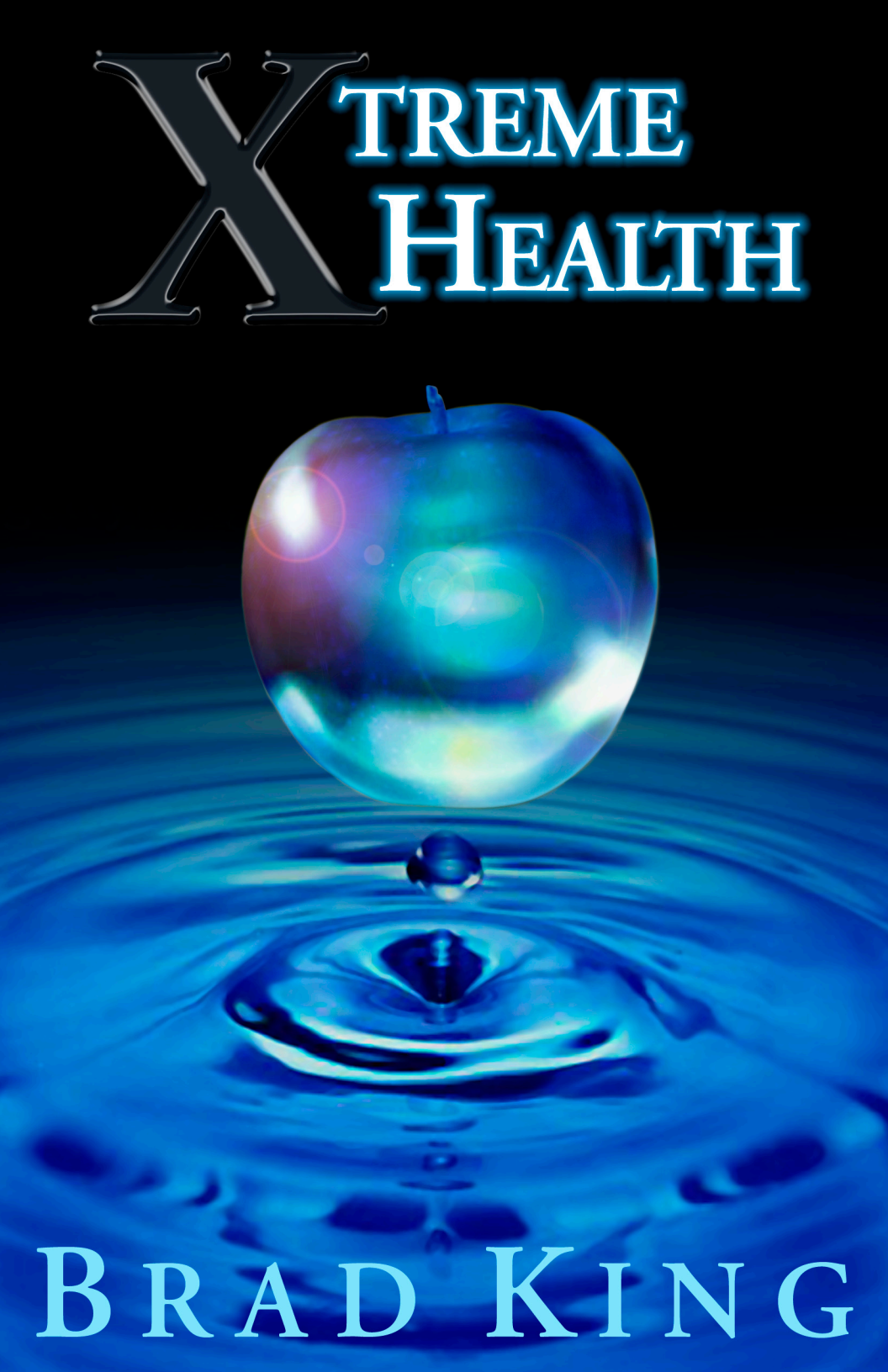
XTREME HEALTH



BRAD KING

XTREME HEALTH

The foundations of optimal
Health, Happiness and Longevity.

Brad J. King

First published in the United States in 2006.

Cover design by Mark Bailey
Page layout and typesetting by Mark Bailey

Printed in the United States by Digital Ink, 9 West Cary Street, Richmond, Virginia 23220

Table of Contents

ACKNOWLEDGEMENTS

There are numerous people I wish to thank for their involvement in helping to bring Xtreme Health to life. First, I to want pay respect to Ron Howell, a true visionary who once told me he had no employees, only players who bring their unique gifts to the team he has assembled. You are a true captain of the seas.

Thanks to Ken Marsh, a great marketer, presenter, motivator, comedian and most important, friend — you are a rare individual. To Mark Bailey, one of the most gifted artists I have ever witnessed: Thank you for designing the cover, layout and illustrations. Special thanks go out to Bill Downs, a scientist I greatly respect and admire. I appreciate the ways you lent your wisdom to help me simplify the complex subject of mineral biochemistry.

If there were an award for the individual who most represents honesty, integrity and passion for helping others, it would have to go to my friend Tommie Weber. I have only known you a short while; however you bring hope to a world where "every man for himself" seems to be the main motto.

I would also like to acknowledge the following individuals for their ongoing support: Dan Putman, Dan Masciullo, Zack Howell, and all the players that keep "Team Xooma" at the top of their game.

Yours in Abundant, Health, Happiness, and Longevity,
Brad J. King, 2006

INTRODUCTION

I have always believed that, once armed with the right information and guidance, almost anyone can make a life change by awakening their inner potential. The problem is that most people never apply the knowledge they are given and therefore continue to lead lives of mediocre health and vitality. It is my sincere wish that all people find the motivation to alter their lives for the better and in the process create a new respect for the miracle called the human body.

I hope Xtreme Health contains the information you've been waiting for, and you find the motivation to implement the necessary guidelines that take your life to the next level.

CHAPTER 1

Metabolic Mayhem—A Real Energy Crisis

Babe Ruth once said, "The way a team plays as a whole determines its success. You may have the greatest bunch of individual stars in the world, but if they don't play together, the club won't be worth a dime." And so it is with your body!

We are composed of nearly 100 trillion cells, and the life and vitality of each and every one of these cells is dependent upon how those cells behave as a unit—a team! In case you may have forgotten, your organs, bones, and tissues are nothing more than many, many clusters of individual cells that have come together to form those particular structures.

What makes us different from a unicellular (eukaryote) organism, such as yeast? The main difference is that unicellular organisms divide to form more independent organisms, whereas human cells—even though they start out as a single cell (zygote)—eventually divide to form groups of cells (or teams) that comprise the body that you are now living in.

The amazing reality behind all this lies in the fact that the health and vitality of every single cell that comprises every single tissue and organ in your body is 100 percent dependent upon its ability to generate an efficient yet constant supply of energy. The problem is that, because of life's many stresses, inadequate nutrition, inactivity, environmental pollution, illness, physiological and psychological stress (perception equals reality here), negative thoughts, etc., our cellular power plants (called mitochondria) begin to erode, until one day our once-infrequent aches and pains, and let's not forget the lack of energy, become the norm. In fact, research published in the prestigious journal *The Lancet* showed that a 90-year-old subject had lost 95 percent of his ability to produce energy [1]—yikes!

This may be the time that when those over-the-counter pain medications become as customary to you as drinking that cup of coffee first thing every morning. And speaking of coffee, remember when one cup was really enough? Perhaps now, one cup is only enough to give your body enough perceived energy so that you can brew the next, and the one after that. Before you know it, you're at a pot a day (or perhaps more), and so the cycle begins.

Unfortunately, this downward spiral continues unabated in most instances, and the sails that carry you through life begin to lower

more and more until you are lucky if you are even sailing at half-mast. This is about the time you begin to believe that this less than optimal way you have been feeling over the years is the inevitable downward spiral called aging. The saddest part of all is that most of you are way too young to be feeling old! But as the saying goes, "you are what you believe you are."

Are you too acidic?

As you will find out (in chapter 3), your overall health—and energy—is completely reliant on your body's second-to-second ability to remain in a slightly alkaline high-oxygen (aerobic) environment. Although very few of us ever think about our living system in terms of acid or alkaline, the truth is that most diseases begin and flourish in an acidic low-oxygen (anaerobic) environment—especially cancer. In fact, it has been known for decades that cancer is an anaerobic process and cancer cells are anaerobes.[2] And, all cancers are bathed in lactic acid, a by-product of anaerobic metabolism.

Aside from cancer, organisms such as yeast (and other fungi), molds, various pathogenic bacteria, worms, and parasites are all anaerobic pathogens and thrive in an oxygen-deficient (anaerobic) environment.

Even energy depends on an alkaline environment. Efficient energy production is carried out through an aerobic (oxygen-rich) process called oxidative respiration (OR). Taking place within your body's premier energy factory, the Krebs cycle (citric acid cycle), OR uses 1 oxygen ion to "burn" 1 glucose

molecule, ultimately producing 36 energy (ATP) molecules in the process. However, if the environment is too acidic (unable to use oxygen effectively), glucose can't be burned (oxidized), and the anaerobic (oxygen-free) process of fermentation (glycolysis) is alternately used to break down glucose to make energy. Unfortunately, this energy detour is not nearly as efficient at producing loads of energy (ATP); in fact, glycolysis is 18 times less efficient at the end of the day (during glycolysis, only 2 energy (ATP) molecules are produced instead of 36). If the cell's environment is too acidic, it would stand to reason that your cells wouldn't be able to produce enough energy to meet the body's overall energy needs. If oxygen can't be used to "burn" sugar to make energy (as in anaerobic metabolism), more sugar is required to continue the energy cycle. This may be one of the reasons why some people have an overwhelming craving for sugar—to make more energy in this acidic anaerobic environment.

Environmental disrupters

Fact: The number of North Americans experiencing cancer has grown exponentially over the past few decades, yet according to one of the world's leading toxicologists, Samuel S. Epstein, MD, our ability to both treat and cure most common cancers has remained virtually unchanged.[3] If you consider the impact that environmental changes have had on our bodies during this time, you will quickly get a more realistic picture of why this is so. In his ground-breaking book *The Politics of Cancer* (East Ridge Press, 1998), Dr. Epstein goes on to show

that from 1940 to 1990, the annual production of synthetic chemicals increased more than 600 times to a whopping 600 billion pounds per year (yes, that's billion).

We live in a time in which humans can live in outer space, wars can be fought with radio-controlled airplanes, computers can fit inside the palms of our hands, and human beings can be cloned (yes, even you and me), yet despite billions of dollars spent annually, we can't seem to crack the cancer code? According to the American Cancer Society, nearly 600,000 Americans die each year from cancer[4] (that's nearly 1,500 people each and every day), and the World Health Organization estimates that at least 80 percent of <u>all</u> cancers are attributable to environmental influences.[5] (Big surprise there!)

To make matters worse, cancer researchers estimate that things will only get worse as time goes by. The American Cancer Society states that men presently have about a 1 in 2 lifetime risk of developing cancer and women have a 1 in 3 risk.[4] Could you imagine starting your life with the understanding that there is anywhere from a 33 percent to a 50 percent chance that you will one day come face to face with the big "C," as if it weren't even your choice?!

