Technically, fiber is considered a carbohydrate even though it is not digested and it provides no calories. Fiber is important for heart health, and getting at least 25 grams of fiber daily is recommended. Most people, however, need a fiber supplement to get these recommended levels.

Nutrition Facts	
Serving Size 1 cup (240g)	
Servings Per Container 2	
Amount Per Serving	
Calories 100	Calories from Fat 20
% Daily Value*	
Total Fat 2g	3%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 70mg	3%
Total Carbohydrate 17g	6%
Dietary Fiber 3g	12%
Sugars 5g	
Protein 4g	
Vitamin A 70%	• Vitamin C 20%
Calcium 15%	• Iron 8%
<small>*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.</small>	

Grams of carbohydrates

2 servings X 17g = 34g Total

3. Look for Saturated and Trans fats

Eat To Your Heart's Content

Look for products with the lowest amounts of saturated and trans fats per serving. For the past years, consumers have been told 'low fat' was best and with the added carbohydrates in place of the fat in most products, people have been eating more sugar, more refined carbs and processed foods instead, which has made the world sicker and fatter.

When reading labels, the amount of Total Fat, Saturated Fat, and Trans Fat is listed, as the law requires it. No amount of trans fat in the diet is beneficial. Therefore, when a food label indicates "0 grams of trans fat," that's ideal. However, even then a product may still have some trans fat. Manufacturers are allowed to list "0 grams" of trans fat if the product has less than 0.5 grams of trans fat per serving. Some examples are tub margarines or peanut butter. Usually this isn't a problem if you eat one or two servings a day. However, if you were to eat many servings, this amount of trans fat may add up.

In general, go for the 'good' fats, like olive and coconut oil, and don't hesitate to use higher fat, yet healthy and nutritious foods on occasion, such as avocados, cheese, eggs, nuts, chia seeds and yogurt. Again, moderation is key to healthy living.

Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%

4. Watch your Sodium intake

Sodium (salt) regulates your body's water levels, which is especially important for those with heart disease and high blood pressure. Sodium is listed on the label in milligrams. When 1500 milligrams is the general limit for people with heart disease, sodium can add up quickly. That's equal to little more than ½ teaspoon of salt! A low-sodium food is defined by the Food and Drug Administration as 140 milligrams or less per serving. This can be a helpful when deciding if and how a certain product can fit into your healthy eating plan. Most canned foods and highly processed food are high in sodium so best to buy frozen and or fresh produce and unprocessed or low-sodium meats.

5. Review the Ingredient List

All food products have the ingredients list by weight in decreasing order. This means the first items listed are the primary ingredients with the remainder of the list showing what is less within. This can be very helpful in determining more information about the food product.

Eat To Your Heart's Content

--If there are more preservatives and fillers than identifiable ingredients, this food is likely highly processed and therefore NOT healthy.

--If the list contains 'partially hydrogenated oil' then it still has trans fat despite a label that may say "0 grams" of trans fat.

--If sugar or high-fructose corn syrup is listed before the healthy ingredients then likely the calories and carbohydrates are from sugar and low in other nutrients. Other names for sugar include sucrose, fructose, glucose, maltose, dextrose, high-fructose corn syrup, corn syrup, concentrated fruit juice, honey and maple syrup.

What do I do if there is no Nutrition Facts label?

There are many fresh fruits, vegetables, and other grocery items that do not always come with nutritional labels. A highly recommended online site that will give you nutritional breakdown of all foods is located at www.calorieking.com. If you do not use a computer, then seeking a good nutrition book at your local library or bookstore will help you understand which foods are the healthy choices. As with most lifestyle changes, the more you read and understand the nutritional value of healthy foods, the easier it will become.

