



## The Secret of Dark Chocolate: Scientific Breakthroughs

*Written by: Warren S. The Power of Chocolate, Sound Concepts, 2006*

For centuries chocolate or dark cocoa/cacao was utilized as a medicine — a cure-all for many diseases and ailments. The Aztecs and Mayans highly regarded cocoa as a medicine and even used it as currency. It was a priceless commodity. After the Spaniards arrived in America, they too began to utilize the cocoa for many diseases. It was a secret for the elite and royal families for years. Its use later became mainstay for the entire European continent. However, use as a medicine stopped when the chocolate became processed and sugar and fat were added —our modern day candy bar. Recently there has been new scientific evidence that this original dark cocoa does possess some health benefits which can help our society with many chronic illnesses. With the increase in obesity and cardiovascular disease being the number one killer of both men and women in the US, it is important to look at nutritional products.

The studies conducted at some of the USA's top universities have focused on several areas of health — cardiovascular, diabetes, neurobiological, dental, depression, and weight loss. The studies have identified the process by which cocoa can improve health and stop the progression of many diseases.

The first studies which were performed looked at the benefit of the antioxidants in cocoa called flavonoids and specifically epicatechins and catechins. Numerous studies conducted found that cocoa can lower blood pressure, increase the good cholesterol (HDL), and lower the bad cholesterol (LDL), increase nitric oxide (important in blood vessel relaxation) and stop platelets from forming clots. The study last year looked at a tribe of Indians off the coast of Panama who consumed a native chocolate drink three to four times a day. This tribe had very low cardiovascular disease rates, low blood pressures and lower cancer rates. Those who left the island and started on a Western diet soon had increases in cardiovascular disease and increases in blood pressure. When they returned to their native drink again their risk factors returned to their previous state. The scientists found that the levels of nitric oxide were higher in those who drank the flavanol-rich cocoa and the flavanols were actually found in the bloodstream. The higher levels of the flavanol — epicatechin in the bloodstream were associated with improved blood flow.

A study last year in Holland —the Zutphen study found that elderly men who ate dark chocolate daily over 15 years had a 50% reduction in overall mortality and cardiovascular deaths. They also noted that these men also ate more calories yet weighed less than their counterparts.

Other studies have pointed out how cocoa can improve insulin sensitivity and improve blood sugars. They noted an overall decrease in blood sugars in those individuals who ate dark chocolate.

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In January this year at a symposium at the American Association for the Advancement of Science, several papers were presented regarding enhancement of brain blood flow and improved cognition in individuals consuming flavonoid rich cocoa. One of the studies found that the consumption of a high flavonoid beverage resulted in regional changes in blood flow in the brain suggesting that the cocoa flavanols may have “therapeutic potential for the treatment of vascular impairments within the brain itself”. They found that by drinking this beverage there was increased blood flow to the grey matter for 2 to 3 hours. They felt that it was possible that this increased brain blood flow could help older adults or even people with fatigue or sleep deprivation. It was found to enhance neurogenesis and improve learning and memory. One of the researchers was quoted as “... it raises hope that that the brain blood flow response ... can result in maintenance of healthy brain function and cognition, which is an issue that ...plagues many older adults today.”

Scientists also have found that the bioactive chemicals in chocolate such as tryptophan, dopamine, serotonin, PEA , and ananamide have been associated with decreased depression and elevation of mood. The addition of magnesium and other minerals and vitamins in cocoa have been proven to help individuals improve their mood and increase their energy levels. These chemicals have been purified in many instances into anti depressant medications but cocoa is a natural anti depressant without the side effects.

Science has focused on the problem of oxidation and inflammation in relation to over 200 chronic diseases including aging. These scientists have found that the antioxidants and other phytochemicals in cocoa can stop the oxidative process and in many instants stop the progression of inflammation both in muscles and joints as well as within blood vessels and organs. Dark cocoa has been found to stop inflammation and prevent damage from this process. The molecular cell signaling pathways have been identified and cocoa has been found to act like a protein kinase in regulating these regulatory pathways.