According to the Alliance for Aging Research, the nation's leading citizen advocacy organization for improving the health and independence of Americans as they age, nearly 80 percent of all cancers are diagnosed after the age of 55, and 72 percent of all cancer deaths occur in people 65 and older.[6] Wouldn't this imply that cancer, similar to numerous other diseases, is a disorder of aging, and youth carries with it a magical quality that allows us to bypass the everyday insults that eventually wear us down after middle age?

That so-called magic something we have, yet take for granted in our youth, lies in our ability to rebuild, replace, and repair damaged or worn-out cells in a process called *anabolism*. As we get older, our bodies' ability to keep up with the daily wear and tear of living declines, and our ability to rebuild, repair, and replace worn or damaged cells declines along with it; this downward spiral is called *catabolism*. When our cells experience more catabolism (breaking down) than anabolism (renewing), we experience aging as we know it.

Could environmental changes also be a cause of obesity? Researchers from Stirling University in Scotland point to evidence that indicates natural weight-control mechanisms in obese individuals no longer function effectively, making it very difficult to control weight gain. The researchers suggest that drastic environmental changes during the last few decades, especially the production and usage of synthetic organic and inorganic chemicals, may be largely responsible for this metabolic malfunction.[7]

To further corroborate this theory, research published in the 2002 *Journal of Alternative and Complementary Medicine* showed that the drastic rise in the use of synthetic chemicals over the years matched the rise in the number of overweight and obese adults in the U.S.[7]

Are you insuring your future?

Are you presently living the life you want to live? By this, I mean are you at the level of physical health that allows you to live your life in the manner of which you dreamed of, or are you like the majority of North Americans who are already experiencing the pitfalls of catabolism, some of which include difficulty losing weight, sore achy joints, lack of energy, high cholesterol, wrinkles, brittle nails, failing eyesight, difficulty sleeping, mood swings, etc.? As I have already mentioned, the majority of people today are sailing at half-mast and not doing anything to change their present state of affairs. Are you someone who has been stuck in the same old rut for years only to find that the rut is getting worse instead of better? Do you actually believe that your present condition is changeable, or do you feel that you need to start accepting it as your new reality? If you answered the former, you are already ahead of the pack; you just need guidance to take you to your new ground. If you answered the latter, you need to change your perceptions and realize that no one has to live below his or her potential, physical or otherwise.

A debate has raged for centuries. It is referred to as the Nature versus Nurture debate. On one side, you have

those who believe that the genes we have inherited from our parents control almost everything about us; on the other side, others believe that it is our environment that influences us on almost every level. And, of course, there are still others who believe that both genes and our environment (internal and external) influence our behavior.

In order to resolve the debate, scientists have gone so far as to study identical twins, by separating them to see how separate environments affect them. Most scientists will agree that the interaction of both nature and nurture is what shapes our destiny. In other words, you may have been born with the best genes in the world, however, if you continuously expose those genes to a poor environment, they will eventually respond by creating an unhealthy version of whom you could have been (given the right environment, of course). I think Dr. Jeffrey Bland said it best in his ground-breaking book *Genetic Nutritioneering* (Keats Publishing, 1999) when he stated, "Genetic inheritance is merely the template upon which we build our unique life experience."[8] Wouldn't you think that experience is largely up to you?

As youth has proven over and over again, your cells have an incredible ability for self-renewal, and through this miraculous feat,

their disease-fighting ability is limitless. Your cells divide hundreds of billions of times each day, and since your cells experience a continuous barrage of assaults—both internally and externally—the cells sometimes experience genetic damage (anything that causes damage to our DNA is called a carcinogen). If your internal environment is optimal, then your cells' many back-up systems will deal with these carcinogens, and you won't be the wiser for it. However, if your internal environment is less than optimal, your cells may not have the ability to engage their damage-control centers, which could lead to cancer. After all, cancer is uncontrolled cellular division—and really only one example of the body's inability to repair (anabolic) damaged cells.

No one ever believes that his house could burn down, yet very few individuals would ever be caught without fire insurance. But what do we do to insure our own health? If you're like most, probably very little, if anything at all. In fact, I'll go so far as to say that the way most people treat their bodies, it's amazing that it took so long to actually see and feel the results of their efforts.

Let's face it, we don't need another study to understand how important regular exercise is, yet most of us still don't exercise. We don't need to see hard-core research behind the ill effects of pop drinks to know they don't belong in our bodies, and we sure as heck don't need our grandmas telling us to eat another stalk of broccoli to know that it is a million times better for us than a candy bar. Yet we continue to assault our bodies by subjecting them to an unhealthy environment, and yet manage to

scratch our heads in disbelief when we experience the so-called inevitability of aging.

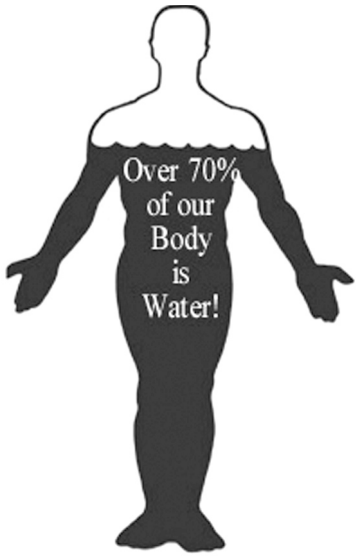
The question is, “What are you doing to insure your future?”

CHAPTER 2

Water You Made of?

Most people realize that at least three-quarters of the Earth is covered with water. What most people never think about is the fact that the great majority of this water is in the form of saltwater (97 percent). Freshwater comprises 3 percent of the Earth's water, with more than two-thirds of this supply undrinkable because it's in the form of polar ice caps and glaciers. This leaves a mere 1 percent of the world's water to drink (with the right filtration methods, that is).[9] Suffice it to say that we take water for granted.

Any way you look at it, you are mostly water! The question is, if you take water for granted, aren't you in essence taking yourself for granted? Your brain and muscles are three-quarters water. Your blood and lungs are more than 80 percent water. Even your bones are one-quarter water. Next to oxygen, water is unquestionably the most important nutrient for sustaining life. Then why don't the majority of us drink enough of it?



Well, you might say, I drink

plenty of liquid: juice, coffee, tea, sodas. Nothing can take the place of water. A great many of us may indeed be dehydrated and not even know it! Aging is a process of drying out. Many health researchers and medical experts now believe that water—not just fluid—is essential to our health and well-being, and is one of the keys to slowing down the aging process and helping us lose excess body fat![10, 11, 12]

Muscling in on longevity

In my best-selling book *Fat Wars*, I explain that lean body mass (especially muscle), to a very large extent, controls the overall metabolic rate of the body.[13] Research published in the *Journal of the American Geriatrics Society* in 1997 shows muscle mass as being the number one determining factor in longevity (experiencing a longer, yet more healthful life).[14]

The problem is that the great majority of North Americans will lose anywhere from one-third to one-half of their lean body mass over their lifetimes—especially if they are sedentary (resistance exercise maintains muscle). According to Dr. Robert Mazzeo, professor of exercise physiology at the University of Colorado, the majority of major health risks for the frail elderly are immobility, falls, and fractures, which are all related to muscle weakness. Muscle strength is directly related to muscle loss, and Dr. Mazzeo states, "Studies indicate that muscle strength declines by approximately 15 percent per decade in the sixties and seventies and about 30 percent thereafter."[15] Researchers have also shown that a loss of muscle

mass is even correlated to loss of brain and nervous system function as we age.

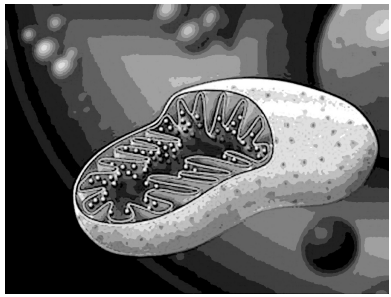
Studies prove that maintaining and enhancing muscle mass is associated with increased energy, lower body fat levels, better moods, stronger connective tissue, better immunity—and the list goes on. As you are now aware, your muscles are 75 percent water.

Speaking of slowing down premature aging, maintaining lean body mass (muscle), and losing body fat, everyone realizes how important regular exercise is. Intensive exercise can cause a person to lose 5 to 8 pounds of fluid through perspiration, evaporation, and exhalation. Studies show that for every pound of fluid lost, there is a significant drop in the efficiency with which the body produces energy. Everybody wants energy! But how many of us actually understand how energy is made in the body?

Running on empty

Most energy is produced in tiny little power plants within our cells called mitochondria (my-toe-con-dria). The more active a cell is, the more mitochondria it contains. Some of our cells (such as heart, muscle, and brain cells) contain thousands of these tiny power plants. Our cells are completely dependent upon mitochondria to sustain life by generating energy. And research has even shown that mitochondria are also responsible for ending life by triggering cells to commit programmed suicide (apoptosis). In fact, one of the major reasons we experience aging as we know it is because our

mitochondria lose their ability to produce energy, and cellular suicide increases in later years. This phenomenon is referred to as the Bioenergetic Theory of Aging.[16]



The mitochondria are also where the majority of your fat is burned as energy. They produce power through a process called the Krebs cycle. This cycle (the Krebs) is responsible for converting the nutrients from the foods we eat—the protein, carbs, and fats—into a universal chemical energy substance called ATP (adenosine triphosphate). ATP is like an electrical source; nothing in our body runs without it. In fact, we use so much ATP on a daily basis that the total amount required just to get most of us through the day would weigh in at an estimated 150 to 200 pounds.[17]

The process in which ATP is converted from our foods into the energy we feel is extremely complicated. So complicated in fact that we still don't fully understand (or can we recreate) how the body manufactures energy using a process called electron transfer.

So what does all this biochemistry babble have to do with water, you ask? The fact remains that water is imperative in the creation of ATP. In fact, ATP has to be broken down by water in order to generate energy—in a process called hydrolysis (meaning water broken). As I have mentioned before, ATP is like an electrical charge, and water is

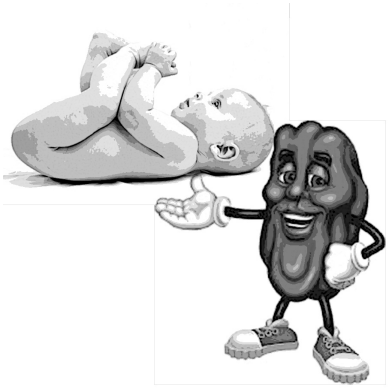
responsible for providing the primary hydroelectric energy that is stored in ATP when the cell is inactive. As your cells become active, water hydrolyzes ATP, and energy is released again so that you can do everything it is you do during a 24-hour period, yes, even sleep! So, as you can see, a low water environment means inadequate energy production. But that's just the tip of the iceberg.

All dried up?

At the beginning of this chapter, I pointed out that you are mostly water. When we are young—in the biological sense—our bodies have a very high water percentage, approximately 70 percent. However, as we age, our water content diminishes. Unfortunately, most individuals between the ages of 30 and 40 have already lost 10 to 15 percent of their water stores, and by the age of 75 to 80, you're lucky if you still have 50 percent of your water (women lose even more than men).[18, 19] Suffice it to say that aging is, in a way, a process of drying up from the inside out, and unfortunately the majority of this water comes from areas that you can't afford to lose it from!