Shopping Smart

Navigating the grocery store

When shopping at a grocery store, it is best to circumnavigate the store first, using the outside aisles as a guide to the better selection of quality food products. These areas include the fresh fruits, vegetables, meats, and dairy sections, avoiding the inner aisles as much as possible where the boxed and canned items are sold. Boxed and canned items will contain higher amounts of preservatives, including artificial chemicals and salt, which allows a longer shelf life. Watch for expiration dates that are listed on the label as to when the product will no longer have the proper nutrient or freshness level and know that the newer products are always stocked behind the ones about to expire. Avoid any opened or dented cans and boxes as it may have allowed bacteria to enter.

Organic food labeling and GMO

For higher quality food products that will promote good health, look for the 'certified organic' label and which means it is also 'non-GMO'. GMO stands for 'genetically modified organisms' and means the food has been genetically engineered or changed in some way from the original food source. You can also see the term "GE foods" (genetically engineered) which means the same as GMO. This process of genetically modifying foods is relatively new to the food industry, as there were no GMO or GE food crops planted in the US prior to 1994, however, there are now more than 165 million acres of GMO foods planted each year today. It is estimated by the Center for Food Safety that 70-75% of all grocery store products contain at least one genetically modified ingredient.^{vii} The reason for the growth in

Eat To Your Heart's Content

engineered food products is because they are often easier to grow due to their resistance to pests, along with pesticide use, and more profitable to produce.

The problem with GMO / GE foods lies with the health risks associated with them. Genes are the blueprint for making proteins, therefore a GMO food will contain new proteins that were not present in the food prior to its modification. Since it is proteins that are often the basis for allergies and our immune system response, many scientists have speculated that these altered genetic GMO/GE proteins may be a source of recent increases in body system inflammatory responses, food allergies, digestive tract dysfunction, as well as autoimmune disorders.

Unfortunately, mandatory labeling laws for GMO or GE foods do not yet exist in the United States and until such labeling is widely adopted, the only practical way to lower GMO risks is to select 'certified organic' foods. Since the U.S. National Organics Program forbids the use of genetic modification in foods to be certified as organic, purchasing organic is a great way to lower your exposure to GMO or GE foods.

Supplements

The human body is a complex network of different systems, all intricate in their design and function. What each system has in common is its need for nourishment, mostly in the form of nutrients, to operate properly. Antioxidants, vitamins and minerals work synergistically to help the body reach optimal health. Deficiencies in these nutrients can have serious consequences. The immune system, bones, vision, mental clarity, blood pressure, metabolic function and energy are just a few of the health areas influenced by a deficiency in one or more vitamins and minerals. There is no substitute for a healthy, well-balanced diet; however, in today's fast-paced lifestyles it is important to ensure the body is getting the fuel it needs.

Ideally, consuming foods such as fruits and vegetables can provide antioxidant protection to cells from the damaging free radicals as well as offer other essential vitamins and minerals that help the body perform optimally. Unfortunately, many foods today are grown in mass quantities in soil that has been nutritionally depleted over many years of use. In a landmark study published in 2004, nutritional data of various vegetables and fruits over a 50-year period were found to have 'reliable declines' in protein, calcium, phosphorus, iron, Vitamin B2, and Vitamin C. It was felt this was due to the modern agricultural practices designed to breed new crops that provide larger yields, pest resistance, and climate adaptability.^{viii}

Combine the nutrient-deficient soil with over-processing and refinement of our foods, then add chemical preservatives and artificial color and flavor enhancers, and there is now a great need to supplement the missing vitamins, minerals, and antioxidants on a daily basis to help combat the inflammation and free radical production that our modern lifestyle generates. ^{ix}

Eat To Your Heart's Content

Because dietary supplements are not FDA regulated as prescription and non-prescription drugs are for standards, safety, and effectiveness, there can be a wide variety of products on the market to choose from. These can range from poor quality supplements with high amounts of fillers and nonessential ingredients to high quality, isotonic forms that have FDA marketing approval as high quality and easily absorbable.