Dark cocoa has been rediscovered by science. The unprocessed dark cocoa without the sugar and fats is starting to be studied in many scientific circles. The secret of cocoa and its health benefits is just in its infancy in research. The future will soon prove the benefits of cocoa, which our ancestors knew for centuries. *Article Updated: July 17, 2007*

## We are What we Eat

As our population ages, we are facing more chronic illnesses than ever before. Aging itself is not a disease, but we are seeing more aging-related diseases than ever before. Coronary artery disease, hypertension, diabetes mellitus, obesity, strokes, certain cancers, respiratory problems, arthritis, depression, dementia, and dental problems are growing at rapid rates. It has been reported that more than three-fourths of all deaths in patients over 65 years of age are due to heart problems, diabetes, and certain cancers. It has been estimated that over 80% of elderly people have one chronic illness and more than 50% have at least two. All of these chronic illnesses are impacted by our nutritional habits. Our nutrition impacts the quality of our lives and can impact the quantity of years.

What food we put into our bodies markedly determines how we feel and function. The increase in fat intake, decrease intake of fruits and vegetables, lack of exercise, exposure to smoking, and environmental hazards are contributing to chronic illnesses and aging. We can change or at least slow down wrinkling, mental confusion, dental decay, elevated blood pressures, cholesterol levels, arthritis, and perhaps aging with the right foods. Functional foods—foods which promote health and fight disease—need to be consumed in order to battle this rising epidemic of chronic illnesses. This article will help you understand how chronic illnesses occur and the process by which the body tries to limit the damage.

### How do aging-related diseases develop?

In order to understand how we can limit the damage from chronic illnesses and aging, we need to understand how some of the chronic illnesses develop.

Cardiovascular or heart disease is a leading cause of death in our society. Everyone has some degree of blood vessel disease or damage. The vessels which bring blood to heart muscles become damaged when fat from our diet becomes hard and blocks the blood flow (atherosclerosis or arteriosclerosis). There are several thoughts on how this happens but the main theory is that bad cholesterol (LDL-C) is oxidized (lipid peroxidation).

What is oxidation? All body cells use oxygen to make energy and to function. Oxidation occurs every time oxygen is burned as a food for energy. The oxygen mixes with different compounds (proteins, fat, etc.) or molecules to form highly unstable and highly reactive molecules called free radicals. The body likes all of its molecules/atoms to have even numbers of electrons. When the oxygen mixes with the molecule it gains an extra electron, making it an unstable free radical with an uneven number of electrons. It is important to remember that environmental factors like smoking, radiation, pollution, hypertension, a high-fat diet, and elevated blood sugars can also oxidize the body cells to form free radicals. The main types of free radicals are called superoxide, hydroxyl, singlet oxygen, peroxy, and hydrogen peroxide molecules. They are even formed during infections (oxidation is necessary for health because oxidation is needed to kill microorganisms) or chronic inflammation when free radicals are formed to fight the infection and overproduce themselves. Even strenuous exercise will

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increase the production of free radicals. These free radicals like to hook to other cells to steal electrons and cause a major chain reaction as each cell tries to steal electrons. These unstable molecules commonly damage the cell membranes (by attaching to unsaturated fatty acids), weaken blood vessel walls, affect immune cells, modify protective enzymes, and hinder how the cell functions. They cause a lot of inflammation and even scar tissue from their damage. The free radicals can also damage cell proteins and even alter DNA within the cell. It has been estimated that the human body generates 1-3 billion free radicals a day! It is thought that the DNA in each of our trillion-plus cells is bombarded by 10,000 free radicals a day. No wonder there is evidence that more than 200 diseases are caused by free-radical damage. Blindness, arthritis, kidney disease, cardiovascular disease, diabetes, arthritis, dementia and even physical aging can result from free-radical damage.