As we age, we experience a decline in cognitive function due to the loss of water from certain areas of the brain and body. Many so-called signs of aging are also signs

and symptoms of chronic dehydration: heartburn, dyspepsia, rheumatoid joint pain, back pain, migraine headaches, hypertension, old-age diabetes, colitis, dry skin, constipation, autoimmune diseases, and cholesterol buildup, to name a few.[20]



When your body is dehydrated, water is drawn from precise areas within the body. Sixty-six percent of the water loss comes from within the actual cells in the drought-stricken area, 26 percent is removed from the areas outside and around the cells, and the remaining 8 percent is withdrawn from the bloodstream. Your blood vessels are composed of soft pliable muscle, allowing them to expand and contract. The 8 percent loss of water from the dehydrated area causes the blood vessels to constrict and tighten to compensate for the shortage of space (the 8 percent). This water shortage can cause severe irreversible damage to the body if not taken care of.

According to Dr. Batmanghelidj, MD—best-selling author of *Your Body's Many Cries for Water*—the following symptoms are your body's main indicators of dehydration:

- Feeling tired when it is not the result of strenuous work (in its extreme form, chronic fatigue)
- Excessive hunger and cravings
- Feeling flushed

- Feeling irritable and easily angered
- Feeling anxious without a justified cause
- Feeling depressed

If you're still not convinced as to why nothing can take the place of water, read on. Water helps the body eliminate toxins, the waste products that accumulate in our systems. If you have ever tried to lose excess body fat, are you aware that when your 30 billion fat cells release their fat as energy, they also evict tremendous amounts of fat-soluble toxins that are lodged in that fat? It's true, your system needs water to help detoxify these toxins before they can take up residence once more in your fat cells and cause further damage to your body—especially your hormonal system. One study published in the *Journal of Lipid Research* in 2002 showed that unwanted weight gain (excess body fat) may be strongly linked to hormone-disrupting contaminants that can accumulate in fat cells.[21]

Water may also be an important way to control hunger pangs. Many researchers believe that we have lost our biological ability to discern thirst from hunger, a condition exacerbated by age: somewhere in our evolutionary past, the signals for the two may have crossed wires. In other words, when you feel hungry, you may actually be thirsty. Thus, by keeping yourself properly hydrated, you can avoid false cravings for food.

Body water content is strongly connected to the lean body mass-to-body fat ratio. In other words, the more muscle you have, the more water you are made of and vice

versa. An obese person often has a body water content of less than 50 percent, and if you remember from the beginning of this section, that is right in tune with most elderly folks!

Aquawhat?
In 1992, researchers from Johns Hopkins discovered the exact way our cells take in and utilize water.[22] Aquaporins, as they were named, are minute proteins that reside in the membranes of every cell in the body and when expanded, drive both water and oxygen into the cells' interior. The amazing reality is that these aquaporins only allow pure water and oxygen into the cell. Only the purest of water is allowed access through these special water channels to hydrate the cell.

Is tap water good enough?

Have you ever left a few drops of tap water in a glass on your counter only to come back to a dried residue of sediment? Do you actually believe that the sediment should be in your body—it shouldn't! More than 60,000 different chemicals are known to contaminate our water supplies, and studies show that we each may drink more than 450 pounds of raw metal and sediment during the course of our lifetimes! The problem is that the human body cannot use the majority of these inorganic materials in our tap water. [23]

Aside from this, the specialized water channels—aquaporins—mentioned above only allow the purest of water to travel through their structures to hydrate your 100 trillion thirsty cells. Therefore, it would stand to

reason that you should drink only the cleanest sources of properly filtered—not mineralized—water. Water purity is measured in Total Dissolved Solids in milligrams per liter (TDS mg/l), usually referred to as parts per million, or ppm. You should do your best to always consume extremely low ppm water. For this reason, I recommend distilled, reverse osmosis filtered, and bottled waters with ppm levels of 30 or less.

How much is enough?
Health experts are still not 100 percent certain regarding exactly how much water is needed by the average person on a day-to-day basis—due to factors including amount of exercise, heat loss, illness, etc.—but the general consensus is that adults require anywhere from three-quarters to 1 ounce of water per pound of body weight. In other words, the average 120-pound woman should drink at least eight 8-ounce glasses of fluid per day.

Intelligent water

Most people think that water is water! Tap water should be no different from the water that comprises your body, other than your body's water content being cleaner of course (let's hope much cleaner than most municipal waters)! It turns out that regular water and the water within your body—primarily inside your cells (also referred to as *intracellular water*)—are like night and day. Tap water occurs in random clusters of H_2O molecules, whereas once these H_2O molecules make their ways into your cells, they become highly structured.[24] Through these highly structured molecules, cell-to-cell communication takes place on the most fundamental level

of all—your genes. Structured water is found within your genetic blueprint (DNA), and your genes communicate with your cells by sending second-by-second information through this structured water highway, which is why even tiny changes in your intracellular water content can cause big changes in the messages your genes send out.[25] A study published in the *American Journal of Physiology* showed that cellular hydration levels can change within minutes and are under the direct influence of hormones, nutrients, and oxidative stress.[26] Researchers have also speculated that at least part of the damage that is seen in severely dehydrated cells could be a direct result of the disruption within the structured water content,[27] which would ultimately affect your cells' ability to communicate effectively.

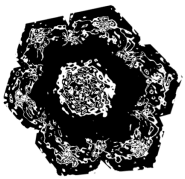
You are by now familiar with the vast importance of water as it pertains to your physiology and biochemistry, but what if water could actually react to various stimuli such as words and feelings? In other words, what if you actually had the ability to alter the quality of the water you drink? According to ground-breaking research from Japan, you can! Dr. Masaru Emoto is the world's leading expert on the *intelligence of water* and in his *New York Times* best seller, *The True Power of Water* (Atria Books, 2005), Dr. Emoto explained that "water shows different shapes of ice crystals depending on the information it has received."[28]

In order to show that water does in fact respond to information, Dr. Emoto first placed water samples in a glass bottle and exposed the water to words, pictures,

or music. After the water had been exposed to the information, the water was then placed in petri dishes and frozen to -25 degrees Celsius (-13 degrees Fahrenheit) for three hours. Once the water samples were removed from the freezer, they were placed under a microscope with a directed light. The light raised the temperature and as the ice started to melt—depending upon the information given to the water—beautiful ice crystals either formed or not. According to the studies, crystals never form when negative information is received by the water, even when this information is delivered by way of thoughts. On the other hand, crystals are always seen when the information is positive, which indicates that water crystals are associated with the quality of the water tested. Dr. Emoto's studies not only show that the quality of water can be changed by the type of information the water receives, but that this information also has a significant effect upon how your body reacts to water. So, the next time you drink water, think about something happy and positive and know that you are changing how that water reacts within your body!

POSITIVE

NEGATIVE



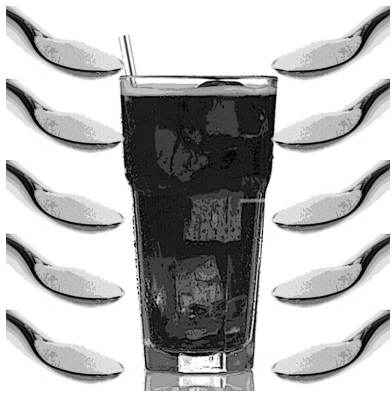
Liquid candy and caffeine

Sugar, sugar, and more sugar

One of the best ways to expand your fat cells, prematurely age your body, and erode your health potential is to down a soft drink loaded with sugar, caffeine, and

phosphorous.

The average soft drink contains about 10 teaspoons of sugar—that's 10 times more sugar than your body is programmed to handle at any one time. The National Soft Drink Association in the United States (yes, there is such an organization) reports that the average American guzzles back slightly more than 52 gallons of carbonated soft drinks per person per year (that's thousands of teaspoons of sugar), equating to a whopping $65.9 billion.[29] According to one press release by the Beverage Marketing Corporation of New York, "One of every four beverages consumed in America today is a soft-drink . . ."[30]



Soft drinks presently account for the single largest amount of refined sugars in the American diet.[31] In fact, if you were to consume an average 12-ounce (360 ml) can of soda pop, you would be delivering almost 40 grams—or 10 teaspoons—of refined sugars to your body (yummy!).

Given these numbers, it's easy to see why so many of us are in hormonal havoc these days. The pop we drink elevates our insulin levels through the roof, enhancing our fat cell expansion (weight gain), and making us feel lousy from both a physiological and psychological standpoint.

What about the artificial stuff?
Statistics show that at any given time, close to one-third of women and one-quarter of men can be found on the latest fad diet! Even though fad diets are nothing more than short-term solutions to a life-long problem (obesity), we still buy into them—to the tune of more than $30 billion each year. A large part of this confusion lies in the diet pop industry. How many times have we heard about someone who has ordered a double cheeseburger, large fries, and, of course, a diet cola?

The artificial sweeteners these soft drinks contain can affect your health just as negatively as sugar (and in some cases even more so). Sugar substitutes didn't exist when our bodies were evolving over thousands of years. Our bodies don't know what to do with them other than treat them as a type of sugar. Laboratory tests confirm that artificial sweeteners can boost our metabolic storage hormone insulin by fooling the body into thinking the sweetener is sugar and stimulating sugar cravings.[32, 33] In case you are unaware, insulin is the hormone responsible for causing our bodies to switch into fat-storage mode. When insulin is stimulated, it looks for sugar. When insulin can't find any real sugar from these substitutes, the insulin ends up going after our blood sugar, causing us to experience an energy decline and a fat-storage increase.

One study published in the *International Journal of Obesity* even showed that artificial sweeteners may actually enhance your desire to overeat by hindering your body's ability to estimate overall calorie intake,[34] and in

his ground-breaking book *Aspartame (NutraSweet) Is it Safe?* (Charles Press, 1992), Dr. Hyman Roberts states, "The American Cancer Society (1986) documented the fact that persons using artificial sweeteners gain more weight than those who avoid them."[35]

Excess sugar cravings, enhanced calorie intake, and weight gain are far from the only things to worry about when consuming an abundance of artificial sweeteners. The USFDA and other health organizations have been bombarded with numerous reports linking aspartame use to seizures, dizziness, visual impairment, disorientation, ear buzzing, tunnel vision, muscle aches, numbness of extremities, pancreas inflammation, headaches, high blood pressure, eye hemorrhages, and more. According to Dr. Roberts, "Hundreds of thousands of consumers, more likely millions, currently suffer major reactions to products containing aspartame. Today, every physician probably encounters aspartame disease in everyday practice, especially among patients with illnesses that are undiagnosed or difficult to treat."[36] And, just in case you're wondering, aspartame is not the only artificial sweetener that may potentially be compromising your health. So-called healthy artificial sweeteners such as Sucralose (which contains chlorine by the way) may also be toxic to some individuals.[37, 38]

Caffeine woes

Aside from everything you've just read on the pitfalls of soft drinks, let's not forget about all that hidden caffeine. Caffeine is one of the major reasons millions of people across the globe are now considered *soft drink addicts*. The caffeine in pop is highly addictive, ensuring that we keep refilling our super-sized cups. A 950-milligram serving of one of the leading colas contains between 98 and 125 milligrams of caffeine, enough to get us really hooked. Kids may be at even greater risk because, although they weigh less, they can down a big drink as if it were water. And since we experience caffeine withdrawal symptoms (such as fatigue, headaches, malaise, anxiety, and depression) for a few days when cutting back on pop, very few of us withdraw: we just keep on filling up our liquid-candy containers.