Vitamins are divided into two types: fat-soluble and water-soluble. Fat-soluble vitamins (vitamin A, D, E and K) are stored in the fat tissues and liver. They can remain in the body up to six months. When the body requires these, they are transported to the area of requirement within the body with help of special carriers. Water-soluble vitamins (B-vitamins and vitamin C) are not produced nor stored in the body like the fat soluble ones and need to be replenished everyday, whether consumed in our foods or supplementation.

Choosing the right multivitamin supplement is more than just looking at the ingredients. The form in which the supplement is in can make all the difference in the quality of the supplement you are receiving. A good multivitamin should be easily absorbed and have all of the required daily levels that are essential to maintain good health.

One multivitamin supplement recommended is 'isotonic' which comes as a powdered form to which you add 2 ounces of water to drink. Isotonic, which means "same pressure," bears the same chemical resemblance of the body's blood, plasma and tears. All fluids in the body have a certain concentration, referred to as osmotic pressure (which is isotonic) and allow a consistent maintenance of body tissues. This means that the body has less work to do to in obtaining maximum absorption. The isotonic state of the suspension allows nutrients to pass directly into the small intestine and be rapidly absorbed into the bloodstream. With Isotonix (Nutrametrix) products, little nutritive value is lost, making the absorption of nutrients highly efficient while delivering maximum results.

The Nutrametrix Daily Multivitamin contains all the basic daily dietary needs, and can be with or without iron as recommended by your healthcare professional. You can then add other Nutrametrix isotonic dietary supplements according to your own personal needs, for instance, for arthritis, allergies and joint pains (antioxidants like OPC-3 and vitamin C), elevated cholesterol (Essential Omega 3 oil with Vitamin E) or nerve conduction/ nerve pain and stress levels (Activated B-complex). These items can be found online at www.nutrametrix.com/karendoll. There is a free "Nutri-physical" you can complete online that will help individualize your supplement needs according to your personal needs. (www.nutrametrix.com/karendoll/nutri-physical). Before considering any supplemental regimen, be sure to consult your healthcare provider.

Omega-3

Eat To Your Heart's Content

Omega 3 fatty acids have been shown to be effective in fighting inflammation in your body as well as in reducing overall cholesterol levels and triglycerides, improving blood flow and blood pressure, and may also help to reduce the occurrence of the more severe outcomes of heart disease. Fatty fish such as salmon, sardines, anchovies and mackerel provide essential omega 3 fatty acids, especially eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The American Heart Association recommends 1000 mg per day of Omega-3 EPA/DHA for patients with coronary heart disease and 2000 to 4000 mg per day for patients with high triglycerides. For vegetarians or those who have fish allergies, flax seeds or flax seed oil provides an acceptable alternative.

To achieve this level of supplementation, a high quality Omega-3 oil is recommended daily as you want to know it is tested to be free of fillers and non-essential ingredients, like the Nutrametrix Heart Health Essential Omega-3 with Vitamin E. NutraMetrix Heart Health Essential Omega III comes from small anchovies and sardines that have a short lifecycle making them an ideal source of fish oil because they are less prone to accumulating environmental toxins that can be found in larger, longer-lived fish. A good quick way to test any fish oil supplement is to place a capsule in the freezer overnight. Pure oil will not freeze solid, but those with mostly added fillers will. If it is firm and inflexible when frozen, it is likely to be more filler ingredients than omega-3 oil.

Another source of inflammation-fighting healthy fats is nuts—particularly almonds, which are rich in fiber, calcium, and vitamin E, and walnuts, which have high amounts of alpha-linolenic acid, a type of omega-3 fat. All nuts, though, are packed with antioxidants, which can help your body fight off and repair the damage caused by inflammation.

Antioxidants

Antioxidants are another key supplement necessary for health, especially as we age that will reduce 'free radical' formation. Free radicals are unstable molecules or compounds that react negatively with other molecules creating stress on the body. This free radical formation is a natural process that occurs daily when the body breaks down certain substances in our environment or food, or comes in contact with pollutants. Specifically, antioxidants provide the body with a defense against the negative effects of the free radicals, then stabilize and prevent other molecules from turning into unstable free radicals, thereby promoting good health.