### **Cardiovascular Disease**

Heart disease can be caused when bad cholesterol (LDL-C) is turned into a destructive free radical. Oxidized LDL-C starts inflammatory or immune cells inside of the heart muscle arteries to release chemicals which start this cascade of damage turning monocytes (regular infection white cells) into foam cells. Then the foam cells attract more free radicals and other damaging molecules and harden up inside in the artery (plaques). This process continues until there is a cement pipe-like artery inside your heart. Since the arteries are hard they cannot expand like they should and your blood pressure rises. As your blood pressure rises it causes more damage to your heart and the damage accelerates. The damaged arteries also attract blood clotting cells known as platelets. The platelets form clots where the plaques are and cause the plaques to become larger. The clots can get so big they close off the vessel (blood thrombus) and damage the area downstream. This is what causes heart attacks (myocardial infarction—death of heart muscles). Sometimes the blood clots break loose (emboli) and travel down a vessel until it reaches an area too small to travel through. If the clot is in the heart it causes a heart attack. If it is in the artery of the brain it causes a stroke. If it is inside your lung you have a pulmonary embolism. Sometimes the plaques can cause the vessel to spasm, which in turn stops the blood flow. It is a vicious circle: hypertension (high blood pressure) damages the vessels, which in turn form more plaques, which make the vessel harder and increases the blood pressure further. It is easy to see how high blood pressure, heart attacks, and strokes occur as a result of free-radical damage. A diet high in saturated fats and trans-fatty acids (the bad types of fat) contribute to high LDL cholesterol levels which increases the amount which can be turned into the damaging free radicals.

### **Diabetes**

Diabetes is a chronic disease which affects a growing population. There are two types of diabetes mellitus—Type I, or insulin-dependent (caused by the inability of the body to make insulin), and Type II, also known as non-insulin-dependent or adult-onset diabetes. The second type of diabetes is associated with the inability of the body to deal with sugar (insulin resistance). It is usually seen in older-age people and obese

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people. The problem is that diabetes can impair many of the functions of the body. It can damage heart blood vessels, vision, kidneys, and most every function of the body. Oxidation or free-radical formation occurs more rapidly with elevated blood sugars. Elevated blood sugars and elevated insulin levels can damage the body's ability to function and can cause other diseases. Micro blood vessel damage is caused by sugar (an oxidant) linking with blood vessel proteins (collagen), causing scarring and blood vessel blockage. This damage is what causes neuropathy (pain in the nerves) and edema (water in the tissues) in extremities, which can lead to ulcerations and amputations. It also causes kidney damage (nephropathy) and even blindness (retinopathy).

### **Cancer**

Cancer is another leading cause of death. There are probably many factors that can contribute to the cause of cancer, but it has been estimated that 50% are influenced by diet—either by causing cancer, promoting cancer, or by curing cancer. There are many theories, but an important theory again involves the formation of free radicals which attack the body and can change the DNA to start the cancerous process. There is growing evidence that oxidation is one of the main initiators of many cancers.

### **Chronic Illness**

Free radicals can cause damage in almost every body system. Dementia, or memory loss, has been related to plaque formation and damage from free radicals to brain cells. Dental caries, kidney disease, vision (macular degeneration), arthritis, skin damage, and even aging can be related to free-radical damage. Aging has been associated with free-radical formation as well as declining cellular energy production and impaired immune cells. Chronic illnesses are directly impacted by our diet—both by what bad foods we eat and the right types of foods to counteract the bad.

### **How does the body fight free radicals?**

The body has some natural defenses against damage from free radicals. The body is constantly trying to balance oxidative stress with antioxidants. One of the defenses is the body's natural reserve of antioxidants, vitamins, minerals and enzyme systems (a complex system of reactions the body does to counteract the free radicals). Antioxidants are compounds that protect other cells (lipids, proteins, DNA) from damage from free radicals. Antioxidants donate an electron to the free radical and convert it to a harmless molecule. Antioxidants also chelate metal ions which also damage the body. The body can only obtain antioxidants from eating them in foods or supplements. However, many artificially produced supplements have not been shown to be effective, so it is important to obtain antioxidants from the foods we eat. It appears that antioxidants in food can be metabolized and used by the body while most of the antioxidant tablets or supplements are just passed through the body without being used.

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The body can make some antioxidants like glutathione, uric acid, coenzyme Q-10, and lipoic acid. Most other antioxidants are found in our diet, like vitamins C, E, and selenium, as well as phytonutrients.