So, if your goal is to live a healthy lean life with abundant energy, do yourself a favor and ditch the soda—regular and diet—in favor of, yes, you guessed it, clear, filtered water. Be prepared to give yourself a few days to get over the withdrawal symptoms, but you'll be on your way to better health in no time.

CHAPTER 3

Minerals—What Once Was, Is No Longer

Dr. Linus Pauling, the late, two-time Noble Prize winner, said, "You can trace every sickness, every disease, and every ailment to a mineral deficiency." Yet most people think about vitamins, amino acids, and essential fats before even giving a second thought to the essentiality of minerals. Minerals are believed to be the single most important key to our metabolic machinery. So important in fact, that a document issued by the U.S. Senate in 1936 stated, "Our physical well-being is more directly dependent upon minerals we take into our systems than upon calories or vitamins, or upon the precise proportion of starch, protein, or carbohydrate we consume."[39]

Minerals play almost innumerable roles within your body. Aside from being a part of nearly every enzymatic process in the body (functioning as metalloenzymes), minerals are required for the manufacture of and are part of cellular membranes and connective tissue, including muscles, tendons, ligaments, cartilage, bones, and soft tissues such as veins, arteries, and brain tissue. Even your hormones and chemical messengers (neurotransmitters) are composed of, or require the aid of minerals.

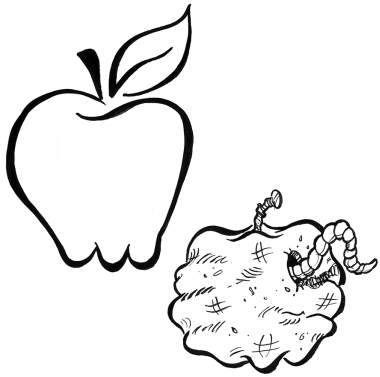
Some minerals also function as electrolytes (calcium, magnesium, potassium, sodium chloride [salt], sulfate, and phosphate), acting as buffering agents that help

protect the body's tissues from excess acidity, which more often than not comes from our own poor lifestyle choices. Electrolytes also carry electrical charges that trigger a signal or function somewhere in the body.

The problem is that too many of us may actually be deficient in numerous minerals due to the fact that these minerals just aren't found in high enough quantities in the foods that we consume. Researchers from the University of Texas published a study in the *Journal of the American College of Nutrition* that showed that at least six nutrients in fruits and vegetables (including the minerals calcium, potassium, and iron) have diminished quite extensively since 1950.[40] We live in a time in which bigger and brighter often equates to more water and less nutritive value. Technology has allowed us to tinker with the genetic components of fruits and vegetables and in the process create huge strawberries that deliver very little in taste to broccoli that contains half the calcium and magnesium of its older cousins.[41] Aside from these facts, very few of us consume organically grown produce, and as the saying goes, "If it isn't in the soil, it isn't in the produce!" Researchers from the Agricultural Research Service in Maryland discovered that organically grown fruits and vegetables produce many more antioxidants, polyphenols, and enzymes than commercial produce.[42]

Following are just a few examples of how important minerals are.

Calcium is considered the king of minerals because calcium is the most abundant mineral in the human



body (teeth and bones conta calcium). When one thinks of calcium, the first thing that usually comes to mind is bone health; however, calcium is also essential to proper muscle contraction—especially where your heart is concerned, cellular communication through nerve transmission, and the release of hormones. Research has shown that proper calcium intake (supplementation) can make a modest improvement in lowering your risk of osteoporosis and fractures.[43] Having said this, it is important to realize that calcium can also be linked to heart disease. Say what? It's true, if calcium is not properly transported to the skeletal system to form new bone, calcium can become deposited in the arteries, causing them to harden and lose their elasticity in a process referred to as arteriosclerosis. Excess calcium buildup within the artery wall can often lead to heart attacks.[44] The condition of calcification is hardly (no pun intended) relegated to your arteries, as it can also occur in other areas of the body, including your lungs and brain. Vitamin K is a nutrient—primarily found in green leafy vegetables—that is essential to the proper transportation and deposit of calcium to the bones, which is yet one more reason why minerals that occur in their natural forms in nature will always provide superior absorption and utilization compared to those found in a capsule. Vitamin D is essential to the absorption and bioavailability of calcium. And if you're worried about suffering from kidney stones if you increase your calcium intake, think

again! Research published by Harvard scientists in 1993 showed that a high calcium intake actually decreases the risk of symptomatic kidney stones.[45]

Research published in the *Journal of the American College of Nutrition* shows that more than half (68 percent) of Americans are deficient in *magnesium*, because they don't consume the government's recommended daily intake of 420 mg.[46] To make matters worse, an alarming 19 percent of Americans don't even consume half of this amount.[46] Aside from the fact that magnesium is required for calcium absorption and bone integrity, this mineral also helps maintain proper blood sugar levels and is required in more than 300 biochemical reactions—involved in every step the body uses to produce energy (ATP). Researchers from the Medical University of South Carolina have discovered that people who consume inadequate—less than the RDA—levels of magnesium are at higher risk for inflammatory disorders, especially where cardiovascular disease is concerned.[46]

Iodine is an essential component of the main thyroid hormones, T4 and T3, and its deficiency is a known cause of thyroid disease.[47] What many people may not realize is that hypothyroidism is also associated with other disorders such as heart disease, high cholesterol, and depression.[48, 49, 50]

In 2004, researchers from the Federation of the American Societies for Experimental Biology discovered that mineral deficiencies cause radiation-like damage to our cellular blueprint—DNA. It is important to note that DNA damage is often associated with advanced aging and cancer. Mineral deficiencies can lead to double-strand breaks in DNA, which is the most serious damage often seen with ionizing radiation.[51]

A 15-year study of 1,103 subjects published in the *American Journal of Clinical Nutrition* showed that blood concentrations of the trace mineral *selenium* were related to a lower incidence of such cancers as esophageal and stomach, and a lower incidence of heart disease[52] This is not at all surprising when you consider that selenium is essential to the health and integrity of our immune systems—especially where viruses are concerned. A deficiency in this essential nutrient can cause an otherwise harmless virus, *coxsackievirus*, to become a potentially lethal one that is capable of destroying heart tissue. In fact, in certain parts of the world where selenium is most deficient, children are lucky to live to be 10 years old because of the destruction of their hearts.[53] Selenium deficiency is also believed to be associated with numerous other viral outbreaks, including the progression of HIV to full-blown AIDS, influenza, the common cold, and perhaps even the dreaded Ebola virus.[54]

Zinc is found within every one of your body's trillions of cells and is essential to the proper functioning of the immune system, which is why zinc deficiency is known

to increase your susceptibility to a variety of pathogens.[55] In fact, zinc deficiency is known to occur in many diseased states. Zinc is also required for the activity of several enzymes (more than 200 to be exact), many of which are responsible for maintaining energy production. Thus, zinc deficiencies could result in a reduction in energy production and endurance capacity.[56] Aside from this, zinc maintains effective sex hormone production and transportation[57]—especially where testosterone is concerned, as well as growth hormone[58] and insulin[59] production. Some research even alludes to zinc working as a secondary cellular messenger.

Manganese is a mineral that is essential for healthy bones,[60] joints,[61] hair,[62] and nails, and maintaining a healthy cardiovascular system by maintaining adequate levels of the good HDL cholesterol.[63] Manganese is also required for healthy carbohydrate metabolism.[64] In fact, the bodies of diabetic patients often contain only 50 percent of the manganese of non-diabetic patients, which is one of the reasons that manganese is sometimes suggested for diabetics who do not respond well to insulin.

Chromium is a trace mineral that is essential to the proper functioning of our metabolic systems. For instance, insulin—the body's primary storage hormone—cannot function properly without the aid of chromium (as glucose tolerance factor), which is why chromium-deficient individuals can often experience compromised carbohydrate metabolism and blood sugar regulation leading to obesity, hypoglycemia and/or hyperglycemia,

and diabetes. Since chromium is not found in any significant quantity in many of the soils within the U.S., and since processed foods are both void of chromium and work to deplete it from our systems, chromium deficiency is widespread throughout the United States (a possible explanation as to why obesity in the U.S. is now at epidemic proportions—pun intended!).[65] According to research published in the journal *Medical Hypotheses*, chromium deficiency could also play a role in skin conditions such as acne.[66]

Vanadium is another trace mineral that is important to proper insulin function. Some research even suggests that vanadium is able to mimic insulin's functions to a certain point. In fact, one study showed that vanadium was able to help patients with non–insulin-dependent type 2 diabetes (NIDDM) improve overall insulin sensitivity after only 3 weeks of supplementation.[67]

The trace mineral *copper* is essential to the production of one of the body's most important and powerful antioxidant enzymes, superoxide dismutase (SOD).[68] SOD levels are an important determining factor of the longevity potential of most living things—especially humans (the higher the SOD levels, the longer the lifespan potential).[69] Copper deficiency can often lead to cardiovascular disease and inflammatory disorders such as arthritis.[70, 71]

Boron is another trace mineral that plays an essential role in keeping our bones and joints as healthy as possible. A study by the USDA even showed that boron

is able to aid in healthy hormone levels—primarily of estrogen and testosterone—in postmenopausal women and thereby help prevent bone loss.[72] Another way that boron helps maintain bone and joint integrity is possibly by maintaining healthy vitamin D levels.[73]

Natures pH buffers
What is pH, and why does yours matter?

pH is one of the most important things you need to learn about in terms of health or disease. In order for your body's cells to function at peak capacity, your body needs to ensure that its pH levels—especially your blood—are in a slightly alkaline state (that means with a pH of slightly more than 7). You may remember pH in high school chemistry, so you know it has something to do with acids and bases. Lemon juice and the stuff in your car battery are acids or acidic. Baking soda and drain cleaners are bases or basic, which is another term for alkaline.

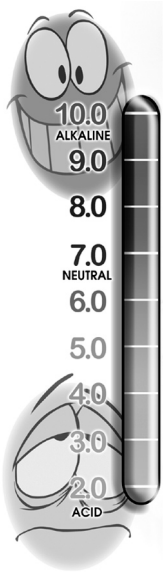
pH is actually the measure of hydrogen and oxygen ions (electrically charged particles) in a solution. Measures are relative and are presented on a scale of 0 (with a high concentration of hydrogen ions and therefore highly acidic) to 14 (with a high concentration of hydroxyl ions [hydrogen and oxygen] and therefore highly alkaline). A pH of 7 is neutral on the scale. Your blood, urine, saliva, digestive juices, mucus, and the fluids inside and outside your cells each have an optimum pH level.