Inflammation is part of the body's immune response; without it, we can't heal. But when it's out of control it can damage the body. Chronic inflammation has been linked to many cardiovascular diseases. Cholesterol gets deposited in the lining of blood vessels and acts as an insult. Cytokines respond to these insults in the bloodstream, which leads to systemic inflammation. Inflamed blood vessels and growing fatty plaque can cause blockages and blood clots, which then can cause heart attacks. Foods high in sugar, saturated and trans fats, excess weight, smoking,

Eat To Your Heart's Content

pollution, chemical preservatives, poor oral health and unhealthy diets in general cause chronic inflammation. In addition to cardiovascular disease, inflammation is also associated with diseases such as arthritis, autoimmune diseases, allergies, asthma, cancer, and inflammatory bowel diseases.

Three important antioxidants, OPC-3, Vitamin C, and CoQ10, have been found to be beneficial for heart health by reducing inflammation as well as the number of free radicals causing inflammatory damage in our bodies. Oligomeric proanthocyanidins (OPCs) are bioflavonoids (complex organic plant compounds) found in fruits, vegetables and certain tree barks that provide exceptional nutritional benefits to the human body. Studies have shown OPCs to be up to 20 times more powerful than vitamin C and 50 times more powerful than vitamin E in neutralizing free radicals. Supplementing with a high quality isotonic OPC, like the Nutrametrix (Isotonix) formulation OPC-3 taken with your daily multivitamin will help fight the free radicals and offer an effective anti-inflammatory.

Vitamin C is an essential water-soluble nutrient that must be replenished on a daily basis. It is important to know that cooking destroys vitamin C activity. Aside from its well known antioxidant properties, vitamin C supports cardiovascular health in a few different ways, i.e. normalizing blood pressure and cholesterol levels, in addition to supporting our immune system and pulmonary health. A lack of vitamin C can cause general fatigue, as it helps moderate healthy iron absorption, transport and storage. In the typical diet, most vitamin C comes from fresh fruits and vegetables. Peppers, like sweet green and red peppers, hot red and green chili peppers, are especially rich in vitamin C. Other good sources include citrus fruits and juices, brussel sprouts, cauliflower, cabbage, kale, collards, mustard greens, broccoli, spinach and strawberries.

Another powerful antioxidant and vital nutrient to promote energy production within our cells is CoenzymeQ10 (CoQ10). CoQ10 levels in our body naturally diminish with age, and even faster with poor eating habits, stress or infections. It is reported that the use of statins (cholesterol-lowering medications) will also reduce the body's ability to make CoQ10 even further. It is generally a combination of choosing the right foods containing CoQ10 with additional supplementation daily that will provide the body with the best possible amount of CoQ10 for optimal health. CoQ10 is naturally found in high levels in organ meats such as liver, kidney, and heart, as well as in beef, sardines, and mackerel. Vegetable sources of CoQ10 include spinach, broccoli, and cauliflower with peanuts and soybeans the best non-animal sources.

Chemosensory Changes in the Aging Process

Most people understand that as we age, the way in which we experience our world through our senses of sight, hearing, touch, taste, and smell changes as those senses deteriorate over time. As our visual acuity diminishes, we wear corrective lenses;

Eat To Your Heart's Content

with auditory loss, we wear hearing aids. However, the least accepted and least understood deprivations are those of taste and smell, the two senses that primarily control the body's ability to experience food. Disorders of taste and smell are viewed as affecting the "lower" senses—those involved with sensual and emotional life—rather than the "higher" senses that serve the intellect.