Our interest is in phytonutrients, which are neither vitamins nor minerals but come from plants and have numerous health-enhancing effects. Many phytonutrients are antioxidants and anti-inflammatory. These phytonutrients are very important to us in this discussion. It is important to remember that many vitamins, minerals, and enzymes are also antioxidants.

### **What are polyphenols and flavonoids, and how can they help?**

One large class of phytonutrients is called polyphenols. There has been a lot of interest in these compounds in the recent few years even though they have been used for centuries by healers. There are over 8000 different phenols and there are many as 14 classes. Some of the common ones are coumarins, flavonoids, phenolic acids, simple phenols, lignans, quinines, and xanthenes. Over 2/3 of these polyphenols are in the class called flavonoids or bioflavonoids.

Flavonoids or bioflavonoids (the old name was “tannins”) are compounds that give vegetables, fruits, grains, leaves, flowers and bark their color. The colors include the deep red, purple, mauve, blue and red. These compounds also protect the plants from disease, UV light and from predators. There are many types of flavonoids—flavanols or flavan-3-ols (myricetin, catechin and epicatechin), flavanones, flavones, flavonols, anthocyanins, and isoflavones—each with health-promoting benefits. If you look at all the studies, these compounds have antibacterial, anti-inflammatory, antiallergic, antimutagenic (anticancer), antiviral, antithrombotic (anti platelet formation), hormone-like, liver-protective, and vasodilatory (relax blood vessel walls) actions. Flavonoids can increase energy levels, lower blood pressures, and decrease Parkinson’s symptoms. They can help stop motor nerve deterioration and help improve cognition, memory function, and dementia. Flavonoids have been found to help with allergies through decreasing inflammation (antihistamine); inhibiting the growth of cancer cells in breast, colon, prostate, and lungs; improving stomach ulcers; and improving the health of the cardiovascular system by reducing platelet aggregation, strengthening vascular walls, making the vessels more flexible, preventing further damage to the vessel walls, and reducing the plaques in all blood vessels. Flavonoids also have antimicrobial actions which help prevent dental caries, oral diseases and other infections. Flavonoids are strong antioxidants which neutralize many free radicals like the hydroxyl radical (HORAC), singlet oxygen, superoxide radical and peroxy nitrate. This action helps stop damage to most of the body’s functions. The bioflavonoids inhibit COX-2 enzymes in your body, the same strong anti-inflammatory action that many prescription drugs have. By blocking COX-2 enzymes your immune system works better, decreases pain in your joints, and stops further production of free radicals.

Another type of flavonoid, anthocyanins, is a powerful antioxidant and has strong anti-inflammatory properties. It gives fruits and vegetables their dark color. The darker the color of a berry, the stronger antioxidant properties it has. Anthocyanins are also hypoglycemic agents which lower blood sugar levels and help the body use sugars effectively. By lowering sugar loads and using antioxidant properties they can stop the

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free-radical damage of eyes and extremities, where diabetes likes to attack. They not only prevent small blood vessel damage; they also start to repair and clean up the damage. They also stop small blood vessels from leaking in the eye and causing eye damage, and they repair the damage once it happens. They are also very effective histamine blockers and can stop the inflammation associated with allergies, cardiovascular disease, arthritis, and stomach ulcers.

Another powerful antioxidant group of flavonoids are called proanthocyanidins (condensed tannins or oligomeric proanthocyanidins (OPCs)). They are very powerful and help other antioxidants work better and more effectively. They inhibit the oxidation of LDL-C, preventing heart vessel damage.

A cousin of the flavonoids is xanthonenes. Xanthonenes are a bitter compound (tannic) that prevent predators from eating the plants. In a few studies they have been shown to be also an antioxidant and anti-inflammatory. They have been found to reduce diarrhea, curb appetites, reduce insulin resistance, and improve moods. The richest source is found in gentian root nectar. There are over 200 types of xanthonenes identified with limited studies on which types are beneficial.

Flavonoids and phytonutrients are just starting to be studied. There are thousands of flavonoids which need to be researched in the future. The research is just starting to explode in trying to help us learn how these compounds can benefit us.