While your digestive juices are quite acidic, your blood must be slightly alkaline (7.35-7.45). "Slightly alkaline" means a slightly higher concentration of hydroxyl ions. Why should your blood be slightly alkaline? One of its jobs is to carry oxygen—the basis for most of the biochemical reactions that sustain life—to the cells in your body, so your blood has to be alkaline! Your body will buffer the acidity of your blood at all costs—your body won't let your blood become acidic and therefore unable to carry oxygen—or you wouldn't survive. Your body does this buffering by pulling alkaline minerals (**especially calcium**) from your saliva, soft tissues, and bones.

Despite the constant buffering, many of your body fluids (including your blood) may be more acidic than they should be. A shortage of buffering agents, particularly dietary minerals, can make it a challenge for your body to maintain the pH it prefers. Alkaline conditions maintain your body's ability to rebuild and repair itself, while an acidic environment ensures that your body will break down faster.

Bone loss—insufficient calcium or too much acid?

For ages, people have associated more calcium with less bone loss (i.e., osteoporosis); however, the reality is not so simple. It turns out that bone health seems to be much more dependent on your body's acid/alkaline balance than the amount of dietary calcium you consume. For years, researchers have wondered why diets high in calcium containing foods such as cheese can cause



the body to actually lose calcium. The answer lies in a process called "calcium balance." Your calcium balance refers to how much calcium is retained by the body at the end of the day. Since calcium is the body's major acid-buffering mineral, its levels are tied to your acid/alkaline balance. In other words, if you continuously eat and drink acid-producing foods and liquids (such as processed cereals, meats, dairy products, and sodas) without balancing this with sufficient alkaline foods and liquids (such as fruits, vegetables, and pure alkaline water), your body will end up pulling too much calcium from the bones to buffer the excess acidity. This is why some people who consume alkaline foods and liquids, yet don't take in "so-called" adequate quantities of calcium, can still maintain bone mass—at the end of the day, they've held on to more calcium than they've excreted.

Researchers from John Hopkins University were amazed to find that 459 men and women were able to reduce their loss of calcium considerably by consuming alkaline foods (fruits and vegetables).[74] Research published in the *New England Journal of Medicine* proved that, by neutralizing the excess acids in postmenopausal women with nothing but potassium bicarbonate (yes, baking soda), the women reduced their urinary calcium losses and actually increased their rates of bone formation.[75]

Bioavailability of minerals

If you have ever looked at minerals on the periodic table of elements, you would have quickly noticed that these minerals are listed in their "free ionic state," meaning the mineral "ion" isn't bound to anything else. The realty is, however, that mineral ions found in nature are almost always bound to other mineral ions. In other words, mineral ions generally don't exist "unbound" or in a free ionic state, except in your body fluids, rain water, and glaciers (glacial ice).

Minerals have primarily two forms and are derived from four basic origins. From purely a chemistry standpoint, any substance that contains carbon is defined as "organic" in contrast to "inorganic," i.e., non-carbon containing. For dietary purposes, however, we shall allow for a slight modification of that definition. As far as the food supply is considered, minerals are generally categorized as organic or inorganic. Inorganic minerals are those in which the ions are bound to other ions, such as those that exist in metals, rocks, and seashells. Ions bound to other ions are very compact, dense, and hard, which is why they make up things such as metals, rocks, and shells (real hard stuff). These inorganic forms were intended to be very hard and provide great structural strength. They were not intended by nature to be eaten, although—unfortunately—they are the most widely used in supplement formulations due to their abundance and very low cost of acquisition and processing.

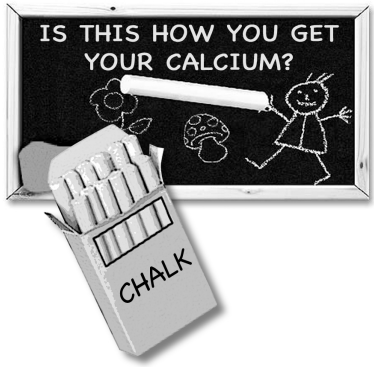
Similar to the way your body absorbs vitamins and other nutrients, your body absorbs minerals better in

some forms than in others. The most absorbable form of minerals is what is called "organic." In this case, the mineral ions are bound to organic molecules (ligands) such as amino acids or various sugars. The resulting molecules are large and take up a lot of space; because the bonds between the mineral ions and the organic molecules are fairly weak, these organic forms are much more easily broken apart (or ionized). Minerals in this "free ionic state" are better absorbed, more effectively used, and are "body friendly" (that is, they are less of a burden to your body as a result of their use). Therefore, organic minerals, such as the calcium found in a serving of broccoli or steak, is easily broken down and absorbed by your body for use for metabolic processes.

Inorganic mineral ions are usually bound to other mineral ions, as this is their favorite form. Thus, this bond is a very strong one, making the resultant minerals compact, dense, and hard, which is why they make up materials such as limestone and oyster shells. Because the bonds among the mineral ions are so strong and this form of mineral is difficult to break down (ionize) for metabolic use, your body has a difficult time absorbing inorganic minerals. It's doubtful that nature intended for these inorganic forms of minerals be eaten, although—unfortunately—they are the form most widely used in supplement formulations due to their abundance and very low cost of acquisition and processing.

The calcium from limestone or oyster shells is used for dietary supplements, especially in daily multiple formulas in which many ingredients are used and space

is limited. This form of calcium is cheaper, and it's concentrated so it fits into a smaller space, making for an inexpensive and small pill. This form is highly alkaline and thus good for neutralizing or buffering the acidity in your stomach. You may use hard mineral sources like those found in Tums™ for that reason, but generally, the minerals from these sources are not well absorbed.



Researchers and manufacturers have long recognized this problem, and are always striving to find ways to make inorganic minerals as bioavailable to your body as they can be. This enhanced absorbability is usually created by "chelating" or binding the inorganic mineral ions to natural agents (enter the ligand) such as amino acids. The supplement pills themselves have grown larger during this process (a pill containing a mineral "chelated" or bound to an organic ligand is much larger than a pill containing its inorganic mineral counterpart). We're heading back to large molecules similar to those found in nature's broccoli and steak. Just as it is necessary to consume a lot of steak or broccoli to get 1,000 milligrams of calcium, the development of more organic forms of minerals for supplementation means you have to consume a much larger pill (if you can get it down) to get 1,000 mg of bioavailable minerals. Compare this to a small tablet of the old "powdered rock" version, calcium phosphate

from limestone, for example, that is easy to swallow but unlikely to be broken down well for absorption.

Rather than trying to consume half your weight in broccoli (quite possibly grown in soils with depleted mineral content) as you try to get your required daily amount of minerals such as calcium in a form your body can absorb, you can use a variety of sources, including minerals derived from plants, animals, the earth, or, better yet, the sea (marine minerals). In fact, marine minerals have been around since the oceans were created, and contain dozens of macro and trace minerals that have some very remarkable properties—including enhanced bioavailability due to their unique ionic forms.

Marine minerals—myth or magic?

Marine mineral complexes are one of the most misrepresented and misused supplements to be introduced to consumers. Marine minerals derived from Okinawa, Japan, contain a wide range of macro (especially calcium and magnesium) and trace minerals (more than 70). When pure marine minerals are added to purified or distilled water in a sachet ("tea bag") form known as X2O™, the minerals can be ionized efficiently and made available to your body. (This means the mineral oxides are released in the water to form hydroxide ions (OH-), which increase the pH of the water.) The proper way to ionize the minerals is to put a sachet in as much purified or distilled water as you can drink in less than 20 minutes (I suggest 250 mL or more) and shake it well for about 5 to 10 seconds. Allow the marine mineral complex (X2O™)

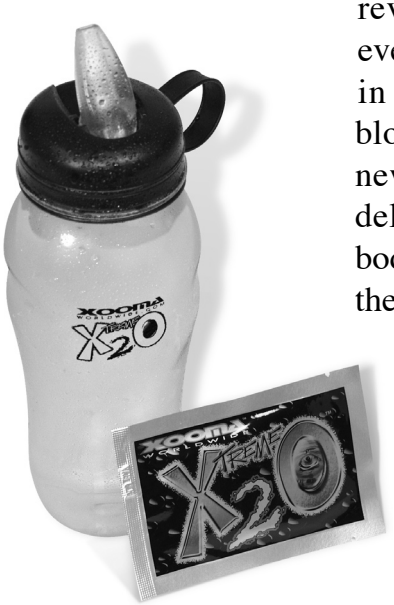
to activate the water for another 5 minutes (to release the ions) and then drink all of the water within 60 minutes if you want to benefit from the greatest mineral absorption. (Why 60 minutes? Because after 60 minutes, those needy ions will start bonding with each other again.) You can easily add more water to the container, making sure to replace the X2O™ sachet once or twice daily (maximum 16 hours). It's important not to combine used sachets and fresh sachets. Those ions love to bond with each other, and the ones in the used sachets will attract the ions from the fresh sachets instead of leaving them free in the water to bond with you.

The problem is that most of the popular promotional programs to date only sell these marine mineral formulas in capsules and tablets. The real potential of marine minerals is only unlocked when the minerals are activated first by water. The solid form of pure marine minerals—when added to water—has a very alkaline pH of 9.5 - 10.4, aiding in the body's removal of excess acids and thereby helping improve overall health.

To evaluate the quality of a marine mineral complex, you need to see its effects on the water's pH, surface tension (in dynes), and change in (-) millivolts (the higher the negative number, the better). If you were just looking at pH, you could add lye to water and get an alkaline change in pH, but the water would be very unhealthy, even dangerous to consume. Whereas marine mineral water is, as stated previously, highly alkaline and health-promoting to the body.

What about protecting the marine environment? It is important to note that the specialized marine minerals used for X2O™ are only found in Okinawa, Japan, and are derived by means that protect and actually improve the conditions of the marine ecosystem. X2O™ marine minerals are only collected from depths greater than 200 feet. To further protect the pristine mineral environment, collecting any mineral deposits closer than a mile from shore is forbidden.

Although I am not an admirer of people who tout so-called silver bullets or magic pills, human studies of red blood cells and surrounding fluids using Darkfield microscopy (a specialized microscope that enhances magnification while maintaining the quality of the information in an image) before and after marine mineral water consumption have revealed a significant (and even dramatic) improvement in the health of those red blood cells and fluids. This new health status works to deliver more oxygen to the body's trillions of cells and in the process help to maintain peak energy efficiency and overall health.



CHAPTER 4

Cellular Insurance—The Power of Nature's Antioxidants

We have been told by our mothers, and they in turn by their mothers, to "eat our fruits and vegetables." And now, according to numerous studies that can no longer be ignored, if you want to rev up your cellular engines, burn body fat, increase your energy supplies, and turn back the clock, you should heed your mother's advice.