The taste and smell of food have a major effect on levels of food intake and the maintenance of good nutrition. Losses and distortions in these chemosensory mechanisms contribute to a significant degree to anorexia in the elderly. Taste and smell are considered chemical senses because molecules that contact receptors in the mouth, throat, and nasal cavity stimulate them. The sense of taste is mediated by taste buds located on the dorsal surface of the tongue and on the epiglottis, the larynx, and the first third of the esophagus. Olfactory receptors are bipolar neurons located in the upper portion of the nasal cavity that project into the limbic system of the brain. The limbic system also processes information associated with emotions, so there is, in fact, a medical explanation for the emotional response we have to food. The olfactory bulb shows considerable degenerative changes during aging, and cross-sections of the bulb often look "moth-eaten" owing to losses in the number of cell bodies of neurons. Those losses are especially profound in patients with Alzheimer's disease.

Because of reduced function in these key chemosensory systems, the natural biochemical responses designed to break down food as it enters the body are consequently also less active. When the body smells, tastes, or simply sees appetizing food, a number of biochemical responses are set in motion to aid subsequent digestion. For example, saliva builds up in the mouth, gastrointestinal juices are released into the stomach, plasma insulin is released into the bloodstream, and the pancreatic system is engaged. All these responses have the combined effect of aiding absorption of food and promoting overall nutrition. As the aging process affects the body's internal response to food, seniors do not enjoy food as much or absorb it as well, and as a result they can become vulnerable to malnutrition, which can contribute further to health problems.

Taste and smell decrements arise not only from the normal aging process, but also from certain disease states, pharmacological and surgical interventions, the effects of radiation, and environmental exposure. Similar medical conditions and drugs affect the sense of smell. For example, most people have experienced the metallic taste of orange juice after brushing their teeth; the chemical in toothpaste responsible for this effect is sodium lauryl sulfate, which is also used to help fat-soluble drugs dissolve. Most elderly persons take their medications with their meals to offset the potentially harmful effects of the drugs on the stomach lining, which in turn affects their ability to taste and smell their food. Their senses are inhibited by these drugs, as is their digestive system, and this effect can at times induce a negative reaction and in severe cases lead to malnutrition.

Eat To Your Heart's Content

Many medications commonly prescribed are recommended to be taken with food. Often people will take their medications before they eat, especially when dinner plans call for a night out to a restaurant. By the time their meals actually arrive at the table 60 minutes or more could have passed since they consumed the medication prior to leaving home, giving the medication taken on an empty stomach ample time to be absorbed into the bloodstream and the opportunity to adversely affect their ability to taste and smell their food. Simply advising people to take their medications after they eat rather than before can have a profound effect on their overall dining satisfaction. In fact, at one senior living community, after the seniors were educated about this concept, senior satisfaction in food and beverage service increased by 10 percent over the previous survey, while perceptions of all other conditions remained constant^x.

Measurements of taste and smell dysfunction in adults reveal a progressive decline with age. Those losses tend to begin around 60 years of age and become more severe in persons over 70 years of age. In most retirement communities, the chef and cooking staff have an ability to taste and smell that is more than twice as acute as that of the people for whom they are cooking. In one study, persons between the ages of 20 and 70 had approximately 206 taste buds each. This number was reduced to 88 taste buds for persons between the ages of 74 and 88 years. The average age of seniors in retirement communities today is about 82 years. Therefore even the best-qualified chefs working with the freshest natural ingredients are working at a considerable disadvantage, and they will express their frustration in trying to address this problem using conventional methods. Seniors may inadvertently harm themselves by trying to amplify the flavors of their food by using too much salt at the table, or by eating too much dessert because they can still enjoy the sweet taste of many of these offerings. Compensating in these ways, however, only leads to nutritional imbalances and could be in direct conflict with doctor-prescribed dietary guidelines.

Recent studies suggest that the amplification of foods and beverages with naturally produced flavors can increase preference ratings as well as subsequent intake and absorption in elderly persons with known chemosensory losses. These commercially produced flavor enhancers, which are inexpensive (adding less than a penny to the per-meal cost), are made by reducing food such as chicken and capturing and concentrating natural flavor and odor molecules. The concentrate can then be attached to a “carrier” (such as water, oil, or flour) and added to the food. This added flavor contains no fat, salt, or other harmful products traditionally associated with flavor enhancement.