## **Chocolate's Health-Promoting Nutrients**

Have you ever wondered why a chocolate bar left at room temperature never spoils? The reason is that cocoa/chocolate contains potent antioxidants. Cocoa powder is rich in the polyphenols, mainly flavonoids—flavan-3-ols, flavonols (epicatechin and catechin), and procyanidins. Cocoa is from the plant *Theobroma cacao*. Cocoa butter accounts for 50% of the weight of the cocoa bean, with the main fatty acids being stearic and palmitic (saturated fats), oleic (the one in olive oil, a monounsaturated fatty acid) and linoleic acid (polyunsaturated). Even though we are taught that saturated fats are harmful to the cardiovascular system, the stearic acid fat does not elevate blood cholesterol like other saturated fatty acids. This particular fat in chocolate is not absorbed well by the intestinal tract. It also has been shown that these cocoa fatty acids may modify LDL-C, making it more resistant to oxidation. The cocoa bean also has some insoluble fiber and soluble fiber, which helps lower cholesterol levels. Fiber has been shown to be extremely beneficial in lowering colon cancer rates, improving sugar metabolism, and preventing constipation. The cocoa bean contains several minerals and vitamins which are useful. Dark chocolate contains magnesium, which is necessary for muscle relaxation, nerve conduction, energy production, and bone and teeth development and health. Magnesium deficiencies make PMS (premenstrual syndrome) worse. Copper is involved in many of the chemical processes in the body and dark cocoa is a rich source of copper. Potassium is vital for cardiovascular health and dark cocoa contains a high level of potassium.

The flavonoids in cocoa are the flavan-3-ols, flavonols (catechin and epicatechin and procyanidins), and proanthocyanidins. Chocolate on a per-weight basis has the highest concentration of these flavonoids of any food. Cocoa is loaded with a variety of phytonutrients, making it very high in antioxidants. There is a scientific test which helps

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rate the level of antioxidant properties. The test is the ORAC, or oxygen radical absorbance capacity. Cocoa rates as one of the highest on the ORAC scale. It is even higher than green tea and red wine, which have been shown to very effective antioxidants.

Cocoa can stop the oxidation of the LDL-C cholesterol as discussed previously, resulting in reduced cardiovascular damage. Cocoa flavonoids can also increase the production of good cholesterol (HDL), which cleans and mops up the blood vessels from the harmful fats. Cocoa flavonoids also discourage platelets from forming harmful clots and damaging heart muscle blood vessels. The flavonoids help the blood vessels dilate easier, allowing more blood flow to the heart (nitric oxide (NO) activation). This same principle is applicable to insulin-stimulated blood sugar uptake resulting in improved diabetic control. Cocoa has been found to have anti-inflammatory properties, stopping the inflammatory process (cytokines) from damaging the body.

In several studies, dark chocolate has been shown to decrease blood pressure, which in turn decreases the damage to heart vessels. Cocoa is thought to be a rennin-angiotension enzyme inhibitor, which is the same principle that many blood pressure pills work on (ACE inhibitors).

There have also been studies showing that dark cocoa can help reduce dental cavities, decrease the plaque on teeth, and prevent gum disease.

Additionally, antioxidant principles can be applied to slowing the progression of dementia. Several vitamins like vitamin E and certain B-vitamins have been used to help with dementia. As we discussed previously cocoa has the same ability to decrease the free-radical damage, which also helps with limiting dementia and improving memory.

Dark chocolate improves the body's ability to use insulin and stops the resistance problem that can lead to diabetes. Cocoa can increase nitric oxide levels to help with insulin-stimulated uptake of blood sugars. The increase in nitric oxide also improves the health of the blood vessels, limiting the damage of diabetes on the small vessels.

Cocoa has been found to help with liver damage and can repair liver cells after long-term exposure to alcohol.

Cancer can also be impacted by the antioxidant properties of cocoa. As was pointed out before, the oxidative process can damage DNA and lead to cancerous cells. By stopping this process antioxidants can hinder the development of cancer cells.