Fruits and vegetables contain special plant chemicals called phytonutrients, of which tens of thousands have been discovered so far. Phytonutrients act like an immune system in plants, essentially protecting them from injury, disease, insects, poisons, and environmental threats such as pollution, drought, excessive heat, and overexposure to the suns ultraviolet rays. Just as these powerful compounds have the ability to protect the very plants they come from, the compounds in turn have been shown to help boost our immune systems—possibly by enhancing our innate antioxidant defense systems— aiding in the body's ability to repair itself more effectively and age more slowly. In fact, pharmaceutical researchers from India and Germany have discovered that a specific class of phytonutrients called flavonoids may have the ability to protect the brain from memory deficits associated with aging. The researchers found that flavonoids have the ability to enhance antioxidant protection to the brain

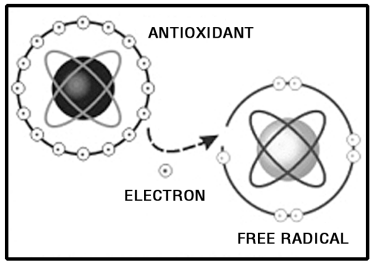
and suppress proinflammatory molecules often seen in neurological disorders, including Alzheimer's disease.[76, 77]

Oxygen—a paradoxical substance

Ask almost anyone what the most important substance is on Earth, and they will tell you the precious air that they breathe. The fact remains that we can only live without oxygen for a few minutes, but through a chemical reaction that takes place within our every cell (mostly within the energy centers called mitochondria), oxygen by-products slowly erode us from the inside out. Your body is composed of untold trillions of atoms. These atoms make up the molecules of your body, which in turn construct your cells and so on. Atoms must be stabilized using electrons that spin around the atoms' centers (nuclei) in pairs. These electron pairs balance each atom's electromagnetic charge. The health of your body depends on this intricate balance. When atoms become unbalanced by either gaining or losing an electron, they are called free radicals. (*Free* refers to the fact that these compounds are misfits, with no proper place in cellular society. *Radical* is the name biochemists give to an atom or molecule with an un-paired electron). Free radicals are constantly seeking another electron to pair up with, usually stealing one from an adjacent atom and creating a destructive domino effect on the cells of the body.

How destructive? According to Dr. Bruce Ames, a leading biochemist from the University of California in Berkeley, the DNA (cellular blueprint) of our cells is attacked by free radicals more than 10,000 times each day.[78]

Antioxidants to the rescue



The scenario described above is also referred to as uncontrolled oxidation and is, in all reality, the most destructive process the human body must deal with on a daily basis. Considering that excess free radical damage takes place within every cell of your body, produced by multiple factors including, among other things, regular breathing, stress, polluted air, and sunlight's ultra-violet radiation, you can quickly understand what we are up against. In fact, it has been scientifically validated that the vast majority—at least 92 percent—of all free-radical damage takes place within our very own energy-producing centers, the mitochondria. Regular bouts of exercise cause your body to use up to 20 times the oxygen your body does while at rest, and since free radicals are formed from the by-products of oxidation, exercise increases your body's ability to produce free radicals. Research shows that even moderate exercise can create a threefold increase in muscular free radicals and, without the proper protection, extensive muscle damage.[79]

Since 1955, Dr. Denham Harman, the father of the free-radical theory of aging, has been telling us that uncontrolled oxidation has been proven to be at the forefront of premature aging.[80, 81] But the main question is, if this process is so relentless, then why don't we just decompose? Well, in a sense we do. It's called aging. However, we were all given the ability to fight this

destructive and unrelenting process with a little help from Mother Nature, and our very own antioxidant defense systems.

Our bodies produce powerful antioxidants (antioxidant enzymes) with big names such as superoxide dismutase, glutathione peroxidase, and catalase. Our antioxidant enzymes quench these free radicals and stabilize their atoms by either taking or receiving an electron (this is the same process in which antioxidant vitamins, minerals, and amino acids work). But in order to keep this natural system working at peak efficiency, we must supply our bodies with precursors to these antioxidants that are found in the plant kingdom—fruits, vegetables, herbs, and spices. Even though you have inherited this one-of-a-kind defense system, its ability to help keep you young doesn't exactly last forever. As we age, we experience an eventual decline in the production of these cellular defenders, and our cells become more and more prone to damage from the relentless free radical attacks.[82] This is where phytonutrients come in.

One of the most effective ways to eliminate excess free radical damage is to reduce the overall calories you consume on a daily basis. Let's face facts, the majority of our population eats way too much as it is, and most of what we eat—unfortunately—comes from unhealthy food choices. Many of us could benefit from reducing some of this gluttony. The numerous health benefits associated with caloric restriction have been scientifically documented in every animal species studied to date. For instance, it is widely

known that calorie-restricted rodents can often live 50 percent longer than rodents allowed to eat freely. The reason for this vast improvement in maximum lifespan is believed to be largely due to a decrease in mitochondrial, free-radical production—meaning that the less you eat, the fewer free radicals get made.

Nature's ultimate antioxidants

You are probably familiar with the multitude of antioxidants on the market today. News of their many benefits has been displayed for years. In fact, even the most conservative of medical journals are now extolling the virtues of antioxidants.[83, 84] The antioxidants you are undoubtedly most acquainted with are vitamin C (a water-soluble antioxidant) and vitamin E (a fat-soluble antioxidant). These two antioxidants are indeed two of the most important players in our continual battle with free radicals, but they are far from the only ones needed by the body.

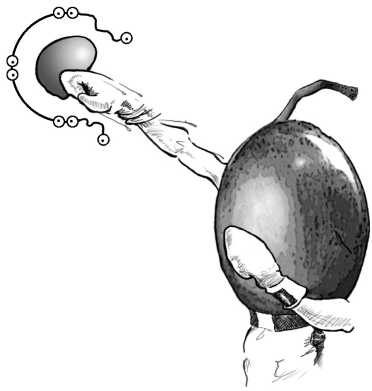
Many nutritional researchers believe that dietary antioxidants, such as vitamins C and E—unlike natural antioxidants produced by your cells—may not actually be able to reach the cells' energy-producing centers (mitochondria) and protect them from free radical damage (especially to their delicate DNA). However, there is very little debate over the ability of naturally derived dietary antioxidants to offer protection to virtually all parts of the cell, such as cellular proteins, membranes, and the mitochondria. It is thereby believed that the best way to enhance the body's overall antioxidant potential, and therefore your energy potential, is by consuming

antioxidants derived from nature in their purest form—found in some of the most powerful phytonutrients. Anything else at this point is nothing more than a guessing game.

The reason we need a mixture of natural antioxidants found within the plant kingdom is because the combination of nutrients in these foods offers the greatest protection to your cells. The reality is that once an antioxidant has neutralized a free radical, the antioxidant becomes a weak free radical itself and must be regenerated again in order to continue to protect your cells. It may actually be possible to add to the body's free radical load by only taking one or two dietary antioxidants. When it comes to battling the 1,100 or so different families of free radicals that exist, we must introduce a synergy of antioxidant nutrients to the mix. Nothing imparts overall protection to your cells like antioxidants created by Mother Nature.

ORAC: A not-so new way to measure antioxidant potential

Developed during the early nineties, the Oxygen Radical Absorbance Capacity (ORAC) is a well-accepted way of measuring the total antioxidant protection of foods and other chemical substances.[85] Recent surveys show that the majority of our population consumes less



than half of the recommended amounts of high–ORAC-containing vegetables and fruits on a daily basis. By increasing our intake of these cellular protectors, we may help slow the processes associated with aging in our bodies and brains. Research published in the *Journal of Neuroscience* has shown that diets supplemented with foods high in ORAC values show promise in reversing decreases in brain function caused by aging.[86] Two human studies show that by eating high-ORAC fruits and vegetables, or by doubling our present intake of these foods, we can increase the antioxidant power of the blood by 25 percent.[87]

If you do decide to supplement your diet with antioxidants from your health food store, make sure to look for natural, preferably organic, low-heat dried vegetable, fruit, herb, and spice powders with the highest ORAC values. Dr. Lester Packer, director of the Packer Lab at the University of California in Berkley and one of the world's leading authorities on antioxidants, has stated that there are five pivotal antioxidants called "network antioxidants" that should be taken as a group for added free radical insurance, as each one works synergistically to increase the overall potential of the others. The network antioxidants are lipoic acid, coenzyme Q10 (CoQ10), vitamin C, vitamin E (mixed tocopherols, not just alpha), and glutathione.

When it comes to a food's overall antioxidant potential as measured by ORAC, not all foods are created equal. It turns out that fruits containing the darkest pigments

seem to also have the highest ORAC values. This is not surprising since the health-promoting potential of most fruits and vegetables is usually measured by the nutrients concentrated in their skins. For instance, studies have shown that fruits containing dark blue pigments such as those found in wild bilberry and blueberry extracts usually possess the highest ORAC ratings, which also seems to give these foods powerful cancer-preventing abilities.[88] In fact, Japanese researchers have discovered that bilberries are the most powerful of the berries when it comes to stopping cancer growth in a laboratory setting.[89]

According to research collected from the United States Department of Agriculture (USDA), in order to give our cells the best antioxidant defenses, we should be consuming between 3,000 and 5,000 ORAC units per day. Yet studies from the Human Nutrition Research Center on Aging at Tufts University in Boston suggest that most people consume approximately 1,670 ORAC units daily. When study participants increased their fruit and vegetable intake to 10 servings a day (1 serving is equivalent to a half-cup), they were able to raise their ORAC values to between 3,300 and 3,500 ORAC units—or just a little over the minimum established ORAC levels needed to maintain optimum health.

Having said this, how many people realistically eat 10 half-cup servings of fruits and vegetables each day (not counting fruit-flavored candy and potato chips)? In fact, according to recent statistics, less than 10 percent of the North American population consumes

ORAC UNITS PER 100 GRAMS			
FRUITS		**VEGETABLES**	
CoffeeBerry™	80,000	Garlic	1,939
Wolfberries	25,300	Kale	1,770
Prunes	5,770	Spinach	1,260
Pomegranates	3,307	Yellow Squash	1,150
Raisins	2,830	Brussel Sprouts	980
Blueberries	2,400	Alfalfa Sprouts	930
Blackberries	2,036	Steamed Spinach	909
Cranberries	1,750	Broccoli Flowers	890
Strawberries	1,540	Beets	840
Raspberries	1,220	Avocados	782
Plums	949	Red Bell Peppers	710
Oranges	750	Baked Beans	503
Grapes (red)	739	Kidney Beans	460
Cherries	670	Onions	450
Kiwi fruit	610	Corn	400
Grapefruit (pink)	495	Eggplant	390
Grapes (white)	460	Cauliflower	385
Cantaloupes	250	Frozen Peas	375
Bananas	210	Potatoes	300
Apples	207	Sweet Potatoes	295
Apricots	175	Cabbage	295
Peaches	170	Leaf Lettuce	265
Pears	110	Tofu	205
Watermelons	100	Carrots	200
Honeydew Melons	97	String Beans	200
		Tomatoes	195
		Zucchini	176
		Lima Beans	136
		Iceberg Lettuce	105
		Celery	75
		cucumbers	60

even the recommended 4 cups of fruits and vegetables recommended by the Dietary Guidelines for Americans.[90] It stands to reason that we should all be doing our best to consume more high-ORAC foods, which is why I have provided you with a chart outlining the ORAC values of some common fruits and vegetables below.