Flavor-amplified foods not only are preferred from a sensory standpoint, but also can influence the body’s natural biochemical response to food, actually promoting better absorption and, as a result, improving the immune status of elderly persons. In a study by Schiffman and Warwick, elderly persons were offered regular food for three weeks, then flavor-enhanced versions of the same food^{xi}. Blood samples were

Eat To Your Heart's Content

taken before and after the use of the flavor enhancement. They showed an increase in levels of T and B cells (white blood cells), the body's natural defense agents against disease and injury. Schiffman's research confirms that as the body's biochemical absorption of food improves, so do nutrition and immune status. This research suggests that the addition to recipes of natural flavors that increase the perceived flavor intensity would improve satisfaction with the food and compensate for chemosensory losses due to normal aging, diseases, and prescription drugs. It can be argued that the use of flavor enhancements can actually promote better health as well as improve culinary satisfaction.

The increased preference for flavor-enhanced food is extraordinary. In fact, many manufacturers of convenience products, such as Stouffers and Tyson, now list natural flavors among their ingredients. When a convenience product and its scratch-made counterpart are served, the convenience product is often better received than the homemade one. This is simply because the commercial product is higher in flavor than the homemade product as a result of added natural flavor. Certainly natural products are important and should represent the primary ingredient source. The addition of fresh herbs and spices and pre-treating with marinades should not be abandoned. We walk a fine line, however: for if too many herbs and spices are added, the seasoning then overpowers the main ingredients. Often seniors' delicate digestive systems become agitated when aromatic herbs and spices are not used in moderation.

Research has confirmed an improved immune status as measured by the total level of blood lymphocytes, which help to fight diseases inherent in the elderly population. In addition, seniors feel better about their dining experience, and opioid (endorphin) levels increase as seniors' ability to sense their food improves. It has actually been proven that seniors become physically stronger as well. With flavor enhancement, seniors are less interested in fatty foods and in adding salt to their entrees, and thus they are better able to adhere to their doctor-prescribed dietary guidelines.

Flavor Amplification

Our bodies are a wondrous miracle of fully integrated systems designed to support our survival. When we see, smell, taste, or even think about food, biochemical processes (described above) are already at work designed to break that food down and convert it to energy and nutrition to support every cell in our body. All of it amounts to a symphony of digestion orchestrated by our bodies to extract the essential elements from our meals that our systems crave.

The older we get the higher are thresholds are for the chemosensory receptors to register, therefore when we may need intensify the flavor of what we eat to initiate the automatic responses detailed above to achieve both an efficient breakdown and enjoyment of the food that we eat. There are many healthy alternates to picking up the saltshaker for adding flavor to your food. Sauces and dressings, concentrates

Eat To Your Heart's Content

and marinades, and most spices that will provide a flavor boost that can be added "free" of harmful agents to your health.

ⁱ "Diet Related Diseases," Purdue University, <http://www.four-h.purdue.edu/foods/Diet-Related%20Diseases.htm>.

ⁱⁱ Ibid.

ⁱⁱⁱ U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans*. 2010 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

^{iv} **<http://www.exploresupplements.com/tree-nuts-support-heart-health>**

^v U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans*. 2010 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

^{vi} U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans*. 2010 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

^{vii} <http://www.whfoods.org>

^{viii} University of Texas (UT) at Austin's Department of Chemistry and Biochemistry was published in December 2004 in the *Journal of the American College of Nutrition*

^{ix} See also antioxidants for a definition of free radicals.

^x Benjamin W. Pearce, *Reactivating Appetite*, Eldercare Advisor Press, Amazon Kindle eBook, Amazon Digital Services (2014).

^{xi} S. S. Schiffman and Z. S. Warwick, "Effects of Flavor Enhancement of Foods for the Elderly on Nutritional Status: Food Intake, Biochemical Indices, and Anthropometric Measures," *Physiology and Behavior* 53 (1992): 395-402.