Chocolate does contain theobromine, a very small amount of caffeine, phenylethylamine (PEA—the “love-chemical”), and anandamide that can increase your mental awareness. The antidepressant effects of chocolate have been studied, showing that serotonin and dopamine levels are increased. The small amount of fat in chocolate also helps curb our appetite for fats and helps decrease our fat intake. Cocoa by itself can decrease appetites. The carbohydrates in chocolate provide an energy source. The theobromine stimulates the central nervous system and gives us additional energy. Theobromine, a cousin of theophylline, is used to open up lungs and improve breathing as well as its use as a cough medicine. Even a recent study thought that low libidos in women could be improved with chocolate.

In elderly patients cocoa has been found to be an appetite stimulant and may help in increasing their weight (not fat weight gain) and provide nutrients needed for their

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body to function. It may even slow down the process of aging but interfering with the free radical destruction of body cells.

## **Other Potent Sources of Antioxidants**

Another new powerful antioxidant is the açai berry from the Amazon. The açai has been touted as one of the superfood of the world. It contains many of the phytonutrients which we have discussed above. It is a great source of anthocyanins, which again help protect the heart, prevent blood clots, relax the blood vessels, and has antiviral and antiallergenic properties. It has more than 30 times the amount of anthocyanins than red wine. It has one of the highest ORAC values for berries. The essential fatty acids in this berry (essential fatty acids are ones required by our bodies to function that have to be provided by diet) include oleic acid (a monounsaturated omega-9 acid) and linoleic acid (polyunsaturated omega-6). These fatty acids help lower LDL-C oxidation, maintain HDL-C levels, and increase the absorption of fat-soluble vitamins like A, E, D, and K. This berry also has a protein profile like eggs (it contains all of the same amino acids) and is high in fiber, both of which are important for maintaining our health. It also has COX-2 inhibition and can limit generalized inflammation in the body. The berry is loaded with macro minerals like calcium, iron, magnesium and many trace minerals like chromium and copper. The açai also contains naturally occurring B-vitamins, vitamin E, and vitamin C. It is related to saw palmetto, a natural remedy for prostate enlargement, and may also have the same action. The benefits of this berry are just starting to be realized.

Another important source of phytonutrients and antioxidants are blueberries and dark grapes. Blueberries also have a very high ORAC value and have been studied many times as a potent antioxidant. The berries are fat free and very low in calories. This berry also has a large amount of anthocyanins (the deep pigmentation color). It is easy to determine which foods have high anthocyanins because they are the last ones to spoil in your refrigerator. Blueberries have shown to have anticancer activity against cervical and breast cancer and perhaps other cancers. Ellagic acid is a powerful anti-carcinogen (prevent cancer) which is present in large amounts in blueberries. Blueberries also have a high anti-inflammatory property and can stop damage to blood vessels like chocolate and açai do. Daily servings of blueberries are the only treatment known that can reverse some of the motor function association with aging. The phytonutrients in blueberries seem to speed up neuron communications and help with balance as well as memory. Blueberries can prevent cell death and the loss of nerve growth factors, resulting in brain function improvement. Blueberries can increase the levels of the naturally occurring antioxidant glutathione, which can help decrease the progression of dementia and even Parkinson's disease. Blueberries have been used for years as a natural remedy for diabetes because they can lower blood sugar levels. A very important chemical in our brain which helps the nerve cells communicate is dopamine. Blueberries help the body release more dopamine, resulting in better concentration, decreased depression, and improved memory. Vision is even improved with the ingestion of blueberries and other antioxidants. Blueberries have even been found to help prevent urinary tract infections. They are loaded with vitamins and minerals like vitamin C and potassium. Dark grapes have been shown also be high in

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flavonoids, anthocyanins (4 times stronger than vitamin E), as well as nonbioflavonoids (resveratrol). Dark grapes have been studied in detail and are well known to lower blood pressure, improve diabetes, and improve memory.

Another source of phytonutrients is peppers. Peppers contain phytonutrients like capsaicin (antioxidant), which helps open up blood vessels and decrease the ability of clotting in vessels. They are an excellent source of vitamin C, iron, B-vitamins, calcium, and phosphorus. They have been known to help the digestive system, increase circulation, and strengthen the arteries. The peppers can suppress the liver's production of cholesterol.