Taking ORAC to the next level—introducing the other side of coffee

As you can see, appearing at the very top of this list is a fruit very few people have ever heard about before; it's called a coffee berry. Coffee berry is exactly what it sounds like, the berry that grows around the coffee bean (yes, the exact coffee bean that is used to make more than 350 million cups of coffee each and every day in the United States alone!). For centuries, native cultures have used the whole fruit from the coffee berry for its medicinal qualities and energy enhancing effects. The only reason we haven't heard about this incredible fruit before is because we didn't have the scientific means in which to properly extract the whole coffee fruit—all the while maintaining its powerful antioxidant and nutritive qualities—until recently. The majority of these powerful compounds are lost or destroyed during the roasting of coffee beans.

Aside from unsurpassed ORAC values (8,000 per gram, compared with 625 per gram of blueberries), the coffee berry also contains a class of phytonutrients called polyphenols, including caffeic acid,[91] chlorogenic acid,[92] ferulic acid,[93] quinic acid,[94] and trigonelline,[95] shown to help:

- maintain brain health and memory function[96]
- reduce inflammation[97, 98]
- reduce the incidence of coronary heart disease[99, 100]
- lower cholesterol[101, 102] and high blood pressure[103]
- inhibit the formation of kidney stones and urinary tract infections[104]

- aid in sugar metabolism[105] and type 2 diabetes management[106]
- reduce cancer risk[107]
- reduce skin aging[108]
- and provide health benefits associated with metabolic syndrome, depression, anxiety, and oral health

Coffee-Berry extract is available in a 100% natural, great tasting water flavoring product called X2O BLAST, which contains 3000 ORAC units per serving.

REFERENCES

[1] Linnane AW et al. Mitochondrial DNA mutations as an important contributor to ageing and degenerative diseases. 1989. Lancet 1: 642-645.

[2] O. Warburg, et al. Klinische Wochenschrift 43, 289, 1965.

[3] Epstein, SS. The Politics of Cancer Revisited. East Ridge Press, Hankins, NY, 1998.

[4] American Cancer Society. Cancer Facts and Figures, 2005. www.cancer.org

[5] Sandra Steingraber, Living Downstream; An Ecologist Looks At Cancer And The Environment, New York: Addison-Wesley, 1997, pg. 60.

[6] Alliance for Aging Research. A Call For Action: Cancer (Amended Articles), 2001.

[7] Baillie-Hamilton PF. Chemical toxins: a hypothesis to explain the global obesity epidemic. 2002. J Altern Comp Med Apr;8(2):185-92.

[8] Bland, JS. Genetic Nutritioneering: How You Can Modify Inherited Traits and Live a Longer, Healthier Life. Keats Publishing, Lincolnwood, Ill, 1999 (intro).

[9] BBC Science & Nature Homepage. www.bbc.co.uk/nature/environment/conservationnow/global/freshwater/

[10] Hodak SP, Verbalis JG. Abnormalities of water homeostasis in aging. Endocrinol Metab Clin North Am. 2005 Dec;34(4):1031-46, xi.

[11] Miller M. [Aging and water metabolism in health and illness] Z Gerontol Geriatr. 1999 Jul;32 Suppl 1:I20-6.

[12] King B. Fat Wars Action Planner. Wiley & Sons, Toronto, Ont. 2003

[13] King BJ. Fat Wars: 45 Days To Transform Your Body. CDG Books. Toronto, Ont. 2002. (pg.11)

[14] Ravaglia G, et al. Determinants of functional status in healthy Italian nonagenarians and centenarians: a comprehensive functional assessment by the instruments of geriatric practice. *J Am Geriatr Soc.* 1997 Oct;45(10):1196-202.

[15] Krucoff C. Making Muscle a Thing of the Present: New Guidelines Urge Older Exercisers to Put Emphasis on Strength Training. The Washington Post, Jan. 26, 1999; Pg. Z28

[16] Linnane AW et al. The universality of bioenergetic disease. Age-associated cellular bioenergetic degradation and amelioration therapy. 1998. Ann NY Acad Sci 854: 202-213.

[17] King, BJ & Schmidt, MA; BIO-AGE: Ten Steps To A Younger You, CDG Books Canada, 2001.

[18] Fulop T Jr, Worum I, Csongor J, Foris G, Leovey A. Body composition in elderly people. I. Determination of body composition by multiisotope method and the elimination kinetics of these isotopes in healthy elderly subjects. Gerontology 1985;31:6-14.

[19] Brensilver, JM & Goldberger, E, A Pimer of Water, Electrolyte and Acid-Base Syndromes. Oxford University Press, New York, 1996

[20] Batmanghelidj, F. Your Body's Many Cries for Water. 2nd ed.: Global Health Solutions, 1997.

[21] Masuno, H., et al. “Bisphenol A in combination with insulin can accelerate the conversion of 3T3-L1 fibroblasts to adipocytes.” J lipid Res 3 (2002): 676-684.

[22] Agre P, et al. Aquaporins: a family of water channel proteins. Am J Physiol. 1993 Sep;265(3 Pt 2):F461.

[23] Willix, RD; The Shocking truth About the Water You Are drinking Now…and the lethal Effect it may have on Your Health; Doctor’s Special Report, Healthier You Inc., 1998.

[24] Ling GN. Solute exclusion by polymer and protein-dominated water: correlation with results of nuclear magnetic resonance (NMR) and calorimetric studies and their significance for the understanding of the physical state of water in living cells. Scanning Microsc. 1988 Jun;2(2):871-84.

[25] Haussinger D, Gerok W. Role of the cellular hydration state for cellular function: physiological and pathophysiological aspects. Adv Exp Med Biol. 1994;368:33-44.

[26] Haussinger D, Lang F, Gerok W. Regulation of cell function by the cellular hydration state. Am J Physiol. 1994 Sep;267(3 Pt 1):E343-55.

[27] Mansell JL, Clegg JS. Cellular and molecular consequences of reduced cell water content. Cryobiology. 1983 Oct;20(5):591-612.

[28] Emoto M. The True Power of Water. Atria Books. New York. NY. 2003.

[29] American Beverage Association. Soft drink facts (2004 stats). www..nsda.org

[30] Soft Drink Markets in 174 Countries Worldwide Documented,” *Beverage Marketing,* press release, June 15, 2001.

[31] Gibney M, et al. Am J Clin Nutr. 1995 Jul;62(1 Suppl):178S-193S; discussion 194S. Erratum in: Am J Clin Nutr 1997 May;65(5):1572-4.

[32] Lynette L. “Just a Spoonful of Aspartame.” Utne Reader July/Aug. 1988: 16-17.

[33] Farber SA. “The Price of Sweetness.” Technology Review Jan. 1990: 46-53.

[34] Davidson TL, Swithers SE. A Pavlovian approach to the problem of obesity. Int. J. Obesity (2004) 28, 933-935.

[35] Roberts, H.J. Aspartame (NutraSweet) Is it Safe?. Philadelphia: The Charles Press, 1990

[36] Thomas P. ASPARTAME REACTIONS: A HIDDEN EPIDEMIC, Ecologist on-line. 05/08/2005

[37] Labare MP, Alexander M. Microbial cometabolism of sucralose, a chlorinated disaccharide, in environmental samples. Appl Microbiol Biotechnol. 1994 Oct;42:173-8.

[38] Hunter BT. Sucralose. Consumers’ Research Magazine, Oct90, Vol. 73 Issue 10, p8, 2p

[39] US Senate Document No. 264. 74th Congress of the United States of America. 1936.

[40] Davis DR, Epp MD, Riordan HD. Changes in USDA food composition data for 43 garden crops, 1950 to 1999. J Am Coll Nutr. 2004 Dec;23(6):669-82.

[41] USDA Website. http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=101867.

[42] Wang SY, Lin HS. Compost as a soil supplement increases the level of antioxidant compounds and oxygen radical absorbance capacity in strawberries. J Agric Food Chem. 2003 Nov 5;51(23):6844-50.

[43] Kaplan B, Hirsch M. Current approach to fracture prevention in postmenopausal osteoporosis. Clin Exp Obstet Gynecol. 2004;31(4):251-5.

[44] Wallin R, et al, Arterial calcification: a review of mechanisms, animal models, and the prospects for therapy. Med Res Rev 2001 Jul;21(4):274-301.

[45] Curhan GC, et al. A prospective study of dietary calcium and other nutrients and the risk of symptomatic kidney stones. N Engl J Med. 1993 Mar 25;328(12):833-8.

[46] King D, et al. Dietary magnesium and C-reactive protein levels. J Am Coll Nutr. 2005 Jun 24(3):166-71.

[47] Evlivaoglu O, et al. Incidence of iodine deficiency in patients presenting with goitre—discrepancy between clinical and ultrasonographic evaluation of the thyroid: comparison of patients with and without autoimmune thyroiditis—clinical, hormonal and urinary iodine excretion studies. J Pediatr Endocrinol Metab. 2006 Jan;19(1):39-44.

[48] Hak Ae, et al. Subclinical hypothyroidism is an independent risk factor for atherosclerosis and myocardial infarction in elderly women: the Rotterdam Study. Ann Intern Med. 2000 Feb 15;132(4):270-8.

[49] Feld S, Dickey RA. An Association Between Varying Degrees of Hypothyroidism and Hypercholesterolemia in Women: The Thyroid-Cholesterol Connection. Prev Cardiol. 2001 Autumn;4(4):179-182.

[50] Cleare AJ. Et al. Neuroendocrine evidence for an association between hypothyroidism, reduced central 5-HT activity and depression. Clin Endocrinol (Oxf). 1995 Dec;43(6):713-9.

[51] Courtemanche C, Huang AC, Elson-Schwab I, Kerry N, Ng BY, Ames BN. Folate deficiency and ionizing radiation cause DNA breaks in primary human lymphocytes: a comparison. FASEB J. 2004 Jan; 18(1):209-11.

[52] Wei WQ, Abnet CC, Qiao YL, et al. Prospective study of serum selenium concentrations and esophageal and gastric cardia cancer, heart dis- ease, stroke, and total death. Am J Clin Nutr. 2004 Jan;79(1):80-5.

[53] Jackson ML. Selenium: geochemical distribution and associations with human heart and cancer death rates and longevity in China and the United States. Biol Trace Elem Res. 1988 Jan-Apr;15:13-21.

[54] Rayman MP. The importance of selenium to human health. Lancet. 2000 Jul 15;356(9225):233-41.

[55] Prasad AS. Zinc and immunity. Mol Cell Biochem. 1998 Nov;188(1-2):63-9.

[56] Cordova A, Alvarez-Mon M. Behaviour of zinc in physical exercise: a special reference to immunity and fatigue. Neurosci Biobehav Rev. 1995 Fall;19(3):439-45.

[57] Hammond GL, et al. Structure/function analyses of human sex hormone-binding globulin: effects of zinc on steroid-binding specificity. J Steroid Biochem Mol Biol. 2003 Jun;85(2-5):195-200.

[58] Turgut S, et al. Effects of cadmium and zinc on plasma levels of growth hormone, insulin-like growth factor I, and insulin-like growth factor-binding protein 3. Biol Trace Elem Res. 2005 Winter;108(1-3):197-204.