Chocolate (dark cocoa) and berries contain some of the most potent antioxidants available. The synergy of multiple antioxidants, vitamins, minerals, etc. is just starting to be realized as vital to our health. Eating these as part of a balanced diet and exercise program can improve the quality and perhaps quantity of life. The combination of various food products will produce a functional food which is a major benefit to our health. Our bodies need natural foods to function and not supplements. The research on chocolate, the açai berry, blueberries, and dark grapes has been done and is being done all the time.

Studies have shown that by taking these antioxidants one may experience:

1. A decrease in cardiovascular disease by stopping bad cholesterol from forming on vessel walls and narrowing the passage, as well as lowering cholesterol levels.
2. Prevention of the formation of blood clots that can lead to heart attacks and strokes.
3. Increased flexibility of blood vessels, resulting in lower blood pressure and decreased stress on the heart.
4. Better utilization of sugars, thus preventing diabetes as well as decreasing the complications of diabetes—vision problems, amputations, and kidney problems.
5. Fewer dental cavities and reduced incidence of gum disease.
6. Improved memory and slowing of dementia.
7. Cancer prevention.
8. Fewer breathing problems.
9. Improvement in the quality of one's skin.
10. Decreased inflammation associated with arthritis, fibromyalgia, or any inflammatory disease.
11. Decreased prostate size and prevention of urinary tract infections.
12. Increased energy.
13. Improved liver function.
14. Improvement of depression.
15. Curbed appetite and help with weight loss.

What you take into your body determines how your body will function. A functional food or beverage provides our body the phytonutrients, minerals, vitamins, fiber, essential fatty acids, and even protein we need to improve the quality of lives. Antioxidants are supplements to a lifestyle which includes a proper nutritious diet with daily exercise. It takes a joint effort of diet and exercise and the appropriate antioxidants to maximize our health potential.

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## **The Healthy Side of Chocolate**

### **One of the strongest food antioxidants is dark cocoa**

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As our population ages, we are facing more chronic illnesses than ever before. Our nutrition impacts the quality of our lives and can impact the quantity of years. What food we put into our bodies markedly determines how we feel and function. Functional foods - foods which promote health and fight disease need to be consumed in order to battle this rising epidemic of chronic illnesses. This article will help you understand how chronic illnesses occur and the process by which the body tries to limit the damage. Over 200 diseases which affect us as we age are related to the formation of free radicals. A free radical is formed when oxygen reacts with our body molecules abnormally forming a molecule with an unpaired electron. This is called oxidation. An example of oxidation is when oxygen reacts with a banana turning it brown and rotting it away. These free radical travel through out our bodies damaging our cells. Heart disease, stroke, diabetes, dental caries, eye disease, arthritis, aging skin, dementia, cancer and even aging are the result of free radical damage. The body needs a natural food to provide additional antioxidants in order to prevent damage to our body. Phytonutrients are chemical components of plants which provide when digested antioxidants and other health promoting substances. One of the strongest food antioxidants is dark cocoa. Cocoa/chocolate contains a very strong antioxidant called flavonoids. Flavonoids have been studied extensively and shown to be very beneficial. The combination of cocoa, açai (ah-sigh-EE) berries, blueberries, and dark grapes provides us with one of the most concentrated source of phytonutrients, antioxidants, amino acids, essential fatty acids, vitamins, minerals, and fiber. Studies have shown that by taking these food products one may experience:

1. decrease cardiovascular disease by decreasing cholesterol levels, prevent blood clot formations, and lower blood pressure.
2. help the body utilize sugars better thus preventing diabetes as well as decreasing the complications of diabetes
3. fight bacterial and viral infections
4. prevent dental caries and gum disease
5. improve memory and slow down dementia and fight depression
6. prevent certain types of cancer
7. improve breathing problems and help with allergies
8. improve the quality of your skin
9. decrease the inflammation association with arthritis
10. decrease the size of the prostate and prevent urinary tract infections.
11. lower overall weight and decrease appetite and provide energy (for references see [www.mydrchocolate.com](http://www.mydrchocolate.com))

The combination of these antioxidants - chocolate and berries is not a replacement but it is a functional beverage which is part of a lifestyle which includes a proper nutritious diet with daily exercise. Our nutrition can definitely improve our health and hopefully slow the aging process and the diseases related to it.

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