[59] Haase H, Maret W. Fluctuations of cellular, available zinc modulate insulin signaling via inhibition of protein tyrosine phosphatases. J Trace Elem Med Biol. 2005;19(1):37-42.

[60] Rico H, et al. Effects on bone loss of manganese alone or with copper supplement in ovariectomized rats. A morphometric and densitomeric study. Eur J Obstet Gynecol Reprod Biol. 2000 May;90(1):97-101.

[61] Leffler CT, et al. Glucosamine, chondroitin, and manganese ascorbate for degenerative joint disease of the knee or low back: a randomized, double-blind, placebo-controlled pilot study. Mil Med. 1999 Feb;164(2):85-91.

[62] Jin W, et al. Determination of zinc, copper, iron and manganese contents in hair for MPA patients and healthy men. Guang Pu Xue Yu Guang Pu Fen Xi. 1998 Feb;18(1):91-3.

[63] Kumawat DC, et al. Effect of manganese on prevention of atherosclerosis in cholesterol fed rabbits. J Assoc Physicians India. 1986 Oct;34(10):704-5.

[64] Baly DI, et al. Effect of manganese deficiency on insulin binding, glucose transport and metabolism in rat adipocytes. J Nutr. 1990 Sep;120(9):1075-9.

[65] Kumpulainen JT. Chromium content of foods and diets. Biol Trace Elem Res. 1992 Jan-Mar;32:9-18.

[66] McCarty M. High-chromium yeast for acne? Med Hypotheses. 1984 Jul;14(3):307-10

[67] Goldfine AB, et al. Metabolic effects of sodium metavanadate in humans with insulin-dependent and noninsulin-dependent diabetes mellitus in vivo and in vitro studies. J Clin Endocrinol Metab. 1995; 80(11):3311-3320.

[68] Caruano-Yzermans AL, et al. Mechanisms of the copper-dependent turnover of the copper chaperone for superoxide dismutase. J Biol Chem. 2006 Mar 10

[69] LeBourg E, Fournier D. Is lifespan extension accompanied by improved antioxidant defences? A study of superoxide dismutase and catalase in Drosophila melanogaster flies that lived in hypergravity at a young age. Biogerontology. 2004;5(4):261-6.

[70] Saari JT. Copper deficiency and cardiovascular disease: role of peroxidation, glycation, and nitration. Can J Physiol Pharmacol. 2000 Oct;78(10):848-55.

[71] Milanino R, et al. Nutritional supplementation with copper in the rat. I. Effects on adjuvant arthritis development and on some in vivo- and ex vivo-markers of blood neutrophils. Inflamm Res. 2000 May;49(5):214-23.

[72] Neilsen FH, Gallagher, et al. Effect of dietary boron on mineral estrogen, and testosterone metabolism in postmenopausal women. FASB J 1, 394-397, 1987.

[73] Miljkovic D, et al. Up-regulatory impact of boron on vitamin D function - does it reflect inhibition of 24-hydroxylase? Med Hypotheses. 2004;63(6):1054-6.

[74] Appel L, et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. N Engl J Med. 1997 Apr 17;336(16):1117-24.

[75] Sebastian A, et al. Improved mineral balance and skeletal metabolism in postmenopausal women treated with potassium bicarbonate. N Engl J Med. 1994 Jun 23;330(25):1776-81.

[76] Schmitt-Schillig S, et al. Flavonoids and the aging brain. J Physiol Pharmacol. 2005 Mar;56 Suppl 1:23-36.

[77] Patil CS, et al. Protective effect of flavonoids against aging- and lipopolysaccharide-induced cognitive impairment in mice. Pharmacology. 2003 Oct;69(2):59-67.

[78] Wright K; Free Radical: An interview with the University of California at Berkeley's endlessly inventive biochemist Bruce Ames. DISCOVER Vol. 23 No. 10 (October 2002).

[79] Alessio, H.M.; Exercise-induced Oxidative Stress, Med Sci Sports Exerc, (Feb 1993), 25:2, 218–24.

[80] Harman D; J. Aging: a theory based on free radical and radiation chemistry. J Gerontol. 1956 Jul;11(3):298-300.

[81] Harman D. The aging process. Proc Natl Acad Sci USA. 1981 Nov;78(11):7124-8.

[82] Packer, L & Colman, C; The Antioxidant Miracle : Put Lipoic Acid, Pycnogenol, and Vitamins E and C to Work for You. John Wiley & Sons, New York, NY, 1999.

[83] Boaz M, et al. Secondary prevention with antioxidants of cardiovascular disease in endstage renal disease (SPACE): randomised placebo-controlled trial. Lancet. 2000 Oct 7;356(9237):1213-8.

[84] Prasad KN, et al. Multiple antioxidants in the prevention and treatment of Alzheimer disease: analysis of biologic rationale. Clin Neuropharmacol. 2000 Jan-Feb;23(1):2-13.

[85] Cao G, Alessio HM, Cutler RG. Oxygen-radical absorbance capacity assay for antioxidants. Free Radic Biol Med. 1993 Mar;14(3):303-11.

[86] Gemma C, et al. Diets enriched in foods with high antioxidant activity reverse age-induced decreases in cerebellar beta-adrenergic function and increases in proinflammatory cytokines. J Neurosci. 2002 Jul 15;22(14):6114-20.

[87] McBride J. Can Antioxidant Foods Forestall Aging? Agricultural Research Service, April, 1999.

[88] Roy S, et al. Anti-angiogenic property of edible berries. Free Radic Res. 2002 Sep;36(9):1023-31.

[89] Katsube N, et al. Induction of apoptosis in cancer cells by Bilberry (Vaccinium myrtillus) and the anthocyanins. J Agric Food Chem. 2003 Jan 1;51(1):68-75.

[90] News headlines. Consumers need more nutritional help from food companies, study. BakeryandSnacks.com. 24/02/2006

[91] Nardini M, et al. Absorption of phenolic acids in humans after coffee consumption. J Agric Food Chem. 2002 Sep 25;50(20):5735-41

[92] Daglia M, et al. In vitro and ex vivo antihydroxyl radical activity of green and roasted coffee. J Agric Food Chem. 2004 Mar 24;52(6):1700-4.

[93] Sohn YT, Oh JH. Characterization of physicochemical properties of ferulic acid. Arch Pharm Res. 2003 Dec;26(12):1002-8

[94] Del Rio D, et al. HPLC-MSn analysis of phenolic compounds and purine alkaloids in green and black tea. Agric Food Chem. 2004 May 19;52(10):2807-15.

[95] Minamisawa M, Yoshida S, Takai N. Determination of biologically active substances in roasted coffees using a diode-array HPLC system. Anal Sci. 2004 Feb;20(2):325-8.

[96] Cole GM, et al. Prevention of Alzheimer's disease: Omega-3 fatty acid and phenolic anti-oxidant interventions. Neurobiol Aging. 2005 Dec;26 Suppl 1:133-6. Epub 2005 Nov 2.

[97] Luceri C. Plant phenolic 4-coumaric acid protects against intestinal inflammation in rats. Scand J Gastroenterol. 2004 Nov;39(11):1128-33.

[98] Firuzi O, et al. Hypochlorite scavenging activity – Anti-inflammatory Activity. J Pharm Pharmacol. 2003 Jul;55(7):1021-7.

[99] Bohm M, Rosenkranz S, Laufs U. The "French Paradox"—effects of alcohol, wine and wine polyphenols on the heart. Dtsch Med Wochenschr. 2002 Dec 20;127(51-52):2748-56.

[100] Ndiaye M, et al. Red wine polyphenols cause endothelium-dependent EDHF-mediated relaxations in porcine coronary arteries via a redox-sensitive mechanism. Biochem Biophys Res Commun. 2003 Oct 17;310(2):371-7.

[101] Zern TL, West KL, Fernandez ML. Grape polyphenols decrease plasma triglycerides and cholesterol accumulation in the aorta of ovariectomized guinea pigs. J Nutr. 2003 Jul;133(7):2268-72.

[102] Shafiee M, et al, Grape and grape seed extract capacities at protecting LDL against oxidation generated by Cu2+, AAPH or SIN-1 and at decreasing superoxide THP-1 cell production. A comparison to other extracts or compounds. Free Radic Res. 2003 May;37(5):573-84.

[103] Zhongguo Zhong Xi Yi Jie He Za Zhi. Effect of theo-polyphenols on oxygen free radicals and hemorrheology in patients with essential hypertension. 1997 Apr;17(4):221-3. Chinese.

[104] Hutchinson J. Do cranberries help prevent urinary tract infections? Nurs Times. 2005 Nov 22-28;101(47):38-40.

[105] Cheng JT, et al. Release of beta-endorphin by caffeic acid to lower plasma glucose in streptozotocin-induced diabetic rats.
Horm Metab Res. 2003 Apr;35(4):251-8.

[106] Hsu FL, Chen YC, Cheng JT. Caffeic acid as active principle from the fruit of Xanthium strumarium to lower plasma glucose in diabetic rats. Planta Med. 2000 Apr;66(3):228-30.

[107] Szaefer H, et al. Anti-cancer and Chemopreventive Activity of CGA. Nutr Cancer. 2004;48(1):70-7

[108] Yu , et al. Method of treating wrinkles using quinic acid or quinolactone. United States Patent 5,589,505 December 31, 1996.

Have you ever wondered what it would be like to experience a life of *abundant health*?

Are you happy with the way you presently look, feel or perform from day to day? How many times have you thought about doing something to change your present status, only to get lost in the confusion surrounding today's health information? Imagine what could happen if you finally had the proper information and guidance to make a true life change.

Now you do!

In *Xtreme Health*, nutritional researcher Brad King shares the very foundations that can help you create the life you were designed to live! Based on scientifically sound principles, *Xtreme Health* shows you why many of us are living less than adequate lives today and what you can do to turn things around—once and for all.

The fact is, you are mostly water—or at least you once were! Aging is a condition in which you dry up from the inside out, and it usually shows itself in the form of lost muscle mass and excess body fat, low energy levels and a diminished capacity to enjoy life to its fullest. Once you learn how to optimize your body's hydration levels and stop the excess wear and tear from everyday living, you can allow your body once again to get in touch with its natural innate repair systems—leading to a biologically younger and healthier you.

Xtreme Health is now yours for the taking!

Brad King, M.S. (Nut. Sci.), MFS (Fit. Sci.), is a nutritional researcher, performance nutritionist and fitness expert. Brad is the creator of the highly successful Fat Wars Un-Diet Plan and has developed numerous gold-medal winning nutritional products and exercise protocols designed to improve health, slow biological aging, boost athletic performance and correct a dysfunctional metabolism. He is also the 2003 inductee into the *Canadian Sports Nutrition Hall of Fame.*

Brad is the author of 8 books, including the International best-seller *Fat Wars: 45 Days to Transform Your Body, Bio-Age: 10 Steps to a Younger You, Awaken Your Metabolism: Your Ultimate Guide to Abundant Energy* and *Conquer Inflammation.*

Aside from being highlighted in numerous national magazines, health publications and newspapers, Brad regularly appears as a leading health and fitness expert on national television programs throughout North America, and *has been heard* on hundreds of radio talk shows.

$14.95
RETAIL PRICE